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HOW HUNGARIAN CHILDREN LEARN TO SPEAK.

University of California, Berkeley,
Ph.D., 1974
Language and Literature, linguistics

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How Hungarian Children Learn to Speak

By

Brian James MacWhinney

A.B. (University of California) 1965

M.A. (University of California) 1967

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Rhetoric

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, BERKELEY

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Preface

The research reported upon here was begun during a twelve-month visit to Hungary from September 1970 to August 1971 facilitated by a grant from the Ford Foundation and sponsorship from the International Research Exchange Agreement. Upon my return to the United States, the Ford Foundation continued its support until April 1972, after which the research and data-analysis was supported through a grant to the Language Behavior Research Laboratory at the University of California, Berkeley. The course of this research and my graduate studies in general has been guided by Professor Susan Ervin-Tripp of the Department of Rhetoric and Professor Dan Slobin of the Department of Psychology. I wish to extend my sincerest gratitude to my two advisors for their patience in awaiting the results of this research.

My appreciation must also be expressed for the assistance given me by three Hungarian colleagues. László Dezső of the University of Debrecen and the Linguistics Institute of the Hungarian Academy of Sciences has been of continuing assistance in unraveling mysteries of Hungarian syntax. Loránt Czigány, formerly of the Department of Slavic Languages at the University of California, Berkeley kindly consented to serve as reader for the first rough drafts of Part II. Finally, Katalin Forrai of the National Nursery-School Methodological Institute in Budapest was instrumental in securing for

me truly excellent conditions for both research and relaxation in the nursery in which her research-group was located. My thanks must also be offered to all the workers in the Methodological Institute and the nursery for their cheerful acceptance of a foreign visitor who stayed twelve months. Other Hungarian linguists with whom I was able to exchange frequent and profitable conversations include György Szépe of the Linguistics Institute, Zsolt Lengyel of Debrecen, Melania Mikes of Novi Sad, and Ildikó Meixner of Budapest.

Finally, my thanks to my grandfather Dezső Nanasy for having inspired by interest in the Hungarian language, to all my Hungarian friends and relatives for their hospitality, and to my wife Mary for her good cheer.

Brian MacWhinney

Berkeley, California
October 1973

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Part I

Toward a Psycholinguistic Model

1.0 General requirements on grammars and acquisition models:

A commonly-accepted goal of linguistic theory is the formulation of a grammar that will "generate" all the correct sentences and no incorrect sentences of a given language. When this task has been successfully performed, the grammarian is said to have described the "competence" of an idealized native-speaker of that language.

Psycholinguists and other students of language behavior are often interested in more than a set of structural descriptions of the sentences of a language; psycholinguists would like to be able to account for both the acquisition and the utilization of linguistic structure. The general theory of language acquisition concerns itself not only with first-language acquisition by children, but with second-language acquisition, bilingualism, and aphasic language-loss. Here, the discussion of acquisition is strictly limited to monolingual first-language acquisition. The theory of language utilization is concerned with the comprehension, production, and recall of utterances as a part of active mental functioning. There are a number of additional major areas of language behavior which fall somewhat outside the confines of psycholinguistics; among these are investigations of language change, the racial ontogenesis of language, and the place of language in culture. Eventually, these

latter areas must be integrated with psycholinguistic concerns into a larger theory of language behavior.

To the degree that the linguist's description of language competence describes regularity of language structure which is also of significance in the description of behavior, the theory of language utilization and acquisition must seek out ways of relating such structure to performed language. But, where aspects of linguistic description are due not to inescapable facts regarding the structure of language, but rather to the standards accepted for linguistic description (compare Chomsky, 1966), it may be that the psycholinguistic model will look different from the linguistic model. However, a psycholinguistic model which were unable to account for the generation of the grammatical utterances of a language and to explain deviations from ungrammaticality would be inadequate.

In these terms, we define the most highly-valued psycholinguistic model as that model which serves to:

- 1) provide an account of linguistic form most in harmony with our understanding of ways in which human memory may encode information;*
- 2) account, in the fullest way, for the processes involved in the utilization of this structural information in each of the various linguistic tasks, i.e. comprehension, production, imitation, recall, shadowing, etc.; and

* We will refer to such encoded information as language "structure," attempting to base this on the distinction between structure and process. Of course, this stored information on language form may also describe grammatical "structure."

- 3) outline learning strategems sufficient to permit human beings to acquire linguistic structure and/or facility with linguistic process from the raw speech data to which they are exposed.

Further criteria upon the systematic form of a potential psycholinguistic theory are that it should be:

- a) maximally integrated in terms of symbolisms and processes,
- b) maximally natural in relating symbolisms to phenomena,
- c) maximally useful as a tool and heuristic for research, and
- d) maximally simple.

The structural, utilizational, and acquisitional aspects of a proposed psycholinguistic model will be discussed in the next three chapters.

2.0 A Psycholinguistic Model

2.1 Structural aspects of the model

In the previous section we sought to contrast facts of language behavior based upon structural encodings in long-term memory with facts of language behavior based upon characteristics of the process of utilizing this structural information. It is not necessary to assume that all linguistic form or structure can be related to structural aspects of memory; indeed, there are a number of areas which the structure of utterances seems to reflect facts of utilization or processing.

2.1.1 Levels of Structure

We propose a model of the structure of linguistic knowledge with the following sequence of representational levels and rule levels:

<u>Representational Levels:</u>	<u>Rule Levels:</u>
Semetic Structure	Semetic rules
Concrete Semological Structure	Semological rules
Abstract Semological Structure	Lexicalization
Abstract Phonological Structure (without linear order for items)	Syntactic rules
Abstract Phonological Structure (linearally ordered items)	Phonological rules
Concrete Phonological Structure	Articulatory/Acoustic rules
Articulatory/Acoustic structure	

2.12 Salient Characteristics of the Model

Although the majority of the representational and rule levels proposed in the preceding section are familiar to most readers, the etymology of the two new terms "semetic" and "semological" requires some explanation. These terms are offered as divisions of what is generally called "semantic" structure. Retaining the root sema- "sign," the suffix -etic is used to refer to a structure which is closely related to raw data. Just as phonetic structure is close to the raw data of actual sound, while phonological structure is more abstracted from that data, so semetic structure is close to the raw data of meanings, while semological structure shows greater systematization and abstraction.

The order of the components presented in the previous section reflects the basic sequence of decision processes found in the speaker. In production, the speaker transfers semetic structure to phonetic structure. In comprehension, the speaker relates acoustic structure to semetic structure. This bi-directionality of utilization will be further considered in sections 2.22 and 3.21..

In generative grammar, one of the main issues separating the schools of generative semantics and generative syntax has involved determination of the "source of well-formedness." Chomsky (1968) has pointed out that, within the context of linguistic theory, it is the source

of this well-formedness which determines the centrality of a given component. Chomsky seems to suggest that considerations of priority in actual processing are not relevant to judgments regarding such "centrality." However, within the context of a psycholinguistic model, it makes very real sense to ask which informational level is the first to be subjected to transformations in the course of the actual production of an utterance. Working within the context of such a model, it seems intuitively correct to say that formation of meaning in semetic structure is the first act of production, while formation of acoustic structure through audition is the first act of comprehension. Similarly, the formation of phonetic structure is the final act of production; while the formation of semetic structure is the final act of comprehension.

The proposed rule systems include no level of phrase-structure rules. Rather, some of the most fundamental, relational aspects of phrase-structure are incorporated into semetic and semological structure, while other features are added through syntactic transformation.

The degree to which rules must be either intrinsically or extrinsically ordered in application has been the subject of some recent controversy in generative linguistics. In section 3.11 we review some of the relevant issues in this controversy. At this point it is enough to state that we find it possible to construct an adequate psycholinguistic model without recourse to

the additional constructs of either extrinsic or intrinsic ordering of rules on a given level. Furthermore, it would seem that a system of extrinsically ordered rules, such as that of Chomsky and Halle (1968) requires a more complex acquisition device than does a system of intrinsically ordered rules, such as that proposed by Koutsoudas (1972). In this sense, we consider the hypothesis of extrinsic rule-ordering to be a stronger claim than the hypothesis of intrinsic rule-ordering. The present model proposes neither of these two hypotheses, but rather suggests that those surface effects which appear to be the results of rule-ordering are actually the products of a sequential application of rules during processing. The pattern of this sequentiality is here called "scanning" and is discussed in sec. 2.213. The expansion of semological structure through topicalization and focusing is also of relevance to questions of rule-ordering and will be discussed in section 2.212.

2.13 Characteristics of the various levels

2.131 Semetic structure

Despite the recent surge of interest in semantic description, we are not yet in possession of any established semantic theory. The semetic structure of the present model refers to a level of information which is, strictly speaking, non-linguistic. We are thinking of this as an information level which not yet coded into formalized categories, but is composed largely of perceptions which have been subjected to all processing prior to that of categorization. Let us take, as an example, the case of a person looking at a book which is on a table. Having processed the visual patterns arising from this scene, information from differences in color and relief are sufficient to lead the individual to conclude that he is looking at two separate objects. Each object is associated with its position in the visual field and thereby to the general schema of spatial perception. Such information is essentially semetic, involving uncategorized perceptual data. When the positions of the two objects are related across the spatial schema, semetic rules are brought into operation. The result of the operation of the semetic rule in this case would be generation of the feature /+supra/ which would indicate that the book is on the table.

Although we conceive of semiotic structure as composed of relatively unprocessed perception, it is clear that some structure exists even on this level. The structure which is present here is essentially a clustering of perceptions through space-time associations. In a sense, it is this clustering which replaces phrase-structure in the present model. Looking at the cover of a red book, we must be able to associate our perceptions of redness as coterminous with our perceptions of a field bordered by certain square contours. Such association on the basis of time and space contiguity serves as the central mechanism in an empiricist theory of cognition, such as that of Hume (1748). We also note in section 2.312 that the language acquisition process requires such a mechanism as one of its components.

Piaget (1952) has observed that one of the results of early cognitive development is the formation of the object-concept. From our point of view, the object concept may be thought of as a form of clustered space-time relations linked to a central object-construct. The type of semantic relation contemplated here is that of modification, through which aspects of the central object are related as cooccurrent in space-time. The object-concept is developed by the child through distillation of permanence from intransigence. This is to say that objects form a relatively stable aspect of

our experience and environment, whereas the actions in which the objects participate are changes which fade rapidly through time and are more resistant to repeated contemplation. In this sense, we may think of changes as the residue left over after the distillation of the object-concept. Formation of an action-concept would be an eventual result of formation of an object-concept. We take both the object concept and the action-concept to be elements of semantic structure, available to the child before the time of language learning. When distillate and residue are recombined, a proposition (or nucleus) results. It may be the case that thought is based upon the relations of objects and actions through the semantic relation of predication. Actually, both predication and modification are varieties of the basic space-time association; in the case of predication, an object is involved in space-time with some action. A more valuable distinction is between degrees of space-time continuity, i.e. some semantic relations stipulate space-time identity; whereas others may only stipulate that one element be proximal to the other in space or time.

The reader may recognize in this model much that agrees with the deep-structure of language proposed by workers in generative semantics. The structure of object-clusters being related to action-clusters through predication resembles the concatenation of Noun-Phrases about a Verb-Phrase proposed by Fillmore (1968) and

Chafe (1970). However, the structure considered by Fillmore and Chafe may resemble semological structure more than semetic structure. In semetic structure each action-cluster need be related to only one object-cluster. This is to say that no transitivity is present at this level. It is through the conflation of propositions by either semological rules or lexical assignments that transitivity is produced. For example, in semetic structure, John throws the ball is present as at least* two propositions: John moves in a specified manner and The ball moves away from John in the air. On the semetic level, propositions are also related in terms of space-time. In the example just given, the first proposition is identified as occurring prior to the second proposition. This relation leads the speaker to infer causality, and hence transitivity. A similar solution has recently been proposed by Postal and others.

*The examples given are simplified for the sake of illustration. Actually, a number of the decisions involved in these propositions should be effected by semetic rules. For example, the identification of the motion of the ball as "away from John" should be effected by a semetic rule establishing a feature such as /-approx/. Furthermore, it is clear that far more than two propositions are present in semetic structure. One proposition must code the contiguity of both John and the ball at Time 1, while another proposition must code the non-contiguity of John and the ball at Time 2. Two additional propositions must code the entry into the air, etc.

So far, we have outlined a semetic structure in which elements related in space-time may form object-clusters, which may, in turn, associate with action-clusters to form propositions. When propositions are joined through somewhat looser space-time relations, and when causality is inferred from these relations, we may characterize the result as an embedded structure. Much of semetic structure must consist of a complex network of such embedded propositions. Additionally, it is convenient to assume that propositions may be modified in various ways by certain elements. For example, Seuren (1969) establishes a class of operators which includes tenses, modalities, logical conditions, and adverbials. Seuren thinks of the proposition as composed of such operators working upon a nucleus, the nucleus being that part of the proposition which expresses grammatical relations. Additionally, Seuren calls some of these operators "sentence qualifiers," since they characterize "the sentence as a performative act" (p. 150) in various ways. Seuren attempts to delimit the possible combination of operators through a set of phrase-structure rules in the base component of a transformation grammar. Although it seems of analytic value to specify that some of the operators have a broader "scope" (Carnap, 1964:21) of application than others subordinate to them, it is not clear that the grammar should enumerate the possible varieties of

operator cooccurrences. This is to say that the occurrence of modalities, adverbials, and logical functions is specified largely by non-linguistic patterns.

2.132 Semetic rules

Semetic rules serve to translate and systematize the clustered perceptions of semetic structure through the imposition of semantic categories or features. It is not our purpose here to consider the details of a system of semantic features. Rather, we would refer the reader to the expositions found in Chafe (1970) and Slobin (1973). For example, each of the various locative features should be assigned through the operation of semetic rules. In this sense, semetic rules are in some measure still cognitive rules, rather than purely linguistic rules. In fact, we note in section 2.3 that learning of semetic rules should occur previous to the onset of language learning. Other features assigned by semetic rules would be /#cause/, /#duration/, /#plural/, etc. One cannot exclude the possibility that some of these categories will be language specific, developing later through the influence of the particular language.

2.133 Concrete semological structure

Semological structure is here conceived to be the structure of propositions (as combinations of nuclei and

operators) in terms of semantic features. When semological structure is directly related, through semantic rules of category assignment, to semantic structure, the product is concrete semological structure. We consider this variety of semological structure to be concrete, because it most closely approximates perceptions.

2.134 Semological transformations

It often occurs that the semantic structure we observe in the surface structure of utterances is at odds with what we would imagine to be the actual deeper semantic structure. For example, the use of the possessive in such complement structures (Rosenbaum, 1967) as John's giving up smoking seems to be a surface reflex of an underlying structure closer to the fact that John has given up smoking. It is convenient to think of such alterations of underlying feature structure as the results of the operation of semological rules which serve to convert concrete semological structure into abstract lexical structure. In terms of comprehension, semological rules would relate abstract semological structure to concrete semological structure. Much of what appears to us to involve semological transformation has generally been subsumed under the category of syntactic transformation. Semological rules, like phonological rules, may serve to insert or delete features.

One common variety of feature insertion is agreement or concordance. It is possible that zero-derivation involves feature deletion, although there are other ways to explain this process.

2.135 Abstract semological structure

In production, the result of the action of both semetic and semological rules is abstract semological structure. This structure is precisely that feature structure required to achieve activation of the correct lexical items for an utterance.

2.136 Lexical insertion

We have seen that semetic rules serve to relate one level of information to another in that they express perceptions in categorical terms. In this sense they resemble the phonetic and acoustic rules which we will discuss shortly. Semological rules are more clearly transformational in that they effect changes upon more complex structures. In this sense, semological rules resemble the phonological rules which we will discuss below. Lexical insertion occurs neither by categorization nor by transformation, but through simple relation. In a sense, each lexical item is a separate relational rule; it relates a set of semological features to a set of phonological features. In section 2.214 we discuss the possibility that the application of rules

is governed or organized by entry-conditions, so that rules affecting similar features are accessible through similar retrieval paths. This is equivalent to suggesting that there exists hierarchical organization within the lexicon.

Lakoff (1971:270) contrasts generative semantics with the position of autonomous syntax which Chomsky (1971) terms the "standard theory." The present model is similar to the "standard theory" in that it postulates that "all lexical insertion rules occur in a block," (Lakoff, 1971: 270). However, unlike the standard theory (see also Maclay 1971:170), deep structure in the present model is not the output of lexical insertion, but rather the input to lexical insertion, i.e. abstract semological structure.

The bulk of the lexicon consists of both free and bound morphemes of conventional semological and phonological structure. However, there are two additional varieties of sound-meaning associations which receive lexical encoding, although they may not be of the same systematic form as the majority of lexical items. The first such sub-group consists of interjections and similar forms which may fail to participate in grammatical relations and which may fail to be composed only of the standard phonological features in standard patterns of combination. Observing the development of his son Nigel, Halliday (1972) speaks of a set of such items as a two-level grammar in which sound is associated with

meaning, but there is no further association to what Halliday calls lexico-grammar. In our terms, even early interjections constitute lexical items, although they are lexical items of a qualitatively different sort.

The second sub-group of lexical items is the set of meaningful suprasegmentals. Some suprasegmentals, such as the stress which is assigned to syllables within the word, are not to be considered as lexical items; since they may either be assigned by phonological rule or encoded as component aspects of lexical items. Some suprasegmentals, however, are assigned not for lexical or phonological reasons, but for functional or stylistic reasons. A common variety of functional intonation is the assignment of stress to words with the feature /+contrast/. In the present model, the feature of contrast is considered to be the semological representation paired with the phonological feature of stress in a suprasegmental lexical item. Similarly, attitudes towards information such as pleasure, dismay, anxiety, etc. can be represented as lexical suprasegmentals. Crystal (1969:289) notes that "all cases where intonation is primarily of grammatical importance are also of attitudinal relevance, but not all cases of attitudinal function (i.e. all utterances) display a grammatical function..." We believe that, by introducing intonational contrasts at the lexical level, before the application of syntactic rules, the integration of intonation with syntax is facilitated. It would be a mistake, however, to attempt to treat major style shifts as somehow lexically-based

or controllable through diacritic marks. In shifting between codes, styles, and languages we shift not only intonational patterns, but also syntax, phonology, and even aspects of semology.

2.137 Abstract phonological structure (without linear order)

The output of lexical insertion or lexical look-up during production is a number of sets of phonological features. These sets of phonological features have not yet been ordered in any fashion and we must presume that the system of semantic relations present before lexical insertion is still available at the time of activation of phonological structure, since the syntactic rules we discuss in the next section require the information derivable from such structure.

In general, we believe that a psycholinguistic model of phonology can work with the framework of the distinctive feature approach of Jakobson, Fant and Halle (1963), as revised by Chomsky and Halle (1968). The revision of the earlier theory of markedness separates out certain patterns of feature cooccurrence as language universal. From the viewpoint of universal grammar, this revision appears to be useful in various ways; but from the viewpoint of a psycholinguistic model of utilization and acquisition, the earlier theory of markedness permits a more straight-forward description of the relevant processes. The earlier, or Praguean, theory

postulates that the features of lexical encodings shall be composed of the values /+/ and /-/ for every feature not predicted by phonological rule. Where features are predictable by rule, they need not be coded (i.e. the coefficient is /0/) and a saving is achieved in lexical storage space. Here, we further assume that the negative coefficient need only be coded for certain ambiguous segments (see the discussion of section 2.318). After the action of the phonological rules, all such ambiguities are removed and segments of concrete phonological structure are marked with either a positive coefficient or no coefficient at all. The zero coefficient is considered to be the unmarked value and is realized in an articulation specified by the articulatory rules.

2.138 Syntactic transformations

Activated lexical items are not connected in any linear manner, rather they preserve the network-like connection semological structure. In the present treatment, the sole function of syntactic transformations is the ordering of lexical elements. The ordering is achieved on the basis of the semantic relations binding the lexical items in surface semantic structure. The form of such rules is:

Semological Structure:	α	---	β	(---)	=semantic relation
Linear Order:	X	+	Y	(+)	=linear ordering,

where X and Y are lexical items related in a given semantic fashion expressed on the first line. Although the input to the syntactic rules includes semological information along with sets of lexical items, these rules do not affect semological structure, only the linear order of the lexical item.

Syntactic rules of the type symbolized above are those of the greatest generality. Moreover, most of the central syntactic rules in a given language appear to be of this variety. However, as Ervin-Tripp (1972) has noted, the semantic basis of certain syntactic patterns and groupings may not be obvious to the child. Ervin-Tripp notes the English auxiliaries can, will and do as examples of members of a form-class without apparent semantic communality. In terms of the present model, the ordering of these auxiliaries can be effected in terms of the fact that they all carry tense. This pushes the issue back to the lexical level, where it becomes clear that the coding of tense upon these modals is related to the fact that their morphological forms are irregular. Despite such problems with this particular example, we believe that Ervin-Tripp is correct in pointing to the possibility that some syntactic relations may be acquired without the presence of governing semantic relations. Such syntactic rules could be represented exactly as in the diagram immediately

above, with the addition of a limitation of either X or Y to the lexical items: L_1, L_2, \dots, L_x . Rules of this form may constitute an intermediate step in the process of superimposition which we will discuss in section 2.31. Since rules of this type fail to isolate syntactic relations upon the basis of a simple semantic relation, they are unparsimonious and the grammar generally avoids them.

2.139 Abstract phonological structure (with linear order)

After the operation of the syntactic rules, there is no further need to refer to relations obtaining in semological structure. Ordered abstract phonological structure differs from unordered abstract phonological structure only in that the items are ordered.

2.1310 Phonological transformations

The system of phonological rules, like the system of semological rules, serves to insert or delete features in phonological structure. Deletion of features will occur in the case of ambiguously-coded features which must be resolved by the action of phonological rules. Phonotactic rules may insert features whose presence is redundant. However, we must remember that such rules need not effect changes to zero-coefficients, since all features assume a zero value, unless otherwise stated. Epenthesis of very simple segments, such as the neutral vowel, could be the result of the action

of a phonological rule, although the scope of epenthesis is limited by facts of acquisition. Phonological transformations would include both phonotactic and morphotactic rules on one systematic level. Note that integrating rules on the same descriptive level is not the same as saying that these two sets of rules are identical in all cases. The latter position is advanced by Postal (1968:208-216), Hale (1965:295-305), and Chomsky and Halle (1969). Kiparsky (1968) indicates that there may be areas where the two types of descriptions will not overlap.

2.1311 Concrete phonological structure

Concrete phonological structure is the level of representation in distinctive features which may, through the operation of either articulatory or acoustic rules, be related to articulatory or acoustic structure.

2.1312 Articulatory rules

Rules similar to the Detail Rules suggested by Postal (1968:66) and Chomsky and Halle (1968) integrate the targets of phonological features into actual motor commands for articulation. The general form of these rules is:

Phonological Feature X → Motor Command X/
in the environment Y ___ Z.

The combined systems of phonological and articulatory rules do not constitute a system which is either taxonomic or autonomous. However, they do seem to approach a Sapirian type of phonological description, in the terms used by Braine (1972). We will not proceed further to consider the nature of motor commands or their interrelations in actual articulation, this being an essentially phonetic question. Similarly, we will not consider the details of acoustic perception, although we must note the place of acoustic rules.

2.1313 Acoustic rules

Up to this point we have presented a model which is capable of being utilized bi-directionally in both comprehension and production. However, it is not likely that the levels external to concrete phonological structure can be bi-directional. It is true that the motor theory of speech perception (Liberman, Cooper, Harris, and MacNeilage, 1962) proposes that acoustic perception is achieved through internal synthesis of an articulatory form as a match. Stevens (1968:102) has suggested that "experience with the generation of speech movements and with the simultaneous observations of the acoustic consequences of these movements plays an important part in shaping the process whereby speech is perceived." The present model would hold that the interaction between

audition and articulation occurs early in the life of the infant and that the distinctive features of phonology which arise from this interaction fix the nature of the relation between the two modalities. The role of the distinctive features is the formation of a way of coordinating audition and phonation; their extraction requires the establishment of articulatory and acoustic rules to relate the features to motor commands on the one hand and to acoustic perceptions on the other hand.

Although the present model is not primarily interested in questions of articulatory and acoustic learning, it would appear that the model could be extended to account for some of the data which motivated the formulation of the motor theory. In the case of those consonants which defy identification apart from context, acoustic rules predicting segmental features on the basis of information found elsewhere in the syllable may develop on the basis of experience gained through somesthesia (MacNeilage and Rootes, 1967) in its interplay with audition. Such acoustic rules might be based upon articulatory facts, but their shape would be determined by acoustic requirements. This would require us to assume that the unit of acoustic processing can be the syllable. There is evidence (Kroshevnikov and Christovitch) that the syllable may be the fundamental unit of articulation. This possibility does

not preclude the importance of distinctive features as the fundamental units of encoding.

2.1314 Modifications of the basic structure

The structural model presented here is only intended to describe the form of linguistic knowledge of the monolingual child. The acquisition of literacy, the learning of second languages, and the development of style differentiations all increase the complexity of the basic model. When children learn to read, lexical items assume graphological shape in addition to phonological and semological shape. When children acquire new languages, dialects, and styles, they must learn to separate rules associated with these new codes on each of the various linguistic levels. This is to say that German-English bilingual children must somehow divide his lexicon into German and English components and learn to distinguish the rules of German syntax and phonology from the rules of English syntax and phonology. Early on, children begin to acquire specialized styles, such as baby-talk style; these styles require similar compartmentalization on each of the various levels.

2.2 Utilizational aspects of the model

The distinction between structure and utilization is not to be equated with the distinction between competence and performance. In the terms of the present model, the structural aspects of language consist of sets of rules (tactic and relational, as in the terms of section 2.312) and features. Inasmuch as we can legitimately speak of a neuro-chemical substrate for long term memory (Maggio 1971), there must be certain aspects of language which are stored in some relatively permanently encoded fashion. Others aspects of language are due not to changes in long-term memory effected during learning, but to innate characteristics of the mental apparatus. Possible examples of such characteristics are suggested by the utilizational phenomena of level-separation, scanning, focusing, topicalization, entry-conditions, monitoring, and bi-directionality--all to be described in this chapter. Additionally, language competence also rests upon the acquisitional mechanisms we discuss in the next chapter. Taken together, these processes and the structural aspects to which they relate constitute what we would term linguistic competence. Performance factors, in this view, would include all those processes and structures whose presence is merely supportive of the utilizational processes. Fatigue, disease, lack of motivation, poor memory, fear, anxiety,

and hyper-tension can work independently or in consort to modify the products of language competence.

2.21 Factors affecting the sequencing of decisions

Generative grammars frequently assume that decision-making occurs in a quite constant fashion. Complete base-strings are generated in the deep structure and subjected in their entirety to a set of intrinsically or extrinsically ordered rules one after another through several components. In effect, no consideration is given to the facts of language utilization in real time. In this section we suggest a number of processes which work together to move information from one decision level to another.

2.211 Separation of levels

In the previous chapter we suggested that a description of language structure might reveal that information is separated by type into decisional levels. In language utilization, it makes sense to say that we first decide what we want to say before we choose the words through which we will express ourselves. Similarly, we place our words into a temporal order before we articulate them. For this reason, we have built separation and sequentiality of levels into our structural description. If a given area of semological structure is realized into lexical items all at one time, those

lexical items should be ready for simultaneous syntactic processing. However, information is not produced in this massive way, but is selectively processed in ways to be discussed forthwith. One consequence of this selective processing is that separation of levels may not be immediately obvious in the output. For example, we often produce sentences of the form, "That fellow's name is ____." All of the utterance has moved on to the level of articulation, while we are still searching for the person's name. In order to move this incomplete utterance on towards articulation, we need to know that all relational requirements in the sentence have been satisfied. That is, we can order "that" before "fellow," because we know that it modifies a lexical item which, in turn, is ordered before the verb "is." However, if we are missing existential relational elements such as the verb, all production of the utterance must be halted.

On the other hand, it appears that smooth expression is not facilitated by too rapid processing of information as it is formulated. By pausing a few milliseconds on any decisional level, we can wait for information to appear in a more complete and integrated form before we rush to premature conclusions. For example, a slight delay before the application of syntactic rules would allow us to collect all of the the lexical items we wish to express without leaving out essential information, such as the additional adjective on the noun.

2.212 Topicalization and Focusing

Focusing of information refers to a number of processes which either emphasize information as being of emotional import, or contrast information with that previously communicated by either speaker or listener, or simply guide attention to elements of central significance in the logical structure of the proposition. Focusing is of particular importance in the process of transferring the multi-dimensional network of semantic associations into the linear order of speech. Focusing allows the speaker to lexicalize his thoughts by starting from elements of primary importance and extending outwards to elements of lesser significance.

The presence of focus upon a given set of semantic features is reflected in the treatment given to the lexical item which expresses these features. A focused lexical item may be marked in one of three ways: syntactically, intonationally, or morphologically. Syntactic marking of the focused element occurs in so-called "free word-order" languages, such as Hungarian. There has been very little study of the position of the focused element in the world's languages, although the work of Szépe and Dezső (1967) and Dezső (1972) stands out as an exception to this. In their view, the focused element is always a part of the comment in

the topic-comment structure and is positioned, first, by the the general positioning of the comment and, second, by positioning within the comment. In other languages, such as Turkish and Tagalog, the focused element is marked morphologically by a particular particle or suffix. Finally, in other languages, the focused element is marked intonationally, often by a stressed intonation. Combinations of these three means of marking focus are also common. We should also note that focusing may also be achieved by a radical restructuring of the proposition, as often occurs in English. Given the utterance I saw her uncle yesterday, focusing upon the item uncle may be achieved through recourse to the structure It was her uncle that I saw yesterday.

In languages like Hungarian, focusing plays an important role in language utilization and the formation of the utterance. First, we should note that, without the presence of some focus, no utterance will be produced. This is tantamount to saying that, without something to talk about, the speaker will remain silent. In section 5.33 of Part III, we note that the system of semantic features represents rather poorly the process of focus-assignment. A more appropriate system of notation would assign 100 percentage points of focus to each utterance and allow these points to be distributed throughout the utterance. If a topicalized element

receives less than a certain minimum number of points, the rules of Hungarian will have it post-topicalized, rather than pre-topicalized. If a focused element is of great importance, all the points will be assigned to it and no element will proceed it. Expressed in this way, there is a perfectly natural relation between focusing decisions in semetic structure and the order of morphemes in Hungarian utterances. Elements which receive the greatest focus are lexicalized first and are also the first elements to move on towards phonological processing. When no remaining element has a sufficient degree of focusing within the proposition being developed, the development of the utterance is terminated and a new utterance begun.

The selection of material from semetic structure is also facilitated by topicalization processes which serve to treat certain information as given. In some cases, this given material is also old material which was mentioned in some immediately preceding utterance. As old material, a topic should be readily available and should require no new lexicalization. Possibly, topicalized material is stored in short-term memory and identifiable in this way. In both English and Hungarian, pronoun usage depends heavily upon use of the referent of a pronoun in a previous utterance; such anaphora resembles topicalization in certain ways. Hungarian also marks topics through word-order and sentence intonation. If a topic also receives a modicum of focus, it occurs

first in the utterance and is followed by a slight pause. Somewhat akin to topicalization in short-term memory is the marking of the feature /+definite/ over longer terms. In both English and Hungarian, the definite article marks the fact that a noun is familiar to both speaker and hearer as a single or unique individual. Knowledge of which individual is "the" individual referred to is based upon some long-term knowledge similar to knowledge of old information (Chafe, 1970).

Focusing and topicalization work together to direct the listener's attention to salient information and remind him that certain information is already familiar to him. The speaker may use focusing and topicalization with varying degrees of decenteration. He may mark surface topics and foci only in terms of his own interests and knowledge, or he may identify with the listener's knowledge with varying degrees of sensitivity. Inability to account for the listener's knowledge appears to be greatest in very young children (see section 5.43 of Part III).

We should note that focusing and topicalization alone do not guarantee propositional structure to utterances. The fact that utterances express either complete propositions or elliptical propositions is attributable to the fact that semantic structure

(see section 2.131) is based upon propositional relations. However, it is also true that focusing and topicalization alone cannot fully account for the expansion of semantic structure even in Hungarian. One additional principle needs to be recognized: all elements within the NP must be lexicalized before lexicalization moves on to the next NP. There is no attempt here to suggest that the detailed syntactic structure of an utterance can be fully specified through rules of focusing and topicalization. Peculiarities of lexical choice and the presence of morpheme-specific rules (see section 2.319) would make this solution unmanageable. Rather, focusing and topicalization permit the speaker to begin speaking before decisions affecting later parts of the utterance have been made.

2.213 Scanning

In section 2.1 we outlined the nature of scanning as an alternative to rule-ordering. Here we note that scanning provides an explanation of the flowing nature of speech which is not provided by the model which requires that ordered rules apply to entire strings. Additionally, the model based upon a scanning application of rules would allow far more rapid utilization.

Let us examine the possible effects of scanning at each of the various levels of the model. Above the

level of syntactic transformations, information is not ordered linearly and rules cannot apply from right to left. Therefore, semantic, semological, lexical, and syntactic rules apply in a sequence determined by the expansion of semantic structure through topicalization and focusing. Rules on levels below syntax apply to strings from left to right. This model of scanning requires that some display area exist for each linguistic level. Left-to-right structure or expansion structure must also be notated in this display. Information will be exposed to the rule set of a given transformational or relational level for a brief time during which all transformational rules or relational rules will apply simultaneously. Once decisions are made at the left, they cannot be further modified by subsequent changes on the right. However, the span of the scanner appears to be fairly large and both material to the left and right of a given feature or cluster of features can be viewed within the width of this scanning. This means that changes on the left can be incorporated into a revised context description for changes occurring slightly later on the right. In some cases, this effect may simulate the effects of rule-ordering.

2.214 Rule-organization and entry-conditions

In the previous section we discussed how rules apply through scanning. However, it may be

uneconomical to assume that all rules apply with equal force at any given point in the scanning. Rather, rules on any given level can be organized in a hierarchic or branching fashion, so that rules which all require appearance of a given first feature in scanning should be retrievable through a similar search pathway. In the case of lexical-insertion rules, this would mean that the search process may begin to retrieve all lexical items with, say, initial sibilants by a certain pathway. However, location of an actual item would require a larger number of pathway choices. Lexical items may also be ordered and retrieved with semantic information through such a procedure. Phonological rules are fewer in number than lexical items, but even rule sets could be retrieved or activated through fulfillment of the requisite branching entry-conditions.

2.215 Monitoring and hesitation phenomena

A final process affecting the sequencing of decisions in utilization is the monitoring process. Monitoring checks information at Time A' against information processed slightly earlier at Time A and already moving towards articulation. The information level from Time A may be tapped somewhat along the course of its final processing and then taken as a perceived signal, as in comprehension. Reversing the processing of this signal, information is checked with the information states on the various higher levels.

If no discrepancies are noted, articulation proceeds unhindered. If discrepancies appear, hesitation phenomena result. Some such phenomena are glottal stops, drawls, filled pauses, unfilled pauses etc. If the error is not stopped soon enough, a retraced false start may result; if production is stopped earlier we may find pauses, word repetitions, or incompletions. Hesitation phenomena may also result from failure to generate information at all. This is to say that hesitation phenomena may indicate processes of information correction or processes of information incubation.

2.22 Bi-directional utilization of the structure

The present model is designed for parallel use in both comprehension and production. Thus, words are recognized through the action of phonetic, phonological, and lexical rules, in that order. Words are produced through the operation of the same rule sets in the opposite order. At any given level, a rule serves to relate one level of information to another level of information; any rule is thus potentially bi-directional. Only the final rules of articulation (section 2.17) and audition (section 2.18) are uni-directional. Some of the reasons for arranging rule-utilization in this way are discussed in section 3.21 below.

2.3 Acquisitional aspects of the model

2.3.1 Requisite cognitive processes

In this section we will present a set of acquisitional processes which would allow the child to learn a grammar of the form described in section 2.1. Inasmuch as we are unable to attribute these strategems to prior learning, we must count them as elements of that innate mental equipment known as the Language Acquisition Device (Chomsky, 1965). Moreover, the proposals of this section and of section 2.1 constitute a Language Acquisition Model, since the Language Acquisition Device to be presented is capable of acquiring a grammar of the form discussed in section 2.1 above.

The processes which we are about to discuss are not specific to language, but find broad application in non-linguistic areas as well. In addition to this innate mental equipment, language acquisition and utilization must also rest upon the biological foundations of the human auditory and articulatory mechanisms (Lenneberg, 1967). The specifically human ability to speak appears to rest as much upon this articulatory-auditory foundation as it does upon the characteristics of the general cognitive processes to be discussed (compare Premack, 1971).

2.311 A mechanism for relaying perceptions

Between the stimulus and the higher mental areas lies the peripheral nervous system. This system serves not only to relay sensory information and execute motor commands, but also to modify this information and these commands in ways which are still only slightly understood (see Bosma, 1967). For example, it may be that aspects of peripheral auditory processing aid in perception of the distinctive features of speech sounds. Although we know very little about this subject, it is important to remain aware of the possible influences of the relay mechanism upon perception and learning.

2.312 A mechanism for associating perceptions:

In order to form a coherent world-view, the child must be able to associate its perceptions in space-time. To a large extent, the messages relayed by peripheral perception reach higher levels in a structurally-determined pattern. For this reason, it appears that the child is not faced with the task of associating perceptions arising from the same sense modality or organ. But Piaget has demonstrated that, when perceptions are not homo-organic, the child must construct schemata (schemes) through which perceptions can be woven into an integrated space-time fabric.

Thus, Piaget notes that there is a time when the child is unable to see what he grasps and to grasp what he sees. These inabilityes are attributed to the child's lack of schemata coordinating prehension and vision.

In our more rule-oriented approach, Piaget's schemes are seen as systems of rules relating modes of perception. For example, the tactile impression of an object grasped by the right hand would be related to the visual image of the object as seen in contact with the right hand. This requires a certain coordination of elements in visual and haptic perception. If we reserve the term scheme for the general framework determining coordinations, we may use the term schemata for a given instance instance of coordinated perceptions. The plurals would be schemes and schemata, respectively. Thus, a bundle of distinctive features in audition would be associated as a low-level schema. On a higher level, the association of a string of such phoneme-sized bundles with a schemata of meaning would produce a lexical item, a schema of still a higher level of bundling. When the child learns to read, the action of the scheme which coordinates lexical items and orthographic forms gives rise to new schemas.

In terms of our present understanding, the relations between the various levels of the grammar presented in 2.1 above can be viewed as complex relational and tactic

schemes. Relational schemes serve to relate one type of information to another. The lexicon is a relational scheme composed of relational schemata, since it relates sound to meaning. Relational schemes are sets of classificatory rules, but include no transformational rules. On the other hand tactic schemes are composed of transformational rules which alter elements of one informational level in terms of tactic (context) relations on that level. The relational and tactic schemes of language have their parallels in non-linguistic cognition, although the exact character of the linguistic schemes is highly influenced by the determining influence of social convention upon language. The scheme which determines the ordering of lexical items upon the basis of semantic relations between these items seems to be rather unique to language. A scheme like the syntax proposed in section 2.1 combines elements of relational and tactic designs. The scheme of syntactic rules is relational in that it relates semantic facts to facts of linear ordering. However, it is also tactic in that, on both the semantic and syntactic levels, information is related to other information on that level. This fact is reflected in the quadrangular design of the rule-types in section 2.138.

2.313 Short-term memory

There is evidence (Kintsch, 1970) for the existence of a rapidly-fading sensory memory and an intermediate-range or short-term memory. The effect of the sensory memory is to preserve large segments of experience for a very short period along the traces of sensory neurons. Short-term memory selects out limited parts of this sensory trace and holds these most interesting aspects of experience until long-term memory acts to consolidate the information into the general mental structure in some associatively meaningful fashion. Alternatively, what we call short-term memory may be a result of the effects of rehearsal upon rapidly-fading sensory memory. That is, it may be that sensory memory and short-term memory are not two separate memory stores, but the effects of the interaction of a rehearsal process with a single store.

Ervin-Tripp (1972) and Slobin (1971) have suggested that the limitation of short-term memory may force the child to retain only the most recent material in both imitation and storage. Pačesová (1968) found that Czech children often omit initial syllables in imitation, even though these syllables are stressed. However, the Hungarian data we review in section 3.5 of Part II run directly contrary to this Czech evidence. Mikes and Vlahović (1966) found that Hungarian locative

suffixes were learned by young Hungarian and Serbo-Croatian bilinguals before they learned comparable Serbo-Croatian prepositions. This may be attributable to the recency effect in short-term memory, although other explanations cannot yet be definitely excluded.

2.314 Long-term memory and a retention metric

Braine (1971) has proposed a Language Acquisition device which relies upon the filtering action of various memory levels to achieve the isolation of linguistic patterns. Braine's system requires that, for each of the various stores, a retention metric would have to determine how and when an item or a bundle of perceptions could be transferred to a higher-level store. A retention metric may be based simply upon the number of reoccurrences of an item, or it may also evaluate the salience, spacing, or pragmatic value of perceptions. Comparing the order of acquisition of fourteen grammatical morphemes in his subjects with the frequency of these morphemes in the speech of their parents, Brown (1973) found no clear or significant relation between frequency and order of acquisition. It seems likely, therefore, that any retention metric operating in either short- or long-term memory must be based on more than just frequency of occurrence.

In section 2.316 we suggest that linguistic patterns are isolated by the act of a comparator. On the other hand, it may well be that learning is also

facilitated by the kind of decay in memory Braine is proposing. In fact the two processes hardly seem to be mutually exclusive, although it is our belief that memory filtering is not of central importance. If we think of the growth of memory as the development of an increasingly complex web of associations, decay can be prevented by preservation and strengthening of associations. Where such associations are not formed, decay will weed out the non-integrated elements.

Long-term memory is structured along the lines of perceptual association determined by the initial bundling of the perceptual mechanism as well as lines determined by later systematization. The present model proposes that long-term memory is capable of preserving the original structure of perceptions in the shape of the schemata or amalgams set up by perception, as well as in the more-analysed form yielded by systematization. For example, idioms such as kick the bucket may be preserved as syntactic units coupled with a specific semantics, while also being analysed as verb-object constructions. As long as there is some utility to each of the storage patterns, they will persist. However, if systematization eliminates the need for storage of amalgams, they will in time decay from memory. The further consequences of this will be discussed again

below.

It is further assumed that long-term memory is capable of assimilating a structure similar to that described in section 2.1 above. Specifically, this means that the child must be able to store information on separate levels and be able to relate these levels through transformational rules, categorizational rules, or classificatory rules, as the information types require. It seems not entirely unlikely that such basic characteristics of the structure of memory should be innate properties of the organism.

2.315 The subsidiary role of eidetic imagery

The occasional appearance in child language of extra-systematic forms indicates that not all memory is based upon preservation through a system of systematic associations. A well-known example of such an extra-systematic item was reported by Leopold (1947) in the speech of his daughter Hilda. The item was prItI "pretty" which defied various patterns in the phonology at that time. If such items are truly acquired through eidetic processes, phonetic precision should be accompanied by semetic precision, at least at first. If phrases are acquired this way, they should illustrate precise, and perhaps non-systematic, phonetics and semetics. The degree to which the child's lexicon actually reflects the operation of eidetic processes remains to be seen. However, the existence of non-systematic forms requires

that we consider the possibility of the existence of some subsidiary memorial device.

The two major memory stores discussed above, together with a retention or decay-resistance metric and eidetic imagery constitute some of the central features of a memory system required for the acquisition of a grammar of the form described in section 2.1. Although the perceptual and memorial capabilities discussed so far are clearly necessary for the acquisition of such a grammar, they tell us very little about the actual process of this acquisition. The acquisition of linguistic form occurs through a process which we term systematization, which serves as a bridge between perceptions and the final encodings of memory. Additionally, systematization serves to transform old patterns in memory to new ones. Because systematization is of such importance for learning, and because it is so poorly understood; we will treat its major aspects in some detail in the next four sections.

2.316 Motives for systematization

There are three reasons why the child seeks to analyse and systematize the early linguistic amalgams he derived from the perceptual and associative mechanisms. First, the child hopes to dispose of redundant information in order to lessen the strain placed upon long-term memory. In order to reduce redundancy, it is necessary to establish rules which predict the occurrence of certain features or patterns in terms of other features. These will be tactic rules. It seems that the desire to regularize is as much a basic motive in cognition as is the desire to associate perceptions.

A second major motive for systematization is the child's desire to analyse amalgams into their component parts. Again, the desire to analyse seems to be a basic cognitive disposition. In the context of language learning it is indispensable, since language is based upon use of morphemes and not phrases or amalgams. The desire to predict redundancy leads directly to the process of superimposition discussed in section 2.318 below, while the desire to analyse first requires operation of the process of analysis and then may require further operation of superimposition and rule-formation.

A third major motive for systematization is the fact that an increase of the systematic relations between items, both in terms of hierarchical relations and rule-

operations, serves to increase the strength of long-term memory and facilitate recall.

2.317 The process of analysis

Analysis works to break up large associations of perceptions into smaller units. These larger associations, or amalgams, are formed through the action of the mechanism referred to in section 2.312 above. Linguistic amalgams include phrases, inflected words, and even sentences which have been learned as unanalysed wholes. In section 5.2 of Part II we investigate a number of errors which may occur in the process of analysis of amalgams. The basic strategy which appears to govern this analysis is that the child must first attempt to extract the known from the unknown. Thus, for example, if the child knows what dog means, he can analyse the amalgam dogs through extraction of the known element. This extraction produces a phonological and semological residue; this residue is then subjected to lexicalization which may or may not proceed successfully. If items did not alter their shape according to the rules of semology, phonology, phonetics etc., the task of systematization would be finished upon the completion of analysis of amalgams. Many amalgams may become analysed in this simple fashion; but, for others, full analysis cannot be achieved without superimposition

and rule-formation. In section 2.3182 below we discuss how final analysis may be avoided for certain amalgams, even though superimposition and unification of representations for individual morphemes does occur.

2.318 Superimposition and Unification

Superimposition is a process through which bundles of perceptions or bundles of categories are compared in order to extract either their similarities or their differences. Presumably, this process is of general importance in cognition. The action of this comparator may be visualized through use of the following analogy. Let us imagine that each bundle of perceptions is transcribed onto a transparent sheet, so that its features are arranged in some systematic way, as are the features of phonological segments in a bracket representation. If a set of such sheets were to be laid one upon the other, it would be possible to move these sheets about until the area of identity between sheets were maximized.

After having obtained the closest fit between two sets of features, superimposition must be followed by some process of unification which records the results of the comparison. Continuing our analogy, unification may be understood as a process which photographs the combined pattern resulting from superimposition of the transparent sheets. However, unification is realized in

two distinct ways, depending upon the nature of the material which was superimposed and the motives leading to systematization. We will assign separate names to these two varieties of unification: unification of substance and unification of context.

Unification of substance occurs when the child decides that one set of features or perceptions are equivalent to another set. Equivalence does not require identity; however, the child must be able to predict all differences between the forms to be unified in terms of rules. Unification of substance requires the child to focus his attention upon the differences between two forms which are otherwise essentially identical. The end-result of unification of substance should be the elimination of redundancy in storage. Unification of context, on the other hand, requires that the child focus his attention upon similarities between generally dissimilar environments. Unification of the environments has no direct effect upon the storage load, serving instead processes of rule-formation.

In order to understand how these processes interact in language learning, we must consider some examples using real language material. Because of the rather limited scope of productive English morphology,

it is more convenient to adduce Hungarian examples at this point. Let us consider how the Hungarian child might utilize superimposition and unification to acquire the basic vowel-harmony rule for fronting-harmon. As a morphophonemic rules, this rule alters suffixes in terms of the shape of the root. Therefore, the child would begin systematization with a paradigm including one suffix in combination with many roots, rather than one root in combination with many suffixes, i.e. with the suffixes -ban, -ben "inessive."

házban	kézben	
folyóban	évben	
kosárban	székben	
városban	könyvben	etc.

Using superimposition to compare these forms, the child would find that /-ban/ and /-ben/ show semantic identity, being two forms of the inessive. Perception of this semantic identity posits that the child also has in his lexicon uninflected forms such as ház "house" which may serve as the basis for preliminary analysis. In addition to detecting the semantic identity of the two forms, the child also observes their phonological similarity. Given this high degree of similarity, the child moves on to effect unification of substance between /-ben/ and /-ban/. This unification creates the ambiguous feature /± back/ which will be discussed directly below.

Up to this point, systematization has consisted

of analysis of amalgams, superimposition, and preliminary unification of substance. In order to confirm the preliminary unification of substance, the child must establish a rule governing the front-back alternation of the vowel. This rule should take the shape of a morphemè-specific (see section.2.319 below) morphotactic rule, such as:

1) fronting-harmony:

$$\pm \text{back} \longrightarrow +\text{back} / \left[\begin{array}{l} +\text{vocalic} \\ +\text{back} \end{array} \right] \left[\text{0vocalic} \right]_{\text{X}} \# \text{b} \text{ ___ } \text{n}$$

X=any number

Formation of this rule constitutes the fourth step in systematization. The fifth step is confirmation of the tentative unification of substance between /-ban/ and /-ben/. This confirmed unification should eventually lead to a simplification of the lexicon.

Formation of the rule above involved unification of context. In fact it is a general characteristic of this model of acquisition that formation of categories and lexical items involves unification of substance, whereas formation of rules requires unification of context. Analysis of the context also occurs through superimposition of the various contexts in the input amalgams noted in the paradigms above. However, in this case it is not the differences but the similarities in the superimposed images which are "photographed" by unification. Where differences appear, no attempt is made

to predict the occurrence of ambiguities through rule, since such an attempt would produce infinite regress.

The sixth step in the transformation of the fully-bound morphotactic rule to a partially-bound morphotactic rule is the superimposition of several morpheme-bound rules such as Rule #1 above. Such a superimposed set might include:

- 2) a) $\pm \text{back} \rightarrow +\text{back} / \begin{bmatrix} +\text{vocal} \\ +\text{back} \end{bmatrix} [\text{Ovocal}]_x \# \text{b} _ _ \text{n}$
- b) $\pm \text{back} \rightarrow +\text{back} / \begin{bmatrix} +\text{vocal} \\ +\text{back} \end{bmatrix} [\text{Ovocal}]_x \# \text{n} _ _ \text{k}$
- c) $\pm \text{back} \rightarrow +\text{back} / \begin{bmatrix} +\text{vocal} \\ +\text{back} \end{bmatrix} [\text{Ovocal}]_x \# _ _ \text{s}$

Given enough separate input morpheme-specific rules of the type of a to c, superimposition and unification of context should yield:

- 3) $\pm \text{back} \rightarrow +\text{back} / \begin{bmatrix} +\text{vocal} \\ +\text{back} \end{bmatrix} [\text{Ovocal}]_x \# \text{X} _ _ \text{X}$

Such a rule would be partially-bound in that it still would depend upon the presence of the ambiguous feature for backness.

Now let us consider the course of acquisition of a morphotactic free-rule, the rule of final vowel lengthening. Here, the input paradigm is two-dimensional, including both various roots and various suffixes, i.e.

alma	kutya	labda	
almát	kutyát	labdát	
almám	kutyám	labdám	
almánk	kutyánk	labdánk	
almában	kutyában	labdában	
etc.	etc.	etc.	etc.

In the case of a morphotactic rule, these amalgams must have been subjected to some preliminary analysis, at least on the semantic side. It is quite possible that the child has begun to form morpheme-specific rules along the lines of Rule (1) above. However, before the child formulates the pattern completely in terms of a bound-rule, systematization works across the two-dimensional paradigm. This alternative application of superimposition is followed by unification of context, rather than unification of substance. As we observed above, unification of context leads to the formation of a rule. In this case the rule is:

$$4) \quad \text{Olong} \rightarrow +\text{long} / \left[\begin{array}{l} \text{+vowel} \\ \text{-tense} \\ \text{-round} \end{array} \right] \# \text{ X}$$

Actually, the alternation of length is accompanied by an alteration of tenseness, and the pattern also extends to the vowel /e/, but such considerations are not important for our illustration.

Whereas Rule 3 serves to resolve ambiguities resulting from unification of substance, Rule 4 transforms an unmarked category to a marked category in a specified environment. In this sense, free morphophonemic rules like Rule 4 are very much like phonotactic rules. The difference between the two is that the former requires some preliminary analysis, perhaps through the formation

of morpheme-bound rules.

The final variety of rule which we must consider is the syntactic rule. The present model suggests that syntactic patterns are abstracted from stored memories of word sequences which we shall call syntactic amalgams. Syntactic amalgams differ from lexical amalgams in that they do not contain specific phonological and semological information. Rather, they code an ordered arrangement between two lexical items, whose specifications may be found in the lexicon. In addition to this simple order association between two lexical items, the syntactic amalgam encodes the fact that the two items are related in terms of a specific semantic relation. Similar relations may obtain between roots and formative suffixes, when the relation is somehow idiosyncratic; this possibility will be discussed further in section 2.3182 below. The importance of syntagmatic associations in children has been indicated by studies such as Brown and Berko (1960) and Ervin (1961).

The substance of the syntagmatic amalgam is the directionality of the association, the identity of elements which are associated, and the presence of a semantic association binding the two elements. Analysis of these amalgams proceeds first through superimposition across a one-dimensional paradigm involving a given common word occurring with many other words (compare

Saussure, 1959: 122-130 for an explanation of the dimensionalities of associations). For example, analysis of the input paradigm:

little house
 little man
 little mouse
 etc.

would yield the morpheme-specific rule:

5) α ----- +object
 | |
 X + Y (X = little)

Superimposition and unification of contexts along the lines of Rule 2 above would yield a general syntactic rule based on inherent features of lexical items:

6) +modifier ----- +object
 | |
 X + Y

The model would predict that acquisition of rules based upon non-inherent features would follow a similar course, but would be plagued by instability deriving from the fact that the distribution of non-inherent features varies from utterance to utterance. Moreover, functional features should be even more unstable than grammatical features, since they are more affected by speaker subjectivity.

2.3181 Further remarks on ambiguous features

In the course of our discussion of unification of substance, we noted that such unification often

requires the establishment of ambiguous features. For example, if the child hopes to unify the English plural forms /s/ and /z/, the difference between them in regards to voicing is most important. Pending rule-formation, these two plural suffixes may be provisionally unified, but the unified coding must record the feature of voicing as /± voice/ in this case. The feature /± voice/ simply represents the superimposed product of /+ voice/ and /Ovoice/. For orthographic reasons, it is easiest to indicate this combination as /±/. Additionally, the use of the negative coefficient serves to represent the case when the zero coefficient is opposed by the positive coefficient.

The present model postulates that the ambiguous set of features /± feature/ codes the ambiguity bias which was inherent in the input items. If 70% of the items which served as input to unification were /+voice/, then the feature /± voice/ would be biased towards /+voice/ in a proportionate amount. This ambiguity bias in favor of one feature or the other of the ambiguous pair may be thought of as a particular form of response bias. Moreover, within the context of rules, a limited amount of probability matching could conceivably result from such ambiguity bias.

Ambiguity bias reflects certain basic facts of language which might be illustrated through some examples from Hungarian. In section 3.13, we observe rules for

vowel-insertion and vowel-deletion, together with rules for vowel-lengthening and vowel-shortening. The directionality of the changes effected by these rules is designed to reflect not a movement from marked to unmarked (Chomsky and Halle, 1968), but a movement from positive to negative bias. This is to say that features with positive bias will be realized even without the rule, whereas realization of features of negative bias requires rule operation in order to be certain. The four Hungarian rules and samples of the changes they effect are given here:

<u>Rule</u>	<u>Nominative</u>	<u>Altered base</u>	<u>Plural</u>
vowel-insertion	hal	hala	halak
vowel-deletion	majom	majm	majmok
vowel-lengthening	pipa	pipá	pipák
vowel-shortening	tehen	tehen	tehenek

The claim here is that the psychologically fundamental forms are not the altered bases, but the nominatives.

Using a physiological analogy, we may speak of two neural pathways connecting the lexical item majom with a neural unit governing the feature /+segment/. One of these pathways is strongly excitatory, while the other is inhibitory, but not strongly so. In section 2.319 below we propose that the added inhibitory effect of the rule of vowel-deletion would result in a summation

of impulses leading to inhibition of the segment. However, if the inhibition from the rule is not present, the summation of the feature /+segment/ and the feature /Osegment/ will produce excitation.

When there is no ambiguity bias in the forms to be unified, unification follows directly upon superimposition. When an ambiguity does occur, the child should then return his attention to the product of superimposition of contexts. It may be necessary to extend the search for contexts through the associations in memory. Having derived some context to predict the occurrence of the ambiguity, the child must form a rule (section 2.319) and then may proceed to unification. The sequence of superimposition-- preliminary unification -- superimposition of contexts -- rule formation -- unification contains room for much error. Moreover, premature unification based upon superimposition of insufficient data may require that superimposition apply at least three times. If the first applications of superimposition produce free variants, it will be necessary to superimpose these free-variants in an additional round of superimposition -- preliminary unification -- superimposition of contexts -- rule formation -- unification.

2.3182 Phonological effects of superimposition

The example of the Hungarian inessive case suffix

-ban, -ben illustrates how two children might vary in their application of learning strategies to the same material. Child A and Child B may both possess roughly equivalent sets of amalgamated nouns inflected for the inessive. Some of these amalgams may bear the inessive in the shape -ben, while others may bear it in the shape -ban. Child A, seeking a quick analysis of the amalgamated forms, may first superimpose all those forms bearing, say, -ben and establish the lexical item -ben "inessive." Shortly thereafter, Child A also establishes the lexical item -ban "inessive." Since these two items are synonymous, they then appear in Child A's speech as free-variants. In order to eliminate free variation and decrease errors, Child A then superimposes -ban and -ben in a second round of comparison and achieves a unified representation with the feature /± back/ ambiguous on the second segment. In a third round of superimposition, Child A searches the contexts of -ban and -ben for the features governing the alternation. But note that, after the original analysis of -ban and -ben as free variants, it may be that the original amalgams stored in memory began to fade in strength. Thus, premature analysis may force Child A to rely more upon newly perceived forms than stored amalgams in order to locate the determinants of the free variation.

Child B, proceeding somewhat more cautiously,

notes the semantic identity of -ban and -ben and attempts to include all such semantically identical forms into the same lexical unit. After initial superimposition of items, Child B must then superimpose contexts in order to discover the patterns which resolve the ambiguity of features.

This model predicts that some children would use the inessive relatively early, but would illustrate phonological forms dominated by free variation. Other children would begin productive use of the inessive somewhat later, but would illustrate less phonological free variation. Both groups would use the inessive in amalgams before the time of productive use. In the second group the period of use in amalgams would be somewhat extended. The meager data on this question found in Part II and the data from my own material suggest that, with the inessive, a solution like that of Child B is most common, since reports of free variation involving suffixes such as the inessive are rare. However, the rule of fronting-harmony is so general that free variation, as in Child A, could only last a short time.

Ervin (1964:174) observed a state of free variation in use of the English plural which "is transitory, lasting at most two months, and then is resolved into a system of conditioned variation like that of adults."

Among the plurals Ervin reports are footses, handses, and feetses. It seems reasonable to interpret these forms as indicative of the existence of /-s/ and /-iz/ as separate plural suffixes. If we go back to an earlier developmental stage, we find a time when all plurals were members of amalgams. Data from Ervin (1964), Berko (1958), Bellamy and Bellamy (196), and Leopold (1949) show that the plural forms /-s/ and /-z/ emerge before the form /-iz/. The statistical preponderance of /-s/ and /-z/ in amalgams promotes their initial analysis as the basic plural. Moreover, use of /s/ or /z/ can be determined either by the general free phonotactic rule of voicing assimilation or by a similar free morphotactic rule of voicing assimilation. There seems to be little evidence that children use /-s/ and /-z/ in free variation to any great extent. On the other hand, free variation between /-iz/ and /-s, -z/ is promoted by the child's desire to use the former as a productive form and the difficulty involved in establishing the bound-rule with inserts the /ɪ/. When the child unifies all plural suffixes without having first established a rule governing i-insertion, he may find himself in the position of Child A above.

2.3183 The gradual nature of the effects of superimposition

The view of superimposition presented thus far is somewhat simplified in that it fails to account for the interaction of superimposition with memory processes. We have spoken of the unification of items as if it were

an all-or-none process. The facts of linguistic structure show that superimposition cannot function in this way. Let us consider the fate of two lexical items A and B which are present in amalgams in the shapes $A_1, A_2 \dots A_n$ and $B_1, B_2 \dots B_n$. Through superimposition of the amalgams which contain A and B together with many other items, Rule 1 is extracted which completely predicts the various shapes in which A appears in these amalgams. Rule 1 also predicts some of the basic alteration in which B is involved, but complete prediction of B's alterations requires the extraction of rules 7, 13, and 34 which the child has not yet completed. Before, we suggested that items such as A may be extracted from their various amalgams and unified, but it is clear that B cannot be unified in this way. On the other hand, we have reason to believe that Rule 1 applies to B just as much as it applies to A. The clearest way out of this dilemma seems to be the following: where an item is involved in a series of alternations, unification proceeds in a gradual fashion. For example, when the Hungarian child learns the front-back vowel-harmony rule, he extends the pattern to all suffixes undergoing such harmony. In their various amalgams, each suffix is given a new, changed coding which corresponds to its pairing with a new rule extracted by superimposition. Before this occurs, the child has coded the /o/ in

házhoz "house+allative" as /+back, Oround/. After rule extraction, the /o/ is coded as /± back, Oround/ and the ambiguity is resolved by rule. At this point, however, amalgams containing -hoz, -hez, -höz still contain essential information regarding rounding and their representations could only be unified after the rule for rounding-harmony emerges.

This gradualistic model of the application of superimposition can also account for features of the acquisition of derivational morphology. As we will see in chapter 5 of Part II, regarding the learning of Hungarian, a large number of derivational or formative suffixes are limited in cooccurrence to a specific set of roots. In English, unhappy is a conventional lexical item, whereas unred is not. Wherever the semantics of items such as unhappy can be predicted simply as a composite of the component items, such as un- and happy, it is reasonable to assume that the child attempts to analyse these amalgams into their component forms. For such amalgams, there are neither phonological nor semological grounds prohibiting analysis, but such analysis would violate lexical facts regarding permitted occurrences of formative morphemes and roots. In such cases, the child may proceed with the analysis by accounting for all semological or phonological alterations in terms of rules already at his command and by

unifying each of the morphemes involved to its individual lexical representation, if already available, or by establishing a new lexical representation for the item. However, the amalgams involved must be retained simply as associations between separately encoded lexical items. In this sense, systematization of such items allows superimposition and unification to proceed to a finish, but does not permit the final act of analysis. Thus, the result of systematization is that, from an initial fully-specified amalgam, all that remains is a specification of an association between two independent morphemes. In section 3.13 we discuss this matter from the perspective of the productivity of the various rules involved.

The preservation of some unique association between otherwise independent lexical items is a case of minimal insulation. Insulation may be viewed as the opposite of analysis through superimposition. It frequently occurs that some of the most common forms of a language violate some of the most general rules of that language. The ability of the language-user to operate with both productive rules and exceptions to these rules can be traced to the insulation of certain common items against the effects of these rules. Some English examples of complete insulation are children, bought, and were. Failure to insulate these items against the regular patterns results in childs, buyed, and amed.

2.3184 Superimposition compared with Braine's learning mechanism

In a recent paper on child phonology, Braine (1972) presents a simple learning mechanism which is designed to account for a data range very similar to that accounted for by the process of superimposition and the other processes of systematization suggested here. Braine proposes that:

The phoneme /x/ replaces /y/ (or zero) in the lexical entry if the representation with /x/ yields the same phonetic output as the representation with /y/ (or zero) when produced in what as hitherto been the standard phonological context of the morpheme. (If the morpheme is a word, then the "standard" phonological context will be the word in isolation; otherwise, it will be the most frequently occurring form of the morpheme in the learner's speech. (page 36)

Braine presents a number of examples of the operation of this principle. His first example is taken from some British dialect area where both soar and saw are consistently heard by the child as realized by the same sound, either /sɔ:/ or /sɔə/, whereas soaring can be distinguished from sawing by the presence of inter-vocalic /r/. In order to make his learning principle work in this case, Braine must assume that the child has a rule of final-r deletion which allows him to add /r/ to the earlier r-less lexical representation of soar. Braine's principle is only intended to operate in cases where the lexical representation possessed by the child is insufficient to account for

some form perceived in the input. This is to say that the experience of hearing soaring is the efficient cause of the alteration of the lexical representation of soar. Braine is not suggesting that the child adds phonemes throughout his lexicon wherever they can be safely deleted through some rule.

Braine's analysis is similar to our own in that experience with new forms is taken as the motive for the operation of processes of lexical systematization. It differs from our own suggestion in two important ways. First, it requires the presence of fully-acquired rules before any systematization can transpire. It may be true that the speech of Braine's subject Steven was subject to some primitive articulatory limitation on the production of final-r. However, how might we explain learning of the adult representation of soar from a child who happened not to suffer from such a limitation at the time of learning this word? Braine might reply that all children are subject to this restriction, save only those who have traded their primitive restriction for some adult-like phonotactic rule of r-deletion. An argument such as this retains its plausibility as long as attention is confined to those rules which are really primitive articulatory tendencies. But, when we expand our attention to include morphotactic rules such

as the rule of internal vowel deletion in Hungarian (see section 3.13) which deletes the last inter-consonantal vowel in certain specified roots under certain specified conditions contingent with other rules, it becomes very difficult to assume that such deletions are a universal property of human language. Certainly the tendency towards deletions is universal, but the limitation of these deletions to a specific lexical sub-set in a specific environment must certainly be learned. Moreover, if such bound-rules are to be learned, it must be through experience with the various alternation forms which the root assumes. However, Braine appears to be assuming that rules are already present before lexical modifications are attempted.

This difficulty may also be observed in Braine's second example, taken from Russian. Braine assumes that the child controls not only the articulatory tendency (or phonotactic rule) of final-consonant devoicing, but also a rule replacing /o/ by schwa in unaccented syllables. We believe that these two assumptions are of a qualitatively different sort: the first involves some reputed universal articulatory tendency, the second involves a language-specific phenomena. On the one hand, we have doubts about the relevance of articulatory limitations to the process of lexical acquisition. On the other hand, we are worried about the effects upon

the lexicon of the child's overcoming these limitations with advancing development. If the production of lexical items were bound to the presence of articulatory limitations, the lifting of these limitations might result in a series of rather bizarre forms from children who were fairly advanced in development. On this basis, one would predict that, as soon as a German or Russian child shows ability to voice one final stop, all final stops of roots which ever appear voiceless would suddenly, in all positions, appear voiced. To my knowledge, this has never been observed.

A second problem with Braine's suggested learning mechanism and principle is that they require that the basic lexical form always be the richest form. In the discussion of section 2.3181 above we noted that the basic form of some Hungarian words is not the one with the most possible segments. If one is to pay any attention to the reality of such intuitions, then the ambiguity bias established through superimposition more satisfactorily accounts for the shape of the basic forms of lexical items.

In general, Braine's approach resembles our own in certain ways, but differs in requiring that rules be present before lexical modification occurs. We agree that, wherever rules are already acquired, they may apply directly to new items falling under their jurisdiction. However, we emphasize in our model that the initial formation of rules depends upon the process of comparison

of amalgams through superimposition. Moreover, we would tend to downgrade the role of primitive articulatory tendencies as a stable basis for the learning of lexical alterations.

2.319 Rule-formation

In section 2.1 we outlined ways in which linguistic rules can relate and transform information. In section 2.312 we distinguished between tactic rule schemes and relational rule schemes. In section 2.317 we saw how the creation of ambiguous features during superimposition and preliminary unification provides a direct motive for the formation of a rule based upon the context as a predictor of the ambiguity. Moreover, in section 2.315 we noted that the desire to eliminate redundancy may lead directly to formation of a rule, even when no unification occurs.

Comparing all these observations, we can construct a typology of rules. The first major division in this typology corresponds to the two major motives of section 2.315, analysis and the elimination of redundancy. Taking the phonological component of the grammar as an example, we find that these two processes distinguish phonotactic rules from morphophonemic rules. Recently, it has been suggested that phonotactic facts may be economically explained through morphotactic rules. On the other hand,

Chafe (1968) has questioned the possibility of totally integrating phonotactic and phonological description, although it does seem that there are significant areas of overlap between the two systems in many languages. In terms of the present model, the differences between the two varieties of rules reflect differences in their developmental course, while similarities in their form reflect the fact that they operate on similar varieties of information.

In addition to the distinctions already drawn between relational and tactic rules and between rules which predict redundancies and rules which predict ambiguities, we may distinguish between free and bound rules. Free-rules are general rules which apply whenever their structural description is fulfilled. Phonotactic rules are, by their very nature, free-rules applying to all items. Bound-rules apply to specific lexical items in ways to be discussed below. Bound-rules may occur in any of the components dealing with lexical items: phonological, syntactic, and semological. Bound-rules within the phonological component are exclusively morphotactic. The possibility of syntactic rules bound to specific items was discussed in section 2.138 above.

It is necessary to distinguish two sub-classes of bound rules: partially-bound rules and fully-bound rules. Partially-bound rules are bound to the occurrence

of ambiguous features, as these as defined in sec. 2.3181. The specific function of these partially-bound rules is the resolution of the ambiguity encoded through superimposition. In terms of utilization, it may be that rules of this type act like free rules, in that they are activated by the presence of a phonological environment which is specifiable solely in terms of distinctive features, without recourse to any mention of lexical items. However, the acquisition of these partially-bound rules follows a course quite different from that for free-rules, in that the formation of a bound rule requires coordination of the rule with the establishment of the ambiguous feature through superimposition. This coordination is made difficult by the fact that placement of the ambiguous feature must be determined separately for each lexical item. In the case of a free-rule, once the rule is isolated, it extends more or less immediately throughout the lexicon.

The second type of bound rule is the fully-bound rule, whose activation is bound to the occurrence of specific lexical items. Since the fully-bound rule is tied to specific morphemes, it may also be thought of as a morpheme-specific rule. A particular sub-variety of the morpheme-specific rule is the morpheme selection rule which is bound to one or more morphemes, and which selects between these morphemes on the basis of phonological facts. In such cases, two synonymous morphemes are not unified through superimposition. Examples of

each of these various rule types will be given in section 3.13 below. Although morpheme selection rules appear quite different from other morpheme specific rules in descriptive terms, it should be noted that their psycholinguistic statuses are quite similar.

2.32 Requisite physiological structures

Attempts to teach language to chimpanzees, such as that of Premack (1971), indicate that the apes' inability to acquire verbal language may be attributable not so much to deficiencies in the central cognitive processes discussed in the previous section, as to the fact that he has no satisfactory means of encoding meanings into audible signals. On the other hand, every normal human child inherits a vocal apparatus well-designed for achieving fairly accurate articulations. Although we may marvel at the adaptation of the oral tract separating man and ape (Lenneberg, 1967), we must not forget that the process of articulation remains a major stumbling block in the path of child language acquisition. The articulatory process is the one language area where large amounts of energy are required to move blocks of matter. In addition, the cochlea responds in a highly sensitive fashion to small vibrations. The transmission of electro-chemical messages across the synapses and the relay of signals in neurons involve

relatively small amounts of energy and move very small amounts of matter. However, articulation requires movements of the jaw mass, the tongue, the vocal cords, the lungs, and a number of other heavy organs. Moreover, such movements must become coordinated and precise.

In terms of our immediate concerns, one of the most important aspects of the system of articulation is that some articulations are inherently more difficult than others. Articulations that require a maintenance of stable position, such as stridency or trilling, place a greater stress upon the system of coordinations. Additionally, certain articulations may be more difficult in the context of other articulations. Braine (1972) and Stampe (1969) have noted that both inherent difficulty of articulation of a sound and difficulty with the articulation of certain sequences of sounds are widespread characteristics of early child language. Braine speaks of these limitations as "primitive phonotactic tendencies." Stampe pushes the analogy of these limitations even further and contends that, in large measure, learning of adult phonotactics is simply a process of selection from among the numerous phonotactic rules limiting early child productions. We recognize the universal existence of these primitive tendencies, but we believe that it is methodologically unsound to think of them as rules. Moreover, we are skeptical regarding Stampe's hypothesis, holding that the limitations facing the

child cannot be attributed to the adult. There is no evidence, for example, that the adult German is unable to voice final consonants.

3.0 Evaluating and testing the model

We should stress that the model advanced in the previous section is nothing more than a working hypothesis. By forcing ourselves to be specific about the consequences of our observations in terms of a model of language behavior, we can increase the precision of our thought and communication.

Models are best tested against other models which are designed to explain similar facts. In the case of the present model, this means that its structure can be evaluated against current generative grammars. In terms of the utilizational model, the comparison that suggests itself is with Morton's Logogen Model. If I interpret Morton's model correctly, it agrees in many significant aspects with the model proposed here. The one exception to this is that the present model permits bi-directional utilization of structure above the most peripheral levels of audition and phonation. The acquisitional aspects of the model can be most profitably compared to the learning principles suggested by Braine (1971b, 1972); such a comparison was partially conducted in section 2.3184 above. The comparison should be guided by principles outlined in section 1.0. We should also note that there are numerous aspects of the present model which cannot be directly evaluated against other available explanations. In particular, ~~no other model attempts~~ to integrate structural, utilizational, and acquisitional concerns.

3.1 An evaluation of the model in terms of data on language structure

The descriptive adequacy of the structural aspects of this model can be most completely tested by describing an entire language in its terms. Of course, no present structural model is equal to this task and the present model is no exception. The major obstacle in the path of effective linguistic description is the poor state of our knowledge of semantic structure. Granted this major difficulty, we illustrate in section 3.13 how the structural model proposed in section 2.1 is capable of providing an accurate account of some of the essentials of Hungarian grammar. Before we turn to our description of Hungarian, we consider two major aspects of the proposed structural model which are, perhaps, the most controversial. In section 3.11 we discuss the status of the proposed simultaneity of rule-operation on a given level, and in section 3.12 we discuss the hypothesis of strict separation of information types between informational levels.

3.11 Rule-ordering

Discussions of the need for ordering between rules of a grammar have generally concerned themselves with only syntactic and phonological rules. To our knowledge, no arguments have been advanced supporting ordering of semantic, phonetic, or acoustic rules. Therefore, we will also confine our discussion of rule-ordering to these two areas. It is possible to define at least three major

positions regarding the ordering of grammatical rules on a given grammatical level. In one model, rules are said to be extrinsically ordered, i.e. to be applied in a predetermined sequence irregardless of the exact shape of the underlying strings. In the model of intrinsic ordering, the order of application of the rules is not predetermined, but is contingent upon the nature of the underlying strings. Thus, the operation of Rule C may transform Structure 1 to Structure 2. Rule B is then intrinsically ordered after Rule A, since it applies to Structure 2 and not to Structure 1. In the model we suggest, all rules apply simultaneously and in a scanning fashion. If the structural description of a rule is fulfilled, a structural change is made. Several such changes may be coordinated in a given area of information according to the specifications of the grammar.

3.111 Ordering of syntactic rules

Of the various published accounts of ordered sets of syntactic rules, it is Burt's (1971) introduction to the subject which postulates the greatest depth of extrinsic rule-ordering. In addition to seventeen ordered rules of phrase-structure, Burt finds evidence for strict linear ordering of twenty-six syntactic transformations. Burt summarizes the content of the manual as "exemplary of the basic insights achieved by

advocates of the transformational approach to English syntax," (Preface).

It is possible to formulate a set of non-ordered or simultaneous rules which serve to generate all the sentences of the type considered by Burt. Such a non-ordered solution requires five semological rules, eighteen lexical rules, and thirteen syntactic transformations. By shifting the descriptive burden from the syntactic component to the lexicon and the semological component, the simultaneous solution achieves additional economies in the areas of semantic and lexical description. Although a full account of the simultaneous solution would clearly be out-of-place in the present context, we do hope to make it available at a later date.

It is not clear how one should evaluate the two solutions. While the ordered solution requires fewer total rules, it requires the added ability to store and use order, as well as some learning mechanism to acquire ordered rule sets. Moreover, the simultaneous solution seems to parcel out information types into more natural divisions. In particular, the choice of grammatical morphemes such as by, to, who, it, etc. is not a result of a syntactic transformation, but of a lexical insertion. The problem of successive lexical look-ups is also avoided. In general, there is little mitigating in favor of the ordered solution.

3.112 Ordering of phonological rules

Kiparsky (1968) presents five examples arguing for strict ordering among phonological rules. In his first example, Kiparsky (177) notes that, in standard Finnish, underlying vee is realized as vie through diphthongization, and underlying te "do, make" is realized as tee through a rule deleting certain medial consonants. These forms, by themselves, constitute no evidence for strict ordering of rules. However, in certain dialects, standard tee "you do, make" is replaced by tie. Kiparsky proposes that, in these dialects, consonant deletion precedes diphthongization. The present model would suggest that the difference between the dialects and the standard is not a difference in the ordering of two rules, but a difference in the context-specification of the diphthongization rule. In the dialects, the diphthongization rule specifies that the vowels may be separated by a consonant marked as / \star segment/.

Kiparsky then compares the Swiss dialects of Schaffhausen and Kesswil (178). He notes that in both dialects / ɔ / occurs only before consonants which are either /+grave/ or /+lateral/, whereas / o / may occur before consonants which are neither *grave* nor *lateral*. Kiparsky assumes that / o / is the "underlying" form for all lexical items with either / o / or / ɔ /. He therefore proposes a phonotactic lowering rule (178) to change

/o/ to /ɔ/:

$$\left[\begin{array}{c} \text{V} \\ -\text{high} \\ +\text{back} \end{array} \right] \longrightarrow +\text{low} / \text{---} \left[\begin{array}{c} +\text{consonantal} \\ -\text{grave} \\ -\text{lateral} \end{array} \right]$$

Note that this lowering is a purely phonotactic process, not a result of morphotactic alterations. However, both dialects use the morphophonemic umlauting rule to form plurals etc. In the dialect of Kesswil there is a low-front vowel /ɔ/, as well as a mid-front vowel /ɜ/. However, in Schaffhausen there is no low-front vowel and all umlauting is achieved through the mid-front vowel.

Kiparsky's solution to the problem here is to combine his phonotactic lowering rule with the morphotactic umlauting rule in two different sequences. In Kesswil the lowering occurs first and the products of lowering may be umlauted. In Schaffhausen the umlauting occurs first. Since the "underlying" vowels are all the mid-vowel /o/, the products of umlauting can only be front mid vowels. Note that Kiparsky's rule cited above only applies to back vowels and that no lowering of front umlauted vowels could occur.

Although Kiparsky's solution serves to adequately "generate" the forms of both dialects, it requires us to make several psycholinguistically doubtful assumptions. First, it requires us to believe that highly language-specific phonotactic rules are operative even in young children. Second, it requires us to imagine that words such as bɔdɔ in the Kesswil dialect are learned as bodɔ, even though they never appear in this form anywhere in

the linguistic environment. Finally, it requires us to make the basic assumption that rules are ordered and that there is some direct path from complexities of phonological structure to control through re-ordering of rules.

In the formulation suggested by the present model, the underlying forms of words in the two dialects would more closely resemble the forms these words assume in speech. In the first part of our formulation we present the solution to the alternations which may be devised by young children, as they first acquire the relevant patterns. In Kesswil, children hear words with mid vowels as always containing mid vowels; similarly, words with low vowels always have low vowels. In Schaffhausen, words with mid vowels (i.e. boga) always have mid vowels, but words with low vowels (i.e. boda) may also have mid front vowels. For these latter words, the feature /±low/ will be encoded as a direct result of superimposition (section 2.318). Summarizing:

	Schaffhausen	Kesswil
words like <u>boga</u>	0low	0low
words like <u>boda</u>	±low	0low

In both dialects, the umlauting rule is identical. In Schaffhausen, the children must also learn a rule to resolve the ambiguous feature /± low/ to /+low/ when umlauting does not occur:

$$\pm \text{low} \text{ --- } +\text{low} / \text{ (+back)*}$$

$$\text{---}$$

$$\pm\text{back}$$

The feature enclosed in parentheses is intended to represent the suprasegmental morpheme of unlaunting. Presumably, the child has also marked vowels susceptible to unlaunting with the feature /±front/ and it is to such ambiguous features that the unlaunting suprasegmental applies. As we noted in section 2.137, the feature /±low/ will assume the value /0low/ when the above rule does not function. Thus, when unlaunted by /0back/, the feature will be /0low/.

This is the solution devised by children who have not yet concerned themselves with the phonotactic facts common to the two dialects. In Kesswil, older children will learn to produce the feature /+low/ through the rule:

$$0\text{low} \text{ --- } +\text{low} / \left[\begin{array}{c} \text{---} \\ +\text{vocalic} \\ 0\text{high} \\ +\text{back} \end{array} \right] \left[\begin{array}{c} +\text{cons} \\ \{ +\text{grave} \} \\ \{ +\text{lateral} \} \end{array} \right]$$

whereas older children in Schaffhausen must learn that

$$0\text{low} \text{ --- } +\text{low} / \left[\begin{array}{c} (+\text{back}) \\ \text{---} \\ +\text{vocalic} \\ 0\text{high} \\ +\text{back} \end{array} \right] \left[\begin{array}{c} +\text{cons} \\ \{ +\text{grave} \} \\ \{ +\text{lateral} \} \end{array} \right]$$

With the synthesis of this new rule, the rule resolving /±low/, as well as all the encodings for /±low/ lose their function and disappear. Quite parallel to the

Schaffhausen-Kesswil example is a dialect contrast Kiparsky (199-200) cites between Low German and Swiss German; all that we have said about the former applies mutatis mutandis to the latter. On the first level of our explanation of the dialect differences, the level accounting for the performance of young children, we interpret the contrast as due to the loss of a rule in Kesswil and differences in the coding of the underlying forms in the two dialects. So Chafe (1968:131) interprets the example from Low German and Swiss as "loss of a rule accompanied by a change in underlying forms." In the second solution, that offered for older children, the differences are even smaller, only involving the presence of the umlauting environment.

In order to discuss Kiparsky's remarks on the ordering of rules involved in the two Slavic palatalizations (197-198), we would need more extensive information supporting the quite abstract forms Kiparsky proposes to explain the synchronic facts. However, Kiparsky's discussion (199) of the relative ordering of rules governing devoicing and spirantization in two groups of German dialects can be discussed on the basis of the material Kiparsky presents. The forms in question are:

Alsatian (conservative)	Low German (innovative)	
tāk	tāx	"day"
tāʃe	tāʃe	"days"
tāg	tāg	underlying

Kiparsky is able to generate these forms by assuming that spirantization only applies to voiced consonants (g to ɣ) and by ordering spirantization after devoicing in Alsatian. If the consonant has already been devoiced, spirantization cannot apply. Koutsoudas, Sanders, and Noll (1971:30-31, abbreviated as KSN), provide an alternative explanation which simply notes that, whereas spirantization may only occur in the environment V ___ V in Alsatian, it occurs in the environment V ___ (perhaps V ___ #) in Low German. Thus KSN explain the sound change as the result of the simplification of the context-specification of the rule. Both devoicing and spirantization may apply simultaneously to a given distinctive feature representation.

To KSN's explanation we would only add the observation that both devoicing and spirantization, from our perspective, serve to resolve the features /± voice/ and /± spirant/ which are present on most, but not all, roots ending with velars. Exceptions such as awek may be coded with ambiguity, or they may be coded as /± voice/, if there is reason to maintain an underlying representation of aweg. In either case, they differ from other Low German roots of this type.

A number of other authors have offered evidence of the need for postulating strict ordering among phonological rules. For example, Postal (1968:140-152)

discusses in detail the need for ordering between six rules of the phonological component of Mohawk:

- 1) Truncation $V \longrightarrow \emptyset$ in $___V$
- 2) Prothesis $\emptyset \longrightarrow i$ in $\text{verb} (\# ___ D_0^n V D_0^n \#)_{\text{verb}}$
- 3) Stress $V \longrightarrow V'$ in $___ D_0^n V D_0^n \#$
- 4) Stress Jump $V D_0^n \neq' \longrightarrow V' D_0^n \neq$
- 5) Tone $V' \longrightarrow \hat{V}$ in $___ \left\{ \begin{array}{l} ? \\ hR \end{array} \right\}$
- 6) Length $V' \longrightarrow V':$ in $\left\{ \begin{array}{l} ___ CV \\ \left[\begin{array}{c} \hat{___} \\ ___ \end{array} \right] \end{array} \right\}$

Where the symbols are:

- V any vowel
 C any consonant, resonant or not, including systematic w, y
 D any nonvowel, i.e. consonant, or h, ʔ
 R any resonant, i.e. w, y, n, r
 \emptyset the null or identity element
 X_0^n from 0 to n successive occurrence of X
 $\left\{ \begin{array}{l} A \\ B \end{array} \right\}$ either A or B
 # word boundary
 ' stress
 ^ falling tone
 : length

A non-ordered solution need not be as uneconomical as Postal suggests. (In the following, the reader is

kindly requested to consult Postal's examples and discussion.) First, Postal notes that the prothetic /i/ of Mohawk verbs cannot be assigned by the phonological component of a system which postulates separation of informational levels, since assignment "involves appeal to categorial structure." Precisely for this reason, we hold that the /i/ is a lexical item marking the category Verb; its coding includes the features /±segment/ which are resolved by the rule:

$$\pm \text{segment} \longrightarrow +\text{segment} / \# \text{ ___ } D_0^n V_0^n D_0^n \#$$

By substituting the representation V_0^n for the V of Postal's prothesis rule, the need to order prothesis after truncation is eliminated. Although the symbol V_0^n is more complex than V, the rule is simplified by the omission of categorial symbols and parentheses. There is no need to account for the fact that the epenthetic vowels do not figure in the stress rule, since the stress rule begins its operation before they are present. Therefore, a simultaneous solution eliminates rule #4. The stress rule itself must be slightly modified:

$$\text{Ostress} \longrightarrow +\text{stress} / \left[\begin{array}{c} \text{ ______ } \\ +\text{voc} \\ \text{Ocons} \end{array} \right] D_0^n V_0^n D_0^n$$

and the tone rule takes the form:

$$\text{Otone} \longrightarrow +\text{tone} / \left[\begin{array}{c} \text{ ______ } \\ +\text{voc} \\ \text{Ocons} \end{array} \right] \left\{ \begin{array}{l} ? \\ \text{hR} \end{array} \right\} D_0^n V_0^n D_0^n \#$$

Postal's rule for vowel length seems to combine phonological and phonetic facts. It is a phonetic fact that falling tone is always long; this should be noted by a rule of the phonetic component. The phonological facts can be described by the simultaneous rule:

$$V \longrightarrow V: / _ C V_0^n D_0^n \#$$

Summarizing the simultaneous solution:

Truncation: $V \longrightarrow \emptyset$ in $_ V$

Realization: $\pm \text{seg} \longrightarrow +\text{seg} / \# _ D_0^n V_0^n D_0^n \#$

Stress: $V \longrightarrow V' / _ D_0^n V_0^n D_0^n \#$

Tone: $V \longrightarrow \hat{V} / _ \left\{ \begin{array}{l} ? \\ hR \end{array} \right\} D_0^n V_0^n D_0^n \#$

Length: $V \longrightarrow V: / _ C V_0^n D_0^n \#$

Given a set of conventions which could bracket shared environments of simultaneous rules, this could be further simplified. Although this solution requires an additional lexical item and an additional phonetic rule; it eliminates a phonological rule, the need for ordering of the phonological rules, and the use of categorial structure in the phonological component. Although symbol counting is a risky business, this solution hardly increases the total symbols required.

Chomsky (1964:89) proposes the following ordered rules for the phonological component of English:

1) Spirantization $\left\{ \begin{array}{l} k \\ t \end{array} \right\} \longrightarrow |s|$ in the context / $_+(i,y)$

2) Palatalization: (s, z) + (i, y) \rightarrow (š, ž) / __Vowel
 3) Devoicing: z \rightarrow s in the context/ __ + iv

Spirantization accounts for pairs like opaque-opacity; palatalization accounts for ignite-ignition; and devoicing accounts for abuse-abusive. Chomsky claims that, without rule-ordering, the pair logic-logician must be accounted for by a separate rule and that pairs such as persuade-persuasive require another two additional rules. Perhaps, if Chomsky had written his rules in terms of distinctive features, he would have noted that a simultaneous solution requires not new rules but less features. Specifically, pairs such as logic-logician and corrode-corrosion can be generated by eliminating /+strident, +continuant, +anterior/ from the left-most member of the second rule; and pairs such as corrode-corrosive can be generated by dropping the features /+continuant, +strident/ from the left-most member of the third rule.

Koutsoudas, Sanders, and Noll (7-10) also discuss the ordering Saporta (1965:220-223) posits for various forms of Latin-American Spanish. Thus, in Uruguayan Spanish, /e/ is lowered to /ɛ/ before a final consonant and /s/ is deleted finally. The plural of klase "class" is klase + s, realized as klasɛs. If vowel-lowering is followed by s-deletion, the vowel of klase (with deleted /s/) would not be followed by a consonant and could not be lowered. But, if we apply the rules simul-

taneously, the problem evaporates: both /s/ and /e/ undergo their changes independently and simultaneously. These remarks apply mutatis mutandis to the ordering in Saporta of k-Insertion and Stridency assignment. The following rule pair presents a different problem:

- 1) Final Depalatalization: $\tilde{l} \longrightarrow l / _ \#$
 2) Delateralization $\tilde{l} \longrightarrow y / V _ V$

Castillian Spanish uses only the first rule and no rule-ordering problem is involved. In Latin-American Spanish, however, Saporta finds this derivational sequence:

"that"	"those"	
akel̃	akelos̃	underlying forms
akel	-	by Rule 1
-	akeyos	by Rule 2

In fact there is no reason, other than a diachronic one, to postulate similar underlying forms for the two dialects. Instead, the underlying forms for Latin-American can be taken as ending in /l/ and altering to /y/ by a rule of Delateralization acting in the environment $V _ V$. This allows us to spare a rule in the description of each dialect.

In cases of feature "flip-flop" such as the alternation mentioned by Wang (1967:102):

+high \longrightarrow -high
 -high \longrightarrow +high,

one may substitute rules such as $\alpha \langle \text{high} \rangle \longrightarrow -\alpha \langle \text{high} \rangle$, or one may postulate simultaneous rule application. In effect, the former is an abbreviation of the latter.

In a lengthy discussion of stress, voice, and length in Southern Paiute, based upon Sapir (1930) and Harms (1966), Chomsky and-Halle (1968:344-350) find evidence for "rule ordering of both the sequential and the simultaneous kind, along with several other intricacies." Here, we again kindly request the reader to consult these studies during the course of our discussion. In the alternative proposal below, we shall use \underline{S} as a symbol for a syllable. The simultaneous solution requires these four rules:

Assignment of Primary Stress:

$$\text{Ostress} \longrightarrow +\text{stress} / \# \left\{ \begin{array}{l} [S] [S] [S] \\ [S] [S] \# \\ [S] [S] \# \end{array} \right\}$$

Assignment of Secondary Stress and Contraction:

$$\text{Ostress} \longrightarrow +\text{stress} / \left[\begin{array}{l} S \\ \text{Ostress} \end{array} \right] [S] [S]$$

If both of the above rules operate, /+stress/ may be assigned twice. This will yield phonetic primary stress. If only the second rule applies, secondary stress will be produced.

Degemination:

$$+\text{segment} \longrightarrow \text{Osegment} / \left[\begin{array}{l} +\text{son} \\ \text{Ostress} \end{array} \right] [\text{Oson}] + \left[\begin{array}{l} \text{Oson} \\ +\text{son} \end{array} \right] [+seg]$$

Note that, when the second /+son/ is word-final, it is followed by the word-boundary, while is /Osegment/.

Devoicing:

+voice --- Ovoice / _____

$$\left\{ \begin{array}{l} S \quad \# \\ \left[\begin{array}{l} S \\ \text{Ostress} \end{array} \right] [-\text{son}] [-\text{son}] \end{array} \right\}$$

If the action of any rule serves to alter the feature /Ostress/ which appears in rules 2, 3, and 4, the operation of these rules would be blocked. In section 2.213 we discussed the limited ways in which alteration of the environment during scanning can simulate rule-ordering; this is an example of such simulated ordering. The present solution eliminates the need to complicate the grammar with "an infinite set of rules" (Chomsky and Halle 1968:343), to postulate rule-ordering, and to devoice (by Rule 54) spirants which have been voiced by a previous rule (rule 46).

3.12 Strict separation between levels

The issue of separation between informational levels has received less attention in recent discussions than the issue of rule-ordering. The present model stipulates that information on a given structural level is homogeneous, containing no admixture of information from other levels. Thus, the information on the semological level is exclusively expressed in semantic features and no phonetic features are present. Similarly, inform-

ation on the acoustic level consists entirely of acoustic impressions and has no admixture of semantic features. When the extreme ends of the informational spectrum are compared in this way, the case for separation of information levels begins to appear almost prima facie. However, a number of authors have postulated admixture of information types not between the extremes of semantics and phonetics, but between syntax and semantics in regards to the information resulting in lexicalization, and between phonology and lexical sub-divisions in regards to phonological rules. In the next two sections we focus specifically upon these two questions. Other varieties of admixture could be conceived, but these two seem to be the ones that most frequently appear in the literature.

3.121 Separation in regards to lexicalization

Here the opponent of the hypothesis of strict separation would maintain that lexicalization acts upon some form information other than that provided by semantic features. The arguments reviewed by Lakoff (1971:267 *passim*) are designed to show that lexical insertion is, in at least some instances, dependent upon information which can only be generated through the operation of syntactic rules. It is our position that these various examples are generally accurate in

in their assessment of the semantic composition of the lexical items in question, but inaccurate in their attempt to "rearrange" constituent structure before permitting lexicalization. The view of the present model is that lexical items are capable of expressing information contained in various positions in a proposition or information contained in two related propositions. All that is necessary to properly effectuate lexicalization is an accurate description of the features of semological structure and the semantic relations in which they stand. For example, Postal (1971) interprets the surface verb "remind" as a conflation of "perceive" and "similar" in deeper structure. Since these two verbs are in separate clauses, they cannot be lexicalized through one item in most current theories. In the present lexicalist model, however, lexical verbs are often direct conflations of underlying verbs in two propositions. Postal's argument is that a proper description of the rules governing cooccurrences of reflexive pronouns with "remind" in such sentences as *Mary says that shaving herself reminds Bill of torturing herself requires that, roughly, the subject of the "perceive"-clause and the "similar"-clause be coreferential. Since the present lexicalist model allows this structure to be made quite explicit inside the lexicon, this cannot be taken as an argument for inter-

penetration of syntactic and semantic facts in regards to lexicalization.

3.122 Separation in regards to phonological rules

The stipulation of strict separation of levels in regards to the operation of phonological rules implies that the only inputs to these rules are the bundles of distinctive features specifying segments, lexically-bound information on suprasegmentals, and symbols for morpheme and affix boundaries. This is to say that neither semantic nor syntactic categories are relevant to the operation of phonological rules.

Postal (1968:114-139) discusses at length evidence for the existence of non-phonetic properties in the operation of phonological rules. Basic to his discussion are three example from Mohawk and two from English; let us first consider the English evidence. In his first example from English, Postal (127) observes that "in English some verbs take the nominalizer tion (detention), some ment (development), some al (recital), some null (win) etc. in a generally unpredictable way so that vocabulary divisions are required." Postal proposes that each of the roots involved be assigned some "morphological feature" which will later determine to which phonological rule it shall be subjected. Suffixes are not classed as lexical items, rather they are each assigned through a separate phonological rule. Evidently, Postal must introduce some general symbol for nominal-

ization in order to precipitate the action of the various phonological rules producing nominalizing suffixes.

It is in regards to the question of the "vocabulary divisions" that Postal fails to supply us with sufficient information to consider his proposal fairly. If the vocabulary divisions required here are only relevant to the process of nominalization, then they should be considered essentially ad hoc divisions. Although it is possible that ad hoc divisions exist in memory structure through clustering of similar units, such clustering could be equally well characterized in a solution preserving separation of levels. It is the existence of non-ad hoc lexical divisions which Postal fails to illustrate. The only such divisions which seem to evidence some general lexical importance are those which characterize the source of borrowed roots. But note that features such as /+French/, /+Latin/, /+Anglo-Saxon/ etc. will not serve to correctly generate forms requiring -ment, -al, and -tion, since these affixes are present in each of the Romance languages. Rather, it seems that, both in the source languages and in English, there are meaning differences between the nominalizing suffixes. Thus, -al (Latin -alis) generally refers to the event or ceremony during which a certain action is carried out; -ment often refers to a process; and -tion more generally indicates the result of a process. In the model we propose, superimposition would

act whenever possible to distinguish between these suffixes as independent lexical units. Where suffix use cannot be governed by consistent semantic facts (compare section 5.4 of Part II), the amalgam would fail to undergo complete morphological analysis and would retain a specific association between the root and the suffix as discussed in section 2.3183.

The solution proposed here is preferable to that proposed by Postal in two important respects. First, this solution specifies that semantic facts, lexical facts, and phonological facts be treated separately in the context of acquisition. Separation of these facts automatically provides a coherent framework for the child's emerging grammar. A theory which postulates the existence of morphological features and exception features must explain how such features figure in acquisition and what functional value they might have for the child. How would the ten-year-old discover that certain words have a Greek origin, when he has no idea of where Greece is or who the Greeks are? Second, the present solution concentrates language-specific facts into the lexicon, which is the most language-specific of the linguistic levels (Saussure, 1959:67). Postal's solution serves to diminish the language-universality of the phonological component through the introduction of non-universal rules resolving non-universal morphological features.

In his second example from English, Postal (137) observes that "morpheme initial clusters such as those found in 'sphere;' 'sphinx,' 'sphincter' etc. are exceptional since obstruent clusters in general consist of g plus voiceless stop. That is, these forms exist only because they contain at least one exception feature in their systematic descriptions." Our present model would simply suggest that the systematic descriptions of the irregular items are more complete than those of items with regular initial clusters. Thus, the second segment of "sphere" must be represented as /+continuant/ etc., whereas the second segment of "spill" is represented as /Ocontinuant/ etc.

Postal's first example from Mohawk (116-117) deals with rules for epenthetic insertion of /i/ and /e/. Postal suggests that the rule for /i/ insertion must include in its description the feature /+verb/, since the /i/ only precedes verbs. As we noted in section 3.112, in regards to just this example, the /i/ may be more appropriately treated as a lexical item marking the category /+verb/. This item is assigned during lexicalization and functions grammatically; its phonological specification includes the feature /± segment/ which is resolved by a phonological rule such as the following:

+segment → +segment / # ____ -V_oⁿ V_oⁿ -V_oⁿ (V_oⁿ -V_oⁿ) #

Postal's second example from Mohawk (118) deals with the morphemes "zoic, feminine, and objective with respective base shapes which include wa, yaka, and wa." The cited forms only appear in verbs; in nouns the forms are a, aka, and a, respectively. If the homonymous suffixes involved are in fact separate lexical items, the difference between noun and verb paradigms may be accounted for by the addition of three lexical items. Postal prefers to establish the rule that "word initial glides drop in nouns." If the rule serves no purpose other than to condense six items into three (or four into two?), it hardly appears worth the additional expense of its formulation.

Postal's final example (119-124) from Mohawk is based upon a "class of a few dozen words, almost all of them French borrowings, which have final stress." Since most Mohawk words take penultimate stress, these items are essentially irregular forms. Moreover, they include in their number items which were not borrowed from French. Postal tells us that "we cannot simply give up and mark the French morphemes with stress on the final vowel in the dictionary. These forms receive non-stress on this vowel unless this is the final vowel of a word. Thus, compare /dagó's/ 'cat' with /dagosgo':wah/ 'moun-

tain lion.'" The natural solution which suggests itself here is to code final emphasis as /± segment/ on these few French borrowings and to resolve the feature as /+segment/ in the environment ____#. Thus, nothing in this example militates against separation of levels.

In general, we have seen that the fundamental difference between the solution which mixes information levels and that which separates them is that the latter concentrates irregularity and exceptions in the lexicon, whereas the former introduces irregularity and exceptions into the phonological component. Particularly from the viewpoint of acquisition and utilization, the latter solution is preferable.

3.13 An outline of aspects of Hungarian grammar

This section is designed not only to illustrate the adequacy of the structural model in descriptive terms, but also to provide a basis for the data on the acquisition of Hungarian grammar which concerns us in section 3.3 below and in Parts II and III. Unfortunately, practical considerations force us to omit a treatment of syntactic rules and semological patterns. We are able to outline some fundamental properties of lexicon, particularly in relation to the phonology and the phonological and phonetic descriptions given include the most important patterns in the language. Our basic source throughout has been the comprehensive grammar recently published by the Linguistics Institute of the Hungarian Academy of Sciences. This two-volume work is entitled A Mai Magyar Nyelv Rendszere or The Structure of Modern Hungarian. However, the basic framework of that grammar is descriptive and traditional, while the present account is generative, in terms of the model of section 2.1.

3.131 The Lexicon

Although a complete specification of even the most common lexical items in Hungarian is clearly beyond our scope, we do hope to outline two basic types of

information in this section. First, we will list the major types of roots in terms of morphological patterning. Secondly, we will make a list of all Hungarian suffixes together with their phonological representations and a general semantic representation or gloss.

First, we consider the major morphological classes for roots. In large measure, our analysis follows that of Sándor Károly (in the Academy grammar, edited by Tompa, 313-331). Although hierarchical aspects of lexical structure certainly allow the speaker to differentiate between the parts of speech in terms of such features as /+object/ or /+process/, the importance of the parts-of-speech per se is actually minimal. Although noun and verbs roots may be members of different classes, they may also be present in one class. In effect, the phonological rules are "blind" to the part-of-speech of the root. Rather, it is the exact shape of the root with its various ambiguities that is of importance in determining the action of the phonological rules. Many forms requiring insulation are not predictable by this or any other parsimonious grammar. For the sake of brevity, we will not list such insulated forms here. The root types listed below are grouped in terms of their phonological similarities:

Root Type I:

The simplest type of root is that which has no ambiguous features in its phonological specification and to which suffixes attach without any "linking vowel."

Nouns of this shape, such as hajó "boat," necessarily end in a vowel, since there are several nominal suffixes which would attach a linking-vowel to a noun ending in a consonant.

Root Type II:

Roots without ambiguous features may also end in consonants. Such roots and verbs and nouns which take the mid linking-vowels o-ë-ø which may be carried by the suffix and need not be coded upon the root. Examples of such roots are virág "flower," pad "bench," and kap "get."

Root Type III:

Roots in this group undergo no alteration when followed by suffixes, but differ from the two previous groups in that they end with an /a/ or an /e/ marked as /Osegment/. These final segments were acquired through a process discussed in section 3.3 below. Although they do not appear in surface forms in the adult grammar, they code important information regarding height-harmony and must be preserved for this reason. Large numbers of both nouns and verbs are included in this group. Examples are mond(a) "say" and ház(a) "house." A sub-group here includes verbs like hív(o) which would violate the fronting-harmony rule if the associated vowel were deleted. (The rules of phonology are listed in section 3.133 below.)

Root Type IV:

Some noun and verb roots have the feature /±segment/ marked on the vowel preceding the last consonant. Additionally, these roots may end in a /0segment/ vowel, as in Root Type III. Deletion of the ambiguous internal vowel is handled by the rule of internal vowel deletion discussed below. Examples are tõr(õ)l "wipe" and bok(o)r "bush." However, a number of verbs of this type (see Tompa 1970, 316-317) are not coded with deletable internal vowels by all speakers. For such speakers, items like ebédlõ "dining room" show the apparent results of vowel-deletion from ebédel + õ. However, elsewhere in the conjugation of the verb, few deletions are observed. For these verbs, the deletion of the internal vowel is not achieved through rules working for the immediate production of words. These variations, particularly in the case of verbs, are further complicated by the existence of variations in the rule of internal vowel deletion. Furthermore, each of these variations is coupled to variations in the rule of initial vowel insertion A.

Root Type V:

A number of nouns, adjectives, numerals, and perhaps a few verb roots all show lengthening of the vowel preceding the final consonant in their dictionary or citation forms. All long-short vowel pairs participate in this pattern. The basic rule is subject to two

modifications similar to those made upon internal vowel deletion and initial vowel insertion. Presumably, speakers who make these modifications in one rule make them in all of the relevant rules. Examples here are madár - madarat "bird - bird + acc." and híd - hidat "bridge - bridge +acc." One root, lélek "soul" (lelkem "soul+1PS poss. from lélek + em) belongs to both Root Type V and Root Type IV.

Root Type VI:

Roots of this type end in /a/ or /e/ in their dictionary form, but undergo vowel-lengthening. This process is lexically-free, occurring in all roots or suffixes ending in these vowels. Actually, the encodings of this group may resemble those of Root Type I, but we call attention to this common free-rule by noting a separate Root Type. Examples are drága - drágák "dear - dear +plural" and kabátja - kabátját "coat+3PS poss. - coat+3PS poss. +accusative."

Root Type VII:

These roots lose their final vowel before a /+segment/ vowel. The rule of final vowel deletion governing this is apparently a case of a free-rule with non-concurrent productivity (see below); it acts to delete final vowels before all formative suffixes with initial /+segment/ vowels. Roots of this type include some members of Type VI ending in /a/ or /e/, together with other nouns and

adjectives ending in /ú/, /ü/, /ö/, and /õ/. There is a great deal of variation between speakers and even within speakers regarding the assignment of the ambiguous feature governing this rule and the entire pattern is falling into disuse. Some examples here are csunya "ugly" - csunyul "become ugly," sárga "yellow" - sárgít "make yellow," and erdő "forest" - erdész "forester." However, there is yet another sub-group here which drops its final vowel before vowels that are /± segment/. The irregularities involved here and the fact that only a handful of words are involved indicates that there is no productivity of the pattern in question. Thus, forms such as borja "his sheep" and gyapja "his wool" must be coded as lexical units. Support for this view comes from the fact that both gyapja "wool +3PS poss." and gyapjúja "wool +3PS poss." exist with a slight difference separating them. The former may be the fleece belonging to the sheep, while the latter is the wool belonging to the factory.

Root Type VIII:

Another small group of nouns, adjectives, and numerals not only participates in the alterations of Type VII, but has additional alterations of its own. Roots of this type are the only nouns with more than just a basic dictionary form and one alternant form. These roots have two alternant forms. The alternation peculiar to this group is between a long high vowel on the end and a short non-high vowel in that same position.

The rule governing the alternation is that of lowering-shortening. Examples are erdő "forest" - erdeje "forest+ 3PS poss." and mező "field" - mezei "of the field." The final vowels of these roots must be marked as /± high/, /±long/, and /±segment/.

Root Type IX:

There are four classes of v-base nouns and one class of v-base verbs. Common to all v-base roots is the presence of a /v/ marked as /±segment/. Members of Root Type IX also possess a final low vowel marked as /0segment/, as well as the feature /±long/ on the /o/ preceding the /v/. Thus, ló "horse" alters to lov- before the accusative in lovat. The rules of v-insertion A and vowel-shortening A are active here.

Root Type X:

This type is identical to the previous type, but it also has the feature /±high/ coded on the vowel before the /v/. This feature is resolved by the rule of vowel lowering. Thus, szó becomes szav- before the plural in szavak.

Root Type XI:

Roots of this type have the deletable /v/ and the /0segment/ final vowel, as well as a /u/ with the feature /±segment/ before the /v/. This /u/ is removed through the rule of u-deletion, as in falu "village" - falvam "village +1PS poss."

Root Type XII:

In this group the final vowel is /Osegment/ and the /v/ is /± segment/; otherwise there are no further ambiguous codings in the item. The rules thus activated are v-insertion A and initial vowel insertion A. The latter rule is operative in all of the types discussed up to this point with the exception of Type I.

Root Type XIII:

A handful of verb roots are identical to the roots of Type IX except in not having a final /Osegment/ vowel. These roots are subject to v-insertion B and vowel-shortening B, which operate under the condition that the following suffix begins with a non-deletable vowel, or at least one that is /±high/.

Root Type XIV:

In the verbs of Root Types I, III, IV, and XIII above, the root codes for the Present Indicative, unless further suffixes for tense or mood are attached. In the seven verbs in this root type, multiple encodings for the various tenses and moods are the most economical way of producing the various paradigms. The basic form is a v-base similar to those of Root Type XIII above, although /±long/ need not be coded on the vowel before the /v/. This root produces forms such ivó "drinking" and tevé "doing" from the roots i(v)- "drink" and te(v)- "do, make." The rule active here is v-insertion B. This form also produces the past tense, as in tett "done,"

as well as other forms such as the potential. Roots of this type include iv- "drink," ev- "eat," tev- "put," vev- "take," hiv- "believe," viv- "carry," lev- "will be," and jöv- "come." Each of these roots except for jöv- has another variant with a semantics differing only in the fact that it encodes the Present Indicative and with a phonology differing only in that a non-deletable /sz/ takes the place of the /v/. A third root for each of these except jöv- is the Imperative root with a long or short /d/ in the place of the /v/. Another root for each of these except jöv- is the Imperative root with a long or short /gy/ in the place of the /v/. A fifth lexical item for each verb codes an /n/ in place of the /sz/ of the Present Indicative and specifies a context of the Infinitive or the Conditional. Exceptions to the patterns generated by these five roots include much of the paradigm of jöv- and forms such as evett "he ate" or légy "be!"

Root Type XV:

Verbs of this type have a Present Indicative root ending in /sz/ and with a deletable /u/, as in alusz- "sleep." This /u/ is inserted under Conditions B and C of the rule of internal vowel deletion, i.e. before a deletable vowel and not a /t/. The second root for each verb of this type ends with /ud/, as in alud- "sleep." This root occurs in the context of tense, mood, or the

Infinitive, whenever the Present Indicative is not involved. The third or basic root appears when tense and mood are not in the context. This basic form is of the shape alv- with the final /v/ insertable only through the rule of v-insertion B. Both the coding of the deletable internal vowel in the Present root and the use of the non-Present root within the present paradigm are matters of great idiolectal variation.

Root Type XVI:

The paradigms of the verbs van "present copula" and megy "go" are highly irregular, although they do resemble the above three types in some regards.

Root Type XVII:

A number of verbs from types II, III, IV, XIII, and XIV, together with a number of suffixes of suffix type 9, receive the suffix -ik in the 3PS Indefinite. These roots and suffixes are also idiosyncratic in their use of the suffixes -om, -ol, -ok, and -ék, as will be noted in the suffix list below. There seems to be some semantic communality between these roots, in that most of them involve a bodily function or activity. However, the huge number of idiolectal variations here suggests that the semantic grounds for this distinction are becoming lost. The entire matter deserves further research.

Hungarian grammar distinguishes between képzők or formative suffixes which form new words by the

addition of non-relational semantic material and ragok or flectional suffixes which form new words by the addition of material relating the root to other elements of the sentence. The separation between formative and flectional suffixes also reflects a basic difference along the dimension of lexical productivity. In order to properly describe this difference, we must distinguish between concurrent and non-concurrent productivity. Those lexical items which possess concurrent productivity are attached to the root through the process of active utilization described in section 2.2. Such concurrent productivity is postulated for the majority of the rules described in the next section and for the flectional suffixes. In general, formative suffixes fail to illustrate concurrent productivity. Rather such productivity as they do illustrate appears to be non-concurrent. Non-concurrent productivity is derivational productivity; it accounts for the fact that a given formative affix is applied in a quite similar fashion to many different roots. Thus, for example, the Hungarian suffix -ság, -ség "ness, hood" applies fairly freely to a large number of roots (Tomba 1970:479), as in katona "soldier" - katonaság "the military." In other words, the derived form is katonaság, not katonaség. On the other hand, the rule of final vowel lengthening which applies without exception in concurrent productivity, fails to apply in this case of non-concurrent productivity. If it had

applied, the word would be katonáság. Furthermore, it is clear that the semantics of katonáság "military" is more than just a simple combination of katona "soldier" and -ság "ness, hood." Rather than referring simply to the state of being a soldier, the word refers to an entire institution. Moreover, as Tompa (1970:479) notes, nouns like szerelő "repairman" fail to take -ság, -ség for apparently idiosyncratic reasons. Together, these facts suggest that the suffix -ság, -ség is only productive in a limited non-concurrent fashion.

Having distinguished between concurrent and non-concurrent productivity on both semantic and phonological grounds, we may now list the suffixes which are attached to the root through concurrent processes. These suffixes involve seven different combinations of ambiguous features:

- 1) ± back
- 2) ± back ± round
- 3) ± back ± round ± segment
- 4) ± back ± round ± segment ± high
- 5) ± back ± segment
- 6) ± segment
- 7) ± back ± segment.

The sixth pattern relates to the /j/ element of the 3PS possessive; all the others relate to vowels with one or more features ambiguous. Backness is resolved by the

rule of fronting-harmony. Roundness is resolved by the rule of rounding-harmony. Highness is resolved by the rule of height-harmony. In patterns 3 through 5 the feature /±segment/ is resolved through initial vowel insertion A. In pattern 7 it is resolved through initial vowel insertion B. Each of these rules is discussed in the set of phonological rules below. Since each of the following suffixes is concurrently productive, they each serve to alter the root in all ways determined by concurrently productive rules, given the fulfillment of the context-specification. Each suffix is cited in its high back variant with its meaning and suffix type.

	<u>Concurrent Affixes</u>	Suffix Type
-ana	Conditional	5 __ 1
-né	Mrs. ____	-
-hat	potential	1
-ani	Infinitive	5 (a)
-jj*	{ Imperative 2PS Indefinite Imperative }	-
-ott*	Past	3

* These long consonants may be shortened by an articulatory rule.

-j	Present Definite / ____ {3P Plural}	-
-ok	1PS Indefinite	4
-om	{ 1PS Definite 1PS Indefinite / ____ Past }	4
-ol*	2PS Indefinite/ ____ Present-Ind.	2
-asz*		5

*choice effected by 2PS selection rule

-dl	2PS Indefinite / ____ -[Present-Ind.]	5
-alak	1PS Agent and 2P Patient/Benef.	5 __ 1
-od	2PS Definite	4
-unk	1PP { Indefinite Definite / ____ Cond. }	5
-uk	1PP Definite / ____ -[Conditional]	5
-otok	2PP Indefinite	4 __ 2
-anak	3PP Indefinite	5 __ 1
-d	2PS Definite Imperative	-
-on	3PS Indefinite / ____ Imperative	3
-a*	3PS Definite	5
-átok*	2PP Definite	5 __ 3
-ák*	3PP Definite	5

* all these are subject to j-e assimilation

Suffix	Meaning	Suffix Type
-ak	Plural / ____ Quality	7
-ok	Plural / ____ Object	4
-é	Sign of Possession "____'s"	-
-i	Plural / ____ (sign of poss.)	-
-abb	Comparative	5
leg-	Superlative (assumes that comparison is also generated and marked)	-
leges-	Hyperbolic (assumes superlative)	-
verbal prefixes	perfectivity, direction etc.	-
-om	1PS poss.	4
-od	2PS poss.	4
-ja	3PS poss.	6 - 1
-unk	1PP poss.	5
-otok	2PP poss.	4 ____ 2
-juk	3PP poss.	6 - 1
-jai	{ plural possession plural possession - 3P possessor }	6 - 5
-ot	Accusative	4
-ban	Inessive	1
-ból	Erelative	1
-ba	Illative	1
-on	Superessive	3
-ról	Delative	1
-ra	Sublative	1
-nál	Adessive	1
-től	Ablative	1

Suffix	Meaning	Suffix Type
-hoz	Allative	2
-ig	Terminative "up to ___"	-
-val	Instrumental-Comitative	1
-ostul	Sociative "by each ___"	4
-nak	Dative-Genitive	1
-ul	Modal-essive "as a ___"	1
-on	Modal-essive "___ly"	4, 7
-lag	Modal-essive "___ly"	1
-ért	Causal-Final "for the sake of__"	-
-onként	Distributive "___by___"	4
-vá	Translative-Factitive	1
-szor	Multiplicative "___times"	2
-ik	3PS Indefinite / ___ Present -ikes type	-

		Suffix Type
-om	1PS Indefinite/ ___ikes	4
-ol	2PS Indefinite/ ___Present ikes	4
-ok	3PS Indefinite/ ___Conditional	4
-ék	3PS Indefinite/ ___Imperative	-

For those suffixes whose attachment to roots does not necessarily occur concurrently with the production of the utterance, the Suffix Types 1-7 listed above continue to be of significance, but there are three further suffix types which we must list:

- 8) ± back ± round ± segment
 9) ± back ± segment
 10) ± back ± segment

The features /± back/ and /± round/ are resolved, as before, by the relevant harmony rules. However, the feature /± segment/ in rules 8 through 10 is resolved by the non-concurrent rules of third syllable insertion, r-s vowel insertion, and privative vowel deletion, respectively.

We noted above that concurrent suffixes serve to precipitate root alterations through every free or bound rule whose context specification they fulfill. We also presented the example of the non-concurrent suffix -ság, -ség "hood, ness" which fails to precipitate vowel-lengthening in the root. Because non-concurrent suffixes do not precipitate all possible root alterations, we must specify the root alterations which they do cause.

Of the following six alteration patterns, the first three are also found in concurrent formations, while the last three are restricted to non-concurrent formations:

- 1) vowel-lengthening (free)
- 2) internal vowel deletion
vowel-shortening (A and B)
v-insertion (A and B)
vowel-lowering
u-insertion (all bound rules)
- 3) v-assimilation (bound)
- 4) final vowel deletion (non-concurrent free rule)
- 5) Use of a special shortened form of a Christian name. One Christian name may have several such bases. We will not go into the details of these patterns here.
- 6) Deletion of all but the initial syllable of the root.

Additionally, we should note that many verb formations are based upon a "passive" verb root which never appears as an independent word. Thus fordul and fordít, the Intransitive and Transitive versions of the verb "turn" are based upon the root for- which also appears in other formations, but nowhere by itself. The existence of such roots also appears to be a matter of non-concurrent productivity. Presence of -ik between parentheses indicates that some or all of the roots taking this suffix participate in the "ikes" verb conjugation. A dash indicates that the root takes its dictionary form and that the suffix has only one form.

Non-concurrent affixes

		Suffix Type	Root Type
Formatives making Verbs from Verbs:			
-ogat	frequentative, durative	8 - 1	2
-ong	" "	2	2
-oz(ik)	" "	2	-
-og	" "	2	-
-ász(ik)	iterative "	1	2
-kod	" "	2	-
-kol	frequentative, durative	2	- (8)
-ákol	" "	1	-
-kál	" "	1	-
-gál	" "	1	-
-ol	" "	2	2
-adoz(ik)	" "	5	2
-dos	iterative	2	-
-dal	" "	1	-
-dál	" "	1	-
-dokol	frequentative, durative	2 - 2	-
-dogál	durative	2 - 1	-
(There exist about 15 additional frequentative and duratives which are probably unproductive in any sense.)			
-an	momentaneous	1	-*
* Some non-concurrent final consonant lengthening rule may be operative.			
-int	momentaneous	-	-
-ant	"	1	1
-ít	"	-	-
-ad	inchoative	1	2
-od(ik)	"	2	-
-dul	" reflexive	1	-
-dit	" causative	-	-

-at	causative		1	2
-tat	"		1	-
-aszt	"		1	2
-t	"		-	-
-ft	"		-	2
-atik	passive		1	2
-tatic	passive		1	-
-ód(ik)	reflexive, medio-passive, reciprocal	1		-
-akod(ik)	"	internal	"	8 - 2 2
-kód(ik)	"	"	"	
-akoz(ik)	"	"	"	8 - 1 2
-kóz(ik)	"	"	"	1 -
-óz(ik)	"	"	"	1 -
-ódz(ik)	"	"	"	1 -
-oz(ik)	"	"	"	2 -
-ul	Reflexive (durative, inchoative)		1	-

Formatives making verbs from nouns and adjectives:

-oz(ik)	general verbalizer		4	1,2
-ol(ik)	"		4	1,2
-oll(ik)	"regard as ___; appear as ___"		4	1,2
-ász(ik)	"hunt ___; hunt with ___"		4	1,2
-ft	causative		-	1,2,4
-kod(ik)	"act ___ly or like a ___"		2	-
-skod(ik)	"	"	2	1
-lkod(ik)	"	"	2	1

Suffix	Meaning	Suffix Type	Root Type
-od(ik)	"become ___"	2	2*, 4
*with the exception of <u>internal vowel deletion</u>			
-ul	"become ___"	1	2,4

Formatives making nouns from verbs

-ás	"abstract act of ___ ing"	1	2
-t	gerund	-	2 (?)
-aj	"sound of ___ ing, act of ___ing"	1	-
-alom	"act, process of ___ ing"	1 - 2	2
-odalom	"	4 - 1-2	2
-at	"result of ___ing"	1	2
-omány	"	8 - 1	2
-ovány	"	8* - 1	-

*some further conditions seem necessary

-ék	"result of ___ ing"	-	2
-edék	"	8	2
-élék	"	1	~
-tyú	"instrument of ___ ing"	1	-
-óka	"	1	-
-ó	"place of ___ing, thing at which one ___s"	1	2

		Type	
		Suffix	Root
-oda	"place of ___ing"	3* - 1	-
*exceptions: <u>járda</u> , <u>fogda</u>			
<u>Formatives making Adjectives from Verbs:</u>			
-ós	"characteristically ___ing: or making one ___"	1	2
-ékony	"tending to ___"	3	2*
* uses some Present roots from Types XIV and XIII.			
-atag	"characteristically ___ing"	1 - 1	2
-i	"characteristically ___ing (joking, diminutive connotation)"	-	-
-a	"	1	-
<u>Formatives making Participles from Verbs:</u>			
-ó	Present Participle	1	2
-andó	Future Participle	1 - 1	2
-va	Adverbial Participle	3 - 1	-
-ván	"	3 - 1	-
<u>Formatives making Nouns from Nouns:</u>			
-nemű	"articles related to <u>N</u> or which are <u>A</u> "	-	-
-ék	plurale tantum	-	1
-aság	-ness, -hood	9 - 1	-
-zat	"system of ___s"	1	-
-lat	nominalizer, varying semantics	1	-
-os	"ish" (Nouns and Adjectives)	10, 4	2
-ász	"works with ___"	1	4
-osdi	"game of ___"	4	1,2
-onc	"a person who is <u>Adj</u> or receives <u>N</u> "	2	4

		Type:	
		Suffix	Root
-ista	"member of a ___ group"	-	1
-izmus	"ism"	-	1
-acska	"diminutive, pejorative etc."	4 - 1	1, 2, 5
-ka	"diminutive"	1	5
-i	"	-	6
-csi	"	-	6
-ca	"	1	5
-ci	"	-	6
-ika	"	1	4, 5
-ikó	"	-	4, 5
-us	"	-	6
-u	"	-	6
-uka	"	-	6
-csa	"	1	5
-kó	"	-	6
-is	"	-	6
-ó	"	1	6
-dad	"	1	4
-a	"	-	6
-ók	"	1	6

Formatives making Adjectives from Nouns:

-jú	"supplied with ___"	6 - 1	1, 2
-i	"belonging to ___"	-	2; 4*

*subject to much variation

		Type	
		Suffix	Root
-atalan	privative	5,10-7-1	1#2*
*subject to great variation; further rules may be operative			
-nyi	"of the shape or size of __"	-	1
-aságos	"very ___"	9-1-2	-
-atos	"ish" (joking connotation)	1 - 2	2
-só	"from the ___ (direction, space)"	1	-

Formatives making Numerals:

-od	"____th"	4	2
-----	----------	---	---

Formatives making Nouns from Adjectives:

-ik	"the one which is ___"	-	-
-----	------------------------	---	---

3.132 Abstract phonological structure

After the action of the syntactic rules, information on the utterance to be produced consists of an ordered series of lexical items. Lexical items are represented as a string of distinctive features; each distinctive feature set specifies a segment. It is unlikely that suprasegmental features are parts of lexical encodings in adult Hungarian grammars. Rather, such features are generated as separate lexical items, if they have a meaningful component, or are assigned through phonological rules, if they have no inherent meaning. The specification here and below differs from that of Chomsky and Halle (1968) in that the feature of lowness is omitted as being of little use for the phonology and in that the feature /continuant/ is reversed in direction to /obstruent/. For the sake of brevity, the ambiguous segments resulting from superimposition and the long consonants are not included in the following list of segments. Moreover, each segment should be marked with /+segment/.

	u	ú	o	ó	ü	ũ	ö	õ	a	e	á	ë	é	i	í	r	l	j	p	b
vocalic	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
conson.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+	+
high	+	+	+	+	+	+	+	+				+	+	+	+			+		
back	+	+	+	+					+		+									
round	(+	+	+	+)*)	+	+	+	+												
tense	+	+			+	+				+				+	+					
anterior																	+	+		+
coronal																	+	+	+	+
voice	(+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+)*)	+		
obstruent																	+	+		+
nasal																		+		+
strident																				
long		+		+		+		+		+		+		+						
	f	v	m	t	d	n	sz	z	c	dz	ty	gy	s	zs	cs	dzs	ny	k	g	h
vocalic	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
conson.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
high											+	+	+	+	+	+	+	+	+	+
back											+	+	+	+	+	+	+	+	+	+
round																			+	+
tense																				
anterior	+	+	+	+	+	+	+	+	+											
coronal				+	+	+	+	+	+	+	+	+	+	+	+	+	+			
voice		+	+	+	+			+	+	+	+		+	+	+	+	+		+	+
obstruent			+	+	+			+	+	+	+				+	+	+	+	+	+
nasal			+			+												+		+
strident	+	+						+	+	+			+	+	+	+				
long	(not noted for consonants, each one has a long pair)																			

* Features enclosed in parentheses are inserted by phonological rules.

Table I
Abstract Phonological Segments

3.133 Phonological rules

Hungarian possesses a fairly large set of morpho-tactic rules which operate to modify aspects of lexical items in terms of information present upon neighboring lexical items. These rules may be either lexically-free or lexically-bound, as discussed in section 2.319. It is possible to give a complete listing of the free rules, since the productivity of such rules appears to be rather general. However, it is not clear where the line should be drawn in enumeration of the possible bound rules of the phonology. A large number of these bound rules affect only a small number of lexical items, and their productivity cannot be taken for granted.

The first set of free rules we will consider are the rules governing consonant assimilations. These rules apply between any two neighboring segments, whether they be two segments within a lexical item, two segments in neighboring lexical items within a word, or two segments in neighboring words not separated by a pause. The most general of these rules (Tompa, 1970:99) is that of retrogressive voicing:

$$\text{Ovoice} \longrightarrow \text{+voice} / \left[\begin{array}{c} \text{---} \\ \text{Ovocal} \end{array} \right] \left[\begin{array}{c} \text{Ovocal} \\ \text{+conson} \\ \text{+voice} \\ \text{Onasal} \\ \text{---} \\ \text{+anterior} \\ \text{Ocoronal} \\ \text{+strident} \\ \text{...} \end{array} \right]$$

Note that the nasals, liquids, glides and /v/ fail to produce this assimilation. The rule of retrogressive devoicing is similar:

$$+voice \longrightarrow Ovoice / \left[\begin{array}{c} \overline{Ovocal} \\ +conson \\ Onasal \end{array} \right] \left[\begin{array}{c} Ovocal \\ Ovoice \end{array} \right]$$

Nasals resist this devoicing, but /v/ modifies to /f/ and /h/ joins the voiceless true consonants in producing this devoicing. Some examples of voicing are kék zsák → kég zsák, rakd → ragd. Examples of devoicing are dobtam → doptam and hadfi → hatfi.

Assimilation for place of articulation affects nasals through the rule of nasal place assimilation:

$$\left[\begin{array}{c} \text{anterior} \\ \text{coronal} \end{array} \right] \longrightarrow \left[\begin{array}{c} \alpha \text{ anterior} \\ \beta \text{ coronal} \end{array} \right] \left[\begin{array}{c} \overline{} \\ +nasal \end{array} \right] \left[\begin{array}{c} \alpha \text{ anterior} \\ \beta \text{ coronal} \\ +obstruent \end{array} \right]$$

Some examples of this assimilation are szénpör → szémpör and kán nyúl → kany nyúl. László Deme (in Tompa, 1970:100) also lists a number of associations between coronal consonants. One variety includes assimilation between coronal stops and /j/. Deme treats such assimilations as both complete progressive assimilations and fusional palatalizations, but both of these phenomena may be described through the one rule of j-assimilation. This rule is written out in complete transformational shape, since more than one alteration is involved:

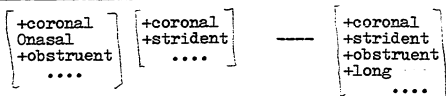
$$\left[\begin{array}{c} Ovocal \\ +coronal \\ +obstruent \\ +strident \\ \dots \end{array} \right] \left[\begin{array}{c} Oconson \\ +high \\ +coronal \\ +voice \end{array} \right] \longrightarrow \left[\begin{array}{c} Ovocal \\ +coronal \\ Canterior \\ +obstruent \\ +strident \\ +long \\ \dots \end{array} \right]$$

The assimilations produced by this rule include: ny+j=nny, gy+j=gyy, ty+j=tty, n+j=nny, d+j=ggj, s+j=ss, sz+j=ssz, z+j=zz, and dz+j=ddz. All these assimilations are of importance morphologically for suffixes like the Imperative, the Present Definite, and the 3PS Possessive which begin with /j/. The latter, however, does not occur after sibilants and no assimilations are detected between it and sibilants. It is not entirely clear to what extent these assimilations might also occur between words not separated by a pause. Another assimilation involving /j/ is one of l-assimilation which is retrogressive as opposed to j-assimilation which is progressive:



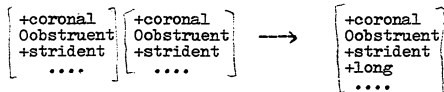
Note that Chomsky and Halle (1968:318) distinguish between /l/ and /r/ through the assignment of the feature /+obstruent/ to /l/.

Another pattern may be described by the rule of non-nasal coronal assimilation:



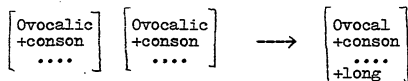
Whether or not the second element is an obstruent, a

long affricate will result from the assimilation. The combinations here are: t+cs=ccs, d+cs=ccs, gy+cs=ccs, ty+cs=ccs, t+c=cc, d+c=cc, gy+c=cc, ty+c=cc, t+sz=cc, d+sz=cc, ty+sz=cc, gy+sz=cc, t+s=ccs, d+s=ccs, ty+s=ccs, gy+s=ccs, t+z=ddz, d+z=ddz, ty+z=ddz, gy+z=ddz, t+zs=ddzs, d+zs=ddzs, ty+z=ddzs, and gy+zs=ddzs. Somewhat similar to this is the pattern of sibilant assimilation:



in which the first element drops out. The assimilations here are s+sz=ssz, z+sz=ssz, sz+z=zz, zs+z=zz, sz+s=ss, z+s=ss, sz+zs=zzs, and z+zs=zzs.

A final assimilatory rule is that of double consonant assimilation. When the combination of morphemes places two identical consonants in contact, a long consonant is formed:



(given that the additional features noted by are identical)

Since the above assimilatory rules occur across any boundary other than a deliberate pause, we have not placed boundary conditions between the various segments.

However, as we move on to a consideration of morphotactic rules, we must recognize two basic forms of boundaries: the root boundary /+RB/ attached to the beginning and end of roots and the affix boundary /+AB/ attached to the beginning and end of affixes. It is also convenient to abbreviate certain combinations of these boundaries by the symbols of a dot and a plus-sign:

$$+ = \left\{ \begin{array}{l} \text{AB} \\ \text{RB} \end{array} \right\} + \text{AB}$$

$$\cdot = \text{RB} + \text{AB}$$

Thus, the first pattern includes the second as a special case. Below we divide our treatment of Hungarian morphotactics in terms of the nature of the binding of the rules to features or morphemes. The reader might do well at this point to reconsider aspects of section 2.319.

Free rules: There appears to be only one morphotactic rule of major importance which is not bound either to the occurrence of specific roots or the occurrence of specific ambiguous features. This rule lengthens final /a/ or /e/ to /á/ or /é/ before a consonant which may be optionally preceded by a deletable vowel.

vowel-lengthening:

$$\left[\begin{array}{l} \text{Olong} \\ \text{Otense} \end{array} \right] \longrightarrow \left[\begin{array}{l} +\text{long} \\ +\text{tense} \end{array} \right] / \left[\begin{array}{l} \text{Ohigh} \\ +\text{vocal} \\ \text{Oconson} \\ +\text{segment} \\ \dots \end{array} \right] + \left(\begin{array}{l} \pm \text{segment} \\ 0 \text{ conson} \\ \dots \end{array} \right) \left[\begin{array}{l} +\text{cons} \\ \text{Ovocal} \\ \dots \end{array} \right]$$

Partially-bound rules: Most of the rules of Hungarian morphotactics are bound to the occurrence of specific ambiguous features. The first set of such partially-bound rules which we will consider are the harmony rules. These rules change the backness, roundness, and height of vowels in accord with features of the root. The rule of fronting-harmony applies to a large number of suffixes both concurrently and non-concurrently.

fronting-harmony: *

$$\pm \text{back} \longrightarrow + \text{back} / \left\{ \begin{array}{l} [+vocal] \\ [+back] \end{array} \right\} [Ovoc \text{ } _x] \cdot [-RR]_x \left[\begin{array}{c} \text{---} \\ \dots \end{array} \right]$$

$$\left\{ \begin{array}{l} [+voc] [Ovoc] [+voc] \\ [+back] [O \text{ } .] [+high] \end{array} \right\}$$

Thus, any segment which is /± back/ will become back when not separated from the root by a second root boundary and when one of two conditions is fulfilled. The first condition, represented in the top of the parentheses, is the presence of a back vowel as the last vowel in the word. This back vowel may be deletable as in hétj(a) or hív(o) which might otherwise appear as front-vowel words. The second condition is the presence in non-compounds of a back vowel in the next-to-the-last syllable when the final vowel is /ɛ/, /é/, /i/, or /í/, as in kocsi or kávét. This second pattern determines a recommended pronunciation which is not followed by all speakers. There is also a special case in which

* In section 3.325 we note that fronting-harmony and rounding-harmony might be better expressed as free rules.

fronting-harmony is blocked. This blocking is fully-bound to the conditional and occurs in the environment of ____ +/ok/. Thus, the 1PS of the Conditional of vár "wait" is várnék rather than várnák, and the 3PS of the "ikes" verb in- "drink" is innék rather than innák.

The rules of height-harmony and rounding-harmony are somewhat less complex. Vowels with ambiguous height can be /+high/ only immediately after a root and only if the root does not end in a low vowel, as in Root Type III. Suffixes attached to the root non-concurrently figure as internal to the root boundaries. Examples of successful harmony as pad+ok = padok or lát + od = látod. An example of blocking is kap+t+om= kaptam.

height-harmony:

$$\pm \text{high} \longrightarrow +\text{high/} - \left[\begin{array}{l} +\text{vocal} \\ \text{Ohigh} \\ \text{Oconson} \end{array} \right] \cdot \left[\text{---} \right]$$

Rounding-harmony works at only a slightly greater distance from the root. Within the first suffix after the root, rounding extends as long as it does not encounter a vowel which is /Oround/.

rounding-harmony:

$$\pm \text{round} \longrightarrow +\text{round/} \left[+\text{round} \right] \left[\text{Ovoc} \right]_x \cdot \left\{ \begin{array}{l} \left[\begin{array}{l} \text{AB} \\ +\text{voc} \\ \text{Oround} \\ \text{Oconson} \end{array} \right] \end{array} \right\} \text{---}$$

The rules of initial vowel insertion A, internal vowel deletion, j-insertion, and vowel-shortening A are

are connected by a series of conditions. First, we consider the rule of initial vowel insertion A, a rule that controls insertion of the linking vowel. The basic rule is:

$$\pm \text{seg} \longrightarrow +\text{seg} / \left[\begin{array}{c} +\text{cons} \\ \text{Ovocal} \end{array} \right] \left(\left[\text{Oseg} \right] \right) + \left[\begin{array}{c} \text{---} \\ +\text{voc} \end{array} \right]$$

Thus, a deletable vocalic element (not a /j/) will be inserted after a consonant, even if that consonant is followed by a /Osegment/ vowel, as in Root Type III. In this form, the rule produces a great deal of vowel-insertion, as in pad + (o)k = padok and bok(o)r + (o)m = bokrom. However, there is one major way and two minor ways in which this insertion may be blocked or facilitated.

Condition A:

$$\left[\begin{array}{c} - \left[\begin{array}{c} +\text{voc} \\ \text{Ocon} \end{array} \right] \\ +\text{coronal} \\ +\text{anterior} \end{array} \right] \cdot \left[\begin{array}{c} \text{---} \\ +\text{voc} \end{array} \right] \left(\left[\begin{array}{c} \text{Ovoice} \\ +\text{coronal} \\ \text{Ovocal} \\ +\text{coronal} \\ +\text{anterior} \end{array} \right] \right)$$

In this condition, if the insertable vowel falls between a dental or, perhaps, palatal consonant and a /t/, /sz/ etc. of the suffix, it may not be inserted. The exact nature of the tolerated consonant clusters is subject to a large amount of individual variation. Clusters ending with /t/ are the most tolerated, followed by /sz/. Clusters with final labials are generally avoided. The closer specification of this condition requires detailed research across various idiolects. In most cases, the presence of a final /Osegment/ vowel will void this condition and permit the basic rule to operate. Condition

A may be partially inhibited by the occurrence of the environments described in internal vowel deletion or vowel-shortening.

Condition B: The vowel will not be inserted after a deletable /v/, if it ends the root, as in Root Type XIII. This /v/ will disappear and the vowel preceding it will directly attach to the consonants of the suffix.

Condition C: A condition limited to the past tense is that, despite the dictates of Condition A, the vowel will, nonetheless, be inserted under specifiable conditions which need not concern us here.

Internal vowel deletion operates upon roots of Root Types IV and XV. It has the form:

$$\pm \text{segment} \rightarrow \text{Oseg/} \text{---} \left[\begin{array}{l} +\text{cons} \\ \text{---} \end{array} \right] \left(\left[\begin{array}{l} \pm \text{seg} \\ \text{---} \end{array} \right] \right) \cdot \left[\begin{array}{l} +\text{voc} \\ \text{Ocon} \end{array} \right]$$

The deletion occurs before suffixes beginning with vowels. When Condition A acts to block or inhibit initial vowel insertion, it also inhibits internal vowel deletion. Note also that, when the environment of internal vowel deletion is fulfilled, Condition A is less likely to operate. Thus, whenever the internal vowel is deleted, the suffix initial vowel is inserted with the environment of Condition A being the crucial factor. For example, we have either szatyort or szatyrot from szatyor +ot, but not szatyrt or szatyorot. The rules are mutually contingent and both depend upon Condition A, which is subject to idiolectal variation. A similar situation exists between internal vowel deletion and j-insertion

vis a vis Condition D discussed just below. Fulfillment of Condition D facilitates j-insertion, but inhibits internal vowel deletion. For example: burok + ja= burka or burokja.

The rule of j-insertion operates upon a number of suffixes with deletable /j/'s. The basic rule is:

$$\pm \text{segment} \text{ --- } + \text{seg} / \begin{bmatrix} +\text{seg} \\ +\text{voc} \\ \text{Ocon} \end{bmatrix} + \begin{bmatrix} \overline{\text{Ovoc}} \\ \text{Ocon} \end{bmatrix}$$

In other words, the /j/ is inserted after vowels. But it also may be inserted after consonants under this condition:

Condition D: The basic consideration regarding the insertion of /j/ after consonants is the nature of the cluster created. If the cluster arising is capable of undergoing one of the assimilations (note that this occurs simultaneously) and no /Osegment/ vowel intervenes, the /j/ is inserted. Condition D may be partially inhibited by internal vowel deletion or vowel shortening A.

Both Conditions A and D are also relevant to the operation of the rule of vowel-shortening A which operates upon roots from Root Types V, IX, and X. Our above discussion of these limitations also applies here. The basic rule is:

$$\pm \text{long} \text{ --- } \text{Olong} / \text{ --- } \begin{bmatrix} +\text{con} \end{bmatrix} \begin{bmatrix} \pm \text{seg} \end{bmatrix} . \begin{bmatrix} +\text{voc} \\ \pm \text{seg} \\ \text{Ocon} \end{bmatrix}$$

In other words, the root form with a shortened vowel occurs before suffixes beginning with a deletable vowel, subject to Conditions A and D.

The remaining partially-bound rules are of less importance than those discussed above. There is another rule of vowel-shortening which applies to the v-base roots of Root Type XIII.

vowel-shortening B:

$$\pm \text{long} \longrightarrow \text{Olong} / \text{---} \left[\begin{array}{c} \pm \text{seg} \\ /v/ \end{array} \right] \cdot \left[\begin{array}{c} +\text{voc} \\ \text{Ocon} \\ \{ +\text{seg} \\ \pm \text{high} \} \end{array} \right]$$

By this rule, the long vowel preceding the deletable /v/ of the root is shortened before suffixes beginning with vowels that are either ambiguously high or non-deletable. Thus lō(v) + (o)k = lōvōk, but lō(v) + (a)ni = lōni. The rule of v-insertion B operates in a nearly identical context, but affects roots of Types XIV and XV, as well as XIII.

v-insertion B:

$$\pm \text{segment} \text{ ---- } + \text{segment} / \left[\begin{array}{c} \text{---} \\ /v/ \end{array} \right] \cdot \left[\begin{array}{c} +\text{voc} \\ \text{Ocon} \\ \{ +\text{seg} \\ \pm \text{high} \} \end{array} \right]$$

Three other rules affecting v-base nouns from groups IX-XII. These are fairly straightforward and can simply be listed.

v-insertion A:

$$\pm \text{seg} \text{ --- } + \text{seg} / \left[\frac{\quad}{/v/} \right] [0 \text{seg}] \cdot [\pm \text{seg}]$$

u-deletion:

$$\pm \text{seg} \text{ --- } 0 \text{seg} / \left[\frac{\quad}{/u/} \right] [\pm \text{seg}] \left[\frac{\quad}{/v/} \right] [0 \text{seg}] \cdot [\pm \text{seg}]$$

vowel-lowering:

$$\pm \text{high} \text{ --- } 0 \text{high} / \left[\frac{\quad}{+\text{voc}} \right] [\pm \text{seg}] \left[\frac{\quad}{/v/} \right] [0 \text{seg}] \cdot [\pm \text{seg}]$$

Note that the deletable segment following the root may be either a deletable vowel or the deletable /j/ of several suffixes.

One final partially-bound rule affects roots of the Root Type VIII.

lowering-shortening:

$$\left[\begin{array}{l} \pm \text{high} \\ \pm \text{long} \end{array} \right] \text{ --- } \left[\begin{array}{l} 0 \text{high} \\ 0 \text{long} \end{array} \right] / \text{ --- } \cdot \left[\begin{array}{l} + \text{high} \\ 0 \text{cons} \end{array} \right]$$

This specification of the context seems a bit odd, but it does generate the correct forms.

A final set of fully-bound rules are bound to the sign of the Imperative -jj and the 2PS Definite Imperative -d. For each of these suffixes, three types of assimilations occur. Final /szt/ on the root alters to /ssz/ before these suffixes by this rule:

Imperative Assimilation A:

$$/sz/ /t/ \cdot \left\{ \begin{array}{l} /jj/ \\ /d/ \end{array} \right\} \rightarrow \left\{ \begin{array}{l} ssz \\ szd \end{array} \right\}$$

The second rule alters /t/ after short vowel to /ss/:

Imperative Assimilation B:

$$\left[\begin{array}{l} Olong \\ +voc \\ Ocons \end{array} \right] /t/ \cdot \left\{ \begin{array}{l} /jj/ \\ /d/ \end{array} \right\} \rightarrow \left[\begin{array}{l} Olong \\ +voc \\ Ocons \end{array} \right] \left\{ \begin{array}{l} ss \\ sd \end{array} \right\}$$

But, if the preceding segment is not /sz/ or a short vowel, the following rule will apply:

Imperative Assimilation C:

$$\left[\begin{array}{l} -/sz/ \\ \left[\begin{array}{l} Olong \\ +voc \\ Ocons \end{array} \right] \\ - \\ \dots \end{array} \right] /t/ \cdot \left\{ \begin{array}{l} jj \\ d \end{array} \right\} \rightarrow \left[\begin{array}{l} -/sz/ \\ - \left[\begin{array}{l} Olong \\ +voc \\ Ocons \end{array} \right] \\ - \\ \dots \end{array} \right] \left\{ \begin{array}{l} ccs \\ csd \end{array} \right\}$$

Fully-bound rules are bound to the occurrence of specific suffixes. The first type of such rules we will consider are those which act concurrently. Thus, the rule of v-assimilation appears to be bound to the Instrumental and the Translative-Factitive, both with initial /v/. It does not effect the adverbializer -va, -ve, even though its shape is similar. Its effect is the deletion of the /v/ after a consonant and the lengthening of that consonant. Since two changes occur, the rule is written out as a full transformation:

$$\left[\begin{array}{l} +\text{cons} \\ \text{Ovoc} \end{array} \right] + /v/ \longrightarrow \left[\begin{array}{l} +\text{cons} \\ \text{Ovoc} \\ +\text{long} \end{array} \right]$$

The rule of j-e assimilation could conceivably be phrased as a free rule, but it only relates to four suffixes and is probably fully-bound. It transforms /j/ + /e/ to /i/ in the Definite Present;

$$+ /j/ + \left[\begin{array}{l} +\text{seg} \\ \text{iback} \\ \text{Ohigh} \end{array} \right] \longrightarrow /i/$$

The rule of initial vowel insertion B is bound to three or four suffixes whose semantic specification is for an Adjective. These few suffixes insert their vowels not only under the conditions of initial vowel insertion A, but also after high vowels.

$$\pm \text{seg} \longrightarrow +\text{seg} / \left[\begin{array}{l} +\text{high} \\ +\text{vocal} \\ \text{Ocons} \\ +\text{segment} \end{array} \right] . \text{---}$$

The rule of 2PS-selection is the one case of a morpheme selection rule (see 2.319) in Hungarian:

$$\left\{ \begin{array}{l} -\text{ol} \\ -\text{asz} \end{array} \right\} \text{---} -\text{ol} / \begin{array}{l} +\text{strident} \\ +\text{obstruent} \end{array} . \text{---}$$

Non-concurrent rules are, in effect, fully bound to specific suffixes as noted in the list of non-concurrent suffixes. In specifying that list, we noted both the suffix type and root type of each suffix. By suffix type, non-concurrent affixes were members not only of Suffix Types 1-6 listed at the beginning of our discussion of concurrent suffixes, but also of the non-concurrent patterns 8-10. Each of these patterns is bound to a separate non-concurrent rule which resolves the feature /±segment/. Third syllable insertion is bound to the suffixes -ogat, -okoz(ik), -okod(ik), -omány and possibly others. It inserts the initial vowel of the suffix after single-syllable roots to form trisyllables.

$$\pm \text{seg} \text{ --- } +\text{seg} / [\text{RB}] \left\{ \begin{array}{l} +\text{cons} \\ \text{Ovoc} \end{array} \right\}_x \left\{ \begin{array}{l} +\text{voc} \\ \text{Ocons} \\ +\text{seg} \end{array} \right\} \left\{ \begin{array}{l} +\text{cons} \\ \text{Ovoc} \end{array} \right\}_x \text{ . ---}$$

In such cases, only /o/ and /ɛ/ are inserted, never /ɔ/.

R-s insertion is bound to the suffixes -aság and -aságos and inserts a vowel between the /s/ of these suffixes and the final /r/ of the root:

$$\pm \text{seg} \text{ --- } +\text{seg} / \left\{ \begin{array}{l} +\text{cons} \\ +\text{cor} \\ \text{Obstruent} \end{array} \right\} \text{ . ---}$$

Privative vowel deletion is a counterpart of internal vowel insertion in roots and deletes a vowel in the privative suffix -atalan only if the root ends in a vowel:

$$\pm \text{segment} \text{ --- } \text{Osegment} / \left\{ \begin{array}{l} +\text{voc} \\ \text{Ocon} \end{array} \right\} \text{ . (at) ---}$$

In addition to specifying certain suffix types for non-concurrent formations, we also noted that root alternations 4-6 occur only in a non-concurrent fashion. Root Type 5, like the use of passive verb roots, seems idiosyncratic to each Christian name involved, and Root Type 6 simply requires use of the first syllable. Root Type 4 is formed by use of the non-concurrent (and, of course, bound) rule of final vowel deletion:

$$+seg \text{ --- } 0seg / \left[\begin{array}{c} \text{---} \\ +vocal \\ 0cons \end{array} \right] \cdot \left[\begin{array}{c} +seg \\ +voc \\ 0cons \end{array} \right]$$

Forms produced here are like lusta + ul = lustul.

3.134 Concrete phonological structure

The concrete phonological structure of Hungarian segments differs from their abstract phonological structure only in ways determined by the phonological rules. These rules eliminate ambiguous features and negative coefficients, insert a few positive values for rounding and voicing, and form a few new combinations of features. In the following table all of the segments in concrete phonological structure are listed with both Hungarian orthography and IPA notation above each Hungarian letter or digraph. Where no positive coefficient is entered in the table, the coefficient "0" is assumed.

	u	u:	o	o:	y	y:	ø	ø:	a	æ	a:	e	e:	i	i:	r	r:	l	l:	j	j:	p	p:
	u	u:	o	o:	ü	ü:	ø	ø:	a	æ	a:	ø	ø:	i	i:	r	rr	l	ll	j	jj	p	pp
vocalic	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				
consonantal																+	+	+	+			+	+
high	+	+	+	+	+	+	+					+	+	+	+					+	+		
back	+	+	+	+					+	+													
round	+	+	+	+	+	+	+	+															
tense	+	+			+	+				+				+	+								
anterior																+	+	+	+			+	+
coronal																+	+	+	+	+	+		
voice	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
obstruent																		+	+			+	+
nasal																							
strident																							
long		+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	ts	ts	dz	dz
	b	b:	f	f:	v	v:	m	m:	t	t:	d	d:	n	n:	s	s:	z	z:	ts	ts	dz	dz	+
vocalic	b	bb	f	ff	v	vv	m	mm	t	tt	d	dd	n	nn	sz	ssz	z	zz	c	cc	dz	ddz	
consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
high																							
back																							
round																							
tense																							
anterior	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
coronal									+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
voice	+	+			+	+	+	+			+	+	+	+			+	+				+	+
obstruent	+	+					+	+	+	+	+	+	+	+						+	+	+	+
nasal							+	+					+	+									
strident			+	+	+	+									+	+	+	+	+	+	+	+	+
long		+		+	+	+		+		+		+		+		+		+		+		+	+

Table II: Concrete Phonological Segments

	c	o:	t	t:	s	s:	z	z:	tʃ	ʃ:	dʒ	dʒ:	ny	nny	k	kk	g	gg	h	hh	hʰ	hʰ²	
vocalic																							
consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
high	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+					+
back															+	+	+	+	+	+	+	+	+
round																							
tense																							
anterior																							
coronal	+	+	+	+	+	+	+	+	+	+	+	+	+	+									
voice			+	+			+	+			+	+	+	+			+	+				+	+
obstruent	+	+	+	+					+	+	+	+	+	+	+	+	+	+					+
nasal													+	+									+
strident					+	+	+	+	+	+	+	+											
long		+		+		+		+		+		+		+		+		+		+			

- 1) added by voicing assimilation
- 2) added by place assimilation

3.135 Articulatory rules

The actual details of articulation are determined in two ways: through motor commands and through interaction of motor commands with the physiology of the vocal apparatus. Let us first consider some examples of direct motor commands as realizations of various features or combinations of features. The feature /+round/ is realized through a complex activity of lip-puckering which requires that motor commands be sent to a series of muscles surrounding the mouth (Lenneberg, 1967:34-38). Furthermore, the extent of this activity may be modified in degree by the presence of the feature /+tense/ which is found on /u/, /ú/, /ü/, and /ű/. It is of only minimal value to write these relations in the form of a grammatical rule, such as:

/+round/	---	mild lip-puckering
/+round/	---	strong lip-puckering / _____
		+tense

Rather, such realization rules at the level of motor commands would be more interestingly formulated in terms of specifications of the actual nature and destiny of the neural impulses.

Let us consider some further aspects of the realization of distinctive features in Hungarian. Another articulatory consequence of the feature /+tense/ in the segment /á/ is the lowering of the jaw to permit more extreme backing of the body of the tongue. This lowering is pronounced and must be effected by a definite

command which is introduced by an articulatory rule. The lip-spreading which occurs in the front high vowels is also a result of the feature /+high/, but its degree varies with the feature /+tense/. Again, tension raises the position of all the vowels with which it is associated.

Another set of commands must realize the feature /+anterior/ through a pattern of bilabial movement in the case of /p/ and /b/, but through a set of labiodental movements in the case of /f/ and /v/. Although the phonological rule of nasal place assimilation made nasals /+anterior/ and /-coronal/ before labial consonants, it did not decide whether their articulation should be labiodental or bilabial. Here, also, articulatory rules must issue the correct commands based upon the nature of the following consonant. Thus, hamvas is pronounced /hamvaʃ/. As in English, the place of articulation of /k/ and /g/ varies from velar to palatal, depending upon the position of the following vowel. However, /l/ undergoes no such major modification. Within the coronal region, there are some small assimilations of place which are not covered by the phonological rules. Final voiced consonants show a somewhat weaker voicing than their intervocalic counterparts. But here, again, if the pattern were phonological, the devoicing would be much more noticeable. When a long consonant occurs in any position other than intervocalic,

it becomes shortened by the following rule, although
it may still retain somewhat more than normal length:

+long \longrightarrow less long/ except in the env.

[+vocalic] — [+vocal]
[-conson] — [-conson]

3.2 Evaluation of the model against utilizational data

The utilizational aspects of the suggested model could be verified through evidence from psycholinguistic experimentation and from continued study of the neurological bases of language. At present our knowledge of the actual facts of language processing is confined primarily to peripheral mechanisms, although the study of central processes is beginning to develop. Perhaps we can give some examples of the kind of evidence that would be helpful here. A further explication of the nature of neural transmission could indicate that the hypothesis of a scanning mechanism is either tenable or untenable. Such a hypothesis would require a display capacity that should have a demonstrable neurological presence. Similarly, the psychological status of distinctive features has been a subject of some investigation (Miller and Nicely, 1956 and Wickelgren, 1966). Similarly, chronometric experiments should be able to test for the reality of the proposed separation of information levels. However, rather than devoting our attention to the possible outcomes of unborn investigations, it seems more advisable to study one or two aspects of the utilizational model in terms of available evidence on language function. The two aspects we have chosen are bi-directionality and monitoring.

3.21 Bi-directional utilization of the structure

In section 2.22 we suggested that rules could be used bi-directionally on all levels, save those of articulation and acoustics. In this regard, the present model differs significantly from the Logogen Model of language utilization proposed by Morton (1964a, 1964b, 1970, and 1971). Morton and Smith have applied the Logogen Model to facts of language acquisition (1971), seeking to explain differences between comprehension and production as the result of a basic separation of the acoustic and articulatory representations of any given Logogen (what we call a lexical item). Recognizing the role of motor control and motor information in the extraction of acoustic features during the babbling phase (p. 12-13), they nonetheless hold that such relations are of minor importance in later language utilization.

Although we agree with Morton and Smith's position regarding the separation between the processes of the Auditory Analysis System (AAS) and the Articulatory Production System (APS), we would hold that this separation need not extend beyond the lowest linguistic level. It would appear that the child language phenomena upon which Morton and Smith base the proposed separation between the two systems can also be explained either as the result of separation on lower levels, or as a product of differences between recall and recognition processes.

Let us take, for example, the oft-mentioned case of the child who says /fis/ for fish, but objects to the adult's imitation of his mispronunciation by saying, "No, fis!" First, it appears that this child has no problems in either utilization of acoustic rules or recognition of phonological features. But the child seems to lack the ability to realize the /s/ - /š/ distinction through phonetic rules. We may attribute this to problems in mapping distinctive features onto motor commands. If this is true, we may then ask the question: "Is the child monitoring his speech and, if so, on what level is he monitoring it?" This particular phenomena suggests that the child monitors his own articulation more heavily than he monitors his own audition. Such monitoring of articulation could occur on the level of motor commands. In view of the likelihood that monitoring efficiency decreases with delay, monitoring of motor commands would be more efficient than monitoring of the acoustic perceptions of the articulation reaching the central processing areas some time later. It is common that, when we first hear our voices on a tape-recorder, we are quite surprised at the true nature of our voice quality. This might be a result of the relatively minor importance we assign to monitoring of the acoustic signals we produce.

The /fis/ - /fiš/ problem could be alternatively

explained as the result of higher level problems in recall which do not extend to recognition, but such an explanation seems less likely in the present case. In general, the examples of the difference between comprehension and production presented by Morton and Smith do provide evidence for peripheral separation of auditory and articulatory processing and the minor role of auditory monitoring, but more evidence would be needed to support a separation between the articulatory and acoustic representation of a lexical item.

Another model which seems to require separate encodings for the articulatory and acoustic images of words is the syllable-based model of phonological learning proposed by Moskowitz (1971). Moskowitz theorizes that the child begins language-learning by acquiring a syllabary. The units of this syllabary, the syllables, are used alone or in combination to represent lexical items. Moskowitz's discussion centers upon the articulatory role of the syllable; but we can only assume that the syllable, in her model, is also the unit of acoustic analysis. Moskowitz's reviews of diary studies from Burling (1957), Leopold (1947), and Velten (1943) turn up good evidence for some kind of important role played by the syllable in language acquisition, and in section 2.322 we propose that this role is derivative of the importance of the CV syllable in babbling. On the other hand, there is little evidence which argues unequivocally for the syllable as the unit of encoding, rather than as the units of articulation or of audition.

Both the Logogen Model and the syllable-based model of acquisition seem to make the relation between articulation and audition much too arbitrary. Given that the child's first experience with a lexical item is acoustic, we may assume that, in the syllable model, he would first encode a lexical item in terms of completely unanalysable acoustic syllable-units. The child might wish to articulate this lexical item, but would have no way of knowing what articulatory unit to pair to the acoustic unit. If, on the other hand, the child is able to relate acoustic impressions to the impressions derived from articulations, the transfer of information at the lexical level becomes possible. In section 2.322 we suggest that a model based upon superimposition and the early isolation of distinctive features provides the required dimension along which articulation and audition may be related. In point of fact, Morton and Smith recognize that their separation between the articulatory and acoustic encodings of a word may require some modification; and Moskowitz realizes that phonological relations play some not entirely well-specified role* in the contrasts involved in early words

* Moskowitz holds that distinctive features are the end-product of sound learning which begins with intonational aspects of the entire sentence, moves on to the construction of a syllabary, works out a set of allophones, unites allophones into segmental units, and finally synthesizes distinctive features. Thus, the sequence

of the form $C_1 V C_2 V$.

(footnote continued)

proposed by Moskowitz differs fundamentally from what we suggest in section 2.32 in that our model postulates acquisition during babbling of a set of distinctive features which serve to coordinate the child productions with the somaesthetic and acoustic effects they produce. Moskowitz holds that evidence for the dominant role of the syllable in encoding is provided by the supposed fact that metathesis only occurs within the syllable. The examples of metathesis in Hungarian reviewed in section 3.44 of Part II show clearly that metathesis occurs frequently across syllable boundaries.

Despite these differences between Moskowitz's model and the present model, there are significant areas of agreement. Both models view syllables as important data sources. In Moskowitz's model, syllables eventually provide data for the extraction of distinctive features. In the present model based upon superimposition, syllables perform this function during the babbling period. During later development, syllables act as the units of articulation and audition and stimulate the formation of articulatory and acoustic rules. Moreover, both models attribute major significance to the sifting action of memory in preserving basic, salient features and discarding secondary aspects.

3.22 Monitoring and hesitation phenomena

Another area in which specific aspects of the proposed model can be compared against data on language utilization is the area of monitoring and hesitation phenomena. By looking at various aspects of the distribution and composition of hesitation pauses, we can make inferences about the nature of the monitoring processes which produced them. One of the more controversial aspects of the model of speech monitoring proposed in section 2.215 is the claim that monitoring may serve more than one cognitive purpose. In the vast majority of the research into hesitation phenomena, the function of the filled and unfilled pause as devices for gaining time has occupied the center of attention. However, there is reason to believe that some hesitation phenomena may also serve the function of correcting errors already generated, but not yet articulated.

Lounsbury's (1954) account of hesitation phenomena was based upon an information-theory model of language structure which saw sentence-structure as governed by transitional probabilities. According to this simple model, pauses should occur at points of low transitional probabilities. Goldman-Eisler (1958) and Tannenbaum (1965) found that words following pauses were difficult to guess. Henderson et al. (1966) found that 54% of all pauses occur at junctures in constituent structure. However, Taylor (1969) found that it is not so much

structure as content which determines pause distribution. This view is in harmony with Goldman-Bisler's notion of pauses as signs of delays in lexical encoding.

The present model seems to explain many of the facts regarding pause distribution. In the terms of that model, lexical encoding is clearly the most time-consuming aspect of utilization, since tactic rule sets at any given level are severely limited in number and apply to quite specific structures. The lexicon, by comparison, is immense. Moreover, coordination of lexical decisions in terms of avoiding over-lap of lexicalized material requires continual monitoring. Given these characteristics of the model, the occurrences of pauses before difficult lexical items is easily explained. In section 2.131 and 2.133 we note that semological structure reflects certain aspects of what has previously been considered as phrase-structure. As we further note in section 2.212, the expansion of semological structure through topicalization and focusing during lexicalization further requires that each NP be fully developed before the next is lexicalized. In this way, the surface structure should show pauses where one NP has been fully processed and lexicalization is just beginning on another NP or VP; In this way, the occurrence of pauses both before difficult lexical decisions and at grammatical junctures is seen as a result of the nature of the lexicalization process specified in the present model.

Wilkes and Kennedy (1970) found marked pauses between the subject and the predicate in passive, as well as active, sentences. The presence of such pauses confirms our view of the subject of the English sentence as the topicalized element. As a topicalized element, the subject should be readily available and not require lexicalization. On the other hand, the material following the topic may well be new and require a delay in processing. This effect is even clearer in Hungarian where the pause after the initial topic is specified as a stylistically correct device for emphasizing the "givenness" of the topic.

Finally, evidence for a basic functional division between various hesitation phenomena appears in a forthcoming study by MacWhinney and Osser in which thirteen different hesitation phenomena were recorded in speech samples from four- and five-year-olds. The correlational analysis showed that sex and social class differences could be accounted for by the differential use of either a slow, deliberate, polite, speaking style or a rapid, careless speaking style. Parts of this analysis are confirmed by the results of a study by Hawkins (1973). The functional division here corresponds to the distinction between hesitation phenomena which allow time for selection or incubation of information and those which allow time for correction of errors in information. This is an important aspect of the model proposed in section 2.215.

3.3 Evaluation of the model against acquisitional data

The rest of this work is devoted to the evaluation of the proposed psycholinguistic model against the relevant data on language acquisition. In order to conduct this evaluation, it will be necessary to extract from the model a set of predictions regarding the course of language development. Enumeration of some of these predictions will be our chief concern in section 3.31 below. In section 3.32 we evaluate some of these predictions against a set of data on acquisition of Hungarian morphological rules obtained through a test similar to that used by Berko (1957) and Bogoyavlenskiy (1957). Part II is a digest of previous research on the ontogenesis of Hungarian. The major results of the Hungarian research are compared with the predictions of the proposed model. Finally, in Part III, we present the results of our own observations of the free speech of two Hungarian children and evaluate our findings in the light of the model.

3.31 Predictions derivable from the model

Prediction #1:

Elements and rules of either rare occurrence or exceptional complexity should be acquired late, while common, simple elements should be acquired early. The formation of categories and the establishment of transformations should be susceptible to detailed description through the model of systematization based upon superimposition and rule-formation. The operation of superimposition requires the presence of a sufficient number of input items. For this reason, rare features or rules would not be picked up at an early point. In order to make this prediction more specific, we must examine individual rules and observe how they might be acquired through superimposition. Such an analysis is conducted in section 3.32.

Prediction #2:

The general course of language learning should illustrate a movement from -etic (semetic, phonetic) to -ological structure.

Prediction #3:

Categories relating events in a given modality should be learned before categories relating events across modalities. We might note that Eimas et al. (1971) have found that one-month-old children illustrate some perception of acoustic categories.

Prediction #4:

From the earliest stages, the child should store his impressions of events in the form of amalgams. The presence of these amalgams, whether they be intra-modal or inter-modal, should be detectable through stereotypy of response.

Prediction #5:

The impact of adult articulations upon the child's early babbling should be minimal. Researchers at the Haskins laboratories (cited by Bever in Huxley and Ingram, 1971:163) have found that coordination between voicing onset and the release of the tongue in a plosive consonant is not yet differentiated across language communities in the speech of children younger than eight or nine months.

Lenneberg (1967:139-140) has noted that there is little difference in the vocalizations of deaf and hearing children up to six months. However, even from three months, the deaf show less interest in babbling. These divisions mark times of coordinations with audition.

Prediction #6:

Turning now to the time of the acquisition of the first words, we would predict that the phonetic structure of the early words would be rather severely limited by the "primitive phonotactic tendencies" mentioned in section 2.32. We are not alone in making such a prediction, and evidence for tendencies towards simplification in early child language is continuing to accumulate. Stampe

(1969) has enumerated some of these tendencies and Ingram (1971) has also made observations pertinent to this question. As we have stated earlier, we believe that it is a mistake to compare such tendencies towards simplification motivated by inability to coordinate the vocal apparatus with the rules of adult phonotactics.

Prediction #7:

Early articulations should be based not simply upon articulatory limitations. Olmstead (1966) seeks to explain "learning, measured by correct pronunciation of phones, as a function of ease of perception." The present model would treat errors in perception as one of the several input variables accounting for deficient articulations. Apart from the child's own limitations, we must remember that the input to the child may be degraded by noise and defective articulations. A second factor determining the nature of the impression finally stored by the child is the possible existence of deficiencies in the distinctive feature set used to code features of the input. We must remember that the distinctive feature set was first analysed from the child's own articulations and may not correspond entirely to the set needed to process adult articulations. A third factor determining the nature of the impression finally stored by the child involves the limiting effects of short-term memory. If the capacity of this memory is limited to around seven

chunks of information. (Miller, 1956), the retention of seven distinctive feature might only be enough to encode three or so features for two segments. Older children may develop perceptual strategies to extend the effective capacity of short-term memory.

Thus, the model predicts that explanations of child articulations based solely upon the model of articulatory limitations will prove insufficient and that among other factors which will need to be considered are acoustic capabilities, encoding deficiencies, and memory limitations.

Prediction #8:

If short-term memory has the important limiting effect suggested above, the child will need to make use of closure techniques to fill in missing feature information in lexical encodings. In the absence of information or a closure technique, a feature should revert to its neutral value, i.e. the value which realizes /Ofeature/. One of the most common closure techniques is assimilation, through which information is inserted from neighboring sounds. Assimilation usually works between the two most similar segments in a short word to modify one in the direction of the other (see section 3.43 of Part II).

Prediction #9:

This model predicts, together with Slobin (1970:5), that the course of acquisition of semological features could be studied as a part of general cognitive development. Slobin (1970):3-4) cites examples from Ingram (1968), Bloom (1968), Gvozdev (1949), Cromer (1968), and Miller and Ervin-Tripp (1964) supporting the general principle that semantic structure is generally richer than the child's morphological or syntactic means of expressing this structure.

Slobin also makes the reasonable correlated assumption that the "rate and order of development of semantic notions expressed by languages are fairly constant across languages." Given such constancy in the development of semological features, we would predict that inter-linguistic differences in the order of acquisition of the linguistic devices to express these features would be a measure of the acquisitional difficulty of a given formal pattern. For example, marking of the notion /+patient/ through a syntactic pattern may be learned before marking of the same notion through a suffix.

Slobin proposes that "the criterion of emergence of a given semantic notion in development must be functional rather than formal." However, we believe that one of the values of Slobin's approach lies in the possibility

of making specific predictions about the order of emergence of formal devices, and then modifying the model in the light of the actual observations. On the other hand, data obtained for a study of the emergence of function, such as that now being conducted by Slobin and associates, may also be subjected to analysis for the effect upon acquisition of formal devices per se. In this sense, the two approaches are not mutually exclusive, but complementary.

Prediction #10:

The model precludes the possibility that early lexical items might somehow be devoid of meaning. For example, in the case of a language which marked the accusative in three different ways for three different formal word-classes (which were not semantically motivated, not even to the degree of gender-marking in Indo-European) we would not expect to find productive use of these markings without some evidence of awareness of the meaning of the accusative. In this sense, the sound-meaning relationship is a basic motive to lexical acquisition.

Prediction #11:

Confusions between lexical items, just as confusions between phonological segments, should involve a small number of erroneous features and a large number of correct features held in common.

Prediction #12:

The child should illustrate use of primitive

tendencies towards phonetic simplification and closure techniques before he indicates any productive use of phonological rules. Similarly, there should be evidence of the presence of semantic features and semantic rules before there are any signs of productive use of semological alterations.

Prediction #13:

Since the motive for the extraction of morphotactic rules is clearer and more pressing than the motive for the extraction of phonotactic rules, the former should enter before the latter.

Prediction #14:

All rules involving unification of substance should first be acquired as morpheme-bound rules operating across a one-dimensional paradigm. Rules established only through unification of context, such as phonotactic rules, should not illustrate any such preliminary stage. In the case of free morphotactic rules, this stage should be only a short-lived transition towards analysis across the two-dimensional paradigm. In the case of rules establishing categories, such as acoustic rules, the first versions of such rules may be those affecting particular values assumed by the category, i.e. frequency of a formant, in specific environments.

Prediction #15:

Syntactic rules should also first be acquired

in morpheme-bound versions. Schlesinger (in Huxley and Ingram, 1971:86) makes a similar prediction. Furthermore, stability of features should affect the sequence of acquisition of syntactic rules, since the model proposes that such rules are based upon semantic categories of varying stability in the utterance. Rules based upon features inherent to lexical items should be acquired first. Among the rules based upon non-inherent features, the most difficult should be those involving functional features, since these features are dependent upon subjective decisions made by the speaker.

Prediction #16:

The model also predicts that the child will attempt to acquire some bound-rules as free-rules. Such errors will occur principally in those cases where much of the output of the bound-rule could be generated through use of a free-rule, even through a few forms could not be so generated. Such an attempt will only occur when the child has sufficient amalgams relevant to the proposed rule to merit formation of a free-rule. In general, formation of a free-rule should require more input than formation of a bound-rule, since the latter is limited to a specific set of lexical items. For this reason, the stage noted in Prediction #14 above, during which a free-rule is only present as a morpheme-bound rule, may persist for some time when the free-rule is of exceptional complexity. However, errors in the use of free-rules should be very few.

Prediction #17:

The environments of rules should be richly specified at first. With progressive superimposition, irrelevant features should be deleted as not participating in the rule.

Prediction #18:

The discussion of section 2.3182 above leads to the prediction that there should be some correlation between early emergence of inflections undergoing morphotactic alterations and errors based upon the uncontrolled variation between these forms. Such a correlation would reflect the existence of two contrasting styles of morphotactic learning.

Prediction #19:

Violations of bound-rules will be attributable not so much to deficiencies in the rules or their operations, as to the fact that children have not learned to mark certain items as subject to those rules.

Prediction #20:

Over-generalizations of root forms which appear without inflection should exceed over-generalizations of root forms which only appear with inflection, since the former are accessible without the action of analysis.

3.32 An investigation of the development of the Hungarian plural

Since the original studies of the development of the productive use of suffixes by Berko (1957) and Bogoyavlenskiy (1957), there have been studies seeking to extend the original conclusions to other languages (Kernan and Blount, 1966) and other studies investigating additional aspects of English morphology (Anisfeld and Tucker, 1960) (Bellamy and Bellamy). Ervin (1964) reports on a study of twenty-four children between the ages of two and four, conducted with the collaboration of Wick Miller. By testing the same children at monthly intervals, Ervin and Miller were able to increase the precision of their observations regarding the sequence of acquisition of various aspects of the English past tense and plural for both conventional and nonsense words.

The present study extends testing for the development of productive morphology to Hungarian, the first non-Indo-European language studied in this manner. Like the study reported by Ervin, it examines a subject population significantly younger than that studied by Berko, Anisfeld and Tucker, Bellamy and Bellamy, Kernan and Blount, or Bogoyavlenskiy. In both this study and Ervin's study, testing of this younger subject population is facilitated by the use of objects, rather than pictures, as stimuli. A further characteristic of the present

study is the attempt to differentiate the effects of analogical formation from the effects of formation through productive rules.

3.321 Stimulus materials

Fifteen common nouns were each paired to a rhyming nonsense word which differed from the original only in terms of one or two distinctive features on one segment. The thirty stimulus words were each represented by figurines or real objects varying from two to four inches in height.

<u>Conventional Word</u>	<u>Meaning</u>	<u>Nonsense Word</u>	<u>Representation</u>
hajó	boat	fajó	space-man
virág	flower	firág	furry creature
hal	fish	gal	spider-octopus
könyv	book	önyv	buckle
bőr	leather	vőr	skeleton
pingvin	penguin	gvin	plastic arrow
pipa	pipe	piga	totem pole
csésze	teacup	szésze	rattle
kenyér	bread	kepér	ear-plug
kosár	basket	mosár	top/cone
tehén	cow	pehén	yellow creature
tükör	mirror	fükör	concentric circles
majom	monkey	kajom	space-man/spaceship
daru	crane(bird)	taru	rocket/shuttlecock
ló	horse	gó	bow (archery)

3.322 Procedure

Two months before the testing began, an initial test was conducted with three boys and three girls of the age-group in question to determine whether all the conventional words were within the vocabulary limits of this age-group. The children demonstrated their knowledge of the names of the objects involved. In addition, the children were asked to provide names for the objects later designated by nonsense words. In no case was there any agreement on what the object was, although the children were quite imaginative in assigning names to the figurines. This indicated that these objects were sufficiently unfamiliar to the children to serve as unknown objects.

The author was assisted in the investigation by Mrs. Ferenc Nagy, a worker at the nursery of the BOMI in Budapest. Together, we examined all of the fifteen children of the older nursery group, whose age ranged from 2;8 to 3;8. When the children were outside in the yard, one child who appeared to be in a cooperative mood was asked if he or she would like to come inside to play with some toys. During the warm-up, the child was invited to play with several figurines that were not involved in later experimentation. The figurines, together with a small house, were placed upon an imitation grass mat atop a table conforming to the child's height. A smock with a transmitting microphone was placed on the child, and recording of his vocalizations began. When the child seemed sufficiently comfortable,

Mrs. Nagy began to present the test items to him in random sequence. First, one figurine would be presented and named with words such as, "Look here, Éva, this is a fajó." The word was repeated as often as necessary until the child appeared to remember it. Then another figurine was presented with the words, "Now here is another one. Here is another fajó." The second object was given to the child and then the question was put, "What are those?" The correct answer to a question such as this would be the plural of the noun. In many cases, the plural was provided by the child at the first questioning. In other cases, it was necessary to repeat the question, or even to drop the item for the moment to return to it later in the session or at another session. Questioning was continued until the child either produced some form of the plural or modified the root in some attempt to form the plural. In this way, a nearly 100% response was received from this group of children.

It should be noted that the stimulus question mik ezek? "What are these?" contains front vowels in the second word, whereas mik azok? "What are those?" contains back vowels. At first, it appeared that it might be necessary to control for the possible effects of the harmony in the stimulus. However, it soon became obvious that no such control was necessary for the simple reason that children made nearly no errors

in regards to front-back harmony. The effect of inter-item associations and item position was controlled by presenting the items to each child in a different order. This meant that nonsense words sometimes preceded and sometimes followed the words from which they had been analogically formed. However, the possibility of analogical formation was increased by the fact that children often gave no reply to nonsense items, and that these items were therefore repeated later in the test session. We should note, however, that the theory of analogical formation, as usually stated, does not require that the base form be presented immediately prior to the action of analogy.

To supplement the results from the fifteen older children, three younger children were also tested. These subjects included a boy aged 2;1,25, a girl aged 2;5,10, and another girl aged 2;8,0. (the latter being somewhat slower in language development). Although the materials used with these children were identical with those for the older children, and although recording techniques were also held constant, it was not possible to require that these younger children remain seated at an experimental table and focused upon the task. Instead, it was necessary to follow them about the room and present the items to them whenever they seemed ready and willing to respond. With this method, nearly complete results were obtained from the young boy (this is the child Zoli whom we study in Part III). However, the young girls

were unable to form plurals for many of the nonsense items. This fact coincides with the finding of Ervin (1964) that the added unfamiliarity of nonsense words leads to a delay in their inclusion in morphological rules.

3.323 Rules governing the formation of the Hungarian plural

In section 3.13 above we observed that the suffix forming plurals of Hungarian nouns is concurrently productive member of Suffix Type 4. The various forms assumed by the plural are -k, -ok, -ek, -ök, and -ak. The distinctive feature representation of the plural is:

± segment 0 consonantal + vocalic ± round ± back ± high 0 long	+ segment + consonantal 0 vocalic 0 round + back + high 0 anterior 0 coronal 0 long
--	---

In other words the plural has a /k/ preceding by a vowel with four ambiguous features. Each of these four ambiguous features must be resolved by a phonological rule bound to the appearance of the feature in question. The rules relevant here are the three harmony rules and the rule of initial vowel insertion A. (All the rules discussed here are spelled out in section 3.133 above.) The plural also provides an environment for the root alterations of types 1 and 2. This means that the rules of vowel-lengthening, internal vowel deletion, vowel shortening A, v-insertion A, vowel-lowering, and u-insertion will all be activated before the plural if the root is of the required shape. Of these various rules, only

vowel-lengthening is free. However, if all the items of CVCVC structure in the child's lexicon are of the deleting pattern, the child may treat internal vowel-deletion as a free rule.

The evidence of Parts II and III suggests that the plural is among the earliest suffixes acquired by the child. However, several other suffixes which are acquired at an early stage are also subject to either the harmony rules or initial vowel insertion or all of these rules. Thus, learning of the alterations required for formation of the plural is an integral part of similar learning which is proceeding at the same time with similar suffixes. By studying the child's use of these rules in the context of the plural, we are simply selecting an area for the observation of the functioning of some fairly general processing strategies.

3.324 Strategies in plural formation

Given the thirty singulars of section 3.321 as stimuli, we might ask, "What strategies must the child utilize in order to respond with well-formed plurals?" Traditionally, students of child language have explained morphological formations produced by children as the results of the operation of at least one of three processes: imitation of adult patterns through rote-memorization, limited or "rhyming" analogy, and extended analogy or rule-operation. Let us examine the status of these

alternative proposals.

3.3241 Imitation or rote-memorization

The simplest explanation for the production of plural responses is that the child has each plural fully encoded in long-term memory. According to this explanation, the form lovak "horses" has been perceived in adult speech, memorized by the child, and encoded as a retrievable unit. It is clear at the outset that the plurals of the nonsense forms in section 3.321 could not conceivably have been produced through such a process, since they never occur in the primary linguistic data, and since the process of imitation, taken alone, is incapable of going beyond the primary linguistic data. The success of this explanation in predicting the responses for the conventional items of section 3.321 will be reviewed in section 3.3271.

The psychological theory which relies most heavily upon the process of imitation in its account of behavior is S-R theory, as propounded by Skinner (1957) and Mowrer (1960).

3.3242 Limited Analogy

Limited analogy is taken here to refer to the production of a new construction from an old known base by treating that old base as equivalent to some other base for which an altered form is already known and which can serve as the model for the structure of the new construction. In the Berko test, we might imagine that the plural of wug is formed on analogy

with the pair rug - rugs.

$$\text{rug} : \text{rugs} = \text{wug} : \text{wugs}$$

The Berko test requires a prediction along the phonological dimension; it is assumed that the child has been able to extract from the instructions that he is to form the plural of wug. The condition for the completion of an analogy which predicts new forms is that a complete analogy must be present along one linguistic dimension in order to make a prediction based upon limited analogy of a form on a related dimension. In the particular case of wugs, we must know that

$$\begin{array}{l} \text{mA} : \text{mA}' = \text{mB} : \text{mB}' \\ \text{sA} : \text{sA}' = \text{sB} : \text{sB}' (\text{X}) \end{array}$$

Here the symbol (X) denotes the predicted form and may replace any term in the analogy. However, only one term may be unknown. In the case of our example, A would be rug and B would be wug. The letter "m" stands for meaning and the letter "s" for sound. This reflects the union of sound and meaning in the linguistic sign. The colon represents the action of a comparator which might be best understood as a very simply form of the process of superimposition of section 2.318. Superimposition must act to compare the elements to each side of the colon; the extracted difference or distillate must equal that isolated on the other side of the equation.

At this point it might be instructive to note that

the psychological theory placing the greatest emphasis upon analogy is the Stimulus Discrimination Theory proposed by Gibson (1940), which may be viewed as an extension of mediational theory (Hull, 1943) to verbal learning. Gibson suggests that paired-associate learning can be understood as a process of stimulus discrimination; where discrimination is not successful, stimulus generalization will occur. Analogies can be viewed as instances of stimulus generalization. Kintsch (1970) observed that Gibson's theory lacks a specification of the dimension or stimulus continuum along which stimulus generalization should occur.

The problem of specifying the relevant stimulus dimension is particularly evident in any attempt to explain morphological formations as analogies. Given the singular fox, how does the child know that an analogy between fox and dock is incorrect, since it would result in the plural /fakss/ on the basis of the analogy /faks/ : /fakss/ = /dak/ : /daks/? Or, for that matter, how does he know that analogy with the rhyming word ox is incorrect, since it would produce foxen? If analogy were to be used as a standard approach to morphological formations, and not merely as a means of achieving ad-hoc solutions, it would require so much further specification that it would begin to

resemble formation through extended analogy or rules.

However, there is some evidence that analogy, as an ad-hoc solution to certain tasks, may function in a limited manner. One such ad-hoc use could be the addition of inflection to nonsense words. Another such use may involve the attachment of inflections which are limited in co-occurrence to a specific set of roots, as discussed in section 2.3183. For example, Ohala (1973) asked his subjects to add the suffix -ity to the root define. One subject reports forming an analogy upon the pattern divine-divinity, but a second subject tells us that the only other word which came to her mind was infinity. Although the first subject quite probably engaged in a simple analogy, the absence of the verb infine from the English lexicon means that the second subject engaged in some process of deduction other than simple analogy. Perhaps /dæfɪnɪti/ was first produced through a phonological rule and then compared to existing lexical encodings of amalgams of a similar shape to double-check its accuracy. In this case the second subject only recalls the final verification process. Of course, other explanations are also possible with data of this type. In section 3.3272 we evaluate the contribution of limited analogy to the responses in the present experiment.

3.3243 Extended analogy (rules)

Linguists (Bloomfield, 1933:404-424, 275-277) generally understand analogy as a comparison between an item and a pattern, rather than a comparison of an item to another individual item. Unfortunately, examples of the action of such extended analogy are generally presented in terms of a comparison between two items. Let us cite some remarks from Saussure (1959:161) in this regard:

Analogy supposes a model and its regular imitation. An analogic form is a form made on the model of one or more other form in accordance with a definite rule.

The nominative form of Latin honor, for instance, is analogical. Speakers first said honōs : honōsem, then through rhotacization of the s, honōs : honōrem. After that, the radical had a double form. This duality was eliminated by the new form honor, created on the pattern of orātōr : orātōrem, etc., through a process which subsequently will be set up as a proportion:

$$\text{orātōrem} : \text{orātōr} = \text{hōnōrem} : x$$

$$x = \text{honor}$$

We have two objections to use of such analogical proportions to account for formation modeled in terms of a "definite rule." The most important objection is that statements of proportion fail to bring to light the exact nature of rules and conditions for the inclusion of an item in a pattern. One further objection to the use of the word analogy to refer to comparisons between an item and a pattern is that, outside of linguistics, analogy generally refers to comparison between two items. Failures to make the necessary distinctions lead to a certain imprecision in the separation between limited

or rhyming analogy between items and extended analogy between an item and a pattern. For this reason, modern writers have preferred to talk about rule-operation rather than analogical formation. For this point on, we will continue this modern separation: analogy will refer only to limited analogy, while rule-operation (or simply rules) will be substituted for extended analogy.

The essential difference between analogy and rule-operation is that, in the latter, the role of superimposition is much more extensive. The initial comparison of items for differences occurs in both analogy and rule-formation, but in the latter it applies to all items in the lexicon which can be subsumed under a basic set of comparisons. The difference extracted through limited analogy is most probably not stored in memory, but fades after being used to predict an unknown form. During formation of a rule, on the other hand, superimposition continues to work through the lexicon, storing comparisons and precipitating analysis and unification of items. For the details of this process, the reader should consult section 2.318.

3.325 A predicted sequence of strategy development

The major advantage of explanation through rules, as opposed to explanation through limited analogy, is its potential specificity. If rules are formulated to explain only one or two forms, they may be quite ad hoc; but, as the size of the data set grows, the choice of a given set of rules may become more well-motivated. The model of morphological analysis through superimposition which was developed in section 2.318 predicts that the acquisition of plural inflection by the Hungarian child should proceed along this general course.

Level I: Initial isolation of the plural suffix:

Strategy A: The first product of superimposition of attached ~~and~~ plurals should be isolation of the suffix -k "plural," since every plural item contains this final sound. For roots such as hajó, which simply add -k to form the plural hajók, it should be possible to begin consolidation of representations for at least the nominative and the plural at this time; other roots cannot be correctly consolidated at this point. Whatever semological learning is involved in the establishment of a plural morpheme is accomplished by the isolation of -k; the further task of refining the shape of the plural suffix should not be dependent upon further semological learning in any direct way. Strategy A may be applied correctly in the formation of items 1-30 of Table I in section 3.326 below (i.e. to all plurals).

Level II: Free rules

In section 2.319 we discussed a number of factors which may contribute to the early emergence of free rules. The theory of superimposition would predict that the child would learn the free rules affecting the plural before he would learn the bound rules involved in plural formation.

In section 3.133 we treated the rules of fronting-harmony and rounding harmony as partially-bound rules. It is, however, possible to formulate these processes as free rules. The environment remains the same as in the earlier formulation, but fronting-harmony is limited to vowels other than /é/ and /i/ and rounding-harmony is limited to high, non-tense vowels. The problem here is that formulation of these rules as free rules would require us to establish one form of each suffix as a basic form and it is not yet clear whether this is justified. On the other hand, it does seem that these rules function as free rules in the context of acquisition.

Strategy B: The rule of fronting-harmony is acquired quite early, since it applies to most common suffixes. This rule, which we shall refer to as Strategy B, may only apply to the plural in conjunction with Strategy E, since harmony cannot function upon the linking-vowel unless a vowel is inserted. Thus, although Strategy B is available by at least Level II, its coordination

with the vowel of the plural must await developments at Level III.

Strategy C: Strategy C, the rule of rounding-harmony, must also await the emergence of Strategy B at Level III. Although rounding-harmony is a free-rule, it only applies to vowels of the height of /o/, when these are in suffixes following the relatively infrequent group of roots which contains a front, rounded vowel in the final syllable. Furthermore, rounding-harmony occurs only at a close phonological distance from this final vowel of the root, and specification of this fact complicates the rule. For these reasons, Strategy C may emerge somewhat later than Strategy B.

Strategy C': The conditions of rounding of back mid-vowels are somewhat different. Since the language contains no unrounded back vowels in middle or high position, rounding of these vowels may be a corollary of the decision regarding their backness. Since this seems to be a part of the child's learning of the system of acceptable Hungarian segments, the feature /+round/ should be assigned through the operation of a phonetic rule or a redundancy rule (see section 3.133).

Strategy D: This is the rule of vowel-lengthening which lengthens final /a/ and /e/ before morpheme-boundary. This rule should apply to items 7, 8, 22, and 23 in Table I of section 3.326. Strategy D adds both length and

tenseness to /a/ and /e/, but acts differentially in regards to height (see Molnár 1969:20). While long /á/ (phonetically /a:/) is lower than short /a/, long /é/ is higher than short /e/. We believe that this fact is phonetic, rather than phonological. Like the addition of rounding to back-vowels through Strategy C', this part of Strategy D is affected by a phonetic rule. The fact that no child has been reported to produce tense /ɔ:/ as a lengthened form of /a/ (phonetic /a/) suggests that this behavior is acquired as an integral part of early learning of the system of Hungarian sounds. We may speak of this further strategy as Strategy D'.

The learning expressed in Strategy C' and Strategy D' is presumably quite early and may well proceed Level I. It is the ordering between Strategies B, C, and D which interests us here. The theory of superimposition predicts that Strategy B should be the first acquired, because it is simple in form, and because it applies to the majority of Hungarian suffixes. Strategy C, on the other hand, applies to a smaller group of suffixes and is somewhat more complex. For that reason, the theory predicts that it will be acquired later than Strategy B. Strategy D is about as complex as Strategy C, but differs in that its major application is in the modification of roots, rather than

suffixes. Unless a great amount of transfer is postulated between information abstracted from superimposition of several forms of a root to superimposition of other roots, the theory would predict that Strategy D should be acquired later than Strategy C. However, the nature of such possible transfer requires further consideration.

Level III: Partially-bound rules affecting suffixes

Strategy E: Having isolated the basic plural -k, the child proceeds to apply it to all available roots. The immediate consequence of this is a set of clearly unacceptable forms lacking linking-vowels. The child then begins to reapply superimposition to his amalgams in an attempt to extract information on the linking-vowel. Here he may follow one of two basic strategies. If he compares across the various amalgams containing a given suffix, i.e. across a set of amalgams with the plural, the child will be able to form a linking-vowel by superimposition of the various linking-vowels with which the plural occurs in different amalgams. This abstract vowel will have the ambiguities /± low/, /± round/, /± front/, and /± segment/; it will yield the vowels /a/, /o/, /e/, and /ɔ/. We would predict that learning of this strategy should be facilitated by the prior learning of Strategies B and C during Level II. These two strategies apply automatically to the linking-vowel of the plural, once it has been isolated. The new learning involved in acquisition of the rule of initial vowel insertion is the observation that the vowel is insertable :

following a final consonant on the preceding morpheme. Thus, establishment of the rule must be coordinated with the creation of the feature /± segment/.

Level IV: Partially-bound rules affecting roots

The following rules should be acquired in the order stated, since they apply to progressively smaller segments of the lexicon.

Strategy F: The child soon discovers that application of Strategy E fails to predict the occurrence of the low vowel /a/. (We assume here that few subjects in our population are acquiring the /e-/ɛ/ distinction). The most economical solution to this problem would be to code /a/ as the final deletable vowel of roots in which it appears. If only the plural required linking /a/ after certain roots, there would be no economy in establishing a rule and a set of ambiguous representations; but the same linking-vowel is required in front of quite a number of other suffixes. Therefore, superimposition is able to apply to the various inflected forms of a given root and analyse the root from the suffix, while coding the linking vowel as /± seg/ and establishing a coordinated rule of final vowel-deletion which deletes this vowel unless the suffix begins with a deletable vowel. This rule applies correctly to items 5, 7, 19, 27, and 29.

This rule of final vowel insertion is not a part of the adult grammar described in section 3.13. Rather

it represents a transitional stage during which the encoding of necessary information upon roots of Root Type III is accomplished. For a while Strategies E and F should compete, but eventually Strategy E should be modified so that the feature /± high/ on suffix vowels is regulated by the rule of height-harmony. If the child attempts to predict the linking-vowel only through the use of Strategy E, there will be free variation between /a/ and /o/ with the latter favored by ambiguity bias.

Strategy G: The rule of vowel-shortening affects all roots of Root Type V. Since it applies to a larger segment of early vocabulary than vowel-deletion, it should emerge somewhat earlier. The child may attempt to generalize this pattern into a free rule, and it is possible that, for certain types of CVCVC words, a free rule would be somewhat successful. On the other hand, it would be quite impossible to determine vowel-shortening in CVC or CV roots through a free rule. Items affected by Strategy G include 17, 19, 21, and 29.

Strategy H: Vowel-deletion should appear only somewhat after vowel-shortening; it applies to items 23 and 25. Although this rule cannot be accurately formulated as a free-rule, the child may attempt to treat it as one for some time.

Strategy I: Strategies of v-base modifications such as v-insertion as in items 27 and 29 and u-deletion in item 27 apply to only a few items and must enter quite late.

3.326 Results

The experiment yielded two types of data. The first type of data includes the response which represents for each child his or her best effort, i.e. that response which most closely approximates the adult form. In a minority of cases, children furnished no response (NR) for certain items, despite the fact that these items were presented several times. The second type of data we have collected relates to the self-corrections made by the child during the course of the examination. In general, the correcting forms are closer to the adult model than are the forms which they seek to correct.

Let us take a look at the best responses from each child in terms of the system of strategies outlined in the previous section. For any given production, we can talk about the set of strategies which may have played a part in its formation. Below each response variety, we code between parentheses the various strategies which are predicted to be relevant to the given formation. Each strategy is coded by its corresponding capital letter. Sets of strategies that should apply together are united by hyphens. Where there is reason to suppose that one strategy set is more likely to apply than another, that set is underlined. Finally, we should note that analogy is only included as an explanation where it is more satisfactory than any set of rule-strategies. As we have noted, analogy may be used to explain nearly all morphological formations.

Table III Plural Responses

Item	Adult Plural	%	Common Error	%	Other Error	%	Other	%	%NR
1) hajó	hajók	100	-	-	-	-	-	-	-
	Strategies: (A)								
2) fajó	fajok	84	-	-	-	-	-	-	16
	Strategies: (A)								
3) virág	virágok	94	-	-	-	-	-	-	6
	Strategies: (<u>A-B-C'-E</u> or <u>A-F</u>)								
4) fűg	fűgök	73	-	-	-	-	-	-	27
	Strategies: (A-B-C'-E)								
5) hal	halak	72	halok	22	hala	5	-	-	-
	(<u>A-F</u> or <u>A-B-E</u> or <u>rote</u>) (<u>A-B-C'-E</u>)				(<u>E</u> or <u>B-E</u>)				
6) gal	galok	67	galak	17	galo	5	-	-	11
	(<u>A-B-C'-E</u>)		(<u>Analogy</u> or <u>A-B-E</u>)		(<u>B-C'-E</u>)				
7) könyv	könyvek	83	könyvök	17	-	-	-	-	-
	(<u>A-F</u> , <u>A-B-E</u>)		(<u>A-B-C-E</u>)						
8) önyv	önyvek	55	önyvök	17	önyve	17	-	-	11
	(<u>A-B-E</u>)		(<u>A-B-C-E</u>)		(<u>B-E</u>)				
9) bór	börök	67	börök	5	börv	6	-	-	22
	(<u>A-B-C-E</u> or <u>A-F</u>)		(<u>A-B-E</u>)		(<u>B-C-E</u>)				
10) vör	vörök	73	vörök	5	vörv	5	-	-	17
	(<u>A-B-C-E</u>)		(<u>A-B-E</u>)		(<u>B-C-E</u>)				

Item	Adult Plural	%	Common Error	%	Other Error	%	Other	%	%NR
11) pingvin	pingvinek (<u>A-B-E</u> or <u>A-F</u>)	61	pingvink (A)	28	pingvingek (<u>A-B-E</u> and assimilation)	6	-	-	5
12) gvin	gvinek (<u>A-B-E</u>)	50	gvink (A)	17	gvinok (<u>A-B-C'-E</u>)	6	gik; gvingik (A and root deformation)	10	17
13) pipa	pipák (<u>A-D</u>)	89	pipak (A)	11	-	-	-	-	-
14) piga	pigák (<u>A-D</u>)	94	pigak (A)	6	-	-	-	-	-
15) csésze	csészék (<u>A-D</u>)	67	csészek (A)	22	csészé (<u>A-D</u> , suppression of A)	6	-	-	5
16) szésze	szészék (<u>A-D</u>)	50	szészek (A)	39	szészé (<u>A-D</u> , suppression of A)	6	-	-	5
17) kenyér	kenyerek (<u>A-B-E-G</u> , <u>A-F-G</u> or <u>rote</u>)	22	kenyérek (<u>A-B-E</u> or <u>A-F</u>)	67	kenyérc (A)	6	-	-	5
18) kepér	kepérek (<u>A-B-E</u>)	56	kepérc (A)	17	keperék (Analogy)	11	keperére (<u>B-E</u>)	5	11
19) kosár	kosarak (<u>A-F-G</u> , <u>A-B-E-G</u> , <u>rote</u>)	11	kosárok (<u>A-B-C'-E</u>)	56	kosárc (<u>A-F</u> or <u>A-B-E</u>)	28	kosárc (A)	5	-
20) mosár	mosárok (<u>A-B-C'-E</u>)	57	mosárc (A)	11	mosárc (<u>A-B-E</u> or <u>Analogy</u>)	11	mosáro mosára (<u>Analogy</u> or <u>B-E</u>)	5	-

Item	Adult Plural	%	Common Error	%	Other	%	Other	%	%NR
21)	tehén tehének (<u>A-B-E-G</u> , <u>A-F-G</u> , <u>rote</u>) (<u>A-B-E</u> or <u>A-F</u>)	33	tehének	56	-	-	-	-	11
22)	pehén pehének (<u>A-B-E</u>)	72	pehének	5	pehene (B-E-G)	6	-	-	17
23)	tűkőr tűkrök (<u>rote</u> , <u>A-B-C-E-H</u> , <u>A-F-H</u>) (<u>A-B-C-E</u> or <u>A-F</u>) (<u>A-B-E</u>)	6	tűkrök	83	tűkrök (A)	5	tűkrök (A)	5	-
24)	fűkőr fűkrök (A-B-C-E)	83	fűkrök	6	fűkrök (A)	11	fűkrök (B-C-E)	11	-
25)	majom majmok (<u>rote</u> , <u>A-B-C'-E-H</u> , <u>A-F-H</u>) (<u>A-B-C'-E</u> or <u>A-F</u>) (A- false analysis)	-	majmok	89	majok	6	-	-	5
26)	kajom kajomok (<u>A-B-C'-E</u>)	67	kajok	11	kajomo (A-false analysis) (<u>B-C'-E</u>)	5	-	-	17
27)	daru darvak (<u>rote</u> , <u>A-B-E-I</u> , <u>A-F-I</u>) (A)	-	daruk	89	-	-	-	-	11
28)	taru taruk (A)	83	-	-	-	-	-	-	17
29)	lő lovak (<u>rote</u> or <u>A-F-I</u>) (A)	17	lők	83	-	-	-	-	-
30)	gő gők (A)	94	-	-	-	-	-	-	6

Let us now take a look at the self-corrections and restatements furnished by the children. The forms, together with the strategies relevant to their production, are listed below. Asterisks indicate erroneous strategies.

Table IV: Self-Corrections

<u>Initial Form</u>	<u>Strategies</u>	<u>Second Form</u>	<u>Strategies</u>
1) könyve	B-E or F	könyvek	A-B-E or A-F
2) könyvök	A-B-E and C*	könyvek	A-B-E or A-F
3) bõrk	A	bõrök	A-B
4) borok	A-B-C'-E and *root incorrect	bõrök	A-B-C-E or A-F
5) bõrkök	*suffix double A on first suffix A-B-C-E on second	bõrek	A-B-E
6) vörõ	B-C-E	võrök	A-B-C-E
7) pingvink	A	pingvinek	A-B-E
8) pingvink	A	pingrisek	A-B-E and *blend (see below)
9) pingvink	A	gvingik	A and *root deformation
10) ginek	A-B-E and *root deformation	ginek	A-B-E and less root deformation
11) gvink	A	gvinek	A-B-E
12) pipak	A	pipák	A-D
13) pigá	D and *A suppressed	pipák	A-D
14) pigász	A-D and *suffix deformation	pipák	A-D
15) pigáik	A-D and *suffix blending (see below)	pipák	A-D

<u>Initial Form</u>	<u>Strategies</u>	<u>Second Form</u>	<u>Strategies</u>
16) csészé	D and *A suppressed	csécsék	A-D
17) csészek	A	csészék	A-D
18) kenyérek	A-B-E or A-F	kenyerek	A-B-E-G or A-F-G
19) keperék	A-B-E and *G incorrect or Analogy	kepérek	A-B-E
20) kosárk	A	kosárok	A-B-C'-E
21) kosára ^{SZ}	A-F and *suffix deformation	kosarak	A-F-G
22) mosáro	B-C'-E	mosárok	Analogy or A-B-E
23) tehének	A-B-E or A-F	tehenek	A-B-E-G or A-F-G
24) tükörök	A-B-C-E	tükörk	A
25) fükörö	B-C-E	fükörö ^{SZ}	A-B-C-E and *suffix deformation
26) kajók	A and *false analysis (see below)	kajomok	A-B-C'-E
27) daru ^{SZ}	A and *suffix deformation	daruk	A
28) lók	A	lovak	<u>rote</u> or <u>A-F-I</u>
29) goly ^k	A and *root deformation	gók	A
30) galok	A-B-C'-E and *incorrect root	gók	A

explanations:

item 8: pingvin "penguin" X tigris "tiger" = pingris

item 15: -k "plural" X -i "plural poss." = ik

item 26: kajom analysed as kajó + m, where m is "LPS poss."

Finally, we should note a piece of evidence which supports a theory proposing that on some level, at least, plurals are present as memorized amalgams. Thus, a boy of 3;5,0 was unable to lengthen the final /a/ of pipa, providing only pipak as a plural. But just a moment later this child said kérem a pipát "I want the pipe." In the spontaneous form the final vowel was correctly lengthened. Or a boy of 2;11,24 used the plural lovak in his own speech, but provided lók later on as a formal test response. This kind of information must be interpreted with care. We should not imagine that children only produce over-regularizations such as lók in the test situation, since the same erroneous forms are abundantly evident in their spontaneous speech. However, it does seem likely that the proportion of regularizations increases in the experimental situation for three reasons. First, the presence of a large number of other plurals may dispose the child to adopt stereotyped response strategies, instead of searching his lexicon for an amalgamated plural of the stimulus singular. Second, many amalgams may be members of higher level sequences or syntactic amalgams. In such cases their retrieval is only possible in connected speech. The third reason would seem to be the most important. Retrieval of amalgams may require presence of a large array of phonological and/or semological cues. The experimental situation with its figurines and comparative tension may fail to provide certain cues essential for retrieval of amalgams

or it may introduce factors that block some aspects of retrieval. When retrieval is blocked or unsuccessful, the child must resort to general strategies of plural formation and the percentage of regularizations increases relative to spontaneous data.

3.327 Analysis and Discussion

In section 3.325 we discussed the three major strategies that may play some role in the formation of the responses of the last section. In the present section we will analyse these responses in the light of the three major strategies in an attempt to evaluate their relative contributions.

3.3271 The contribution of rote-memorization

As we have already noted, it is clear that the strategy of rote-memorization or imitation (section 3.325) is of no value in the formation of the plurals of any of the nonsense words. Furthermore, the large percentage of non-standard plurals for those conventional words which require Level IV strategies (kenyérek-67%, tűkőrök-83%, majomok-89%, daruk-89%, lók-83%) shows that, even with items which may be presented to the child in plural form, only a minority of the forms should be accounted for as products of rote-memorization. Let us review the standard reasoning on this subject. Since the contribution of rote-memorization to the production of responses which are generally regularizations

or over-generalizations is demonstrably low, we argue that the contribution they make towards producing forms which are the results of the correct action of simpler strategies is also low. There is no reason to believe that rote-memorization should be of more importance in producing the response plurals to hajó (i.e. 100% hajók) than in producing the responses to lő. From the viewpoint of the strategy of rote-memorization, the only factor affecting difficulty of memorization should be phonetic complexity. In fact, we might argue that it is inherently less likely that a word which may be accurately produced by the action of rules (not analogies!) would continue to burden storage by remaining as completely unanalysed units.

In only a relatively few cases do we have fairly solid evidence of the operation of rote-memorization. For most of the meaningful items which elicited some adult plurals, there was also some response to the corresponding nonsense stimulus which was analogous to the conventional plural. Thus, we find a 22% response of kenyerek on item 17 and an 11% response of keperék on item 18. Four items show no such effect: items 23, 25, 27, and 29. Of these, both 25 and 27 never elicited conventional plurals. Only in items 23 and 29 do we find conventional plurals no accompanied by analogous nonsense plurals. If the plurals ttkrök and lovak were analysable or produced through the action of a set of strategies or rules, we would expect that the same set

of rules or the same pattern of analysis would apply to form fúkrök and govak. For this reason, there is some evidence that túkrök and lovak are produced through rote-memorization. In section 3.3274 we find reason to believe that rote-memorization may also be of some importance in a number of other well-learned plurals, such as halak "fish + pl." There we suggest that rote-memorized amalgams may serve to supplement forms produced through rules.

3.3272 The contribution of limited analogy

In Table III analogy figures as the best explanation of only five response types: galak, keperék, mosárák, mosára, and pehenek. As we noted above, analogy may be applied as an explanation of any morphological formation. However, its ad hoc nature and its lack of specificity both mitigate against its use when other explanations are also viable. In our data, it is the production of the low vowel /a/ as a linking-vowel and the shortening of vowels in the roots of nonsense plurals which are least well explained as the results of either rote-memorization or rule-operation. The general principle is that an alteration pattern which is lexically-bound cannot be extended to nonsense items, since marking of ambiguous features requires previous experience with the items in question. Just as failure to extend the pattern of the conventional plural to the homologous nonsense plural is the clearest evidence of the presence of rote-memorization, so extension of the pattern of lexically-bound modifici-

cations from the conventional plural to the homologous nonsense plural is the best evidence of the action of analogy. Judged in this way, the fact that there are only nine responses of this type in the entire protocol would suggest that the role of analogy in producing our data is minor.

Returning to the original protocols transcribed from each child, we find that, in the case of five of the nine putative analogies, the conventional word has been altered according to the lexically-bound pattern. What is interesting is that, in four of the nine cases, the conventional word was formed incorrectly (i.e. without vowel-shortening), whereas the nonsense word was formed according to the lexically-bound pattern. If we wish to claim that the child produces galak through analogy with halak, it is most disconcerting to find that the child's plural for hal is not halak, but halok. Yet it is precisely this which occurs in four of nine such possible analogies.

It is possible that pairs such as halok-galak or kosárok-mosárak can be accounted for through the operation of rules. In our discussion of Strategy F, we observed that a state of free-variation between /a/ and /o/ may exist for some time after the acquisition of Strategies B, C, and E. Although we would normally think of /a/ as a lexically-bound linking-vowel, it could also result from such free-variation. This free-variation would

account for the appearance of /a/ in galak, mosárak, and mosára. In fact, the latter two are imperfect analogies and it is even more likely that they are not analogies at all. In order to account for keperek and pehenek, we must begin by assuming that, at a certain point, the child tinkers of Strategy G as a free-rule. In this case, even nonsense items would undergo vowel-shortening, if they are of a certain shape.

3.3273 An analysis of the replacement sequences

It would be superfluous at this point to review the arguments of the preceding sections to illustrate the important contribution made by rules. Except for the forms túkrök and lovak, which seem attributable to rote-memorization, and the five forms attributable to analogy, all the plurals formed by our subjects can be viewed as the products of rule-operation. The precise combinations of rules relevant to each formation are listed in Table III above. For this reason, we will devote this section to the replacement data.

Attempts to explain the correction data of Table IV as operations based upon rote-memorized or analogized forms run into difficulties quite parallel to those reviewed in the preceding sections. Rather, it is necessary to take a closer look at ways in which monitoring (sections 2.215 and 3.22) interacts with morphological rules to produce the various corrections. Such an explanation of the correction or replacement data would

- hold that differences in performance at Time 1 and Time 2' could be attributed to at least three factors:
- A) The latency of some newly-acquired rules may be too large and result in their not applying to data that are quickly processed from one level on toward the next. Alternatively, rules may occasionally fail to apply because of limitations in computing space, although such limitations remain to be demonstrated;
 - B) Roots may become deformed in their phonological shape during retrieval; and
 - C) There exists the additional possibility that the three major strategies may occasionally alternate in application or even apply conjointly. In such a case, a sequence may be the result of accepting the results of one major strategy over another.

Turning to a more detailed analysis of the thirty replacement sequences, we find that the majority of them can be accounted for through factors A and B. Let us consider them individually:

- 1) In this sequence, Factor A, failure of rule operation, accounts for the production. At Time 1 Strategy A fails to operate; between Time 1 and Time 2 monitoring detects an error in the shape of the form könyve and calls for a repeat attempt at plural formation; at Time 2 Strategy A functions correctly and könyvek is produced. Across these two times there is a net increase in coordination.
- 2) It appears that correct production at Time 2 is the result of rote-memorization, while the earlier production

was a result of rule-operation. Thus Factor C seems to be at work here.

- 3) Factor A: The addition of strategies indicates increased coordination.
- 4) Factor B: Correction of the root-deformation leads to substitution of Strategy C for Strategy C'; there is a net increase in accuracy.
- 5) Factor A: Suffix doubling in this particular example must be a result of improper coordination of strategies, since börk could not be an imitation of an adult model. Although Strategy A applies twice at Time 1, there is a net increase in coordination at Time 2.
- 6) Factor A: The addition of Strategy A indicates increased coordination.
- 7) Factor A: The addition of strategies indicates increased coordination.
- 8) Factor B: Here there is a decrease in accuracy over time as the root pingvin "penguin" becomes blended with tigris "tiger."
Factor A: At the some time there is an increase in coordination through the addition of strategies.
- 9) Factor B: Deformation of the initially correct root decreases accuracy.
- 10) Factor B: There is some improvement in accuracy.
- 11) Factor A: Added strategies increase coordination.
- 12) Factor A: " " " "
- 13) Factor A: " " " "
- 14) Factor B: There is some improvement in accuracy.
- 15) Factor A: Here there is an interesting blending of the plural suffix -k with the possessive plural -i. The error here is not phonological, but semological and must be corrected by some recoordination on that level.

- 16) Factor A: The addition of Strategy A indicates increased coordination.
- 17) Factor A: The addition of Strategy A indicates increased coordination.
- 18) Here either of two factors may be at work:
 Factor A: Addition of Strategy G increases coordination.
 Factor C: The production at Time 1 is the result of rule-operation, while the production at Time 2 is the result of rote-memorization.
- 19) Like the previous sequence, one of two factors may be operative here:
 Factor A: The omission of the incorrect Strategy G would still result in a net decrease of coordination, or
 Factor C: The production at Time 1 may be the result of analogy, while the production at Time 2 may be the result of rule-operation.
- 20) Factor A: Added strategies increase coordination.
- 21) Factor A: Addition of Strategy G increases coordination.
 Factor B: There is an increase in suffix accuracy.
- 22) Factor A: The addition of Strategy A indicates increased coordination. In section 3.2152 we note that the /a/ of the second form may be attributed to analogy; but it is more probably a result of free-variation between /a/ and /o/.
- 23) as in (18) above
- 24) Factor A: The addition of Strategy A indicates increased coordination.
 Factor B: Although there is a deformation at Time 2, this is not a decrease in accuracy, since the segment was not present at Time 1.

- 26) Factor B: The root was falsely analysed from kajom through extraction of -m "1PS poss." At Time 2 this error was corrected and accuracy was increased. Although additional rules apply at Time 2, they could not have applied to the first root.
- 27) Factor B: There is an increase in suffix accuracy.
- 28) Factor C: It would appear that the first production in the result of rules and the second the result of rote-memorization.
- 29) Factor B: There is an increase in root accuracy.
- 30) Factor B: There is an increase in accuracy through selection of the correct root at Time 2. As in (26) above, the change in rule application is a consequence of the change of root shape.

We may conclude from this discussion of the replacement sequences that they can be best explained through an account that recognizes the important contribution of rules to morphological formations. Secondly, we may conclude that, in the overwhelming majority of instances, replacements increase either accuracy or coordination or both. In only three of the sequences do we observe a net decrease in information or accuracy.

3.3274 The sequence of rule acquisitions

In section 3.325 we predicted that the acquisition of Strategies A through I should occur in four stages. A full test of these predictions would require more data from more subjects in a much wider age-range. In addition, we would need information on more inflections and inflectional patterns, and we would like to study the effect of task and situational variables upon responses. Although we lack such extensive information, the data from the present study can give us some preliminary assessment of the validity of the predicted sequence.

First, it is clear that 11 children in the group tested have acquired Strategy A. Table III clearly illustrates that k-less plurals are rare indeed, and that the strategy with the smallest percentage of incorrect omissions is Strategy A. The fact that no child failed to provide the plural hajók, and that every child was able to supply a number of correct plurals supports the prediction of an early acquisition of Strategy A. Consistent failure to insert required linking-vowels was confined to the two youngest girls, aged 2;5 and 2;8. It appears that these two subjects had not progressed beyond Level I at the time of testing. The youngest boy, aged 2;1, but somewhat advanced linguistically, never failed to provide the linking-vowel

and showed productive use of Strategy D.

The present data cannot distinguish a child on Level II from a child on Level III. In order to distinguish these levels, we need to study the acquisition of suffixes such as -ban, -ben "inessive." Such suffixes illustrate the operation of Strategy B independently of either Strategy E or Strategy F. The reports of Part II section 5.41 indicate that the plural and the inessive emerge at roughly similar times. If they emerge contemporaneously, and if young children will respond to a Berko-question for the inessive, we should find that the youngest group uses the vowel-less -k and fails to adapt -ban, -ben for fronting-harmony, as required by Strategy B. A somewhat older group, however, will still have a vowel-less plural -k, but would adapt -ban, -ben for harmony; these children would be on Level II. A still older group would not only adapt the inessive for fronting, but would also insert a vowel on the plural. The extension of Strategy B to the vowel inserted by Strategy E should occur in a matter of days.

In the context of the present study, we observe that all the children who are on Level III have acquired Strategy B and the basic pattern of Strategy C. There is only one error in fronting-harmony in the data, and this error (gvinok for gvinek) occurs in an item

with a vowel that lies outside the vowel-harmony system. Acquisition of Strategy C' appears to be almost an automatic consequence of learning of the system of Hungarian segments. The largest set of errors in the use of Strategy C involves the three productions of önnyvök and könnyvök. These "errors" show that these children have acquired the rounding-rule, but that they have not yet learned that its application can be blocked after certain consonant clusters. Such learning of rule-context was even absent in some of the adult speakers. we examined. Apart from items 7 and 8, we find one case each of the erroneous forms börek, vörek, fükörek, and tükörek. Each of these errors derives from a different subject; their ages are distributed throughout the group. Because these errors are so sporadic, and because they may be related to attempts to isolate some of the more difficult aspects of Strategy C; it seems reasonable to conclude that all the children who can use Strategy E of Level III to insert linking-vowels have also completed the essential learning of Level II.

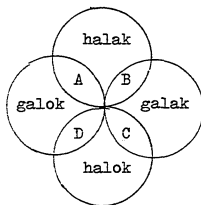
We may now turn to the question of the sequentiality of Levels III and IV. We predicted that Strategy E should be acquired before Strategy F; now we examine some consequences of a possible reversal of this order.

The items that are most useful in determining the order of acquisition of these two strategies are 5, 6, 19, and 20. Responses to the stimuli hal-gal and kosár-

mosár may illustrate four possible combinations of linking-vowels in patterns A through D below:

<u>Pattern</u>	<u>Conventional Plural</u>	<u>Nonsense Plural</u>
A	halak kosarak-kosárák	galok mosárok-mosarak
B	halak kosarak-kosárák	galak mosárák-mosarak
C	halok kosarok-kosárok	galak mosárák-mosarak
D	halok kosarok-kosárok	galok mosárok-mosarak

Equivalent with the above forms are responses with omit the -k, but include either an /a/ or an /o/ as a linking-vowel. Schematically, we may view these patterns as combinations:



Excluding the two younger girls who either failed to respond or provided responses with no linking vowel on at least one item of each pair, we may summarize the responses of the other sixteen children in this way:

Table V : Plural Response Patterns

<u>Age</u>	<u>Sex</u>	<u>Pattern on 7-8</u>	<u>Pattern on 19-20</u>
2;9,26	M	A	A
2;11,24	M	A	D
2;1,25	M	A	D
2;10,15	M	A	D
2;8,10	F	D	C
3;3,0	F	B	A
3;5,0	M	A	D
3;2,15	F	D	A
3;8,0	F	A	C
3;2,13	F	C*	D
3;6,0	M	A	D
3;6,0	F	B	D
3;6,15	M	A	A
3;8,7	M	A	A
3;3,13	M	A	D
3;2,12	F	A	A

*obtained on two separate days

If Strategy F were acquired before Strategy E, there should be a group of children illustrating exclusive use of Pattern B for the items presently under consideration. Pattern A is not predicted for children who use Strategy F before Strategy E, because the nonsense forms gal and mosár have no linking-vowel associated with them and the child who has not yet acquired Strategy E would have no means of inserting a linking-vowel by rule. Furthermore, Patterns C and D are not predicted

for children who might acquire Strategy F prior to Strategy E, since these children would be highly sensitive to the nature of the linking-vowel on conventional words and should make few errors in the height of this vowel. If Strategy F were operative without Strategy E, the plurals galak and mosarak would be formed on analogy with halak and kosarak. In fact, Pattern B is quite rare in occurrence, while patterns A and D are quite common. There does not seem to any sub-group of our subjects which illustrates acquisition of Strategy F without Strategy E.

Moreover, it appears that the bulk of the productions can be explained as applications of Strategy E. Use of Pattern D is a direct result of application of Strategy E of initial vowel insertion to all roots. However, optimal use of Strategy E would require that the child not analyse items such as halak and kosarak which cannot be correctly produced through its operation in its first shape. Children who have encoded such words as amalgams should produce Pattern A. Furthermore, these children have the option of producing a well-defined analogy on the basis of the rote-memorized amalgam; this would produce Pattern B. Only Pattern C is not predicted for children using Strategy E, since this pattern shows that the child has no amalgam to serve as the base of the analogy for the nonsense plural. For

children using Strategy E, the ratio of Pattern A + Pattern B / Pattern D is a measure of the strength of amalgamated codings of the conventional item. For hal the value of this ratio is $\frac{13}{2}$ (assuming that all subjects are actually using Strategy E) while the value for kosár is $\frac{6}{8}$. These figures reflect our intuitions regarding the relative strengths of the two plurals as amalgams for the children. The ratio of Pattern B / Pattern A seems to be a good indicator of the relative importance of analogy in production of the nonsense plurals. In the case of the plural of gal, this ratio is $\frac{2}{11}$; in the case of the plura of mosár, the ratio is $\frac{0}{6}$. These low ratios may be taken as evidence of the circum-spect functioning of analogy and the general importance of Strategy E.

In our discussion of Strategy E, we noted that this strategy may introduce a state of free-variation between /o/ and /a/ as linking-vowels. If the ambiguity bias (section 2.318) of /o/ over /a/ is reflected in a response bias of 3:1 in favor of /o/, we may extend our explanation to include the three occurrences of Pattern C which are not explained through Strategy E. With the 3:1 ratio, we derive predicted values for the occurrences of the four patterns:

<u>Pattern</u>	<u>Predicted Value</u>	<u>Actual Value 7-8</u>	<u>Actual Value 19-20</u>
A	3/16	11/16	6/16
B	1/16	2/16	-
C	3/16	1/16	2/16
D	9/16	2/16	8/16

The discrepancies in the values of A and D may be accounted for as the action of rote-memorization, as we have observed above in our discussion of Strategy E.

Strategy E seems to fit the data for these items more closely than Strategy F, which fails to provide a specific account of the occurrence of Pattern C. On the other hand, Strategy E is unable to predict the complete lack of linking-vowel /a/ in items 3-4 and 25-26. If free-variation is an active process, we should expect forms such as firágak and majomak.

In conclusion, it appears unlikely that any major segment of our subject population produces its responses through exclusive use of Strategy F. The data of the present study do not allow us to pinpoint the actual time of acquisition of Strategy F. Two types of data would help us in making this determination. First, we would have to study the formation of plurals across the root-paradigm (i.e. halam, halad, halat, halaim, etc.), while attempting to instruct the child in the shape of the linking-vowels of newly-learned roots. Here we might observe response latencies as a cue to the possible action of analogy vs. rules. Second, we might hypothesize a drop with age in analogies such as galak. If halak, the base of the analogy, becomes analysed; it might not be as fully coded as a rote-memorized amalgam and hence might be less available to analogy.

Responses such a kosárák (28%) and mosárák (11%), when taken in the context of the absence of responses such as kosarok and mosarok provide interesting evidence on several issues. First, they illustrate that Strategy F is available to at least some of the children. As we observed during our discussion of analogy, these forms are most likely the results of rules and not analogy. The forms most similar to kosár, such as madár "bird" shorten the second vowel in the plural, yet kosárák shows no such shortening. Attributing kosárák to an analogy with a word like halak vitiates the specificity of the explanation. For mosárák it is even more likely that the base of the analogy would be kosár, and again vowel-shortening would be predicted. The other explanation for the linking /a/ which comes to mind is the free-variation of Strategy E. It may be that some of the responses of kosárák could be attributed to free-variation, but we have already noted that Strategy E fails to predict the absence of linking /a/ in items such as #4. Alternatively, we may explain kosárák as a result of the action of Strategy F without operation of Strategy G. Within the theory of superimposition, we would postulate that the child producing this response had formed a consolidated representation for kosár-kosara which marks both the ambiguous length of the fourth segment and the ambiguous

presence of the sixth segment. For children at this stage, Strategy F has been isolated and may apply to the sixth segment; but the child is still acquiring Strategy G and is not yet able to apply it to the fourth segment. In this case the ambiguity bias of the fourth segment would operate by itself to produce /á/.

The sequence of items kosárk-kosárok-kosárák-kosarak, all responses to item 19, illustrates the sequence of rule acquisition we have been discussing. Kosárk uses only Strategy A from Level II. Kosárok shows use of Strategy E on Level III and presumes learning of Strategies B and C on Level II. Kosárák results from the application of Strategy F, the first rule of Level IV. By the time the child has acquired Strategy G, Strategy F is so well-learned that only kosarak and not kosarok is produced. In section 3.3242 we noted that the nonsense plurals keperék and pehenek may be taken as evidence of the operation of analogy. Alternatively, they may indicate that Strategy G operates as a free-rule early in its emergence. In fact, the high occurrence of pehenek in our adult responses suggests that something like this may be happening in the case of CVCVC words.

Subtracting for the contribution of rote-memorization, we find that less than a fifth of the children have

mastered Strategy G. Strategies H and I are still beyond their reach. As we noted in section 3.3241, the forms ttkrök and lovak must surely be amalgams. For the less frequent plurals majmok "monkeys" and darvak "cranes," even amalgams are absent.

3.328 Conclusions

Eighteen children between the ages of 2;1 and 3;8 were presented with a thirty-item test designed to study formation of the Hungarian plural. The test was built to maximize the possibility of analogical formations, but it was found that in most cases an explanation through limited analogy was not superior to an explanation which posited rote-memorization or rule-action. There was reason to believe that rote-memorization was of large importance in accounting for some well-known conventional plurals, but of lesser importance in accounting for less familiar conventional plurals. In any case, rote-memorization could not serve to explain the many non-conventional forms produced by the children. In order to systematically account for the bulk of the responses it was necessary to attribute children's behavior to the use of rules. The model for rule-operation consisted of four different levels, but some of the details of the sequence could not be fully tested by an examination confined to the plural morpheme. It was

found that all subjects had attained Level II of this sequence, and that only the two youngest girls had not advanced to Level III. A few members of the group had begun learning of Strategies F and G on Level IV, but no child had advanced beyond this point.

One of the results of this pilot study is the extension of the test form devised by Berko (1957) and Bogoyavlenskiy (1957) to a somewhat younger subject population and to an agglutinative language.

Part II

A Digest of Studies of Hungarian
Child Language Acquisition

1.0 Introduction

Workers in the area of child language research often are able to read publications in several major world languages, but one cannot reasonably expect all workers to have access to all languages in which research has been conducted. However, the growing interest in universals of language development makes increasingly relevant detailed knowledge about how children learn different languages. Hungarians have written over two-thousand pages on the subject of language acquisition by normal children; but only a small, unrepresentative fraction of this quantity has been published in English, French, or German (for all references to Hungarian research, see the second part of the Bibliography).

Therefore, we propose to review this literature in such a way that a digest of substantive publications will be available to English-reading scholars. Material pertinent to the fields of speech correction, musical training, literary development, and adolescent learning has been excluded, except where such material sheds light upon the acquisition of language by normal children. For the sake of consistency and brevity, the observations in the literature have been processed through the use of a fairly rigid classificatory system. The digest has excluded examination of theoretical discussions of child language, if they duplicate discussions available in the major languages. When phonetic facts are of no clear importance to a given issue, child pronunciations have

been regularized. Throughout, the major goals have been to report with accuracy the observations of the original text and to provide the researcher with information of maximum quality about learning of a language system different in many ways from those which have occupied the focus of research.

2.0 Nature of the Literature-- Historical Remarks

2.1 Early Observations 1800-1868

Throughout the first half of the 19th century, articles appeared mentioning the philosophical significance of child language. Unfortunately, these articles failed to initiate empirical examination of the subject. Mihály Falusi's Okos Gyermekek Nevelés Példája (1805) is an example of such early non-empirical treatments. Marton Nagy (1868) was apparently the first in Hungary to record observations of child speech. But Nagy's observations are few, incomplete, and unreliable, as Viktor (1917) noted in his review of the literature. Nagy claimed in 1868, as did Schultze in 1880, that the development of articulatory functioning begins in the labial area and moves towards the posterior oral cavity in successive stages, first including the teeth, then the tongue, then the palate, and so on. Nagy states that the child's first noun forms are in the nominative or unmarked case and that the first verb forms are in the indefinite conjugation. Data now available (sections 3.1 and 5.32) indicate that Nagy's claims require substantial modification.

Nagy reports the case (1868:13-14) of a child who was placed into a new environment just when he was about to speak. The child failed to adjust immediately to the

language of the new environment, speaking instead with the dialect peculiarities of his former environment and in particular of his former nurse. Nagy interprets these findings as evidence that the child had internalized a competence or inner speech based upon what he had heard in his earlier environment. Although the case has provocative implications, Nagy's observations are deficient in failing to tell us which dialects were involved in the transition, how they differed from one another, and how the dialects were reflected in the child's speech. Grammont (1902:74-80) reports a similar case of a French child who had a nursemaid who spoke French with a heavy Italian accent. The child was separated from the nursemaid just before she began to speak, but preserved aspects of her nurse's Italian accent up to the age of 3;0. Stern (1907:257-258) reports the case of a young German girl who lived in Silesia until 1;6 without acquiring much of the language of her environment. But three-and-one-half years later at the age of 5;0, this child used Silesian expressions which could only be explained as forms which had laid in storage for the intervening period.

In 1871 Ponori Thewrewk presented the first major collection of data on Hungarian child language in his article A gyermeknyelvről presented before the Society for Natural Sciences. Ponori interprets his data as

supporting a position which emphasizes the contribution of the child in the acquisition of language. He also adopts a formulation of sound development which later was to go under the name of Schultze's Law. According to this law, the chief determinant of the sequence of acquisition of sounds is the physiological ease of producing these sounds. In attempting to determine whether Ponori or Schultze was the actual originator, Viktor (1917) concludes that it originated with Mauritius. Jakobson, however (1968:21) cites Buffon as the first proponent of the position. Finally, András Vértés (1953:6) finds such a formulation in Julius Caesar Scallinger from 1540.

In addition to his formulations of the child's contribution to language acquisition and the physiological determination of sound development, Ponori takes the position that ontogeny of language in the child recapitulates the phylogeny of language in the culture. He notes patterns of child language similar to those of various Hungarian dialects, and he finds that child speech can tell us much about the origins of language. In the context of his advocacy of the child's contribution, he cites a number of child neologisms and errors, and he lists 45 Hungarian baby-talk words which evidence the effect of the child-based style of reduplication. Ponori's use of the term analogy anticipates the great importance

given to this process by Simonyi and others (compare Part I, section 3.3242). In focusing upon the deviant aspects of child utterances, Ponori set the tenor for the discussions of the next fifty years.

Between 1874 and 1898 Bánóczy, Ferenczi, Szivák, Kimmach, Németh, and Borcsa each related a number of baby-talk words gathered from various areas of Hungary. The data from these short reports are compiled in section 5.34.

The year 1893 marks the appearance of József Balassa's diary study of his son's speech development from birth to three years. Balassa's study is qualitatively different from those which preceded it and many which followed it. The thoroughness of this eminent linguist and his ability to focus upon the most crucial aspects of development may astound us even today. Although aspects of his reporting fall short of modern standards (section 3.2), his framework of analysis must have illuminated the work of the researchers following him. His examples are well-presented and clear. The basic material of his diary study is conveyed in his article of 1893; the articles published in 1920 present no new data, but examine theoretical questions in child language.

In 1898 Donner published a study of the language of a child between the ages of 2;4 and 2;6. The child had begun to speak only shortly before the beginning of this period. The report is really little more than an account of vocabulary growth, but Donner also notes the emergence of various function words and grammatical forms.

In addition Donner reports 131 sentences from this early period, which we review in chapter 6 below. Donner's reporting is asystematic and his data should be judged against this fact.

The years between 1905 and 1908 experienced the largest number of separate papers on Hungarian child language of any period up to the present. Ponori returned his attention to many of the questions he had outlined in 1871. Utilizing diary observations from his grandson Attila (Lili) gathered in the years 1902-1905 when the child was between the ages of 1;0 and 4;0, Ponori sought to demonstrate the extent of the child's contribution to language acquisition. Although Ponori cited many interesting neologisms, errors, and turned phrases, his exclusion of normative data and his failure to report the actual age at which each form was produced limit the value of his study. Csapodi's 1905 report of child forms also suffers from a failure to report the age at which forms were produced.

Simonyi's 1906 report of unconventional forms, although rather condensed, furnishes us with many well-reported and revealing child forms. Although Simonyi only contributed one article specifically focused upon child language, several of his other articles (1881:17 and 1883:16, for example) contain references to child forms. Simonyi's work of 1881 is of additional interest in that it formulates the then current linguistic interest in the process of analogical word formation. For Simonyi,

the various patterns of child errors are each paralleled by similar processes in adult language. Just as children, for example, produce word-blends (section 3.63), so do word-blends appear in etymological study. Simonyi attempted to explain most child errors as analogies. As we noted in section 3.3242 of Part I, linguists like Simonyi have often spoken of analogy without making the necessary distinction between limited and extended analogy. Although we may wish to modify or amplify Simonyi's explanations of certain errors, we need not object to the quality of his reporting of the data.

Jablonkay's 1905 diary study of his son between the ages of 0;11 and 2;3 focuses chiefly upon vocabulary development, but includes observations of the first uses of various grammatical categories. Unfortunately, these latter are generally unreliable due to the highly fragmentary nature of Jablonkay's reporting. Also in 1905, a somewhat premature attempt was made by József Vértés to summarize the general laws of sound acquisition by the Hungarian child. The major defects of this attempt were:

- 1) reliance upon data gathered from only the four or so Hungarian children who had been studied up to that time;
- 2) failure to clearly separate German and Hungarian acquisition patterns, treating the two sound systems as equivalent on some unspecified level;
- 3) failure to utilize Jakobson's distinction between phonetic and phonological development; and
- 4) treatment of the child's system as simply a defective version of the adult system.

Vértes's work is not alone in being subject to criticisms #3 and #4.

Kallós's 1906 report focuses upon semantic learning, reporting examples of several processes. Kardos's reports deals primarily with morphological errors. Several other articles from this year lie only on the periphery of the area of language acquisition. Náday reports on the slang of teen-agers from Pest. Eperjessy deals with the "experiential realm" of the school child, including in his work reports of a number of vocabulary studies. Eperjessy's failure to report the methodology of these studies makes this data for the most part unusable. The methodology of Eperjessy's diary study of a seven-year-old boy is reported in somewhat greater clarity, but Eperjessy's categories for the parts-of-speech are highly idiosyncratic and cannot be used to compare his data with that from other reports. Sárbo's work is the first major treatment of the subject of child language by a Hungarian speech therapist. Although the work relates no empirical data, it is of some interest by virtue of the quality of its theoretical discussion. Articles by Kardos, Trencsény, and Verő in 1908 continue the gathering of material on child errors.

Gerzson Endrei's 1913 report on language acquisition by his three children adds to the accumulating store of data on child errors. The examples are well-reported and valuable. László Nagy's "Propositions on Child Language" from the same year is based upon the observations of Endrei, Balassa, and the Sterns (1908). Not adding

new data of its own, this article attempts to generalize upon the course of language development by lumping together Hungarian and German data, rather than comparing these two data sets. Bakonyi's lengthy reviews of the international and Hungarian literature on vocabulary development and grammatical development published in the period between 1918 and 1921 suffer from a similar defect, although Bakonyi does consider a larger range of source data than did Nagy.

Viktor's 1917 work on child language is largely dedicated to an evaluative review of the international and Hungarian literature. Viktor's general approach to child language was distinctly advanced in its emphasis upon the need for simultaneous utilization of linguistic and psychological methodologies. Viktor's observations of Matild Kovács's development from 1;9 to 1;10,20 reflect his view of the independent systematicity of child speech. Viktor divides his nine weeks of observation into five periods; for each period he reports vocabulary development, imitations, and babblings. Viktor visited the child two or three times a week and observe two hours on each occasion. He tells us that his subject seemed somewhat retarded in development, perhaps as the result of frequent sickness in earlier months. This may help to explain the extraordinary quantity of babbling he reports at 1;10. Both the babbling strings and the elicited word imitations could be subjected to detailed

analysis, but the bulk of such work lies outside the scope of this digest. However, one must issue a cautionary remark here: Matild's speech was apparently fairly amorphous due perhaps to late learning of phonology. For this reason, Viktor was unable to establish the limits of many words and the lexicon he presents leaves us with many unanswered questions. Moreover, Viktor often listed transitory exclamations as words and his classification of utterances into parts-of-speech is often unclear or controversial.

Varga's 1921 study of his child from the beginning of speech at 1;4 until the age 1;7 focuses primarily upon vocabulary development. However, even the reporting of vocabulary development is incomplete and scarcely usable. Of Varga's observations of grammatical development, only a few are reported in sufficient detail to be included in our digest.

In the years between the World Wars small articles continued to appear in the Magyar Nyelvőr and Magyar Nyelv. Articles by Csűry (1929) and Kelemen (1933) dealt with patterns of formation of baby-talk words (section 5.34). However, most articles including those of Hamvai (1915), Vozáry (1918), Barcsai (1921), Zsidó (1928, 1931), Székely (1929), Szerető (1931), Jablonkay (1935), Jozefovics (1932, 1934, 1935, and 1937) and Kardos (1935, 1936) simply continued the reporting of child errors begun by Ponori, Balassa, Simonyi, Csapodi, Endrei and others.

As the reader may have begun to sense, the pace of improvement in the quality of child language study in Hungary definitely slowed in the years after 1913. Researchers turned their attention to vocabulary studies and reviews of earlier research. In the long period between 1913 and the 1960's, only one work stands out as a major contribution to child language research: Elemér Kenyeres's diary study of his daughter Éva's speech development from birth to six years of age. His study remains to date the most comprehensive picture of the development of a single Hungarian child. His observations extended into all areas of child language research; each observation is well-reported and Kenyeres seeks to relate each of his observations to general questions in acquisition. The results of Kenyeres's diary study appeared in two different forms in Hungarian (1926, 1928) and in a highly abbreviated form in French (1927). The latter version presents only the vague outlines of the Hungarian reports. A complete review of Kenyeres's work must be based upon consideration of both of his Hungarian reports, which overlap in only certain regards.

Kósa's 1936 study concerns itself with delimitation of the role of adult tutelage in language acquisition. In a well-documented review of the German literature, Kósa concludes that, although the ability to acquire a language rests upon a biological foundation, proper unfolding of

this ability requires presentation to the child of speech of a non-degenerated variety. The discussion remains theoretical throughout and no empirical evidence is presented.

Two other studies of this time, Dobos (1936) and Kováts (1937) have not been located at the time of writing of this review. Both studies presumably deal with vocabulary development. Kováts comparison of Hungarian and foreign studies is reported by Cser (1939); Cser suggests that it deals with material also covered in Cser (1939). Cser (1935 and 1939) reports on a large study of children between the ages of 10 and 14 in which the children were requested to write down rapidly as many words as they could. From the samples thus gathered, Cser compiled a dictionary of usage frequency. Cser's technique and the applicability of his results will be discussed in section 5.3.

Keresztes's 1940 dissertation on child language deals somewhat superficially with a great variety of topics. Keresztes's own observations of the speech of Hajnalka are reported rather unsystematically in passages scattered throughout the theoretical discussion.

Child language research in socialist Hungary has been of four varieties. The first variety has continued the tradition of vocabulary study and improved upon the techniques of vocabulary elicitation. Papers here have

included those of Csizmadia, Kemper, Szakács, Somfai, and Sugárné; their results are discussed in section 5.3. A second variety of studies has consisted of reviews of the general course of language acquisition. Thus, Kerékgyártó (1954) and Kanizsai (1955) expostulate the Pavlovian account of language learning, while Baranyai (1947a) reviews once again the findings of German students of child language. Kanizsai's 1954 report on speech correction also includes a theoretical discussion of the course of normal development. Each of these four articles confines itself to the theory of child language and presents no new material. A third variety of research includes articles by Baranyai (1945, 1947b, 1955, 1957, 1958a, 1958b, and 1959), Blaskovich (1959), Lénárt (1957, 1962, 1963), Lénárt and Baranyai (1951) and Baranyai and Lénárt (1959). This work examines the learning of grammar and composition by school-aged children and is discussed in section 7.

The fourth variety of research is that conducted from a more specifically linguistic vantage-point. Here we can cite Dezső's theoretical approach to early syntax, Fónagy's comments on age-differences in intonation forms, Kelemen's (1970) brief remarks on baby-talk forms, Meggyes's diary study of her two-year-old, Mikes's extensive work with phonetics, phonology, and acquisition of grammatical categories in a bilingual environment,

Molnár's review of research on sound acquisition, Lovász's results in a pilot study of cross-age comparisons in development, Szászskó's collection of compound and complex sentences, and Vértés's articles on the general course of acquisition. Although the information in Mikes (1964, 1967) was gathered in a bilingual environment, the results merit discussion in the present report. However, the findings related in Mikes (1968) are not clearly separated in regards to language and are correspondingly impossible to include here. Mikes (1970) outlines an analytic methodology for child language; as a theoretical discussion, it falls outside the province of the present review.

Meggyes's diary study of her daughter Márta occurred in the first months of 1965 between the ages of 1;9,20 and 1;11,21 in the first period and between 2;0,13 and 2;2,10 in the second period. In the pause between observational periods, the observer was ill. Meggyes also notes that, although Márta attended nursery-school from eight months, her frequent absences due to an asthmatic condition and the fact that she was an only child seem to have resulted in her learning relatively little from nursery school apart from some vocabulary items. Along with Kenyeres's work, Meggyes's observations represent the highest level of reporting on Hungarian child language.

Although her observations are confined to a short developmental span, they tell us much of general interest. Some of the material Meggyes presents in her fifth chapter on discourse has not been reviewed simply because it agrees so extensively with recent American research, while presenting little that is not familiar to the English-speaking audience. Among Meggyes's observations are: the pattern Márta illustrates of preserving content words in imitation (p. 85); ways in which Márta expands or deletes the model for imitation; the varieties of sentence repetitions, corrections, and expansion of which the child is capable; the ways in which speech-forms are situationally-bound; the expressive-emotive function of speech; the development of monologue; and the use of speech as an analytic device. At this point it is not clear whether we should expect that functional aspects of speech should remain constant from community to community; research such as that of Bernstein suggests that we might anticipate differences, but it is not clear where to look for them in any given milieu.

At the time of this writing, Ildikó Meixner has not yet published results from her detailed longitudinal study of seven normal three-year-olds, but she has kindly placed at my disposal complete transcripts from three of the children she observed, including the two children from which the largest amounts of data were collected.

From the records for Józsi (2;9,4-3;6,9), Emőke (2;11,15-3;2,23), and Pali (2;11,9-3;5,20) we have extracted all the errors and deviations in language use and included them in the general compilation of this digest. The errors from Józsi, Emőke, and Pali provide us with a kind of control lacking in earlier studies of child errors, neologisms, and "analogies": Meixner's transcripts are complete records of the child's speech production over a given time-span and include all errors made during this span in their true proportions. Earlier studies often reported few examples of common, but uninteresting errors, while focusing upon the most bizarre forms. By looking at the relative frequency of errors from Meixner's three children, we may make a more accurate appraisal of the comparative importance of different error-types. Similarly, the various errors gathered from one of our own subjects, Zoli, are included in the following digest. Like Meixner's data, the errors from Zoli are representative samples of their proportion in the child's speech and should report various error types in some roughly accurate proportion. However, my subjects were younger than Meixner's and were studied with the assistance of a tape-recorder.

Apart from the material in the intentionally excluded domains, I would estimate that somewhat more

than five percent of the material available in the literature has not been included in this digest; the grounds for such exclusions are incompleteness of reporting or interpretation. Additionally, we have not treated the handful of anecdotes and examples which purport to deal with comprehension and child thought as revealed in language. Although these questions merit extensive research, the data available in the literature serves merely to mislead us in our attempt to study these areas.

3.0 Phonetic development and the acquisition of phonological features

With the exception of Mikes, whose work (1964) focuses upon phonetic learning, Hungarian investigators have failed to recognize the fundamental distinction between phonetic and phonological learning. As Jakobson has claimed (1968:28),

.... the appearance of phonemes in a linguistic system has nothing in common with the ephemeral sound productions of the babbling period, which are destined to disappear.

Although Jakobson is probably right in assuming that the productions of early babbling have little to do with the phonemic system, it may be that the child's babblings just before the onset of speech begin to conform to certain speech patterns. But what is at issue here is the unfortunate failure of Hungarian investigators to state whether they propose that a given sound acquisition be judged a phonetic (babbling) acquisition or a phonological acquisition. Throughout this chapter we shall call attention to problems caused by this failure.

In the first section of this chapter we will discuss babbling and phonetic learning. Sections two and three will review reports of sound substitutions and examine their consequences for phonemic patterning. In the fourth section we will discuss the inter-segment relations of cluster simplification, sound insertion, assimilation, and metathesis. In the fifth section we

will consider data on the learning of stress and intonation and the effect of intonation upon the learning of the phonology of words. In the last section, our attention will turn to sound-meaning relations as evidenced by sound symbolism, klang-association, and word-blends. Thus, the first two sections are concerned with normative (i.e. non-error) data, while the rest of the sections review the implications of various error-types.

3.1 Pre-linguistic vocalizations

Investigators of early vocalizations have observed differing aspects of the child's behavior and their reports are comparable in only a few areas. It is, therefore, more interesting to review each of the reports separately.

Balassa (1893: 62-63) provides the first set of detailed observations.

Month #1: The first sounds are cries /oá, oá/. When happily lying in his crib, we hear long /á/ and /ê/ from the child, Iaci.

Month #2: In the tenth week /h/ and "some voiced consonants" appear intervocalically.

Month #4: Production increases, but the phonetic form is very unstable. Balassa attributes the appearance of /b,d,g,m,l/ as the chief consonants to the dependence of "mouth movements" upon the vibration of the vocal cords. However, /p/ and /h/ appear initially. At the end of the month, the uvular trill is frequent and the lingual and labial trills less so.

Months 5-6: Vocalization increases but it does not yet assume a syllable-like form. The labial trill is repeated for minutes on end. The consonants /j, k, n/ appear.

Month #7: Babbling begins in earnest and the syllable-form is clearer. New sounds include /v, w, ɛ, é, and â/. Some babbling structures: bábábá, dádádá, vávává, wáwává; later: tátátá, átá, ádá, átátá, and even dé, té. At the end of the month also these occur: tá, át, átá, dá, dádá and more rarely ɛdɛ, dɛdɛ, tátn, hátn, dɛdn. The child is still fond of the bilabial trill. Babbling "words" never exceed three syllables.

Month #8: New sounds: /gy/, /c/ and /k/, the latter only in /ki/. New sequences: ádá, ɛdɛ. With great joy the child "rediscovers" the uvular trill. His babbling expresses his emotions and he uses it to "reply" to speech from adults.

Months 9-10: New sound: the dentilabial π . New sequences: ká, gye, pápá, pápápá, kákáká, káká. Preferred sequences: té, ɛtɛ, tɛtɛ, á, tá, and tééé with an open é.

Month #11: New sequence: ágyá.

Month #12: When he wished to call a cat, Laci would use the adult form /czszsz/. This was the first purposeful use of a sound he had heard.

Viktor (1917) showed what an extraordinary amount of babbling can be produced by a child who already forms two-word sentences. Viktor observed all that Matildka uttered during some 40-50 hours. His report cites some 491 stretches of babbling groups; but Viktor notes that the material reported is only a sub-set of the total amount produced. The large amount of non-referential vocalization made difficult Viktor's analysis of vocabulary items, because he was forced to recognize a large number of babbling groups as interjections. Moreover, Matildka's words seemed to be particularly rich in extension of semantic domain.

Kenyeres (1928:15-16) reports his child's first sound as /eɔ/ at 0;1,1 said when watching a small flag flutter before her. At 0;1,8 she says sounds like /e/ and /gg/ while looking at the ceiling while being unswaddled.

Up to four months, the open /e/ is predominant in crying and babbling, although it occasionally tends towards an open /a/. In fourth month, babbling commences and /h/ is common when she is in a good mood, whereas /e/ is used in impatient expressions and crying. At 0;4,12 babbling groups include /aja/, /eje/, /a/ and /e/. Although absent from earlier babbling, at 0;5,7 /g/ is babbléd at length and the uvular trill is practicéd. At 0;6,6 Éva practices sounds close to /ʁ/. At the end of the six month and the beginning of the seventh, babbling appears in longer, less isolated, more melodic sound sequences such as: de, te, dádá, dede, te, tá, ata, abbe, tátátá, kádáje, evej. Vowels are more reminiscent of English diphthongs than Hungarian vocalics. The uvular trill and the /g/ reappear after several weeks of absence. In the ninth month babbling becomes very diverse and its forms are complex, variant, and highly melodic.

Mikes (1967) reports some detailed information concerning the acquisition of the phonemes p, m, t, and d by two girls observed in a bilingual Serbian-Hungarian environment. We can summarize the milestones in this acquisition:

	Eszter	Eta
first labial stops in sucking activities	0;2	0;4
first dental stops heard sporadically	0;2	0;4
labial trills appear	0;3	0;4
development of labial stops tied to trills	0;5-6	0;6-7
frequent dentals (also teething)	0;5	0;7
use of dentals for communication	0;6	0;8
labial stops clear but sporadic (some voiced)	0;6	0;7
frequent labial stops	0;7	0;8
use of labials for communication	0;9	0;10

Mikes concludes that in each of the groups there were developmental stages, and that the earlier developmental stages were determined chiefly by physiological factors. However, it appears that the development of dental stops generally precedes that of labial stops. Mikes seems to suggest that this is explained by the fact that occlusion at the tongue tip can be controlled before occlusion at the lips and that, whereas lip vibration is obtainable early, tongue vibration occurs only much later. Mikes's detailed study of the question is valuable not only for its results, but also for the approach which it adopts towards the question of sound development. Sounds are not simply "acquired" at their first appearance, rather they pass through a typical course of development in terms of their systematic relations.

3.2 The acquisition sequence for sound segments

Balassa, Kenyeres, and Keresztes each report the sequence of entrances of the various speech sounds, but each appears to assume that sounds acquired in babbling are also acquired in terms of the phonology. Kenyeres (1928:19) notes that Balassa's report does not state when the child was able to imitate the sound or use the sound with confidence in words. His own observations are not immune to similar criticisms. Here we summarize

the entrance of segments from Balassa (1893:62 and 1905:132):

<u>Month</u>	<u>New Vowels</u>	<u>New Consonants</u>	<u>Remarks</u>
0;1-2	á ê oá		
0;3		b d h	Intervocally
0;4		m l g p t	trills
0;5-6		j k n	many labial trills
0;7	â ë é	v w	babbling begins
0;8	e	gy c	
0;10		ʔ	
1;2	i	sz	speech begins
1;3	í ũ o ó	ny z	
1;4	õ	ty	
1;5	u ú	s	
1;6	ü		

If we look at the first eighteen words produced by Laci in the time from 1;1 to 1;4, we find the vowels /á, ê, e, i, â, ũ/ and the consonants /t, k, b, ny, p, c, gy, d, n, m, z, and j/. It thus appears that the vowels of the babbling stage appear in the first words, but that certain consonants /h v w g/ are absent. Only the /h/ and /v/ are required in the early vocabulary, but are in fact deleted or replaced. The reader may wish to decide for himself how much learning of phonology occurred in Laci's pre-linguistic months.

Kenyeres (1928:19) takes the age of 0;9-1;0 as a baseline and summarize the sounds available in this late phase of babbling:

<u>Month</u>	<u>Vowels</u>	<u>Consonants</u>	<u>Remarks</u>
0;9-1;0	á e i	b d h j m n p t sz	
1;1	ë	f	speech begins
1;2	o	v	

Month	Vowels	Consonants	Remarks
1;3	ó ú a		
1;4	ü ű	c k	
1;7	õ	s	
1;8		gy	
1;9		z	
1;10		r cs	
1;11		zs ty	

Although Kenyeres does not list the child's earliest vocabulary in a systematic fashion, examination of the forms he reports from the first month of speech indicates that most of the sounds of the late babbling phase also enter into early words. Here again, we might cite /h/ and /j/ as exceptions.

Keresztes simply lists the order of acquisition without noting the time of appearance of each sound, moreover her reports only covers consonants (p. 21): m p b n ny h t d w l ly j sz s g c cs f v gy ty k r ŋ were acquired in that order. Keresztes also notes that /m p b/ were present at 0;2, that /l/ appeared at 0;5 and that /k/ only appeared after 2;0. She judges that most sounds are acquired before speech begins. Donner (126) notes that /õ/ and /ü/ were the last vowels to be acquired, and that they entered after 2;4.

József Molnár presents a general picture of sound development in Hungarian which is essentially in harmony with the views of Jakobson regarding the predicted sequence of acquisition of phonemes and distinctive features. Molnár's report suffers from the

fact that conclusions are presented without reference to the observations upon which these conclusions are based. For example, Molnár maintains that /ty/ and /gy/ enter before the fricatives. Balassa, Kenyeres, and Keresztes, as we have just seen, found that /ty/ was among the last sounds acquired, preceded by a number of fricatives. The question of the time of acquisition of /ty/ and /gy/ is an interesting one in any case, since, as Molnár notes, "the affricates ty /tʃx'/ and gy /dʃj'/ are today considered palatal obstruents by many researchers." Molnár also notes that the vowel system is largely acquired by the time that the fricatives enter. Of the fricatives, /j/ is the earliest, and the affricates /dz/ and /dʒs/ are not only the last sounds acquired by children, but also the newest sounds in the language and extremely rare in every-day vocabulary. Molnár also points to the relatively early acquisition of /c/ and /cs/, but fails to specifically state the time of acquisition of these sounds. Citing the tendency towards devoicing of final voiced consonants, Molnár holds that children devoice these sounds completely.

András Vértes (1953:14-15) also outlines the course of sound development, while not giving reference to specific observations. He notes /a, p, m, and b/ as the first phonemes and /ʊ, ű, k, g, f, v, s, zs, sz, z and r/ as the phonemes last acquired.

3.3 Segmental substitutions

One of the traditional ways of studying the acquisition of phonology is to observe the ways in which the child regularly replaces certain segments in adult forms. Such information may shed light on the relative difficulty of the phonemes of the adult language and upon systematic patterns in acquisition. In order to gain a picture of the pattern of phonological acquisition in any given Hungarian child, the child's speech must be observed in a systematic fashion with an eye towards general patterns and laws. Only Balassa and Meggyes have conducted such observations; and their data is reported in the first section below. Although other authors have reported sound substitutions with lesser systematicity, our present picture of Hungarian acquisition is still dependent upon such inadequate data. In the second section below we compile all available reports of substitutions with an eye toward estimating the generality of the substitution pattern. Styles of reporting differ greatly and this estimate of generality must be taken as no more than an estimate. Nonetheless, such estimates must be made, since many of the reports are clearly observations of single occurrences of substitutions.

3.31 Systematic observations

Balassa was the first to discover systematic relations in the sound substitutions of Hungarian children.

In addition to his isolated reports of replacements, he notes (1893:66-67 and 134) that the sibilants /s, sz, zs/ generally underwent replacement in initial position either through retrogressive assimilation or through replacement by some other consonant. The palatalized consonants /ty, gy, ny/ were articulated too far forward up to the age of 2;0, but they were distinguishable throughout from the alveolar stops /t, d, n/. On the other hand, the palatal sibilants and affricates /s, zs, cs, dzs/ were not distinguishable from their alveolar counterparts /sz, z, c, dz/ during the same period. Balassa also observes the generality of use of /l, j, and uvular r/ as replacements for tongue tip /r/ and the interchangeability of /l, r, j/ in general.

In her summary, Meggyes (19-25) notes a variety of systematic relations holding true in Márta's speech. Meggyes points to Márta's general tendency to devoice voiceless consonants, a tendency continuing even beyond the age of 3;0. Donner (125) notes similar substitutions in his child between 2;4 and 2;6; and, when Meggyes (20) scanned Kenyeres's observations for devoicing, she found this process active only between 1;5 and 1;8. Meggyes observes that Donner (126), along with Gvozdev (1961:140, reporting on Russian), attribute the delay in learning of voiced consonants to articulatory difficulties in

their production. Refuting El'Konin's (Hungarian translation, 1964, 200-201) attribution of devoicing to inadequacies of acoustic perception, Meggyes notes that Márta never voiced voiceless consonants, and that she self-corrected lánk "flame" to the adult form láng at 1;10,17. A glance at the next section will reveal that substitutions of voiceless for voiced consonants are rare, but perhaps more common than Meggyes (20-21) believes. In the following table we translate the tables appearing on pages 23 and 24 of Meggyes's work, which summarize the most important aspects of Márta's sound system and its development.

Table VI
Márta's consonantal system between 1;9 and 2;0

Place of Articulation

Manner of Articulation

	Obstruent				Fricative		Affricate	Lateral	Vibrant	
	Oral		Nasal		Var.	Var.	Var.	Var.	Var.	Var.
	Variants		Var.							
Bilabial voiceless	p	-								
voiced	b	(m)	m	(b)						
Labiodental voiceless					(f)	sz				
voiced					(v)	m b f (p)				
Dentalalveolar voiceless	t	-			(sz)sz'	c(s)(cs)	(c)c'	t***	l	l' j ø
voiced	d	(t)	n	-	(z) z'	sz(c)(dz)	dz**			[r]* lje ø
Postalveolar voiceless					(s) s'	sz (cs)	(cs)	c sz (s)		
voiced					[zs]*	z	[dzs]*			
Palatal voiceless	(ty)	t								
voiced	(gy)	d ty (t)	(ny)	n						
Palatovelar voiced					j	l (l')				
Velar voiceless	k	-								
voiced	g	k (d)(t)								
Laryngeal voiceless					h	j(ø)				

(): sounds placed between parentheses are rare variants

[]*: sounds placed between square brackets are those which are missing from Márta's system

** : double asterisks indicate a sound which only occurs as a variant, not as an independent phoneme

***: triple asterisks indicate a sound bound to a single root.

Table VII
Márta's consonantal system between 2;0 and 2;2

Place of Articulation	Manner of Articulation											
	Obstruent		Nasal		Fricative		Affricate		Lateral		Vibrant	
	Oral	Var.		Var.		Var.		Var.		Var.	Var.	
Bilabial voiceless	p	-										
voiced	b	-	m	(v)								
Labiodental voiceless					f	(sz)						
voiced					v	(b)						
Dentalalveolar voiceless	t	-			sz (sz')	-	(c) c'	-	l	-	r	l j ø
voiced	d	-	n	-	(z) z'	-	dz**					
Postalveolar voiceless					s (s')	sz	cs	-				
voiced					zs **		[dzs] *	zs				
Palatal voiceless	ty	t (c)										
voiced	gy	ty d(dz)	ny	n								
Palatovelar voiced					j	-						
Velar voiceless	k	-										
voiced	g	k										
Laryngeal voiceless					h	-						

3.32 Compiled observations

Below we indicate the frequency or generality of various substitutions, the age at which they were observed, the child who was observed, and the source of the report.

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
<u>Consonants: obstruents</u>					
p	b	occasional	Józsi	3;0,9 3;0,23	Meixner
b	m	occasional	Márti	1;9-2;0	Meggyes 14
	p	occasional	Emőke	3;2,18- 3;2,19	Meixner
t	d	occasional	Józsi	2;9,4	Meixner
d	t	occasional	Márti	1;9-2;0	Meggyes 14
ty	t	general	Márti	1;9-2;2	Meggyes 13
gy	t	occasional	Márti	1;9-2;0	Meggyes 13
	ds	?	Pálkó	-	J. Vértes 21
	ty	frequent	Márti	1;9-2;2	Meggyes 13
	d	?	Lili	-	Ponori 1905:388
		frequent	Éva	~1;8	Kenyeres 1928:20
		frequent	Márti	1;9-2;0	Meggyes 13
k	t	frequent	Emőke	2;11,22 -3;2,24	Meixner
		some words	Éva	to 1;7	Kenyeres 1928:19
		?	Józsi	-	J. Vértes 21
		frequent	Hajnalka	to 3;0	Keresztes 21

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
k	t	?	V.	~2;1	A. Vértés 1953:1
		occasional	Iaci	to 2;0	Balassa 1893:133-34
		infrequent	Józsi	3;1,26	Meixner
k	p	occasional	Emőke	2;11,22 -3;2,22	Meixner
g	d	occasional	Márti	1;9-2;0	Meggyes 15
		occasional	Emőke	2;11,22 3;2,26	Meixner
		occasional?	Józsi	-	J. Vértés:21
	?	V.	~2;1	A. Vértés 1953:6	
	k	frequent	Márti	1;9-2;2	Meggyes 14
		single day	Józsi	2;9,4	Meixner
	t	occasional	Márti	1;9-2;0	Meggyes 15
<u>nasals:</u>					
m	b	occasional	Márti	to 1;9	Meggyes 14
n	m	occasional	Emőke	3;9,5- 3;9,8	Meixner
ny	n	general	Márti	1;9-2;2	Meggyes 13
	m	single day	Emőke	3;7,15	Meixner
<u>fricatives:</u>					
f	sz	general	Márti	1;9-2;0	Meggyes 11
		occasional	Márti	2;0-2;2	Meggyes
		occasional	-	2;4	Donner 124,134
		frequent	niece	-	Ponori 1905:399

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
f	sz	frequent	Böske R.	3;-	Simonyi 318
	p	frequent	Hajnalka	-	Keresztes 21
		frequent	Éva	1;3	Kenyeres 1928:19
		general	Laci	to 2;0	Balassa 1893:134
		frequent	B.	1;11-2;0	A. Vértes 1953:16
	s	frequent	Nanus	1;3-1;5	Simonyi 318
	h	initially	Lili	-	Ponori 1905:399
		single day	Emőke	2;11,22	Meixner
		frequent	Linka V.	4;-	Simonyi 318
	v	occasional	-	2;6	Donner 124, 134
v	b	frequent	Márti	1;9-2;2	Meggyes 12
		general	-	-	Molnár 74
		?	Miklós	6;4	Barcsai
		general	Laci	to 2;0	Balassa 1893: 134
		frequent	Linka V.	4;-	Simonyi 318
		?	B.	1;4	A. Vértes 1953: 16
		frequent	Éva	to 1;8	Kenyeres 1928:19
	m	occasional	Márti	1;9-2;0	Meggyes 12
	f	occasional	Márti	1;9-2;0	Meggyes 11
	ø	infrequent	Márti	1;9-2;0	Meggyes 12
	w	frequent	Hajnalka	-	Keresztes 21
	l	frequent	Kati V.	2;6	A. Vértes 1953:17
	p	single day	Józsi	3;6,9	Meixner

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
f	ø	frequent	Éva	to 1;8	Kenyeres 1928:19
<u>sibilants:</u>					
sz	c	frequent	Márti	1;9-2;0	Meggyes 12
		occasional	Feri B.	3;6	A. Vértes 1953:16
		occasional	B.	1;8	A. Vértes 1953:16
		single day	Emőke	3;1,10	Meixner
h		initially	Lili	-	Ponori 1905:399
		occasional	Emőke	2;11,22 -3;1,10	Meixner
		occasional	J.	2;-	A. Vértes 1953:16
cs		occasional	Márti	1;9-2;0	Meggyes 12
s		frequent	-	-	A. Vértes 1953:16
		occasional	Emőke	3;2,1- 3;2,22	Meixner
s/lisped/		occasional	Márti	1;9-2;0	Meggyes 12
t		occasional	Laci	to 2;0	Balassa 1893:134
		occasional	Emőke	3;1,10- 3;2,24	Meixner
z	d	occasional	Lili	-	Ponori 1905:399
	ɖ	intervocal- ically	Kari	2;0-8;0	Simonvi 318

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
z	sz	frequent	Márti	1;9-2;0	Meggyes 12
	ċ	occasional	Márti	1;9-2;0	Meggyes 12
	dz	occasional	Márti	1;9-2;0	Meggyes 12
s	sz	frequent	Márti	1;9-2;2	Meggyes 12
		single day	Pali	3;1,26	Meixner
		occasional	J.	2;0	A. Vértes 1953
	cs	occasional	Márti	1;9-2;0	Meggyes 12
	h	one of last three errors	-	2;0	Jablónkay 150
		single day	Emőke	3;1,10	Meixner
		occasional	Hajnalka	-	Keresztes 21
		occasional	Laci	to 2;0	Balassa 1893:134
	t	occasional	Emőke	2;11,22 -3;2,19	Meixner
	zs	z	general	Márti	1;9-2;0
		occasional	Pali	3;1,26 -3;2,24	Meixner
		single day	Józsi	2;11,24	Meixner
		occasional	Hajnalka	-	Keresztes 21
sz		single day	Józsi	2;11,24	Meixner
d		general	-	-	Molnár 74
l		occasional	Laci	2;3	Balassa 1893:71,134
∅		frequent	Márti	to 1;9	Meggyes 12

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
dzs	zs	general*	Márti	2;0,29	Meggyes 13
*but /dzs/ is rare in her vocabulary					
<u>affricates:</u>					
c	t	general	-	-	Molnár 74
		single day	Emőke	3;2,24	Meixner
		frequent	Márti	1;10-2;0	Meggyes 13
	sz	one of last three errors	-	2;0	Jablonkay 150
cs	c	frequent	Márti	1;9-2;0	Meggyes 13
		single day	Józsi	2;11,24	Meixner
		single day	Pali	3;1,26	Meixner
		occasional	Palkó	-	J. Vértes 21
		frequent	Éva	to 1;10	Kenyeres 1928:19,20
	k	single day	Emőke	2;11,19	Meixner
	t	general	-	-	Molnár 74
		single day	Emőke	3;1,10	Meixner
	sz	frequent	Márti	1;9-2;0	Meggyes 13
		frequent	Éva	-1;10	Kenyeres 1928:20
<u>liquids:</u>					
w	b	general	-	-	Molnár 74
r	j	one of last three errors	-	2;0	Jablonkay 150

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
r	j	one of the last errors	Laci	to 3;6	Balassa 1893:72
		frequent	Márta	1;9-2;2	Meggyes 14
		frequent	Éva	to 1;10	Kenyeres 1928:20
		frequent	Józsi	-	J. Vértes 20
		frequent	Olga R.	-	J. Vértes 20
		frequent	Laci	-	J. Vértes 20
		single day	Pali	3;3,15	Meixner
		occasional	Hajnalka	-	Keresztes 21
		occasional	V.	~ 2;1	A. Vértes 1953:16
		r	l	occasional	Pali
frequent	Márta			1;9-2;2	Meggyes
occasional	Olga G.			2;2	J. Vértes 21
occasional	Emőke			2;11,22 -3;2,25	Meixner
occasional	Józsi			-	J. Vértes 20
occasional	Hajnalka			-	Keresztes 21
frequent	Éva			~1;10	Kenyeres 1928:20
frequent	Józsi			2;9,15 -2;11,24	Meixner
occasional	V.			~2;1	A. Vértes 1953:16
r	ø			frequent	B.
		frequent	Emőke	2;11,22 -3;9,8	Meixner
		frequent	Józsi	-	J. Vértes 20

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
r	ø	frequent	Márta	1;10-2;0	Meggyes 14
		occasional	Pali	3;1,26 -3;5,20	Meixner
j	r	?	Jenő	-	Ponori 1905:399
	l	one of the last errors	Iaci	to 3;6	Balassa 1893:72
		frequent	-	1;-	Szinkovich 94
		non-initial	Lili	-	Ponori 1905:399
		frequent	Márta	1;9-2;0	Meggyes 15
	d	initially	Lili	-	Ponori 1905:399
ø	initially	Éva	to 1;7	Kenyeres 1928:19	
	occasional	Tibor	3;2	Barcsai	
	single day	Emőke	3;9,2	Meixner	
	single day	Pali	3;3,18	Meixner	
l	r	single day	Pali	3;3,28	Meixner
		occasional	Jenő	-	Ponori 1905:399
		general	Emőke	2;11,22 -4;1,20	Meixner
l' (palatalized)		occasional	Márta	1;9-2;0	Meggyes
		?	second boy	-	Csapodi 465

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>	
l	j	occasional	Laci R.	-	J. Vértés 20	
		occasional	Julis	-	J. Vértés 20	
		frequent	Márti	1;9-2;0	Meggyes 15	
		occasional	Éva	to 1;7	Kenyeres 1928:20	
		occasional	V.	~2;1	A. Vértés 1953:16	
		single day	Emőke	3;2,24	Meixner	
	ø	d,g	frequent	Lili	1-2	Ponori 1905:399
		ø	frequent	Márti	1;9-2;0	Meggyes
			frequent	Emőke	2;11,22 -4;0,17	Meixner
			single day	Pali	3;3,15	Meixner
			frequent	B.	1;4	A. Vértés 1953:16
			single day	Józsi	2;11,25	Meixner
	h	j	frequent	Márti	1;9-2;0	Meggyes 15
			occasional	Miklós	4;2	Barcsai
		f	?	-	1;-	Szinkovich 94
ø			initially	Tibor	2;1	Barcsai
		initially	Laci	-	Balassa 1893:134	
		occasional	Márti	1;9-2;0	Meggyes 15	
		occasional	Pali	3;3,14 -3;3,19	Meixner	
		occasional	Józsi	-	J. Vértés 20	

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
h	∅	occasional	Kató H.	2;-	A. Vértés 1953:16

Vowels:back, high, rounded:

u	o	occasional	Márti	1;9-2;0	Meggyes 10
		single day	Emőke	3;2,24	Meixner
o	u	single day	Józsi	2;9,5	Meixner
		single day	Józsi	3;1,10	Meixner
	occasional	Márti	1;9-2;0	Meggyes 10	
	two days	Józsi	3;1,26 -3;1,27	Meixner	
	a	occasional	Márti	1;9-2;0	Meggyes 10
single day		Emőke	3;9,9	Meixner	

back, non-high

a	u	occasional	Márti	1;9-2;0	Meggyes 10
		infrequent	Márti	1;9-2;0	Meggyes 10
	frequent	Iaci	to 1;5	Balassa 1893:65	
á	a	occasional	Márti	1;9-2;0	Meggyes 10

front, non-rounded:

i	u	in back- harmony words	second boy	-	Csapodi 465
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<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
e	a	frequent	second girl	-	Csapodi 465
	á	occasional	Márti	1;9-2;0	Meggyes 10
é	e, i	occasional	Márti	1;9-2;0	Meggyes 10
<u>rounded, front</u>					
ü	u	frequent	second girl	-	Csapodi 465
		occasional	V.	1;10	A. Vértes 1953:16
		occasional	Józsi	1;10	J. Vértes 20
		occasional	Hajnalka	-	Keresztes 20
	i	frequent	Laci	1;5	Balassa 1893:66
		occasional	second boy	-	Csapodi 465
			?	1;8	A. Vértes 1953:16
ű	u	general	-	-	Balassa 1893:133
	e	occasional	Márti	1;9-2;0	Meggyes 10
ő	ü	single day	Józsi	2;9,5	Meixner
		single day	Pali	3;0,12	Meixner
	o	occasional	Lacika	to 3;0	Kallós 409
		occasional	second girl	-	Csapodi 465
		occasional	V.	1;10	A. Vértes 1953:16
		occasional	Mariska	3;0	A. Vértes 1953:16
		occasional	Józsi	to 6;-	J. Vértes 20

<u>Segment</u>	<u>Substitute</u>	<u>Generality</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
ö	o	general	-	-	Balassa 1893:133
	ó	single day	Józsi	2;9,10	Meixner

substitutions influenced by stylistic factors:

The alternation ö-ó is a widely heard feature of many important dialects and to a lesser degree of the standard language.

ö	e	occasional	Márti	1;9-2;0	Meggyes 10
		single day	Józsi	3;1,7	Meixner
	ø	frequent	Laci	1;5	Balassa 1893:66
			second boy	-	Csapodi 465

Finally, we should not that Meggyes observed continual length confusions such as o-ó, ö-ó, u-ú, and ũ-ű in the vowel system up to age 2;0. Every Hungarian consonant and vowel may be present in either short or long form. It is likely that children may far more errors regarding length than the present reports might indicate. Only between the /a/ and /e/ and their long counterparts /á/ and /é/ is the length difference accompanied by differences in tension and height.

3.4 Further simplifications between segments

3.4.1 Cluster simplification

Meggyes, in a detailed account of Márty's consonant clusters (p. 16), notes that /r/ and /l/ were frequently dropped from clusters in all positions. In clusters with /n/ and some homoorganic segment, simplification occurs: -dn- becomes -d-, and -nyv- may become either -n- or -v-.

In Hungarian, initial clusters are rare and medial clusters are generally divided up by the neighboring syllables. However, in the next section we note how sound insertion is used to simplify medial clusters. It was in final position that Meggyes noted the most complex clusters: -jt-, -mb-, -szt-, -szd-, -nf-, -nk-, -ncs-, -nc-, -nt-, -ng-, -rt-, -rsz-, and -lsz- as double clusters, along with the triple clusters -nzt-, -nksz-, and -ncsk-. The general make-up of these clusters is continuant + obstruent.

Balassa (1893:70, 135) notes cluster simplification in initial position. Balassa also makes certain general observations on the nature of the various patterns: initial position is one of low diversity in which obstruents are favored even if they must be produced by retrogressive assimilation; medial position allows the most faithful reproduction of the adult model; and imitations of the ends of words tend to be quite inaccurate. At first

Laci ended words only in vowels; but as he began to use suffixes, he became accustomed to consonants in final position (see sections 3.42 and 4.12).

Meixner found cluster simplification in a number of examples from her subjects, but she cites no general patterns for simplifications over large segments of the vocabulary:

Adult Form	Child Form	Child	Age	Source
spárga	párga	Józsi V.	3;1,6	Meixner
spárga	párga	Emőke	3;2,1	Meixner
luftballon	lufballon	Józsi V.	3;0,23	Meixner
sparhelt	parhet	Emőke	3;2,1	Meixner
sparhelt	parhelt	Emoke	3;10,9	Meixner
spriccal	priccel	Emőke	4;0,23	Meixner
traktor	taktoj	Pali	2;11,16	Meixner
traktor	taktor	Pali	3;3,1	Meixner
spárga	pálga	Pali	3;3,1	Meixner

3.42 Patterns of segment insertion

Hungarian syllables are generally quite free of diphthongization and ellision. Perhaps for this reason, Balassa /1893:69,70,71/ found that Laci inserted /l/ between vowels up to 2;6; Ponori /1905:399/ found intervocalic /l/ insertion in Lili and in his niece; and Meggyes reports insertion of /j/, /n/, /sz/, and /l/ around 2;0. The spoken language often makes use of /j/ as an intervocalic filler, but other consonants are not utilized. András Vértés (1953: 21) reports that:

Two little twin sisters, Éva and Márta H. at 1;6 could not pronounce words beginning with a vowel: they said tapa for "apa" and tanya for "anya"; they placed a t- before every word beginning with a vowel.

Endrei reports that at 1;6 Margit produced forms such as dablak (=ablak) and dajtó (=ajtó). Neither Vértés nor Endrei mention whether these fillers functioned in both initial and intervocalic position.

Meggyes also noted that /n/ served as a filler between a vowel and a following -k, -t, or -cs. J. Vértés (24) found a similar use of /n/ before /t/ in his subject Józsi; and Laci used /n/ in the same way in several words (Balassa 1893:66).

Just as stops and liquids are used as fillers in the intervocalic environment, children make use of vowels and pauses to break up clusters. Thus, Meggyes (16) reports tisz # tába for tisztába and nit # ni for nyitni from Márta at 1;9-2;0. Balassa (1893:65) notes tész # ta for tészta and táto # na for katona from Laci at 1;4. This last example illustrates that, for Laci, not only clusters of consonants, but also words of three syllables needed simplification through an audible pause. Márta simplified many of her medial clusters through introduction of a vowel. Thus, szoknyáját "skirt+3PS poss.+accusative" in Márta's speech would be szoknyáját. Here the inserted /o/ meets the requirements of vowel-harmony, but is clearly nothing more than a filler. However, the majority of such insertions cited by Meggyes (16-17) involve what seems to us to be linking-vowels. Thus we may question whether the extra vowels in gomboja (=gombja), poloja (=porja), nadrágoja (=nadrágja) (16, 44) and főzőni (=főzni) are insertions or realizations of the customarily deleted linking-vowels. Meggyes herself (44)

notes that, although simplification of consonant clusters may motivate use of these vowels, they must be "analogic root-variants." Meggyes's theoretical interpretation is not spelled out in greater detail, but we have developed one possible interpretation along these lines in Part I.

3.43 Assimilation

This topic has received ample discussion in the international literature.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
<u>Assimilation between non-neighboring segments:</u>				
<u>Retrogressive Consonantal Assimilation:</u>				
kettő	tettő	Iaci	1;4	Balassa 1893:66,135
skatula	tatula	"	"	"
katona	tantonda	"	"	"
(the above three forms may be k-t substitutions)				
kompót	pompó	"	"	"
krumpli	pumpli	"	1;6	"
konyha	nóna	"	"	"
cukor	kuko	"	1;7	Balassa 1893:67,135
lámpa	pámpa	"	"	"
szép	pép	"	"	"
gyufa	pufa	"	"	"
szobába	bobába	"	"	"
kabátot	babáto	"	"	"
semmi	mēmi	"	1;8	"
sámli	mámli	"	"	Balassa 1893:68
szabad	babad	"	1;9	Balassa 1893:68,135

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
szeme	meme	Laci	1;11	Balassa 1893:69,135
kapocs	papocs	"	"	"
kapok	papok	"	"	"
labda	babda	"	-	Balassa 1893:135
kávé	pábé	"	-	"
sapka	pappa	"	-	Balassa 1893:134
Moric	Mocic	Józsi	-	J. Vértés 22
szappan	pappan	"	-	"
Paltó (=Pálkó)	Taltó	"	-	"
Rezsín	Zsizsin	"	-	"
Gusztí	Ditti	"	-	"
cipő	pipipő	-	1;-	Szinkovich 94
doboz	bobosz	Márti	1;10,7	Meggyes 17
nagymamáé	mamamáé	"	1;11,0	"
begombolom	gegombolom	"	2;0,21	Meggyes 18
bugócsiga	gugócsiga	"	2;1,25	"
szoknyája	szokójája	"	1;11,4	"
van	nan	"	1;9,25	"
körte	töte	Emőke	2;11,22	Meixner
tefe (=kefe)	tete	"	"	"
labda	babra, babla	"	2;11,22	"
labda	blabla	"	3;2,24	"
goromba	boromba	"	2;11,22	"
koralábé	tarabábé	"	"	"
szappan	pappan	"	"	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
doboz	boboz	Emőke	2;11,20	Meixner
doboz	boboz	"	3;2,24	"
gomba	bomba	"	2;11,25	"
játékvödör	tátékvödör	"	2;11,22	"
kapaszkodom	papaszkodok	"	2;11,20	"
gomb	bomb	"	3;1,10	"
gombóc	bombóc	"	3;1,17	"
kalapja	palapja	"	3;1,25	"
kalapács	pa?apá	Zoli	1;8,6	MacWhinney
gombák	bombák	"	"	"
doboz	baboz	"	"	"
kutya	tyutya	Emőke	3;2,18	Meixner
táncolnak	cáncolnak	"	"	"
gomb	bomb	"	3;2,22	"
cipő	pipő	"	3;1,17	"
cipő	pipő	"	3;2,23	"
táblát	pláblát (also metathesis)	"	3;2,24	"
ormányját	onyányát	"	3;2,24	"
dobol	bobol	"	3;2,25	"
dóbol	bóbol	"	2;11,20	"
káposzta	páposzta	"	2;11,22	"
számológép	hámológép	"	3;0,24	"
dob	bob	"	3;1,10	"
kapa	papa	"	"	"
kacsa	csacsa	"	3;2,19	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
töporlyű	pöörtyű	Emöke	3;2,19	Meixner
dobál	bobál	"	3;2,15	"
zászló	lászló	"	3;0,12	"
lelövöm	lelömöm	Pali	2;11,9	"
ház	záz	"	3;0,12	"
zászló	lászló	"	3;1,26	"
kapkods	papkods	"	3;3,28	"
szellőztetve	szellőzvetve	"	3;3,28	"

Retrogressive Vowel Assimilation

Rezsín	Zsízsin	Józsi	-	J.Vértés 22
Gusztí	Ditti	"	-	"
fésű	fűtű	-	1;-	Szinkovich 94
pagácsa	pácsácsa	-	"	"
butor	potor	Pali	2;11,16	Meixner

Progressive Consonant Assimilation

sötét	sösét	Rózsi	2;-	Kardos 324
anyuska	antunta	Józsi	-	J. Vértés 22
töszönöm (=kösözönöm)	tötötö	"	-	"
labda	labl'a	Márti	1;10,11	Meggyes 18
labda	labla	Zoli	1;10,0	MacWhinney
le vesszük	lelesszük	Márti	1;10,13	Meggyes 18
labda	labla	Józsi	3;1,7	Meixner
bugócsiga	bubócsiga, bubócsida	Emöke	2;11,22	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
karalábé	parapábé	Emőke	2;11,22	Meixner
hegedűművész	hegedűmūvész	"	3;2,1	"
bőgre	bőble	"	3;2,23	"
dógozik (=dolgozik)	dódozik	"	3;2,24	"
egyedül	egyegyül	"	3;11,28	"
páva	páfa	"	4;0,0	"
lelővi	lelőli	"	4;0,17	"
ceruza	tezuza	"	3;2,24	"
lelővőm	lelőlőm	Pali	2;11,10	"
próbál	porpál (also metathesis)	"	3;2,2	"
lábomat	lábalom	Zoli	2;2,0	MacWhinney

Progressive Vowel Assimilation:

Nándor	Nána	Józsi	-	J. Vértés 22
Józsika	Lótota	"	-	"
tik-tak	tik-tik	Józsi	3;4,28	Meixner

Assimilation between neighboring segments:

Retrogressive Consonant Assimilation:

hogycsinál	hoccsinál	Márti	1;9,22	Meggyes 17
megmosta	memmosta	"	1;10,17	"
nagymama	nammama	"	2;0,21	"
légy szíves	lésszíves	"	1;11,1	"
nagy szobába	nasszobába	"	"	"
sűn malac'ka	sűmmalac'ka	"	1;11,11	"
megnézztk	mennézztk	"	"	"
mindenki	mindekki	"	1;11,21	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
nagymami	mammami	Márti	2;0,21	Meggyes 17
megvan	mevvan	"	2;2,23	"
ötven	ötfen	-	2;-	Kardos 1901:297
hatvan	hatfan	-	"	"
itt van	itt fan	-	"	"
ott van	ott fan	-	"	"
bicikli	bicigli	Józsi	3;1,10	Meixner
hagyma	hamma	Emőke	2;11,22	"
hagyma	hamma	"	3;2,24	"
kocka	totta (k-t)	"	2;11,22	"
talicska	talitta (k-t)	"	"	"
csizma	csimma	"	3;2,1	"
tennő	tennő	"	3;2,24	"
lufballon	lubbalon	"	3;4,20	"
asztal	attal	"	3;2,23	"
fegyveres	fevveres	"	3;2,25	"
névnapja	nemnapja	"	3;10,21	"
kockás	kocskás	"	3;11,19	"
pingpongozik	pimpongozik	"	3;11,9	"
pingpongozik	pimpongozik	"	3;11,28	"
aludnék	alunnák	Emőke	4;0,12	"
lufballon	lubbalom	"	4;0,19	"
nadrág	narrág	"	4;1,0	"
lufballon	ludballon	Pali	3;3,1	"
<u>Progressive Consonant Assimilation</u>				
csücske	csüccse	Józsi	3;1,7	"

3.44 Metathesis

Methathesis has also received ample attention in the international literature.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
karperec	kajapec	-	-	Ponori 1871:7
vadgalamb	vadladamb	-	-	"
Gyula bácsi	Gyubalácsi	-	-	"
menyecske	nemecske	-	-	"
harapott	haratop	F.O.'s girl	-	Székely 63
spárga	págla	Miklós	4;5	Barcsai 31
oszlop	opszlop	Laci	2;6	Balassa 1893:71
cipő	picő	"	1;4	1893:66,135
leves	beles	"	1;5	"
kutya	tyuka	"	1;7	67, 135
lába	bála	"	"	"
fekete	feteke	Rózsi	2;-	Kardos 1906:324
valódi	olvadi	Olga V.	-	A. Vértes 1953:24
kicsi	csiki	Zsuzsi	2;6	1953:19
cipő	picő	"	"	"
gomb	bong	"	"	"
kép	pék	"	"	"
kutya	tyuka	"	"	"
kettő	tekő	"	"	"
kap	pak	"	"	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
aranyos	anyaros	Zsuzsi	2;6	A. Vértés 1953:19
palacsinta	pacslinta	Béla D.	3;3	"
náspágot	páspágot	Tamás R.	3;3	"
vacakolj	vakacoj	Magdi B.	2;11	"
elefántot	efelántot	Réka Sz.	4;6	"
katona	takona	András	4;3	"
lila	lali	Julis	-	J. Vértés 22
cutoj (=cukor)	tucoj	"	-	"
télikabát	télibakát	Rudolf A.	-	"
eltépte	eptéte	Nanus	2;-	Simonyi 318
aludjál	atujál	Márti	2;10	Meggyes 18
poharat	porahat	"	1;11	"
szemüvege	szemügeje	"	2;1	"
bölcsödébe	böcöbéde	"	1;11	"
árkon-bokron	ákron-bokron	Jolán	3;2	Endrei 465
labda	blabda	Józsi	2;0	Dezső 1970:95
dobozval (=dobozzal)	dobovzal	Józsi	2;9,10	Meixner
labda	babla, babra (r~l and progressive assimilation)	Emőke	2;11,22	Meixner
labda	blabla	"	3;2,24	"
villamos	vimmelos	"	3;1,10	"
villamos	limlamos	"	3;4,7	"
plafon	paflon	"	3;2,23	"
táblát	pláblát (also assimilation)	"	3;2,24	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
műanyag	műnyadad	Emőke	3;2,26	Meixner
irka-firka	firka-birka	"	3;5,20	"
irka-firka	firka-prirka	"	3;7,22	"
kikaporom	kipakarom	"	3;5,20	"
térdre	térder	"	3;9,8	"
műanyag	műagag	"	3;9,8	"
kaktusz	katkuzs	"	3;10,21	"
trombita	tombrita	"	4;0,0	"
trombita	tombrita	"	4;0,17	"
lejelzik	lelejzik	"	4;0,19	"
lejelzik	elejzik (l-deletion)	"	"	"
lejelzik	rerejzik (l-r)"	"	"	"
fogkrém	fromkém	"	4;1,0	"
fogkrém	fromkém	"	4;1,7	"
varázsló	vazsáró	"	4;1,2	"
copfja	poca	Pali	2;11,16	"
próbál	porpál	"	3;2,2	"
tefu	fetu	"	3;2,24	"
magnó	mangó	Zoli	1;10,0	MacWhinney

At this point we might also make note of some comments by László Deme (1944:48) in his discussion of metathesis as a grammatical device in Hungarian. Deme notes that two factors serve to make adult and child metatheses incomparable: 1) child metatheses disappear from usage whereas adult metatheses become conventionalized,

and 2) the articulatory ease of various sound groups is different for children and adults.

Ponori (1905:395) reports that, at 3;9, Lili got a magic lantern or laterna magica for Christmas. Aware of his grandfather's keen interest in neologisms and deviant forms, the child took particular interest in the name one of the servants gave to his toy: materna lédika "mother box+diminutive". Laughing, Lili ran to his grandfather, saying, "Grandfather, write it down!"

3.45 Contraction

Although there has been little observation in the literature of the phenomenon of word-contraction through the deletion of syllables or segments, it may be that the phenomenon is more common than reports would indicate.

<u>Adult Form</u>	<u>Contraction</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
csilingelés	csilingés	Józsi	2;11,24	Meixner
szemüvegemet	szemügemat	"	3;0,16	"
hinta-palinta	pinta-pinta	"	3;1,27	"
asztal alá	asztalá	"	3;1,27	"
csuzliz	csuliz, csuriz	"	2;11,25 3;0,23 3;4,2	"
Moszkovics	Mokics	Emőke	3;7,2	"
luftballon	lubalom	Józsi	3;1,7	"
	(in lufalmazunk and lubbalmomat with vowel-deletion)			

<u>Adult Form</u>	<u>Contraction</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
számológép	hánógép	Emőke	2;11,9	Meixner
benzin	benzi	Pali	3;3,1	"
benzin	benzi	Pali	3;3,28	"
rekamié	rekamé	"	3;3,1	"
suroló	suró	"	3;3,14	"
barlangot	baragót	"	3;3,18	"
dobogón	dobón	"	3;3,27	"
pingvinek	pingvek	Zoli	2;2,5	MacWhinney

In Section 3.5 following we cite some additional contractions which were reported in terms of limitations in the child's ability to imitate words with many syllables.

In our own data we have also found two cases of syllable insertion. In the second example, more than simple stuttering is involved. The root is forint; -ot is the accusative; int is a repetition of the last syllable of the root; and -am is the LPS possessive.

feküdök (=fekszem) "rest+LPS"	feküdüdök	Zoli	2;0,0	MacWhinney
forintomat "forint+LPS+acc."	forintotintam	"	2;0,2	"

3.5 Questions of stress, syllable number, rhyming, and imitation strategies

In adult Hungarian primary stress falls on the initial syllable; syllables number 3, 5, 7 etc. may receive secondary stress. Few observations of child stress placement have been made. However, A. Vértés (1953:20) reports that Péter H. and Ágnes O. at 1;3-1;4 had final syllable stress and Meggyes (19) found the same in Márta at 1;8, after which time stress was not systematically observed. In view of these unusual findings, it is all the more unfortunate that this subject has not received wider attention.

Both Balassa (1893:63) and Meggyes 19 noted possible production limits on the syllable length of lexical items. Balassa found that babbling sequences were limited to three syllables at 0;7, that words were monosyllabic or reduplicated until 1;2, and that at the end of the month tri-syllabic imitations occurred such as mámámá (nagymama) and nappapa (nagyapa). By 1;3 Laci used the three syllables táto # na as a word, but was forced to insert a pause before the last syllable. By the beginning of the first observational period, Meggyes found only one possible limitation in syllable number: the five-syllable borotválkozik "shave" was imitated as borotázik with four syllables.

Varga (146) and A.Vértés (1953:21) claim that imitations preserve the original syllable number, even when other phonological alterations are made. However, A.

Vértés (1953: 15-16) also holds that child imitations tend to preserve accented syllables above non-accented syllables. Ponori (435) claims to have found preservation of accented syllables in multisyllabic words: nagypapa = nappa, nagymama = namma, katona bácsi = kabba, and gólyamadarat = gomara. Endreini (462, 524) observed preservation of the initial syllable of adult forms in Jolán's vocabulary from 1;2 to 1;6 and in Ferike's at 1;6. Finally, Balassa (1893:66) found that Laci's imitations at 1;5 preserved the first two syllables of the word.

Comparing these observations, we find that, except for Laci, children tended to imitate accented syllables. None of the reports tell of imitations which omit the first syllable upon which Hungarian places primary stress. If we go through the 188 imitations reported by Viktor, and if we exclude examples in which the child is not really attempting to imitate the entire model (sentences, long compound words, etc.), we find no more than a dozen failures to preserve the original syllable number. This is not surprising, since the stretches which serve as models are usually only one or two syllables long. Nonetheless, these exceptions are instructive. In several cases, Matildka (1;9) repeated the accented first and third syllables:

Adult Form	Child Form	Source
skatulya	katya	Viktor 52
zsebkendő	epcő	Viktor 62

In other cases, syllable preservation is effected by reduplication of the initial syllable:

Adult Form	Child Form	Source
bácsi	bábá	Viktor 51
biblia	bibi	Viktor 58

There is a tendency in imitation to preserve vowels correctly: in 188 imitated words, 128 words correctly preserved the original vowels. As further evidence of the important role of semantics in the production and mediation of imitations (compare Slobin and Welsh, unpublished), we might cite Viktor's report that at 1;9 Matildka imitated the conventional adult form virág "flower" with the conventional baby-talk form 'apci," the conventional form Szervusz "good-bye" with baby-talk pá, and conventional víz "water" with baby-talk bü.

Original rhymes by children occur infrequently, but they serve to reveal much about the child's knowledge of the rules of intonation and rhyme required by the specialized form of poetical discourse. Let us take a look at some of the rhymes observed by Ponori and Meggyes. Ponori (1905:445) detected a poetic impulse in Lili's refrain at 1;6 Kánti Imre, Bébi # Kánti Imre, Bébi "Dancey Imre, Bébi." Here we have the simplest form of rhyming: rhyming through repetition. At 2;2 Lili's mother wanted to take him off of Ponori's hands and invited him to go for a walk, saying, Mama Lili # együtt

mennek. "Mother Lili # go together." To this Lili replied in rhyme nadapának # nem engednek "Grandfather # they don't allow." Ponori felt that Lili's mode of expression was so unnatural as to be only attributable to a desire to rhyme. Note that Lili's rhyme preserves the syllable number and positioning of the pause of his mother's sentence, but has a somewhat different accent pattern. Somewhat later (around 3;0?) Lili spontaneously composed the complete verse:

Egyik lábát fölteszi,	One leg he puts up,
Másik lábát leteszi.	The other leg he puts down
Éppen mint a uracska;	Just like the little gent;
Éppen mint a muracska.	Just like the little "mura."

The final root mura is nonsense used to make a rhyme.

The little gentleman in question was a hiker pictured in a guide to the High Tatras. Lili's rhyme preserves both accent pattern and syllable number between the rhymed pairs; this effect is assisted by keeping the syntactic patterns similar in each of the lines.

Meggyes's daughter Márta exercised her poetic abilities exclusively in the context of tunes taught to her both at home and in the state nursery. Her creativity lay in her ability to supply a new text to the old tune, preserving all the time meter and rhyme. Thus, at 1;10,17 Márta sang Ejne, ejne, ejneke "Goodness, goodness, goodness" to the tune of Gólya, gólya gilice "Stork, stork, turtle-dove." And at 2;1,5 Márta was able to substitute the text:

Sömpi ül, Sömpi ül	Sömpi sits, Sömpi sits
Nem fél bele egyedül.	She doesn't fit alone.

for the first verse of the song Komáromi kisleány:

A Dunán, a Dunán,	Across the Danube, (again)
Vigyél által a Dunán.	Take me across the Danube.

At 2;1,28 Márta substituted the text:

Ronda, ronda	Naughty, naughty
Két fiú ronda	Two boys are naughty
Virágom, virágom.	My flower, my flower.

for the first verse of Tavaszi szél vizet araszt:

Tavaszi szél	Spring winds
Vizet araszt	Bring showers
Virágom, virágom	My flower, my flower.

Márta sang this song about the two naughty boys as she saw two boys in the courtyard below her window. Taken together, these reports of rhyming behavior from two children indicate that learning of the conventions and sociolinguistic rules governing poetic activity may begin at an early age indeed.

3.6 Relations between phonetics and semantics

While stressing the arbitrary nature of the linguistic sign, Saussure still recognized the existence of certain limited non-arbitrary relations between sound and meaning. In the following sections we discuss ways in which such relations may lead to deviant forms.

3.6.1 Sound symbolism

In following sections we survey a vast number of child neologisms. The bulk of these neologisms are

produced through the correct or incorrect operation of morphological devices acting upon conventional roots. Only in this section and the one which follows do we deal with direct creation of new roots. There seem to be two ways in which the child forms new roots. The first of these is through sound symbolism, a process of reputed importance in the phylogenesis of language (Chafe, 1969) and of some importance in today's languages (Paget, 1930), (Werner and Kaplan, 1963). Sound symbolism serves to represent objects, actions, processes, and qualities in terms of sounds which they typically produce or in terms of sounds which symbolize the dispositions they generate. Thus, sound symbolism is a fully intentional process, perhaps significantly more so than the process of word-blending we discuss next. We may divide the reported examples of sound symbolism into a non-exhaustive set of categories as follows:

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
a) The sound made by an object is used to refer to that object:				
meleg "hot"	tehe, hete	Éva	1;1,2	Kenyeres 1926:38
tehén "cow"	e	Éva	0;9,20	Kenyeres 1928:86
orsó "bobbin" (this is the sound made by blowing through the bobbin)	titi, titű	Éva	1;2,20	Kenyeres 1928:86 1926:8
bor "wine" (this is the noise of the cork being pulled)	tumm	Piroska	-	Trencsény 264

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
szódavíz "soda water" (sound made when poured)	sutty	Piroska	-	Trencsény 264
víz "water!" (sound of drinking water)	h-h-h-h	Tibor K.	1;7,16	A. Vértés 1953:43

b) A process may take on the name of a sound associated with it:

összetapadt "stick together"	csicer	Éva	4;9	Kenyeres 1928:87
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c) In the adult language, it is common to find the sounds made by animals and men represented by onomatopoeic words; the child also makes use of this device.

hissing at at cat	kusip (in <u>kusipol</u>)	Éva	4;9	Kenyeres 1928:87
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cooing of the wild dove	purg (in <u>purgol</u>)	Éva	2;6	Kenyeres 1928:63
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(The conventional form for cooing of doves is pr-r-pr-r.)

d) Early sound-symbolic words may be simply interjections:

when thudding onto the floor	puf!	Éva	1;1,18	Kenyeres 1926:8
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bad, dirty unpleasant	ee	Éva	1;1,30	Kenyeres 1926:8
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(However, this probably derives from a conventional baby-talk form for defecation.)

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
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e) A child may perceive the sound symbolism inherent in a conventional item and abstract this sound as a characterization of the object or activity:

ffrész "saw"	ffr-ffr	Piroska	-	Trencsény 264
süt "fry"	sss-sss	Piroska	-	Trencsény 264

f) In some cases, the actual symbolism involved is more obscure:

labda "ball"	kr-kr	-	1;2	Jablonkay 149
olvasás "reading"	á - á- á	-	1;3	Jablonkay 149

3.62 Word-blends

Word-blends are neologized roots formed by mixing together sound segments from two lexical items. In some cases the blend also mixes together the semantic features of the source roots, but often enough the blend lies closer to the semantics of one root or the other. For the most part, word-blends are slips-of-the-tongue and fail to acquire a permanent role in the child's lexicon. For this reason, it is difficult to observe with exactitude the semantic domain of any given blend. On the other hand, some blends are formed intentionally in a ludic fashion and remain in currency for some time. In the examples below, where the blend leans heavily towards the semantics of one root over another, that root is marked with an asterisk. As error-like phenomena, blends appear to give us information about the nature of storage and association during recall from the lexicon. Additionally, blends such as those cited by Viktor and MacWhinney suggest that such associations may also be syntagmatic. In our opinion, several of the Hungarian authors have judged child forms to be blends without clear reasons for isolating particular words as sources of the blend. In such cases, it often turns out that the words may be better understood as neologisms based upon morphological or semantic error. This question is a part of the larger issue of the role of analogy in child language.

Source A	Source B	Blend	Child	Age	Source
pont "point"	pötty "tiny"	pönt, pönty	Kari	3;-	Simonyi 319
bokréta* "bouquet"	abroncs "hoop"	bokroncs	Kari	3;-	Simonyi 319
cimbalom "cymbalo"	zongora "piano"	cimbora	Kari	3;-	Simonyi 319
adom "give+1PS"	Andinak "Andi+dat."	andom	Zoli	1;8,6	MacWhinney
anyuci "mommy"	cica "kitty"	anyucica	Zoli	1;8,6	MacWhinney
autó "car"	nincs "is-not"	aucs	Zoli	1;8,6	MacWhinney
Doi "Zoli"	Zoltán "Zoltán"	Doitán	Zoli	1;8,6	MacWhinney
cimbalom "cymbalo"	zongora "piano"	cimbora	Piroska	-	Trencsény
viadukt "viaduct"	alagút "tunnel"	viagut	Kari	3;-	Simonyi 319
állomásház "train station"	masina "machine"	állomás- inaház	Kari	3;-	Simonyi 319
délelőtt "morning"	délután "afternoon"	déletön	Kari	3;-	Simonyi 319
fújja "blow+imp."	hűtse "cool+imp."	fütse	Kari	3;-	Simonyi 319
korsó "mug"	kancsó "pitcher"	koncsó	Kari	4;-	Simonyi 319
tapos "tread on"	tipor "trample"	tipos	Kari	4;-	Simonyi 319
citromlé "lemon juice"	petróleum "petroleum"	citróleum	Kari	4;-	Simonyi 319
ribizske "currant"	cseresnye "cherry"	ribiznye	Nanus	2;0	Simonyi 319
házikó "house+dim."	házacska "house+dim."	házicska	Nanus	2;0	Simonyi 319

Source A	Source B	Blend	Child	Age	Source
picing "tiny"	csöpp "wee"	pipp	-	-	Csapodi 466
elszakít "break"	szakaszt "pluck"	elszakiszt	Nanus	6;-	Simonyi 318
elkülönít "separate"	elválaszt "split"	elkülöniszt	several children		Simonyi 318
Szidi "Szidi"	Judit "Judith"	Szidit	-	-	Verő 263
fődele "cover+3PS poss."	teteje "top+3PS poss."	főteteje	Piroska	-	Trencsény 264
szantiméter	hőmérő	szantimérő	Lili	-	Ponori 1905:440
mogorva "peevish"	komor "serious"	komorva	daughter	4;0	Kardos 1908:265
appa (=hoppá) "whoops"	abla(=labda) "ball"	apla	Matild	1;9	Viktor 67
appa "whoops"	apci "flower"	apca	Matild	1;9	Viktor 67
feküdni "rest+inf."	fekszik "he rests"	feküszni	Nanus	4;-	Simonyi 321
taligáz "he wheel- barrows"	tologat "he pushes"	tologáz	Kari	3;-	Simonyi 318
katona "soldier"	kaszárnya "barracks"	katona- szárnya	F.D.'s son	3;-	Székely 63
fuldoklik "choke"	döglük "die"	füldöglik	Olga V.	-	A. Vértés 1953:42 1971:43
beretvál "shave"	vág "cut"	beretvág	Olga V.	-	"
ki "who"	milyen "what kind of"	kilyen	Gyuri	3;-	A. Vértés 1953:42
pimasz "impudent"	grimasz "grimace"	primasz	Olga V.	-	"

<u>Source A</u>	<u>Source B</u>	<u>Blend</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
tengeri "corn"	kukorica "corn"	tengerica	Ferike	2;4	Endrei 524
hintaló "rocking-horse"	ringat "rocks"	ringaló	Ferike	4;6	Endrei 524
ömlik "pour"	dönt "tip"	dömlik	Olga V.	-	A. Vértes 1953:42
ömlik	dönt	dömlik	-	-	Csapodi
ömlik	dönt	dömlik	Kari	2-6	Simonyi 318
ömlik	dönt	dömlik	Nanus	2;-	Simonyi 318
ömlik	dönt	dömlik	Éva	5;10	Kenyeres 1928:87
ömlik	dönt	dömlik	-	4;-	Kemper 2
futbal "football"	luftballon "balloon"	futballon	-	4;-	Kemper 2
ledül "collapse"	eldönt "knock over"	eldüt	Józsi	2;9,10	Meixner
zebra* "zebra"	abrosz "table-cloth"	zabrosz	-	4;-	Kemper s
apja "his father"	atya "his father"	aptya	Iaci	1;10	Balassa 1893:68
karalábé "kohlrabi"	karamella "caramel"	kelemella	Józsi	2;9,5	Meixner
Ildi "Hilda"	Ildikó "Hilda"	Ildó	Józsi	2;9,5	Meixner
eldültünk "we fell down"	eldöntöttük "we knocked over"	eldütöttük	Józsi	2;9,10	Meixner
domino "domino"	Topolino	dobolino	Józsi	2;11,18	Meixner
lovas "rider"	lovagoló "riding"	lovaszló	Józsi	2;11,24	Meixner
csuháj "whoopee"	suhanjon* "it should slip"	csuhájon	Józsi	3;1,10	Meixner
cinége "titmouse"	cinke "titmouse"	cinécege	Józsi	3;6,9	Meixner

Source A	Source B	Blend	Child	Age	Source
összerontják "they break"	összerom- bolják "they destroy"	összeron- bolják	Emőke	3;2,25	Meixner
lehajlott "bent down"	lehajolt "stooped"	lehajlolott	"	3;2,19	Meixner
bujdosik "lie in hiding"	bujkál "lie in hiding"	bujkosik	Emőke	4;0,19	Meixner
lovagol* "ride"	haragszik "get angry"	lovagszik	Emőke	4;0,23	Meixner
kéményt* "chimney+acc."	kéményít "harden"	kéményit	Pali	3;2,24	Meixner

In addition to the blending of two lexical items into a single word, we also find instances of blending of two phrases into a third phrase.

flastrom "plaster"	gumi elasztikum "rubber elastic"	gumi flasztikum	Kari	4;-	Simonyi 319
törölte ki "he wiped out"	gombolta föl "he buttoned up"	töltölte föl	Pali	3;3,15	Meixner
gyöngé violám "my weak violet" (a popular song)	gyöngé majorána "my weak marjoram" (a popular song)	gyöngé violána	Nanus	1;6	Simonyi 319
Mákos metelt "poppy pastry"	Rákos falú "Rákos village"	Rákos metelt falú	Lili	-	Ponori 1905:446

The blended phrases seem somewhat more intentionally produced than some of the blended words, although blends such as citroleum do seem to indicate how single word blends may seem intentional. In general, it seems that blends of two source words which are highly similar along the semantic domain are the least intentional.

This might mean that semantic factors are primary in the search procedure.

Occasionally, a blended phrase appears, on first inspection, to be a normal syntactic production. However, when the observer has some knowledge of the formulaic nature of certain phrases for a specific child, the phrase may be perceived as a blend. For example, Zoli made frequent use of the phrases anyuci jön majd "Mommy comes later" and anyuci mindjárt jön "Mommy soon comes." Blending these two phrases, he produced anyuci mindjárt jön majd "Mommy soon comes later." It seems that this puzzling utterance can only be a blend. For a further example see section 6.5.

3.63 Klang-associations

If we think of puns as playful word substitutions which depend upon both semantic and phonetic resemblance, klang-associations may be considered incomplete puns, since they rely solely upon a phonetic similarity between the replacing and replaced word. Many of the associations of older children seem intentional word-plays.

<u>Required Word</u>	<u>Replacing Word</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
szomorkodott, szomorkodó "grieving"	szomorodni (a type of Tokay) (=szamorodni)	Lili	-	Ponori 1905:437
pléh "tin"	plébános "vicar"	Lili	-	"
csengő "ringing"	csángó "a Hungarian minority in Rumania"	Lili	-	"

Required Word	Replacing Word	Child	Age	Source
Thurzó "man's name"	torzonborz "hairy"	Lili	-	Pcnori 1905:437
plajbász "pencil"	kolbász "sausage"	Kari	5;-	Simonyi 319
arrogáns "arrogant"	elegáns "elegant"	Olga V.	4;-	A. Vértes 1953:29
guta "stroke"	buta "stupid"	Anna M.	10;-	"
ügetek "trot+lPS"	ugatok "bark+lPS"	Pisti	7;-	"
gyűszű "thimble"	gyűrű "ring"	-	4;-	Kemper 2
eper "strawberry"	perec "pretzel"	Pali	3;3,1	Meixner
szeder "bramble"	szobor "statue"	Emőke	3;9,5	Meixner
száll "fly"	szállít "transport"	Emőke	4;0,19	Meixner

But the productions of younger children seem far less intentional:

mindjárt "right away"	már "already"	Éva	1;10,22	Kenyeres 1926:46
és "and"	is "and also"	Éva	2;3,3	Kenyeres 1926:64
még "and also"	meg "perfective"	Éva	2;0,23	Kenyeres 1926:63
csücsü "sitty-down"	csécsé "pretty"	Matild	1;9	Viktor 67
oppá "whoops"	apci "flower"	Matild	1;9	Viktor 67
Erzsi "Liz"	eccisz "this too"	Matild	1;9	Viktor 67

<u>Required Word</u>	<u>Replacing Word</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
pörög (tekerocs) "turns(reel)"	bög "howl, shout"	Zoli	1;8,6	MacWhinney
torony "tower"	torta "cake"	Józsi	2;9,5	Meixner
akaszt "hang"	ragaszt "stick"	Laci	-	Balassa 1893:64,139

Meggyes reports klang-associations occurring between verses of nursery rhymes that Márta had learned. Thus, at 1;10,11 (Meggyes 98) Márta sang János bácsi, János bácsi, kemence "Uncle John, Uncle John, oven," rather than the usual János bácsi, János bácsi, keljen föl, "Uncle John, Uncle John, get up." The word kemence was evidently taken from another song by the title of "Kis Bence." Around 1;10,21 Márta frequently replaced the line Anyjához készül Lengyelországba "He is preparing to go to his mother in Poland" from the song "Kis kacsa fürdik" with the line Annához készű leng a szakállá, "He is going to Anna; his beard swings." The first part of this contaminated text shows that Márta heard anya "mother" as Anna "Anna" and that she failed to learn that készűl has a final /l/ distinct from the initial /l/ of Lengyelországba. The second part of the text is taken from a song about Santa Claus which she learned at the state nursery.

3.64 Sentence intonation

Apart from the standardized patterns of syllable accentuation within the word, most of the intonational features of the sentence code semantic content. As such, these patterns may be considered as lexical items exterior to the system of segmental phonology. As Crystal (1969) has noted, intonation patterns vary along the grammatical-emotional dimension in regards to the information they encode. Fónagy (1966) observe that metaphorical use of question intonation in imperative sentences was a stylistic feature often associated with the young, students, and trolley conductors. Fónagy based his observations upon data collected from his familyland friends. Fónagy also noticed that adults would use the metaphorical imperative with or without csak. By itself, the imperative with question intonation seems to be a politeness form. Failure of children to use csak appears to be due to their not having learned some of the additional fine distinctions in imperative use.

Balassa had noticed in 1893 that Laci greatly raised the pitch at sentence final position, if the sentence concluded with -é?, the question particle which normally allows the sentence to be pronounced with declarative intonation. Apart from these two isolated reports, our knowledge of the learning of Hungarian intonation is characterized by its absence.

3.7 Phonotactics

Mikes reports that her two bilingual subjects, Eszter and Eta, produced Serbo-Croatian words with sound substitutions that acted to bring them in line with Hungarian rules of vowel harmony:

<u>Adult Serbo-Croatian</u>	<u>Child</u>
bole	bola
donesi	donisi
bencikino	bencikonc
estikono	estikono, estikano
izgubila	zgubala
namazati	namaz'iti

These alterations (Mikes 1968, 253) were found in words from the end of the second year and the beginning of the third year. Although it is true that these child forms show some changes in vowel-harmony, a closer look at the changes involved indicates that processes of deletion and assimilation can easily explain these forms and that no learning of phonotactics need be posited. We should note that, in section 3.325 (Level II) of Part I, we observed that the rule governing fronting-harmony in suffixes may be formulable as a free-rule. However, such a rule is morphotactic and not phonotactic. If a phonotactic were to be devised to control harmony within the root, there would be many exceptions to that rule.

Csapodi (465) reported a case of over-extension of fronting-harmony to a word that is not a suffix. Thus, his second boy said Mama os "Mama too" and néni és "aunt too" when the required forms was is "too."

3.8 Evaluation and discussion

From the viewpoint of Hungarian linguistics, the present data on phonetic development are interesting because they provide the only picture available regarding the nature of the acquisition of phonetics in Hungarian. However, from the larger perspective of the comparative study of language acquisition, the Hungarian data generally serves to confirm existing hypotheses, but not to suggest new formulations. This is not to say that the Hungarian data are unimportant, but rather to point out that future study of acquisition in Hungarian might do well to concentrate on those areas of the acquisitional pattern which might not follow the pattern typical of Indo-European languages.

The data on babbling behavior from Kenyeres, Balassa, and Mikes agree in stressing the importance of physiological (i.e. articulatory) factors in early babbling. This emphasis is in line with our own view of babbling acquisition as the acquisition of a sequence of progressively wider coordinations. Moreover, Kenyeres, Balassa, and others have observed that the gap between babbling and the first words should not be over-estimated in theoretical terms. Many of the sounds of the late babbling period are picked up in the first words. This again is predicted by a model which sees development as a succession of coordinations.

Molnár holds that the available data on the acquis-

ition of phonemes, which includes diary data on the order of emergence of sounds and the observations of section 3.3 on segmental substitutions, supports Jakobson's (1968) theory of phonological acquisition. Certainly, much of what Molnár says is true: the liquids are as late as in Indo-European languages and vowel-rounding is perhaps the last feature acquired in the vowel system (if we confine our observations to rounding of front vowels). Most of the substitutions of section 3.3 involve segments differing only in one feature and this would support a theory based upon the acquisition of features. In the areas where Hungarian is richest in phones, confusions are the most abundant. Thus, in addition to the liquids and rounded vowels, confusions of sibilants and palatal consonants abound. In Hungarian, as in other languages, investigation of the sequence of acquisition requires experimental manipulation such as that performed by Schwachkin (1948) and Garnica.

The distribution of consonant clusters in adult Hungarian seems to have its effect upon the pattern of the child's acquisition. Most children learning Indo-European languages illustrate greater diversity of both segments and clusters in initial position than their Hungarian counterparts. While Meggyes found the greatest diversity of clusters in final position, Balassa found the greatest accuracy of segmental imitation in medial position. There are three important factors at work in Hungarian which

should effect results such as these. First, the presence of primary stress on the initial syllable and the primacy effect should work towards greater accuracy in regards to initial position. On the other hand, the increasing importance of root-final position as the site of the attachment of agglutinated suffixes mitigates for the increasing importance of final position with increasing age. Finally, learning depends upon diversity in the input; thus clusters are few in number precisely because they are rare in the input.

The phenomenon of sound-insertion seems of particular importance in Hungarian, due to the absence of diphthongs in the standard language. On the other hand, some insertions seem to be motivated by morphological considerations such as those observed in our study of the Hungarian plural, while insertions of pauses serve to reduce syllable number. The tendency to avoid sequences of non-diphthongized vowels seems to reflect upon the importance of the CV syllable in the early vocabulary. The use of pauses to break up clusters seems also to be the result of early phonotactic patterns affecting clusters in general. Finally, it is possible that limitations on syllable number which give rise to pauses breaking up word length are due to early hypotheses that limit words to two syllables. Such hypotheses and primitive tendencies were discussed in section 2.32 and 3.31 (Prediction #7) of Part I.

The extensive data on assimilation and metathesis

are worthy of more detailed analysis in the context of similar data from Indo-European. The preponderance of regressive over progressive assimilation noted by the Sterns is also present in the Hungarian material. Both assimilation and metathesis operate within the syllable and between syllables. In the context of the acquisitional model developed in Part I, both metathesis and assimilation may be viewed as attempts to fill in information which has not yet received a full and unambiguous coding. Thus, the child may know that *labda* "ball" begins with a consonant, but may not know anything about its exact nature. Searching for material throughout the word, the child may make use of some or all of the features of the following consonant. If that second or later consonant is left intact, then a regressive assimilation like dabda (from labda) occurs. The fact that regressive assimilation preponderates over progressive assimilation is due to the fact that scanning for information occurs from left to right. In many cases, metathesis could be due to errors regarding the temporal ordering of segments; but it is also possible that metathesis could be the result of lags in the search process. In the case of labda, a state of regressive assimilation is first reached since there is a lag in the retrieval of the features for /l/; but once these features are retrieved the child seeks to include them, now on the wrong consonant, and dabla is the result. Certainly, there may be other accounts of assimilation and metathesis, but it seems that any account must involve

some process of data search and retrieval.

As we noted in section 3.5, the unusual findings regarding early use of final stress by children stand in need of further examination. Similarly, the presence of limitations on syllable length seems to be an interesting and researchable phenomenon. Studies of the preservations of syllables in imitation suggest that syllables are preserved in proportion to the amount of stress they receive. If stress is of such importance in perception, why do children make errors in production of stress?

The data on symbolic words, blends, and klang-associations provide no new insights not available in the international literature, but they are offered as further documentation of the generality of the phenomena.

This data supports Predictions 1, 2, 5, 6, 7, 8, 11, and 12 of section 3.31 of Part I.

4.0 The acquisition of abstract phonological structure

Through the functioning of superimposition, the child is able to unify synonymous surface morphemes of roughly equivalent phonology into phonological units. The raw data necessary for the operation of phonological superimposition must come from the lexical items separated out of large amalgams through lexical analysis. The process of lexical analysis and errors in its application are subjects of the next chapter. Here we are concerned with the incorrect coding of alterations undergone by lexical items. These errors may involve either a root or a suffix, and they may involve over-generalizations of either the basic or a secondary form. Use of the wrong form of a lexical item may be due either to incomplete or erroneous superimposition which fails to code ambiguities in the proper position, or to the inadequate functioning of rules arising during the process of analysis, superimposition, unification, and consolidation.

4.1 Learning of root alterations

For reference purposes, we divide alteration patterns into those which affect roots and those which affect suffixes. Here we treat the former.

4.11 Using a secondary form when the basic form is required

In Hungarian, the basic or dictionary citation form is the nominative for nouns, the 3PS Present Indicative Indefinite for verbs, and the non-compared adjective. The other parts of speech undergo little alteration.

In the discussion of Root Types of section 3.131 we observed that most of the root types illustrated only one or two alternants. Some of the roots which have more than two alternations, particularly among the verbs, were treated as parallel roots. For roots with two forms, we may distinguish between the basic form which occurs either without inflection attached or when the first attached suffix begins with a consonant, and the secondary form which occurs before suffixes beginning with a vowel. The vowel of suffixes following the secondary form may be a deletable vowel. Understanding of the difference between the basic and the secondary form is essential for reading of this chapter.

4.111 Using a secondary form for the basic form:

Use of the secondary form where the basic or citation form is required leads us to suppose that the child has only been exposed to the root in its inflected forms. Thus, for example, the noun kő "stone" might only be known in the amalgams követ "stone+accusative" or köves "stony." The reported cases of this phenomenon involve roots which undergo a major alternation in much of their paradigm:

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
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internal vowel deletion:

reték "radish"	retke	Laci	~2;9	Balassa 1893:71
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<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
kapocs "hook"	kapcs	Nanus	2;-	Simonyi 321
kapocs "hook"	kapcs	Emőke	3;7,22	Meixner
csörög "it rattles"	csörg	Emőke	4;0,12	Meixner
<u>vowel-shortening A:</u>				
szemét "garbage"	szemet	Nanus	3;-	Simonyi 321
hét "seven"	het	Józsi	2;9,16	Meixner
<u>v-insertion A</u> (and vowel-shortening A):				
lé "juice"	lev, lév	Kari	4;-	Simonyi
kő "stone"	köv	Toto	-	Csapodi 465-66

4.112 Using a secondary form in an inflected form, when the basic is required

a) Suffixes beginning with a consonantal non-vocalic segment such as the instrumental -val, -vel, are always attached to the basic form (here kéz).

kézzel	kezzel	-	-	Székely 63
"hand+instrumental"				

b) Nouns of Root Type #8 (section 3.131 of Part I) undergo lowering-shortening before a high non-consonantal segment. Here the rule is applied when the suffix begins with a /± high/ non-consonant.

ajtó	ajtajod	Kari	5;-	Simonyi 321
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4.113 Formation of non-existing secondary forms by rule over-generalization

In the examples considered above, there was reason to believe that the child could have only heard a root in its secondary form. In the errors below the child creates a non-existent alternant or secondary form by subjecting the basic form to the operation of a lexically-bound rule which applies to other lexical items of similar phonological shape. In the terms of the discussion of section 2.31 of Part I, this is the formation of a free-rule where a bound-rule is required. In these errors, the child uses the non-existent secondary form in the type of phonological environment where a secondary form would be required for lexical items subject to the bound-rule.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
<u>internal vowel-deletion:</u> (basic form <u>motor</u> , alternant <u>motr-</u>)				
motort "motor+acc."	motrot	Éva	5;4	Kenyeres 1928:31
motort	motrot	Jolán, Feri, Margit		Endrei 525
alakí "shape+modal-essive"	alku	Emőke	3;10,9	Meixner
alakja "shape+3PS poss."	alka	Emőke	3;10,9	Meixner
lufbalom (=luftballon) "balloon"	lubalm (in <u>lubalmomat</u> and <u>lubalmomzunk</u>)	Józsi	3;1,7	Meixner
<u>lowering-shortening:</u>				
födője "cover+3PS poss."	födeje	Kari	4;-	Simonyi 321

4.12 Using the basic form when a secondary form is required

It is instructive to observe that errors of overgeneralization of the basic form far exceed errors of overgeneralization of a secondary form. We review the former in terms of the types of alterations required to make the secondary forms:

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
a) <u>internal vowel-deletion</u> (basic <u>tükör</u> , alternant <u>tükr-</u>)				
tüköröt "mirror+acc."	tükört	Éva	2;2	Kenyeres 1928:31
fészket "nest+acc."	fészeket	Éva	5;0,8	" "
majmot "monkey+acc."	majomt	Emőke	3;4,7	Meixner
szobrot "statue+acc."	szobort	Emőke	3;9,5	Meixner
vödöröm "bucket+LPS poss."	vödöröm	Emőke	3;9,5	Meixner
telken "plot+superessive"	teleken	Emőke	3;11,28	Meixner
retket "radish+acc."	reteket	Emőke	4;0,12	Meixner
cukrot "sugar+acc."	cukorot, cukorót	Pali	2;11,16	Meixner
toronyot "tower+acc."	toronyt	Pali	3;0,8	Meixner
zörgött "rattle+past"	zörögött	Emőke	3;2,1	Meixner
zörgött	zörögött	Pali	3;1,8	Meixner
lehajlott "down+bend+past"	lehajolott	Emőke	3;2,19	Meixner
elcsavargott "away+wander+past"	elcsavarogott	Pali	3;3,23	Meixner

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
forгатni "turn+infinitive"	forogатni	Laci	2;3	Balassa 1893:70
mozgott "move+past"	mozogт	Kari	3;-	Simonyi 322
mozgott	mozogт	Éva	3;1	Kenyeres 1928:35
tiprok "trample+LPS"	tiporok	Józsi	2;11,24	Meixner
tükörт "mirror+acc."	tükörт	Márti	1;11,0	Meggyes 44
cukrot "sugar+acc."	cukort	Márti	1;8,17	Meggyes 44
piszkok "dirt+plural"	piszokok	Emőke	2;11,22	Meixner
hármат "three+acc."	háromт	Éva	2;10,5	Meixner
tükörök "mirror+plural"	tükörök	Zoli	2;2,3 (twice)	MacWhinney
b) <u>vowel-shortening A</u> (i.e. basic <u>kenyér</u> , alternant <u>kenyer-</u>)				
kenyeret "bread+acc."	kenyért	Zoltán	7;-	A. Vértes 1953:41
kanalam "spoon + LPS poss."	kanáлом	Laci	2;5	Balassa 1893:71
egeret "mouse+acc."	egért	Józsi	2;9,8	Meixner
zsiroskenyeret "bread-with-lard+acc."	zsiroskenyért	Józsi	2;9,10	Meixner
szenet "coal+acc."	szént	Józsi	2;9,10	Meixner
kismadarat "small bird+acc."	kismadárt	Józsi	2;9,10	Meixner
madarak "bird+plural"	madárok	Józsi	2;9,15	Meixner

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
kanalat "spoon+acc."	kanált	Józsi	3;4,28	Meixner
poharat "glass+acc."	pohárt	Emőke	2;11,19	Meixner
egeret "mouse+acc."	egért	Emőke	3;4,10	Meixner
kosarat "basket+acc."	kosárt	Emőke	3;4,6	Meixner
tehenek "cow+plural"	tehének	Emőke	3;4,7	Meixner
madarak "birds"	madárok	Emőke	3;2,26	Meixner
kenyeret "bread+acc."	kenyért	Emőke	3;7,18 3;10,23	Meixner
szenet "coal+acc."	szént	Emőke	3;11,19	Meixner
szamarak "jackass+plural"	számárok	Emőke	4;0,0	Meixner
kanalat "spoon+acc."	kanálot	Emőke	3;2,18	Meixner
kiskanalat "teaspoon"	kiskanált	Emőke	4;1,0	Meixner
bogarat "bug+acc."	bogárt	Emőke	4;1,7	Meixner
fakanalat "wooden-spoon+acc."	fakanált	Emőke	4;1,9	Meixner
tehenet "cow+acc."	tehént	Emőke	4;1,14	Meixner
legyet "fly+acc."	légyet	Emőke	2;11,19	Meixner
poharam "glass+1PS poss."	pohárom	Pali	3;3,18	Meixner
szamarak "jackass+plural"	számárok	Pali	3;3,23	Meixner
vesszem "be-lost+imper.+1PS"	vésszem	Kari	5;-	Simonyi 321

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
kenyeret "bread+acc."	kenyért	Zoli	1;10,5 2;2,0	MacWhinney
bogarat "bug+acc."	bogárt	Zoli	1;10,3 2;0,2	MacWhinney
egeret "mouse+acc."	egért	Zoli	2;0,2	MacWhinney
legyet "fly+acc."	légyet	Zoli	2;0,0	MacWhinney
egerem "mouse+1PS poss."	egérm	Zoli	2;2,5	MacWhinney
tehenek "cow+plural"	tehének	Zoli	2;2,0 (four times)	MacWhinney
tehenet "cow+acc."	tehénet	Zoli	2;2,5	MacWhinney
negyven "four+ty"	négyven	Tibor	3;2	Barcsai 31
hetet "seven+acc."	hétet	Éva	to 4;0	Kenyeres 1926:32
hetven "seven+ty"	hétven	Éva	to 4;0	"
keveset "little+acc."	kevését	Margit	2;6	Endrei 525

c) v-insertion and vowel-shortening A (i.e. basic ló and alternant lova-)

lovat "horse+acc."	lót	Laci	-	Balassa 1893:142
kövek "stone+plural"	kűk	Laci	-	"
követ "stone+acc."	kűt	Laci	~3;2	Balassa 1893:72
lovat "horse+acc."	lót	Miklós	5;8	Barcsai 31
fűvet "grass+acc."	fűt	Éva	2;11	Kenyeres 1928:31
kövek "stone+plural"	kők	Éva	3;0	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
havat "snow+acc."	hót	Éva	3;0	Kenyeres 1928:31
lovat "horse+acc."	lót	Józsi	3;1,6	Meixner
követ "stone+acc."	kót	Józsi	3;1,27	Meixner
füvet "grass+acc."	füt	Pali	3;3,15	Meixner
havazik "snow+verbalizer"	hózik	Laci	2;5	Balassa 1893: 72, 142
havas "snow+y"	hós	Margit	3;6	Endrei 526
lovak "horse+plural"	lók	Zoli	2;2,3	MacWhinney
lovunk "horse+1PP poss."	lóunk	Zoli	2;2,0	MacWhinney
lovat "horse+acc."	lót	Zoli	2;2,5	MacWhinney
d) <u>imperative assimilation B</u> (basic <u>süt</u> , altered <u>süss-</u>)				
süssél "fry+2PS-Imper."	sütjél	Imre	.2;6	Simonyi 321

This rule appears to be fully-bound to the imperative morpheme. It is surprising that more errors in its use are not reported.

e) The next set of errors are based upon use of the 3PS verb base, where some other form is required. Unlike the noun base, which is not subject to the operation of any rule, the verb bases of members of the -ik conjugation (see section 3.131 of Part II, Root Type XVII) may undergo

an alteration through internal vowel-deletion. Noun bases never undergo this deletion. Use of the deleted verb root is an over-generalization before suffixes beginning with consonants.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
döglölve "perish+ed"	döglve	Kari	5;-	Simonyi 321
bújik "hides+-ik"	búj	Zoli	1;8,6	MacWhinney
eszik "eats+ik"	esz	Miklós	8;5	Barcsai 31
iszik "drinks"	isz	Miklós	8;5	Barcsai 31
fekszik "lies"	fek	Rózsi	2;-	Kardos 324
lármázik "he makes noise"	lármáz	Piroska	-	Trencsény 264
eszik "eats"	ész	Józsi	2;9,5	Meixner
szokik "be accustomed"	szok	Józsi	2;11,24	Meixner
elkésik "be late"	elkés	Józsi	2;11,25	Meixner
megeszik "perfective+eat"	megesz	Zoli	2;2,0	MacWhinney

It is convenient at this point to note further problems with this meaningless suffix. While the above errors show failure to attach it to roots which require it, the

following errors show its attachment to roots which do not take it.

Adult Form	Child Form	Child	Age	Source
olvas "reads"	olvasik	Pali	3;3,19	Meixner
olvas "reads"	olvasik	Margit	2;6	Endrei 525
olvas "reads"	olvasik	Jolán	2;11	Endrei 464
szalad "runs"	szaladik	Laci	-	Balassa 1920:135
döng "reverberates"	döngik	Laci	-	"
cseng "rings"	csengik	Jolán	2;3	Endrei 463
csöpp "drips"	csöppik	Nanus	2;6	Simonyi 320
csörög "jangles"	csörgik	Emőke	4;0,12	Meixner
néz "sees"	nézik	Emőke	4;1,0	Meixner
lép "steps"	lépik	Jolán	2;3	Endrei 464

Although the -ik suffix is essentially not meaningful, the above errors show that children sense that it identifies durative actions of a medio-passive nature. The -ik suffix may even assume the status of a formative and begin to replace actual formatives such as -ol or -og:

kotkodácsol "cackle"	kotkodácsik	Pali	3;5,6	Meixner
csipog "peeps"	csipcsik	Pali	3;5,6	Meixner

f) In our discussion of the learning of the plural, we noted that learning of the free-rule of vowel-lengthening should occur quite rapidly. Perhaps it is because this learning is so rapid that few errors have been reported in its application.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
picikéket "little-one+ diminutive+plural+acc."	picikeket	Józsi	3;0,16	Meixner
babát "doll+acc."	babat	Józsi	3;4,8	Meixner
szeméje "eye+3PS poss.+ 3PS poss."	szemeje	Márti	1;10,7	Meggyes 53
kezéje "hand+3PS poss.+ +3PS poss."	kezeje	Márti	1;10,5	Meggyes 53
halacskám "fish+dim.+1PS poss."	halacskam	Zoli	1;10,0	MacWhinney
anyukám "mother+dim.+1PS poss."	anyukam	Zoli	2;2,5	MacWhinney

4.13 Confusions between parallel roots

In section 3.131 of Part I we noted that several root types can be best controlled through the establishment of parallel roots with the same basic meaning, but with different contextual specifications for tense and mood. In this section we treat errors involving use of one such parallel root where another is required. Actually, these errors are lexical errors; but a traditional grammar would surely classify them as morphological and we will follow that over-all classification here. It is, in fact, possible that children and adults control some of these alterations through rules. Certainly, more research needs to be done to determine how these patterns actually function.

4.131 Over-generalization of the root of the present

a) In Root Type XIV, the root of the past is the basic root with no /sz/ (see section 3.131 of Part I):

hittem	hisztem	Tibor	5;6	Barcsai 31
"believe+past+1PS"				
hitted	hiszted	Tibor	5;6	Barcsai 31
"believe+past+2PS"				

b) The third parallel root for verbs of Root Type XIV is a root ending in /gy/ and specified for the imperative.

ígyál	issz	Kari	2;-	Simonyi 321
"drink+imp."				
tedd	tesz	Kari	2;-	Simonyi 321
"put+2PS Imper."				

c) For this same group of roots, there is a fourth parallel root for the Infinitive:

enni	eszni	Kari	1;9	Simonyi 321
"eat+infin."				

d) A few roots of a sub-type of Root Type XV show internal vowel-deletion and /sz/ in the Present, but no deletion and a final /z/ in other forms.

emlékeztem	emlékszettem	Kari	3;-	Simonyi 321
"remember+past+LPS"				

e) The majority of roots of Root Type XV end in /sz/ in the present and /ud/ in the past and elsewhere.

feküdni	fekszeni	Laci	3;-	Balassa 1920: 135, 242
"rest+infin."				

feküdni	fekszeni	Nanus	4;-	Simonyi 321
"rest+infin."				

ne haragudjon	ne haragszon	Kari	2;-	Simonyi 321
"don't get-angry"				

ne haragudjál	ne haragszál	Kari	2;-	Simonyi 321
"don't get-angry"				

aludj	alssz	Imre C.	2;3	Simonyi 321
"sleep!"				

haragudtam	haragszottam	Laci	3;6	Balassa 1893: 72, 142
"get-angry+past+LPS"				

haragudott	haragszott	Kari	1;9	Simonyi 321
"get-angry+past+LPS"				

aludni	alszoni	Márti	1;11,8	Meggyes 44
"sleep+infinitive"				

f) In an error much like (a) above, the present root is used where a special v-base in present in the 3PS Past:

evett	eszt	Tibor	6;2	Barcsai 31
"he ate"				
evett	eszt	Kari	1;9	Simonyi 321
evett	eszett	Tibor	6;2	Barcsai 31
evett	eszett	Józsi	3;1,17	Meixner
evett	eszett	Emőke	3;6,19	Meixner

4.132 Over-generalization of non-present roots

a) One common error type is the reverse of 4.131e:

lefekszem "down+lie+1PS"	lefeküdök	Nanus	2;6	Simonyi	321
lefekszünk "down+lie+1PP"	lefeküdök	Laci	2;2	Balassa	1893:70
lefekszem "down+lie+1PS"	lefeküdök	Laci	2;2	Balassa	1893:70
lefekszenek "down+lie+3PP"	lefeküdnek	Józsi	3;1,17	Meixner	
fekszik "lies"	feküd	Emőke	3;10,23	Meixner	
alszik "sleeps"	alud	Pali	3;3,19	Meixner	
lefekszenek "down+lie+3PP"	lefeküdnek	Pali	3;3,23	Meixner	
alszok(alszom) "sleep+1PS"	aludok	Zoli	1;10,0	MacWhinney	
alszunk "sleep+1PP"	aludunk	Zoli	1;10,2	MacWhinney	
fekszünk "rest+1PP"	feküdünk	Zoli	2;2,0	MacWhinney	

b) Another error type is the reverse of 4.131c:

esznek "eat+3PP"	ennek	Laci	~3;8	Balassa	1893:72
vesznek "take+3PP"	vennek	Laci	~3;8	Balassa	1893:72

c) For most verbs, the 3PS can be used as a base for the rest of the past tense paradigm, but two verbs, "eat" and "drink", have a 3PS in which the /v/ of the base (see section 3.131 of Part I, Root Type XIV) appears through v-insertion A. Use in the rest of the paradigm is an over-generalization:

ettem "eat+past+1PS"	evettem	Kari	3;0	Simonyi	
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4.2 Learning of suffix alterations

In the previous section we treated errors affecting roots; here we treat errors affecting suffixes. Suffixes have no conventionally assigned citation or basic form, so the discussion will not be separated along these lines.

4.2.1 Errors regarding fronting-harmony

a) Attachment of a suffix with front vowels to a root with back vowels:

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
találkoznánk "meet+conditional + 1PP"	találkoznénk*	Éva	6;3	Kenyeres 37
tudnám "know+conditional +1PS"	tudném*	Kari	8;-	Simonyi 322
babyval "báby+instrumental"	babyvel	Hajnalka	1;9	Keresztes 32
papának "papa+dative"	papanyek	Éva	1;5,26	Kenyeres 1926: 29, 1928:31
papához "papa+allative"	papáhesz	Éva	1;5,26	"
mamának "mama+dative"	mamának	Éva	1;6	"
Katika "Kate+dim."	Katike	Zoli	1;10,0	MacWhinney
bácsinak "uncle+dative"	bászinek	Éva	1;6	Kenyeres 1926:29
nekik "to them"	nekuk	Kari	2-5	Simonyi 322
keresztmamánál "Godmother+allative"	keresztmamánél	Emőke	4;0,12	Meixner
ágyamta "bed+1PS poss.+ illative"	ágyambe	Zoli	1;8,6	MacWhinney

* These errors may be influenced by the irregular harmony in the 1PS of the conditional.

Adult Form	Child Form	Child	Age	Source
b) Attachment of a suffix with back vowels to a root with front vowels:				
cserelűnk "change+LPP"	cserelünk	Zoli	1;10,2	MacWhinney
ülűnk "sit+LPP"	ulünk	Zoli	1;10,2	MacWhinney
kezdtem "begin+past+LPS"	kezdtam	Zoli	2;2,2	MacWhinney
gépűnél "machine+adessive"	gépñál	Éva	~1;6	Kenyeres 1928:31
pipikűnél "chicken+pl.+ adessive"	pipikñál	Éva	1;8,10	Kenyeres 192
pisiljűél "pee+imp+2PS"	pisiljál	Pali	2;11,9	Meixner
pisilek "pee+LPS"	pisilok	Pali	2;11,9	Meixner
rőfike "pig+diminutive"	rőfika	Józsi	2;9,16	Meixner
helye "place+3PS"	helya	Pali	3;3,23	Meixner
ezeknűél "this+pl.+adessive"	ezeknál	Éva	3;0,26	Kenyeres 1928:50

The above errors are generally reported as exceptions to a basically correct pattern of fronting-harmony. Each of the above errors involves a failure to apply the basic fronting-harmony rule in standard vowel-harmony situations. There are at least two areas in the conjugation of the verb where the vowel-harmony pattern applies in a non-standard fashion or not at all.

c) The first of these exceptional areas is the LPS of the Indefinite Conditional. In this form the /a/ of the

of the suffix -na which marks the Conditional for back-vowel roots becomes altered to its front-vowel equivalent /e/. Both /a/ and /e/ lengthen before additional suffixes by the rule of vowel-lengthening. Presumably, the child must learn that the unit -nék is the marker of the 1PS Indefinite Conditional for all roots, front or back, and that it cannot be analysed into ne + k. Errors involve use of the regular vowel-harmony pattern. Alternatively these errors may be seen as analogies with the regular 1PS Definite Conditional.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
akarnék "want+1PS cond."	akarnák	Kari	4;-	Simonyi 322
látشانék "seem+1PS cond."	látشانák	Éva	5;8,20	Kenyeres 1928:37
adnék "give+1PS cond."	adnák	Éva	6;3	Kenyeres 1928:37
aludnék "sleep+1PS cond."	aludnák	Emőke	4;0,12	Meixner

d) The second area of irregular application of vowel harmony is in the 3PS and all the plural persons of the Present Definite, where the fully-bound rule of j-e assimilation works to exchange the front vowel /i/ with the back vowel /ja/. During the process of learning of this rule, one common error is simply the substitution of /i/ for /ja/:

issza "drinks+3PS"	iszi	Laci	2;4-3;6	Balassa 1893:71-2,142
megissza "perf.+drink+3PS"	megiszi	Jolán	1;10	Endrei 463
megissza	megiszi	Pali	3;3,18	Meixner

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
mutatja "show+3PS"	mutati	Kari	1;6-2;0	Simonyi 322
látja "sees+3PS"	látí	Kari	1;6-2;0	Simonyi 322
hallja "hear+3PS"	halli	Kari	1;6-2;0	Simonyi 322
szoptatja "give-suck+3PS"	szoptati	Margit	2;6	Endrei 525
olvassa "read+3PS"	olvási	Margit	2;6	Endrei 525
kaparja "scratch+3PS"	kapari	Margit	2;6	Endrei 525
kiborítja "cover+3PS"	kiborítí	Józsi	2;11,25	Meixner
tollja "push+3PS"	tolli	Emőke	3;11,28	Meixner

It is interesting to note that we have no reports of substitutions of -ja for -i. This is most likely due to the fact that the child strongly senses the backness of the /a/ of the -ja, whereas the sound /i/ lies outside the basic vowel-harmony system.

e) For the reason just mentioned, the child attempts to subject the suffixes -ja of the 3PS and -jék of the 3PP to vowel harmony along the regular lines, producing -je and -jék. However, these are precisely the suffixes of the 3PS and 3PP of the Definite Imperative. Thus, in the following errors it is difficult to separate morphological and semantic error:

keféli "brush+3PS"	kefélje	Pali	3;3,18	Meixner
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Adult Form	Child Form	Child	Age	Source
meséli "tell+3PS"	mesélje	Józsi	3;0,23	Meixner
festi "paint+3PS"	festje	-	-	Ponori 1871:9
önti "pour+3PS"	öntje	-	-	Ponori 1871:9
eltépi "up+tear+3PS"	eltépje	Éva	2;9	Kenyeres 1928:36
elkiséri "away+accompany+3PS"	elkisérije	Éva	6;4	Kenyeres 1928:36

3PP confusions:

ellökik "push+3PP"	ellökjék	Pali	3;3,18	Meixner
engedik "permit+3PP"	engedjék	Éva	3;9	Kenyeres 1928:36

The above confusions can be judged as either phonological or semantic. However, when the child assimilates the -j of either -je or -jék to the final consonant of the root, in the manner required by the Imperative and not in the manner required by the Indicative, there is better evidence of a semantic confusion between the Imperative and the Indicative Definite:

megnézi "perf.+look+3PS"	megnézze	Emőke	4;1,7	Meixner
bélyegzi "stamp+3PS"	bélyegezze	Éva	6;7	Kenyeres 1928:36
eteti "feed+3PS"	etesse	Pali	3;3,19	Meixner
építi "build+3PS"	építse	Pali	3;3,19	Meixner
zörgeti "rattle+3PS"	zörgesse	Pali	3;3,23	Meixner

However, there also occurs errors in which the assimilation pattern of the Imperative is over-generalized to the Indicative. Considering these errors separately, we do not know whether the errors are phonological or semantic:

Adult Form	Child Form	Child	Age	Source
összekötjük "together+bind+1PP"	megkössük	Józsi	2;11,25	Meixner
felborítja "up+cover+3PS"	felborítsa	Józsi	3;0,9	Meixner
látja "see+3PS"	lássá	Éva	3;1	Kenyeres 1928:36

Considering all these error types together, it seems that we can only conclude that some of the errors are phonologically motivated, while others are semantically motivated. It doesn't seem possible to distinguish the two motivations in an individual case, unless we know more about the individual child.

4.22 Errors in height-harmony

With the exception of the two errors from Zoli, mistakes regarding height of the linking-vowel are over-generalizations of the mid-vowel /o/. The fact that /a/ is not over-generalized to roots taking /o/ as a linking-vowel supports the view expressed in Part I that /a/ is bound to the root and /o/ to the suffix. The relatively smaller number of over-generalizations of /a/ might also be a result of the over-all effect of ambiguity bias in the operation of initial vowel insertion. More data of this kind are clearly needed.

Adult Form	Child Form	Child	Age	Source
utat "road+acc."	utot	Laci	~3;3	Balassa 1893:72
kanalam "spoon+lPS"	kanáloom	Laci	2;5	Balassa 1893:71
másikat "other+acc."	másikot	Margit	2;6	Endrei 525
madarak "bird+plural"	madárok	Józsi	2;9,15	Meixner
lyukat "hole+acc."	lyukot	Józsi	2;9,15	Meixner
madarak "birds"	madárok	Emőke	3;2,26	Meixner
kádak "bath+plural"	kádok	Emőke	3;6,18	Meixner
szamarak "jackass+pl."	szamárok	Emőke	4;0,0	Meixner
kanalat "spoon+acc."	kanálot	Emőke	3;2,18	Meixner
házakat "house+pl.+acc."	házokat	Pali	3;1,8	Meixner
poharam "glass+lPS"	pohárom	Pali	3;3,18	Meixner
szamarak "jackass+pl."	szamárok	Pali	3;3,23	Meixner
bújom "hide+lPS Def."	bújam	Zoli	1;10,0	MacWhinney
nadrágot "pants+acc."	nadrágot	Zoli	2;0,1	MacWhinney

4.23 Failure to insert a required linking-vowel

a) No linking-vowel is required before the accusative marker -t, if the final consonant or the root is a liquid, sibilant, or apical nasal (see section 3.133 of Part II, discussion of Conditions on partially-bound rules). However, failure to insert the linking vowel after other consonants is a misuse of the Condition limiting linking-vowel insertion:

templomot "church+acc."	templomt	Éva	2;9-5;0	Kenyeres 1928:31
virágot "flower+acc."	virágt	Éva	2;9	"
templomot "church+acc."	templomt	Emőke	4;2,4	Meixner
kilencet "nine+acc."	kilencet	Pali	2;11,12	Meixner
perecet "pretzel+acc."	perecet	Józsi	2;9,4	Meixner
húsdarabot "piece-of-meat+acc."	húsdarabt	Józsi	3;4,28	Meixner
piszkot "dirt+acc."	piszokt	Éva	2;11	Kenyeres 1928:31
majmot "monkey+acc."	majomt	Emőke	3;4,7	Meixner
sokat "much+acc."	sokt	Pali	2;11,16	Meixner

b) Deletion of a linking-vowel before the accusative -t, according to Condition A (Part I, section 3.133) should also be blocked by the presence of a /Ohigh/ linking-vowel on the end of the root. Thus, even when the root is a

sibilant or liquid as its last consonant, if a low linking-vowel follows it must not be deleted. If the low vowel is the back vowel /a/, the child is able to easily distinguish it from the /+high/ linking-vowel /o/; thus, errors indicate a deficiency in the rule specifying deletion before the accusative or in the coding of individual roots.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
pirosat "red+acc."	pirost	Éva	8;4,3	Kenyeres 1928:31
falat "wall+acc."	falt	Éva	-	Kenyeres 1928:31
falat "wall+acc."	falt	Miklós	5;8	Barcsai 31
várat "castle+acc."	várt	Józsi	2;11,25	Meixner
tálat "plate+acc."	tált	Józsi	3;1,17	Meixner
várat "castle+acc."	várt	Emőke	3;9,5	Meixner
házat "house+acc."	házat	Emőke	4;1,0	Meixner
sokat "much+acc."	sokt	Pali	2;11,12	Meixner

In the case of the contrast between non-high /e/ and high /ɛ/, the absence of this contrast in many dialects would suggest that errors resulting from failures to code final /e/ as /o/segment/ would be rather common. However, it seems that the proportion of common roots of this type is lower than for /a/.

Adult Form	Child Form	Child	Age	Source
őzet "deer+acc."	őzt	Éva	8;3,20	Kenyeres 1928:31
tejet "milk+acc."	tejt	Emőke	3;10,11	Meixner
c) Many roots with final /Osegment/ non-high vowels are members of root types with undergo <u>vowel-shortening A</u> and which should therefore block the operation of Condition A.				
darazsat "wasp+acc."	darast (=darázst)	Éva	-	Kenyeres 1928:31
kismadarat "little+bird+acc."	kismadárt	Józsi	2;9,15	Meixner
kanalat "spoon+acc."	kanált	Józsi	3;4,28	Meixner
poharat "glass+acc."	pohárt	Emőke	2;11,19 3;4,10	Meixner
kosarat "basket+acc."	kosárt	Emőke	3;4,6	Meixner
kiskanalat "teaspoon+acc."	kiskanált	Emőke	4;1,0	Meixner
bogarat "bug+acc."	bogárt	Emőke	4;1,7	Meixner
fakanalat "wooden-spoon+acc."	fakanált	Emőke	4;1,9	Meixner
bogarat "bug+acc."	bogárt	Zoli	1;10,3 2;0,2	MacWhinney
egerem "mouse+1PS poss."	egérm	Zoli	2;2,5	MacWhinney
kenyeret "bread+acc."	kenyért	Zoltán	7;-	A. Vértés 1953:41
egeret "mouse+acc."	egért	Józsi	2;9,4	Meixner
zsíroskenyeret "bread-with-lard+acc."	zsíroskenyért	Józsi	2;9,10	Meixner
szenet "coal+acc."	szént	Józsi	2;9,10	Meixner

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
egeret "mouse+acc."	egért	Emőke	3;4,10	Meixner
kenyeret "bread+acc."	kenyért	Emőke	3;7,18	Meixner
szenet "coal+acc."	szént	Emőke	3;11,19	Meixner
tehenet "cow+acc."	tehént	Emőke	4;1,14	Meixner
kenyeret "bread+acc."	kenyért	Zoli	1;10,5 2;2,0	MacWhinney

d) Roots undergoing internal vowel-deletion should also block Condition A:

piszkt "dirt+acc."	piszokt	Éva	2;11	Kenyeres 1928;31
majmot "monkey+acc."	majomt	Emőke	3;4,7	Meixner
szobrot "statue+acc."	szobort	Emőke	3;9,5	Meixner
cukrot "sugar+acc."	cukort	Pali	2;11,16	Meixner
tornyot "tower+acc."	toronyt	Pali	3;0,8	Meixner
vödöröm "bucket+1PS poss."	vödöröm	Emőke	3;9,5	Meixner

e) Although many verb roots are of Root Type I which has no linking-vowel, others are of Root Type II and must code a final /Osegment/ vowel. In these errors no vowel is inserted:

játszani "play+inf."	játszni	Józsi	3;1,6	Meixner
hajtani "drive+inf."	hajtni	Józsi	3;1,10	Meixner

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
önteni "pour+inf."	öntni	Józsi	3;1,10	Meixner
meriteni "dip+inf."	meritni	Józsi	3;4,8	Meixner
elmondani "tell+inf."	elmondni	Emőke	3;9,5	Meixner
fütteni "heat+inf."	füttni	Emőke	3;11,9	Meixner

f) In section 3.131 of Part I we treated the plural of adjectives as a morpheme separate from that which forms the plural of nouns. This separation is made because the adjective plural is subject to initial vowel insertion B, while the noun plural is subject to initial vowel insertion B. In the following errors the former rule is used rather than the latter:

fehértalpúak "white+sole+ish+plural"	fehértalpak	Emőke	4;0,17	Meixner
többiek "more+ish+plural (=the others)"	többik	Emőke	4;0,17	Meixner

4.24 Inserting a linking-vowel where none is required

a) After liquids, sibilants, and apical nasals the insertion of the linking vowel before a suffix beginning with /t/, such as the accusative -t, should be blocked by Condition A.

vánkost "pillow+acc."	vánkosot	Laci	~3;2	Balassa 1893:72
húst "meat+acc."	húsat	Laci	2;4	Balassa 1893:72

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
húst "meat+acc."	hústot	Laci	~2;9	Balassa 1893: 71
papírost "paper+acc."	papírosat	Laci	~2;9	Balassa 1893:71
díszet "decoration+acc."	díszet	Éva	8;2,5	Kenyeres 1928:31
kalászt "ear-of-corn+acc."	kalásztot	-	-	Verő 263
sört "beer+acc."	söröt	Margit	2;8	Endrei 525
bort "wine+acc."	borot	Margit	2;8	Endrei 525
garázst "garage+acc."	garázsot	Józsi	3;0,16	Meixner
edényt "dish+acc."	edényet	Józsi	3;1,20	Meixner
kést "knife+acc."	késot	Józsi	3;1,20	Meixner
motort "motor+acc."	motorot	Emőke	3;4,10	Meixner
csalánt "nettle+acc."	csalánót	Emőke	3;4,20	Meixner
pajtást "chum+acc."	pajtásot	Emőke	3;11,19	Meixner
bort "wine+acc."	borot	Emőke	3;11,19	Meixner
pénzt "money+acc."	pénzet	Zoli	1;10,2	MacWhinney
traktort "tractor+acc."	traktorot	Zoli	2;2,2	MacWhinney
garázst "garage+acc."	garázsot	Pali	3;2,2	Meixner
bort "wine+acc."	borot	Emőke	3;11,19	Meixner

Adult Form	Child Form	Child	Age	Source
dobozt "box+acc."	dobozot	Pali	2;11,12	Meixner
lakást "flat+acc."	lakásot	Pali	3;0,8	Meixner
asztalt "table+acc."	asztalat	Pali	3;2,2	Meixner
motort "motor+acc."	motorot	Pali	3;3,18	Meixner
kanyart "bend+acc."	kanyárót	Pali	3;3,19	Meixner
pénzt "money+acc."	pénzet	Pali	3;3,23	Meixner
buszt "bus+acc."	buszot	Pali	3;3,28	Meixner

b) In the reverse of 4.23e above, the child seems to treat the infinitive as if it had a /+segment/ initial vowel, rather than a deletable initial vowel.

látni "see+infin."	látani	Emőke	3;2,25	Meixner
kötni "bind+inf."	köteni	Pali	3;0,12	Meixner
főzni "cook+inf."	fözöni	Márti	1;10,24	Meggyes 17

Since the linking-vowel in the last of these errors is /+high/, it might derive from the root, rather than the suffix.

c) Other evidence that the child may code a final vowel on the root, as suggested in the model of Part I, is in these possessives in which a linking-vowel appears that could not possibly come from the suffix.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
gombja "button+3PS poss."	gomboja	Márti	1;10,7	Meggyes 17
porja "dust+3PS poss."	poloja	Márti	1;10,7	Meggyes 16, 44
nadrágja "pants+3PS poss."	nadrágoja	Márti	2;1,3	Meggyes 44

4.25 Errors in shaping the past tense suffix

The past tense suffix may take either the shape -t with no linking vowel or -tt with a linking vowel or the pattern o-ë-ö. The shortening of the /t/ in the first case is a phonetic fact which need not concern us here. Thus, the main question is the presence of the high linking-vowel. Conditions governing this insertion are outlined in section 3.133 of Part I.

a) over-generalization of -ott, -ett, -ött:

adtam "give+past+1PS"	adottam	-	-	Ponori 1871:9
adtam	adottam	Piroska	-	Trencsény 264
láttam "see+past+1PS"	látottam	Laci	2;4	Balassa 1893:71,142 1920:135
nevettek "laugh+past+3PP"	nevetettek	Laci	2;4	"
látta "see+past+3PS"	látotta	Laci	2;4	"
elestek "away+fall+past+3PP"	elesettek	Laci	2;4	"
megmelegedtem "warm+past+1PS"	megmeleged- ettem	Laci	2;5	Balassa 1893:72
gőzölgött "steam+3PS past"	gőzölgött	Laci	2;5	Balassa 1893:72, 142
élt "live+3PS past"	élett	Tibor	6;2	Barcsai 31

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
elkergettem "chase+past+1PS"	elkergettettem	Kari	3;-	Simonyi 322
folyt "flow+past"	folyott	Józsi	2;9,4	Meixner
becsavarta "in+screw+past+3PS"	becsavarott	Józsi	3;4,28	Meixner
szerettem "love+past+1PS"	szerettettem	Emőke	3;10,23	Meixner
elpukkadt "away+pop+past"	elpukkadott	Pali	3;3,15	Meixner
kifolyt "out+flow+past"	kifolyott	Pali	3;3,23	Meixner

b) over-generalizations of -t:

adott "give+past"	adt	"many children"		Ponori 1871:9
mozgott "move+past"	mozgot	Kari	3;-	Simonyi 322
mozgott "move+past"	mozgot	Éva	3;1	Kenyeres 1928:35
kapott "get+past"	kapt	Éva	2;2	Kenyeres 1928:35
kötötte "bind+past+3PS"	kötte	Éva	2;10	Kenyeres 1928:35
adott "give+past"	adt	Éva	3;1	Kenyeres 1928:35
nyitottam "open+past+1PS"	nyittam	Éva	3;1	Kenyeres 1928:35
durrantottam "bang+past+1PS"	durrantam	Pali	3;3,15	Meixner
bedobott "in+throw+past"	bedobt	Zoli	2;2,5	MacWhinney

Without entering into a discussion of the details of the rules and conditions governing the past tense suffix, we

should note that most of the errors noted here involve roots which, in one way or another, are exceptions to more general patterns, or which are members of minor sub-patterns.

4.26 Errors in v-assimilation

The instrumental takes the shape -val, -vel after vowels, but after consonants the /v/ drops and the final consonant of the root becomes doubled. This change may be thought of as complete progressive assimilation. The rule is probably fully-bound and requires a large amount of superimposition for its complete formulation.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
késsel "knife+instr."	késvé	Laci	to 3;11	Balassa 1893: 69, 72, 142
bottal "stick+instr."	botva	Laci	"	"
késsel "knife+instr."	tészvel	Hajnalka	1;9	Keresztes 32
kalappal "hat+instr."	kalapval	Éva	3;-	Kenyeres 1928:31
késsel "knife+instr."	késvel	Éva	3;-	"
kikkel "who+plural+instr."	kikvel	Éva	3;-	"
bohóccal "clown+instr."	bohócval	Éva	4;-	Kenyeres 1928:32
kötésemmel "bandage+LPS poss.+instrumental"	kötésemvel	Éva	4;-	"
kisasszonnyal "Miss+instr."	kisasszonyval	Éva	4;-	"
kanállal "spoon+instr."	kanálval	Jolán	1;11	Endrei 463

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
miénnkel "ours+instr."	miénnkvel	Éva	2;7,6	Kenyeres 1926:55
dobozzal "box+instr."	dobovzal (metathesis also)	Józsi	2;9,10	Meixner
olyannal "such+instr."	olyanval	Józsi	2;11,25	Meixner
egérrel "mouse+instr."	egérvel	Emőke	3;2,28	Meixner
fűrészszel "saw+instr."	fűrészszelvel	Pali	3;3,18	Meixner
ilyennel "such-a-thing+ instr."	ilyenvel	Éva	2;11	Kenyeres 1928:55

4.27 Errors in 2PS-selection

In section 3.133 of Part II we noted that the selection between -asz, and -ol for the 2PS of the Present Indicative is made by a special fully-bound rule. It is interesting to note that the reported errors here all involve over-generalization of -ol, -el, -ül to verbs ending in /l/. Apparently, there is something like assimilation at work here.

szólsz "say+2PS"	szólol	Pali	3;3,23	Meixner
csinálsz "do+2PS"	csinálol	Jolán	2;5	Endrei 464
beülsz "in+sit+2PS"	beülöl	Zoli	2;2,2	MacWhinney

4.28 Errors in j-insertion

Learning of the rule governing j-insertion in the 3PS and 3PP possessives is essentially the isolation

through superimposition of the relevant distinctive features.
on the final consonant of the root.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
copfja "curl+3PS poss."	copfa	Emőke	3;2,28- 3;7,11	Meixner
vagonja "wagon+3PS poss."	vagona	Pali	3;3,23	Meixner

4.29 Errors in z-insertion

The rule of z-insertion involves only the definite article a, az. Before roots beginning with a consonant the /z/ is not present, but it is inserted before roots beginning with a vowel. Children have trouble making the insertion:

az ujjamat "the finger+ 1PS poss+acc."	a ujjamat	Éva	2;2	Kenyeres 1928:58
az ebédlő "the dining-room"	a ebédlő	Éva	2;5	"
az ibolyát "the violet+acc."	a ibolyát	Éva	2;5	"

(Kenyeres reports that such errors continue to 5;0)

az Attilája "the Attila+ 3PS poss."	a Atillája	Márti	2;0,17	Meggyes 33
az Évi	a Évi	Márti	2;0,13	Meggyes 33

(Meggyes points out that these errors were exceptions to a pattern of generally-correct usage. She suggests that they may have been learned at the nursery.)

az anyukám "the mother+1PS poss"	a anyukám	Józsi	2;9,4	Meixner
az autó "the car"	a autó	Józsi	2;9,4 2;11,25	Meixner

Adult Form	Child Form	Child	Age	Source
az elefánt "the elephant"	a elefánt	Józsi	2;9,4	Meixner
az enyém "mine"	a enyém	Emőke	3;6,19	Meixner
az aranyos "the darling"	a aranyos	Emőke	3;7,11	Meixner
az Attila "the Attila"	a Attila	Emőke	3;9,8	Meixner
az ünneplőruhám "the holiday-best +lPS poss."	a ünneplőruhám	Emőke	3;10,21	Meixner
az ovodába "the nursery+illative"	a ovodába	Emőke	3;11,19	Meixner
az én teám "the my tea+lPS poss."	a én teám	Emőke	3;2,22	Meixner
az enyém "the mine"	a enyém	Pali	3;3,23	Meixner
az ebéd "the meal"	a ebéd	Pali	3;3,15	Meixner

At Level II (1;6,29) Zoli uses twenty-five definite articles without any errors in morphology. However, the only noun he uses at this time which begins with a vowel is anyu "mother" and az anyu "the mother" is probably an amalgam. At Level III (1;8,6) Zoli uses 211 definite articles. Of these, 192 are correctly a before a consonant and only one is correctly az before a vowel, while 18 are incorrectly a before a vowel. At Level IV (1;10) and Level V (2;0) the omission of the /z/ becomes ever more common. Only at Level VI (2;2) do we begin to find

regular use of az in forms with first person possession, i.e. az én N "my N." See also section 5.1 below.

4.3 Evaluation and Discussion

The data of this chapter supplement the more normative data gathered through the investigation of the Hungarian plural in Part I. Through experimental manipulation we were able to study a fragment of the phonology to a certain depth; the Hungarian reports of child errors give us a wider perspective regarding the relative difficulties of different phonological alterations. The areas revealed through this error data can be studied later in greater depth. A general conclusion from the section dealing with errors in the shape of the root is that such errors are generally due to failure to code alternation patterns of the root through superimposition, rather than inadequacies in the system of rules which disambiguate the codings created by superimposition. When a new item is encountered, the child may not have experienced it in enough forms to know that it is subject to certain alterations. This is a confirmation of Prediction #19.

The over-generalizations of internal vowel-deletion and vowel-shortening A confirm Prediction #16 which holds that some bound-rules may first appear as free-rules.

Moreover, the fact that most over-generalization are of the basic form confirms Prediction #20.

The over-generalizations of the suffix -ik and the attempt to use it as a formative suffix indicate the pervasiveness of the basic process which seeks to isolate sound-meaning units through superimposition. Thus, Prediction #10 is confirmed here. The scarcity of errors in free-rules can be seen as a corollary of Predictions #16 and #19. Problems with conditions on vowel-insertion before /t/ confirm the general form of Prediction #1 which claims that rules of exceptional complexity should emerge late. Similarly, except among the youngest children, vowel-harmony errors seldom involve the basic or central part of the vowel-harmony rules. The scarcity of errors in basic fronting-harmony seems to be attributable to the fact that it is formulable as a free-rule. This confirms Predictions #16 and #19. One of the most striking phenomena is the wide-spread attempt to bring the suffix pairs -ja, -i, and -jak, -ik into line with vowel-harmony. This is clear evidence that fronting-harmony is so productive that even new suffixes can be formed according to its principles, and that the child senses the externality of /i/ to the harmony system.

The fact that over-generalizations of /o/ as a linking-vowel exceed over-generalizations of /a/ suggests

either that /a/ is a result of final-vowel insertion or that there is some free variation in initial vowel insertion. The fact that there are any over-generalizations of /a/ at all supports the latter hypothesis for those children in which such over-generalizations are found.

In general, there is evidence in this data in support of Predictions 1, 2, 13, 16, 17, 18, 19, and 20. Clearly, these observations require support from experimental investigations.

5.0 Acquisition of the lexicon

In order to acquire a lexicon, the child must form a number of associations between a set of sounds and a set of meanings. In the present chapter we explore five major aspects of lexical learning. In the first major section, we discuss the process of segmentation and errors reported in its application. Segmentation involves the locating of morpheme boundaries; it occurs during the analysis of amalgams through superimposition and errors of segmentation involve misjudging the boundary by one or two segments. In the second major section, we discuss more fundamental errors in the process of analysis which are due either to under-analysis or misanalysis. In the third major section, we examine a number of child neologisms; these neologisms demonstrate productive use of a large number of formative suffixes. In the fourth section, we discuss the need for insulation of certain lexical items against the processes of morphological analysis, and at the same time we present a number of child errors due to absence of fully-insulated forms. In the last section, we discuss a variety of normative data on the emergence of the lexicon. Included in this fifth section are observations of vocabulary development, reports of the order of emergence of the common flectional suffixes, and a list of baby-talk words which constitute a unique part of the lexicon to which the child is exposed. Since the topics of this chapter are rather diverse, we will include our evaluation and discussion at the end of each major

section, rather than at the end of the chapter.

5.1 Errors of segmentation

Analysis of amalgams begins with the extraction of a known item from an amalgam. In order for this extraction to proceed successfully, the residue must be subjected to lexicalization and, perhaps, superimposition. If the child fails to extract all the segments (sets of distinctive features) which belong to the known item, or if he extracts too many segments, an error of segmentation results.

a) First let us review a very widespread error due to failure to extract all the segments belonging to the definite article a, az. Processing an amalgam from left to right, the child picks out only the /a/ and leaves the /z/ on the residue, i.e. az ebéd --> a zebéd.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
üngeről (=ingeről) "üngeről"	züngeről	Laci	2;5	Balassa 1893:71
apuka "daddy"	zapuka	Laci	2;5	"
ebéd "dinner"	zebéd	Laci	2;5	"
ágy "bed"	zágy	Rózsi	2;-	Kardos 324
ebédlő "dining-room"	zebédlő	Rózsi	2;-	Kardos 324
apó "Dad"	zapó	Rózsi	2;-	Kardos 324
Ilona "Ilona"	Zilona	Rózsi	2;-	Kardos 324

Adult Form	Child Form	Child	Age	Source
udvarba "court+illative"	zudvarba	Éva	2;1,10	Kenyeres 1926:56 1928:57
orám	zorám	Éva	2;2,20	"
állatokban "an animal+pl. +inessive"	zállatokban	Éva	2;1,15	Kenyeres 1926:56
övéje (=övé) "his+3PS poss."	zövéje	Éva	1;11	Kenyeres 1926:20,56
ujjamat arcom ablakot asztalra égbe orromra	zujjamat zarcom zablakot zasztalra zégbe zorromra	Éva	2;5,3 to 2;5,22	Kenyeres 1926:56
ágy "bed"	zágy	Márgit	2;6	Endrei 525
áda (=ágy) "bed"	záda	Márti	1;10,7	Meggyes 33
Ági néni "Aunt Agnes"	Zági néni	Márti	1;10,18	Meggyes 33
apa "father"	zapa	Márti	1;11,14	Meggyes 33
apuka "daddy"	zapuka	Márti	2;1,11	Meggyes 33
Uzsoki "Uzsoki"	Zsuzsuki (also assimilation)	Márti	5;-	Meggyes 33

Meggyes notes how the /z/ so attached to roots may undergo the same alterations affecting any /z/ which is actually a part of a lexical item. For example, the child may regularly modify initial /c/ to /z/, as in congora for zongora "piano."

apa "father"	capa	Márti	1;10,17	Meggyes 33, 12
erkély "balcony"	cerkéj	Márti	1;9,22	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
apa "father"	szapa	Márti	1;10- 1;11	Meggyes 33,12
ingeje (=inge) "shirt+3PS poss+ 3PS poss."	dzsingejje	Márti	1;11,13	"

It appears that, up to a certain age, segmentation is due to the fact that the only form of the definite article which the child uses is the a. Thus, Kenyeres (1928:58), Meggyes (33), Endrei (525), Balassa (1893:68), and Kardos (324) all report that the first form of the definite article was a. However, Endrei also tells us that the az form entered at 2;6 (compare 5.332g). In section 4.25d above we noted a similar pattern for our subject Zoli. It may be that incorrect placement of the /z/ on the noun ceases with the acquisition of az; however it may also be that such errors continue past this acquisition for a few weeks. The basic principal of segmentation is that the size of each root extracted should be maximized. Even if this rule is somehow available at the beginning of lexical analysis, the child must learn to make trade-offs between maximization of adjacent lexical items. English-speaking children show parallel behavior in their use of the "a" form of the indefinite article before the "an" form.

- b) We also have errors involving the over-extraction of segments belonging to the definite article, i.e. a zöldség
 ---> áz üldség.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
zöld "green"	ölt	Márti	1;10,25	Meggyes 33
zöld "green"	öld	Zoli	1;8,6	MacWhinney
Zolika "Zolika"	Olika	Zoli	1;8,6	MacWhinney
zászló "flag"	ászló	Józsi	2;11,24	Meixner

Since few words begin with /z/, errors of this type are not as common as errors of under-extraction.

c) For children prone to making errors of type (a) above, there is a tendency to treat /z/ as if it were a very general initial consonant for words beginning with a CV. So it happens that the /z/ comes to replace poorly controlled sounds such as the liquids at the beginning of the word.

lábam "leg+1PS poss."	zábam	Laci	2;5	Balassa 1893:71
Jancsi "Johnny"	Zancsi	Márti	1;11,8	Meggyes 33
hattyú "swan"	zattyú	Márti	1;11,18	Meggyes 33

Alternatively, it is possible that the child has coded these roots without an initial consonant, since liquids are frequently deleted. Then the child has produced forms with an article and the correct root, such as az ábam, and then incorrectly segmented these forms.

d) When an amalgam contains no well-known root, segmentation may attempt to preserve simple phonological structures

such as CV structure.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
Szlávik Attila (name)	Szlávi Katijja Márta (=Szlavi Katilla)	Zoli	1;8	Meggyes 33

e) In our account of Hungarian plural formation, we suggested that the child would first segment amalgams by attaching linking-vowels to suffixes. Later, the child would attach linking-vowels to roots also, but would soon learn that they should be /Osegment/. In the following examples, we have evidence that linking-vowels are in fact attached to roots to the limited degree predicted.

doboz "box"	dobozo	Zoli	1;8,7	MacWhinney
szék "chair"	széke	Zoli	1;8,6	MacWhinney
lapát "shovel"	lapáto	Zoli	1;10,0 2;0,2	MacWhinney
tud "know"	tudo	Zoli	1;10,2	MacWhinney
hal "fish"	hala	Zoli	2;0,0	MacWhinney
narancs "orange"	narancso	Laci	1;7	Balassa 1893:67
dob "drum"	dobo (in <u>doboba</u>)	Laci	1;10	Balassa 1893:68
kabát "coat"	kabáto	Laci	1;9	Balassa 1893:67
tej "milk"	teje	Laci	1;3	Balassa 1893:65 1920:58
víz "water"	vize	Laci	1;3	"
ebéd "meal"	ebéde	Laci	1;3	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
fordít "turns"	fordító	Laci	2;1	Balassa 1893:70
bab "bean"	babo	Matild	1;9	Viktor 54

The errors of section 4.222b-c provide further evidence of this sort.

Evaluating the data on segmentation errors in light of the model of superimposition, we find that they provide evidence supporting those aspects of the model which hold that analysis precedes by extraction of a known item and lexicalization of the residue. Furthermore, they show that, when the "known" item has not been completely and accurately shaped by superimposition, errors betray this fact.

5.2 Errors of Analysis

Whereas the errors of segmentation treated in the previous section involved mistaken assignment of a single segment to the lexical item preceding or following, errors of analysis involve more basic failures in the analytic process. These may be errors of under-analysis, over-analysis, or misanalysis.

5.21 Under-analysis

The Hungarian child acquires much of his initial vocabulary in the form of incompletely analysed amalgams. In the input to the child, parts of the body are commonly present only in genitive form; favorite foods are frequently

heard in the accusative, and many verbs are usually imperatives, etc. The child may succeed in using these amalgams correctly in some cases; but, until the child analyses these amalgams, there will inevitably be errors associated with their usage.

5.21 Use of superfluous inflection where a basic form is required

Observers frequently report that children use inflected forms where the basic is required. Thus, the child may have associated the amalgam kocsiba "into the car" with all that is involved with the automobile. In this case, the child may sense on some level the presence of the inessive -ba, but not yet have coded its presence or analysed its presence with sufficient clarity to confine use of kocsiba to situations where motion towards the interior of the car is in question. In a sense, misuse of kocsiba can be considered as illustrative of deficiencies in the semological coding of the lexical item -ba, -be. Although we cannot know whether the child has some inaccurate idea of the semantics of the inessive, it often seems more reasonable to attribute these errors to under-analysis of amalgams than to deficiencies in the understanding of the content of suffixes (section 7.247). New research must attempt to disambiguate the issue by detailed observation of the context of the utterance and the state of the child's lexicon.

Adult Form	Child Form	Child	Age	Source
bot "stick"	botot "stick+acc."	G.Dienes	1;3	Kenyeres 1926:27
alma "apple"	almát "apple+acc."	G.Dienes	1;3	"
zár "lock"	zárát	-	-	Csapodi 465
gólyamadár "stork"	gólyamadarat "stork+acc."	Lili	-	Ponori 1905:435
kéz "hand"	keze "hand+3PS"	Laci	1;3	Balassa 1893:65
száj "mouth"	szája	Laci	1;6	Balassa 1893:66 1920:58
láb "leg"	lába "leg+3PS"	Laci	1;7	Balassa 1893:67
fűrész "saw"	fűrésze "saw+3PS poss."	Pali	3;3,1	Meixner
anyuka "mommy"	anyukája	Zoli	1;8,6	MacWhinney
pad "bench"	padra "bench+sublative"	Lili	-	Ponori 1905:435
kocsi "car"	kocsiba "car+illative"	Hajnalka	-	Keresztes 31
labda "ball"	labdabo, labdábo "ball+relative"	G.Dienes	1;2	A. Vértés 1953:40
csipeszem "clothes-pin+ 1PS poss."	csipeszemet "clothes-pin +1PS poss. +acc."	Zoli	2;0,0	MacWhinney
halacskám "fish+dim+ 1PS poss."	halacskámat "fish+dim+ 1PS poss.+acc."	Zoli	2;0,2	MacWhinney
szandál "sandal"	szandálom "sandal+1PS poss."	Zoli	2;2,0	MacWhinney
(in <u>Ez kié ez a szandálom?</u> Whose is this my slipper?)				
mámmá "mother"	mámmák "mother+pl."	G.Dienes	-	A. Vértés 1953:40

Adult Form	Child Form	Child	Age	Source
vas "iron"	vasok "iron+pl."	Józsi	3;1,10	Meixner
répát "beet+acc."	répákat* "beet+pl.+acc."	Józsi	3;1,20	Meixner
almát "apple+acc."	almákat* "apple+pl.+acc."	Józsi	3;1,26	Meixner
sört "beer+acc."	söröket* "beer+pl.+acc."	Pali	3;7,2	Meixner
tésztát "pastry+acc."	tésztákat* "pastry+pl.+acc."	Pali	3;0,12	Meixner
répát "beet+acc."	répákat* "beet+pl.+acc."	Pali	3;0,12	Meixner
cseresnyét "cherry+acc."	cseresnyéket* "cherry+pl.+acc."	Pali	3;0,12	Meixner
galamb "dove"	galambok "dove+pl."	Márti	1;10,21	Meggyes 48
almát "apple+acc."	almákat* "apple+pl.+acc."	Pali	3;2,24	Meixner

* It is not clear why the plurals are present in these words. Perhaps some surface process is operative here, as in the examples of section 6.12 below.

5.212 Use of superfluous words in phrases

Amalgams include not only inflected words, but also phrases or groups of words. In the following child errors, a phrase including highly inter-associated words is over-generalized to cover situations to which it does not correctly refer. In such cases there is some item in the phrase which limits its applicability. However, the child has not fully analysed the amalgam and does not clearly recognize this limitation.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
nyissa ki "open+imp out"	nyissa ki az ajtót "open+imp. out the door+acc."	Laci	1;11	Balassa 1893:69
csukja be "close+imp. in"	csukja be az ajtót "close+imp. in the door+acc."	Laci	1;11	"
meleg "hot"	jaj de meleg "oh, how hot!"	Laci	~2;9	Balassa 1893:72

5.213 Reduplicated suffixes

One of the most common indications of the presence of incompletely analysed amalgams is the occurrence of reduplicated suffixes. In English, forms such as houseses or wanteded illustrate such reduplication. The most probable explanation of this phenomenon is that it is a result of under-analysis of inflected amalgams. Thus, the child may sense the plurality of houses, but not to a sufficiently articulate degree to prevent activation of the plural suffix. Let us list the reported errors:

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
zárat "lock+acc."	záratot "lock+acc.+acc."	-	-	Csapodi 465
ruhát "clothes+acc."	ruhátot "clothes+acc.+acc."	Rózsi	2;-	Kardos 323
gombát "mushroom+acc."	gombátot "mushroom+acc.+acc."	Rózsi	2;-	Kardos 323
szappant "soap+acc."	szappantot	Rózsi	2;-	Kardos 323
azt "that+acc."	aztat "that+acc.+acc."	Éva	2;0-2;1	Kenyeres 1928:52

Adult Form	Child Form	Child	Age	Source
ő "he+acc."	őt "he+acc.+acc."	Éva	1;11,16	Kenyeres 1926:53
lovak "horse+pl."	lókak "horse+pl+pl."	Kari	1;4	Simonyi 321
gyerekek "child+pl."	gyerekekek "child+pl.+pl."	Márti	1;10,1	Meggyes 48
gombok "button+pl."	gombokak	Márti	1;10,21	Meggyes 48
házakat "house+pl.+acc."	házakakat "house+pl.+pl.+acc."	Józsi	3;1,7	Meixner
szebb "beautiful+ comparative"	szebbebb "beautiful+ comparative+ comparative"	Laci	3;6	Balassa 1893:72
fűrészszel "saw+instrumental"	fűrészszelvel "saw+instr. +instr."	Pali	3;3,18	Meixner
övé "his"	zövéje (=övéé) "his+sign of poss."	Éva	1;11,13	Kenyeres 1926:55
fekszel "rest+2PS"	fekszelsz "rest+2PS+2PS"	Rózsi	2;-	Kardos 324
alszol "sleep+2PS"	alszolsz "sleep+2PS+2PS"	Rózsi	2;-	Kardos 324
eszel "eat+2PS"	eszelsz "eat+2PS+2PS"	Rózsi	2;-	Kardos 324

The next twenty-two errors involve reduplication of the 3PS possessive suffix -a, -e, -ja, -je. Hungarian codes possession on the possessed; not the possessor. The first nine of these errors occurred as parts of an expansion sequence such as szeme# Mártikának a szemeje "her eye #. . Márti's eye." with reduplication on the second occurrence of the noun.

Adult Form	Child Form	Child	Age	Source
szeme "eye+3PS poss."	szemeje "eye+poss.+poss."	Márti	1;10,7	Meggyes 53
orra "nose+3PS poss."	orrája "nose+poss.+poss."	Márti	1;10,7	Meggyes 53
keze "hand+3PS poss."	kezeje	Márti	1;10,5	Meggyes 53
ágya "bed+3PS poss."	ágyája	Márti	1;10,21	Meggyes 53
haja "hair+3PS poss."	hajája	Márti	1;10,0	Meggyes 53
blúza "blouse+3PS poss."	blúzája	Márti	1;11,13	Meggyes 53
gombja "button+3PS poss."	gombája	Márti	1;10,7	Meggyes 53
keze "hand+3PS poss."	kezeje	Márti	1;10,13	Meggyes 53
szája "mouth+3PS poss."	szájája	Márti	2;0,21	Meggyes 53
széke "chair+3PS poss."	székeje	Márti	1;10,7	Meggyes 53
tiktakja "tick-tock+3PS poss."	tiktakája	Márti	1;10,11	Meggyes 53
róka ura "Mr. Fox+3PS poss."	róka urája	Márti	2;1,8	Meggyes 53
papucs "slipper+3PS poss."	papucsája	Márti	1;11,6	Meggyes 53
kabátja "coat+3PS poss."	kabátjája	Márti	2;0,28	Meggyes 53
anyja "mother+3PS poss."	anyjája	Margit	2;8	Endrei 525
helyét "place+3PS poss.+acc."	helyéjét "place+3PS poss.+3PS poss.+acc."	Józsi	3;1,7	Meixner

Adult Form	Child Form	Child	Age	Source
tetejét "top+3PS poss. +acc."	tetejejét "top+3PS poss. +3PS poss.+acc."	Pali	3;0,8	Meixner
foga "tooth+3PS poss."	fogája "tooth+3PS poss.+3PS poss."	Jolán	2;6	Endrei 464
szeme "eye+3PS poss."	szemije "eye+3PS poss. +3PS poss."	Jolán	2;6	Endrei 464
keze "hand+3PS poss."	kezeje "hand+3PS poss.+3PS poss."	Hedvig	2;-	Csapodi 467
szája "mouth+3PS poss."	szájája "mouth+3PS poss.+3PS poss."	Hedvig	2;-	Csapodi 467
kupja "pine-cone+3PS poss."	kupája "pine-cone+ 3PS poss. +3PS poss."	Zoli	1;10	MacWhinney
<p>The above forms with lexically-motivated suffix reduplication show the reduplicated suffixes following each other in the surface order. In a variant of redundant suffixing, the redundancies are separated by other material; a secondary consequence of this separation is that normal order between suffixes is also violated.</p>				
magamét(sic) "self+1PS poss. +sign of poss+ acc."	magamémat "self+1PS poss.+sign of poss.+1PS poss. +acc."	Jolán	2;11	Endrei 464
rám "sublative+ 1PS poss." (=onto me)	rámomra "sublative+ 1PS poss.+ 1PS poss.+ sublative"	-	-	Kardos 324 Csapodi 465

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
rám "sublative+ LPS poss" (=onto me)	rámra "sublative+ LPS poss+ sublative"	-	-	Kardos 324 Csapodi 465
mamuskám "mother+dim.+ LPS poss."	mamuskámka "mother+dim.+ LPS+dim."	Nanus	1;8	Simonyi 318

Meggyes (45) also reports nine errors from Márti between the ages of 1;11,12 and 2;2,23 in which the structure diminutive + accusative appears to be replaced by the structure accusative + diminutive + accusative. However, Meggyes fails to tell us why these errors should not be given a different interpretation. It seems more likely that what appears to be the accusative -t before the diminutive -ka in forms such as uratkát is really an altered /cs/ from the other common diminutive -cska. In other words, the only error here is one of segmental substitution.

5.214 Use of superfluous elements in inflected words without redundancy

Even where no redundancy occurs, it is possible to detect under-analysis through the presence of superfluous or contradictory elements. In one group of reported errors, the child uses a possessive amalgam as if it were the root (as in 5.211) and then attaches further possessive suffixes.

Adult Form	Child Form	Child	Age	Source
nyakam "neck+1PS poss."	nyakám (from nyaka+m) "neck+3PS poss. +1PS poss."	Laci	2;1	Balassa 1893:70
hajam "hair+1PS poss."	hajám "neck+3PS poss. +1PS poss."	Laci	2;1	"
számba "mouth+1PS poss. +illative"	szádamba "mouth+2PS poss.+1PS poss. +illative"	Zoli	2;2,0	MacWhinney

Or the child may attach a plural to a possessive form;
but to do so correctly the child must use the suffix
for plural possession:

tetők "roof+pl."	tetejek "roof+3PS poss.+pl."	Kari	5;-	Simonyi 321
maguk "self+3PP poss." (=themselves)	magak "self+3PS poss. +plural"	Laci	2;-	Balassa 1893:70,142

In another rare error-type the child takes the common 2PS
Indefinite Imperative as a basic form or amalgam and then
attaches to it the suffix of the 2PS Definite Imperative
(there is also semantic error here):

viccelj "joke+2PS Imp"	vicceljed "joke+2PS Imp +2PS Def-Imp"	Pali	2;11,10	Meixner
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The -ik marker of the 3PS Present Indicative is superfluous
everywhere except in that person. However, since many
verbs without -ik use that person as the root of the verbal
paradigm, the child must learn to delete it before all
suffixes. Such learning is morphological, but incorrect
usage may be a result of under-analysis or lack of the
rule for deletion:

enni "eat+infin."	eszikni "eat+ik+infinitive"	Kari	1;8	Simonyi 321
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Finally, we have reports of errors which the presence of under-analysed amalgams can be inferred from the semantic, but not morphological redundancy produced by suffix addition:

kapa "hoe"	kapáló (from <u>kapa</u> + <u>-l</u> + <u>-ó</u>) "hoe+verbalizer+adjectivizer"	-	-	Csapodi 463
dob	doboló (from <u>dob</u> + <u>-l</u> + <u>ó</u>) "drum+verbalizer+adjectivizer"	Józsi	2;11,24	Meixner
csuzli "slingshot"	csuzlizó "slingshot+verbalizer+adjectivizer" (in <u>csurizóg</u> , see section 7.11a)	Józsi	2;11,23	Meixner

5.215 Under-analysis revealed through incorrect ordering of suffixes

Errors involving incorrect ordering of suffixes could be attributed to lack of syntactic rules for the ordering of suffixes, but they are more likely due to the presence of inflected amalgams which are treated as lexical units and thereby insulated against the force of rules governing the ordering of suffixes. Parallel errors by English-learning children would be "little my hat" or "fuzzy my bathrobe."

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
verandánkon "veranda+lPP poss.+superess." (=on our veranda) +lPP poss."	verandánunk "veranda+ superess. +lPP poss."	Nanus	2;6	Simonyi 322
kalapocskám "hat+dim.+lPS poss."	kalapomka "hat+lPS poss. +dim."	Nanus	1;8	Simonyi 318

Adult Form	Child Form	Child	Age	Source
virágocskám "flower+dim. +1PS poss."	virágomka "flower+ 1PS poss.+dim"	Nanus	1;6	Simonyi 318
(virágom "my flower" is a common phrase for Hungarians)				
senkit se "no-one+acc. neither"	senkisé "no-one+ neither+acc."	-	2;-	Kardos 1901:297
senkit se	senkiset	Laci	2;3	Balassa 1893:71 1920:70 "
senkinek se "no-one+dative neither"	senkisenek "no-one+ neither+ dative"	Laci	2;3	"
senkid se "no-one+2PS poss. neither"	senkised "no-one+ neither+ 2PS poss."	oldest boy	-	Csapodi 466
fölszállok "up+rise+1PS" (=I get up)	szállfölk "rise+up+1PS"	Hajnalka	2;0	Keresztes 33
fölkelek "up+awake+1PS" (=I arise)	keljffölk "awake+imp* +up+1PS"	Kari,	2;-	Simonyi 322
fölkelni "up + awake+ inf."	keljfelni "awake+imp* +up+1PS"	-	2;-	Kardos 297
*Evidently, these amalgams were learned in the shape of the imperative.				
bújj el "hide+2PS-Imp. away"	búj eld "hide away+ 2PS-Imp"	Zoli	1;8,6	MacWhinney
elbújjsz "away+hide+2PS"	búj elsz "hide away+2PS"	Zoli	1;8,6	MacWhinney
nem adom oda "not give+1PS over"	nem adodam "not give+ over+1PS"	Zoli	1;8,6 1;10,0	MacWhinney
nyiss ki "open+2PS out" (see section 6.13 for an explication of this form)	kinyissni "out+open+2PS+inf."	Zoli	2;2,0	MacWhinney

5.216 Evaluation and discussion

Having now reviewed all those errors which point towards under-analysis of amalgams, we are in a position to make observations regarding their distribution. Some of the errors indicate that the child may not have fully coded the semantics of the amalgams in question. However, such incorrect coding is probably concentrated in the youngest ages.(section 5.211). When the child uses an inflected form where a simple form is required (5.211, 5.212), it is possible that the child has not yet sensed that the amalgam is limited in some way by the suffix it contains. On the other hand, the child may be using the amalgam simply because he does not yet have another form at his disposal. He knows that the amalgam should not be used in precisely the way he uses it, but he doesn't know how it should be broken up. The errors of section 5.213 and 5.215 indicate less ambiguously that the child senses the meaning of the amalgam, but is unable to dissolve it into units. The large number of reported words with redundant suffixes indicates that the child intends to express some meaning successfully picks out that amalgam which most closely corresponds to his intentions. However, he is not clear enough about the composition of the amalgam he selected to defeat the operation of redundant suffixing.

The predominance of forms with erroneously reduplicated suffixes over forms with other superfluous suffixes can be interpreted in two ways. Above, we suggested that the child may often have some awareness of the semantic composition of the amalgam, although he is unable to analyse it morphologically. An additional possibility is that reduplications are frequent because of the probabilities of cooccurrence of frequent forms. If, for example, the possessive amalgam keze "hand+3PS poss." is the most frequent form used for reference to a hand, this may be because the most frequent context for this item is a possessive context. This would mean, in turn, that the child would be more likely to select the independent possessive suffix than any other suffix to attach to the amalgam. In other words, the motive that leads to the formation of the amalgam also works to create suffix reduplication. There is no reason to believe that this second explanation conflicts with the first. Rather, they supplement each other.

The question of the nature of semantic domain of the roots involved in amalgams deserves further attention. Our examples indicate that the possessive amalgamates with body parts and articles of clothing; the accusative with foods; the locative with rooms, furniture, and delimitable spaces; the instrumental with tools; and the imperative with verbs. The explanation of this must surely be based upon frequencies of cooccurrence.

5.22 Over-analysis and misanalysis

The intensity of the activity of lexical analysis is reflected by the existence of over-analysed forms. Analysis depends upon the isolation of at least one well-known, meaningful element. After this item is extracted, the child is left with a residue to which he attaches a certain meaning. Sometimes this residue is itself a conventional word; in this case the analysis was clever, if erroneous. In other cases, the residue closely resembles some meaningful item. In yet other cases, the residue is essentially meaningless. Except in the second example from Lili, the form used by the child is the residue.

5.221 Meaningless residues

<u>Amalgam</u>	<u>Known</u>	<u>Residue</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
nemzeti "national"	nem "not"	zeti	Lili	-	Ponori 1905:440
oroszlány "lion"	lány "girl"	orosz (actually means "Russian")	Lili	-	"
szanaszét "helter- skelter"	szét "apart"	szana	Piroska	-	Trencsény 264
villamok cikáznak "lightning flashes"	villa "fork"	mokcikáznak*	-	10;-	A. Vértes 1953:30
ott óbégnak	ó!	tóbégnak*	Laci	2;5	Balassa 1893:71

* Although meaningless, these residues have 3PP suffixes.

<u>Amalgam</u>	<u>Known</u>	<u>Residue</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
aluszkaál "sleep"	-l "verbal formative"	aluszka	Éva	1;10,8	Kenyeres 1928:61

(This may have been picked up as a variant of baby-talk alukál "sleeps.")

5.222 Residues similar to meaningful items

Whereas the meaning which the child attached to the residues in the previous section were largely idiosyncratic or capricious and not based upon lexical relations, the following residues are assigned a meaning close to some lexical item which they resemble. In most cases this item is the over-analysed word itself or some aspect of the word. In all the below the form used by the child is the residue.

<u>Amalgam</u>	<u>Known</u>	<u>Residue</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
hűvös "cool"	-ös "-y"	hűv	Laci	-	Balassa 1893:137
(here, <u>hűv</u> was used as if it meant "breeze.")					
e szent célfű "this holy purposed"	eszenc "essence"	élű (~ <u>élű</u> "living")	-	7;-	A. Vértes 1953:30
vacsoraután "after supper"	-n "superess."	vacsorauta (~ <u>vacsoraután</u>)	Laci	3;6	Balassa 1893:73,137
délután "afternoon"	-n "superess."	déluta (~ <u>délután</u>)	Laci	3;6	"
lödöz "shoot"	-öz "verbal- izer"	löd (~ <u>lödöz</u>)	son	-	Csapodi 465
verekszel "fight+2PS"	-el "2PS"	vereksz (~ <u>verekszel</u>)	Józsi	3;0,23	Meixner

(The child thought the final /sz/ of the root was a 2PS suffix)

<u>Amalgam</u>	<u>Known</u>	<u>Residue</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
kapaszkodik "grab on"	-kodik "reflex."	kapasz (~ <u>kapaszkodik</u>)	Kari	4;-	Simonyi 318
kabát "coat"	-t "acc."	kaba (~ <u>kabát</u>)	Márti	1;10, 13	Meggyes 44
térkét (= <u>térkép</u>) "map"	-t "acc."	térke (~ <u>térkép</u>)	Márti	1;10, 21	"
vitrin "glass case"	-n "superess."	vitri (~ <u>vitrin</u>)	Emőke	3;5, 20	Meixner
éhes "hungry" (in <u>éhetlen</u> "hungerless")	-es "-ish"	éh (~ <u>hunger</u>)	Kari	6;-	Simonyi 319
pálcika "stick"	-ka "dim."	pálci (~ <u>pálcika</u>)	Pali	3;2, 24	Meixner
volna "cond./past" (in <u>volni</u> for <u>lenni</u> "to be")	-na "cond./pres."	vol (-to be)	Emőke	4;0, 12	Meixner

Berko (1958: 366-367) found that English-speaking children would treat a word like nizz (a nonsense word) as already containing a plural morpheme, although the word was specifically presented as a singular. Compare this type of error to those above from Meggyes (44).

5,223 Meaningful Residues

Here both residues are used by the child.

Jolán "girl's name"	jó "good"	lány "girl"	Margit	2;6	Endrei 525
millió "million"	mily "how"	jó "good"	Lili	-	Ponori 1905:440

5.224 Evaluation and Discussion

Errors of over-analysis and misanalysis provide us with one essential variety of information: they indicate that the process of analysis is intense enough to lead the child into the isolation and even lexicalization of meaningless residues in an attempt to take words apart. Typically, errors of over-analysis occur later than errors based upon under-analysis. Thus, while errors based upon under-analysis demonstrate the presence of amalgams in the child's lexicon, errors based upon over-analysis demonstrate the productivity of various inflectional devices as means of analysing amalgams.

5.3 Child Neologisms

Neologisms are new words whose formation is in keeping with the rules of word formation set down by the language. Neologized lexical items appear only infrequently in child language and are usually dependent upon sound-symbolism or blending (section 3.6). Neologisms based upon an attachment of formative suffixes are far more common. In many cases the neologism is successfully achieved, but there are also numerous examples of incorrect application of the various formative suffixes. Such incorrect applications illustrate deficiencies in the semantic coding of either roots or suffixes and they are treated in chapter 7. The examples of sections 5.31-5.34 are all successful in the sense that they violate no formulable rule. On the other hand, the degree of lexical acceptability they achieve varies greatly. Some of these formations produce words to express meanings that could only be expressed in the standard language by circumlocution. Other formations are of little practical value, because there exists a conventional item to express most of the area they express. Finally, we should note that some child neologisms are not picked up by the standard, simply because the adult community is often uninterested in lexicalizing semantic areas which an individual child considers most intriguing. We organize the following summary of child neologisms by types of formative suffixes, according to the design used by the grammar of the Hungarian academy (Tompa, 1970).

5.31 Verbal suffixes

These suffixes serve to make new verbs from verb or noun roots; thus they are either deverbative or denominative.

5.311 Deverbative verbal suffixes

<u>Nearest Adult Form</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
<u>-an, -en:</u> A rarely productive suffix making verbs expressing <u>momentaneous</u> action from onomatopoeic roots which often have no independent existence. The root of this neologism is the interjection <u>hoppá</u> "whoops":				
kiesik "out+fall"	kihoppán "out+whoop+moment."	Éva	2;3,26	Kenyeres 1928:87
<u>-ad, -ed:</u> A common, but unproductive <u>inchoative</u> suffix. Here the child takes as a root her own neologized root <u>csicer</u> "stick" (section 3.61).				
összetapad "together+stick"	összecsiceréd "together+ <u>csicer</u> +inchoative"	Éva	4;9	Kenyeres 1928:87
<u>-kod, -kőd:</u> A common <u>iterative</u> suffix which is no longer productive. Perhaps this accounts for the strangeness of the neologism.				
gyakran elfúj "frequently out+ blows"	elfujkod "out+blow+ iterative"	-	-	Csapodi 465
<u>-gat, -get:</u> highly productive <u>frequentative</u>				
enyhít "comforts"	bibizget "hurty+ verbalizer+ frequent."	Nanus	2;6	Simonyi 318
(=treats the wound as if it were just a little scrape)				
gyakran talál dolgozat	találgat "finds+freq."	Jolán	3;3	Endrei 466

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
<u>-ődik, -ődik:</u>	As an inchoative, this suffix is no longer productive, but as a reflexive it is quite productive and frequent. It may code reflexivity, mediopassivity, or, the case of verbs of cognition, frequentativeness. In assessing the child's neologisms, we credit him with the most appropriate of these several uses. The following examples generally express <u>reflexivity</u> and <u>passivity</u> .			
beleesik "into+fall"	beledobódik "into+throw+ reflexive/passive"	Józsi	3;1,7	Meixner
kivesz, kiesik "out+take, out+fall"	kivesződik "out+take+ passive"	Lili	-	Ponori 1905:434
elkeverik a többi közé "away+mixes the other among" (=gets lost among the others)	eldugodik "away+stick+ reflex/passive"	Lili	-	Ponori 1905:435
felnyilik a pakkololás "up+opens the packing"	felpakkolodik "up+pack+reflex."	Lili	-	"
<u>-ít</u>	As a causative, this suffix is no longer very productive. However, the existence of the highly productive homonymous denominative and iterative suffixes seems to call attention to it.			
elront "away+break(vt)"	elromlít "away+break(vi) +causative"	Kari	5;-	Simonyi 318
elront "away+break(vt)"	elromlít "away+break(vi) +causative"	Rózsi	2;-	Kardos 324
kancsóval önt "pitcher+instr. pours" (=pour with a pitcher) (There also exists the verb <u>kancsalít</u> "look squint-eyed" which may have influenced this formation.)	kancsalít "pitcher+ verbalizer+ causative"	niece	-	Verő 263

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
<u>-tat, -tet: the general productive causative</u>				
tanít "teach"	tanultat "study+causative"	-	-	Ponori 1871:9
leemel "down+lift"	leszálltat "down+rise+ causative"	Piroska	-	Trencsény 264
leemel hoppával "lift down with a 'whoops!'"	lehoppáztat "down+whoops+ verbalizer+ causative"	Piroska	-	Trencsény 264
<u>-aszt, -eszt: a frequent, but unproductive causative</u>				
megöl "perfect.+kill"	megdögleszt "perf.+die+caus."	Laci	3;6	Balassa 1893:72

5.312 Denominative verbal suffixes

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
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-oz(ik), -ez(ik), -öz(ik):

This highly productive suffix makes verbs from nouns in a variety of ways. It is similar to the English ϕ -formative or French "faire___". It is interesting to note how many of these formations can be pinpointed semantically simply by knowing the role played by the noun in the semantic structure, i.e. agent, instrument, location etc.

a) The noun as an Agent which acts in some typical fashion:

megkalapál "hammer"	montérozik* "act like a blacksmith"	Lili	-	Ponori 1905:434
rosszalkodik "misbehave"	rontopálozik "act like Ronto Pál"	Lili	-	"
feláll valamire "stand up on something"	törpebácsizik "act like the dwarf (törpebácsi) (by standing up on a tree-trunk)"	Lili	-	"
muzsikál "play music"	cigányozik "act like a gypsy (by playing music)"	Lili	-	"
forog mint a kerék "turn like a wheel"	kerekszik "act like a wheel"	Éva	2;11,5	Kenyeres 1928:62
elfordulnak a könyv levelei "the pages of a book turn"	ellapozik "act like the page of a book"	György	4;-	Simonyi 318
vérzik "bleed"	sebzik "act like a wound"	Kari	4;-	Simonyi 318
úgy viselkedik mint a malac "act like a pig"	malacozik "act like a pig"	Jolán	3;0	Endrei 455

*montíroz now exists with a meaning similar to this neologism.

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
úgy viselkedik mint a bolond Rózsa "act like foolish Rózsa"	bolondrozázik "act like foolish Rózsa"	Ferike	2;9	Endrei 524
egeret játszik "play mouse"	egérezik "act in play like a mouse"	Emőke	3;2,23	Meixner
b) the noun as an <u>Instrument</u> which is utilized in some fashion typical to it:				
baltával ütöget "hit with a hatchet"	baltázik "use a hatchet"	Lili	-	Ponori 1905:434
karddal vív "duel with a sword"	kardozik "use a sword"	Lili	-	"
cimborát játszik "play a cymbalo"	cimborázik "use a cymbalo"	Piroska	-	Trencsény 264
homokkal játszik "play with sand"	homokozik *	Éva	2;6,19	Kenyeres 1928:62
homokkal játszik	homokozik	Lili	-	Ponori 1905:434
szappanbuborék- okkal játszik "play with soap- bubbles"	szappanbubor- ékozik "use soap- bubbles"	Jolán	2;6	Endrei 464
szemmel játszik "play with eyes"	szemezik* "use eyes"	Jolán	2;6	Endrei 464
szánt "plough"	ekéz "use a plough" (in <u>ekézés</u> "ploughing")	Kari	5;-	Simonyi 319
rajzol "sketch"	ceruzázik "use a pencil"	Jolán	2;0	Endrei 463

*These forms now exist in the language.

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
ír "write"	ceruzázik "use a pencil"	Márti	2;1,9	Meggyes 47
gurít "roll"	guruz* "use a ball"	Éva	2;3,11	Kenyeres 1928:61,86
bezár "lock closed"	kulcsoz "use a key"	Pali	3;5,20	Meixner
játszik "play"	játékozik "use games"	Pali	3;3,14	Meixner
lóval játszik "play with a horse"	lovaz "use a horse"	Emőke	4;1,14	Meixner
pénzzel játszik "play with money"	pénzezik "use money"	Emőke	3;10,9	Meixner
traktort vezet "drive a tractor"	traktorozik "use a tractor"	Józsi	3;1,26	Meixner
luftballonnal játszik "play with a balloon"	luftballonozik "use a balloon"	Józsi	3;1,17	Meixner
szódavízzel lefröccsenti "spritz with soda water"	leszódázik "use soda water(perfective)"	Jolán	2;11	Endrei 464
meztláb jár "go barefoot"	meztlábozik "use bare feet"	Ferike	2;5	Endrei 524
újságot olvas "read a paper"	újságozik "use a paper"	Ferike	2;5	Endrei 524
hintázik "use a teeter- totter" (<u>hinta-palinta</u> = teeter-totter)	palintázik "use a totter"	Margit	2;6	Endrei 525
fest "paint"	festékez "use paint"	Józsi	2;9,10	Meixner

* The root of this form is guru, the child's word for conventional labda "ball." Given that this root ends with a vowel (gurum = guru + m), the -it suffix is not appropriate.

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
c) the noun as a <u>transferred object</u> which is given or provided to something or somebody:				
beken tojással "spread an egg into"	betojásozik "egg into"	Kari	~6;6	Simonyi 318
kirak nyulakkal "fill out with bunnies"	kinyuszizik "bunny out"	Éva	6;4,18	Kenyeres 1928:62

d) the noun as a created entity which is the typical product of an activity:

leönt tintával "pour ink down onto"	lefoltozik "produce a spot"	Éva	2;7,5	Kenyeres 1928:62
kibogoz "untie"	kibojtozik "untassle"	Jolán	3;2	Endrei 465
válaztétot csinál (hajban) "make a part (in hair)"	elválasztékoz "produce a part"	Ferike	2;10	Endrei 524
esik poros esővel "rain dusty rain"	poroz "produce dust" (in <u>porzós</u> and <u>porzódik</u>)	Lili	-	Ponori 1905:434

A sub-class of this type is produced when the created entity is a vocal production of some kind:

énekel "sing"	lalizik "produce <u>lali</u> "	Piroska	-	Trencsény 264
muzsikál "make music"	zenézik "produce music"	Piroska	-	"
hoppát mond "say'hoppá'"	hoppázik "produce'hoppá' when lifting the child down"	Piroska	-	"
mindjártot mond "say'right-away'"	mindjároz "produce'right-away'"	Éva	4;1,13	Kenyeres 63

<u>Nearest Adult</u>	<u>Neologisms</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
e) the noun as the <u>object removed</u> from something. This might be seen as the opposite of category (c) above.				
szálgát kiveszik "remove a sliver"	kiszálgázzik "remove a sliver"	Éva	6;6,2	Kenyeres 1928:62
meghámoz "peel"	lehéjázik "remove the skin, peel"	Tibor	5;4	Barcsai 32
meghámoz	lehéjázik	Margit	2;-	Simonyi 318
f) the noun as the typical <u>location</u> of the activity:				
ugrik mint a cirkuszlő "jump like a circus horse"	cirkuszozik "act like at the circus"	Laci	2;6	Balassa 1893:72
iskolát játszik "play school"	iskoláz "act like at school"	Lili	-	Ponori 1905:434
papírhajókat úsztat "sail paper boats"	patakozik "act like at the brook"	Lili	-	"
vérescsatát "play 'bloody- battle' "	vérescsatáz "act like at a 'bloody-battle"	Lili	-	"
közgyűlésre megy "go to a town- meeting"	közgyűlésezik* "act like at a town-meeting"	Lili	-	"
g) Including adjective roots under the category of denominative neologisms, we note a pair of creations in which there is an <u>adjective realized</u> :				
teletölt "fill up"	betelez	Kari	3;-	Simonyi 318
szőke hajat felfésztül "comb blond hair"	felszőkez "blonde up"	Margit	3;6	Endrei 526

*This form now exists in the language.

-ít: a productive suffix creating verbs from nouns and adjectives.

- a) When the source is an adjective, the verb expresses the action involved in making the adjective realized, as in (g) just above.

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
lehűt "cool down"	meghidegít "perf. +make cold"	Éva	4;4	Kenyeres 1928:62
(This may be formed by analogy with <u>megmelegít</u> "warm up.")				
lehűt "cool down"	hidegít "make cold"	Jolán	3;2	Endrei 465
ráemel "raise onto"	rámagasít "onto+high+make"	Éva	2;2,3	Kenyeres 1928:62
összeszaggat "make into rags"	elrongyosít "perf.+raggy+make" (=rag out)	Piroska	-	Trencsény 264
kirojtöz "make into rags"	kirongyosít "out+raggy+make"	Piroska	-	Trencsény 264
kifúj "out+blow"	kipuposít "out+swollen+make"	Éva	6;0,2	Kenyeres 1928:62
kisebbít "make smaller, diminish"	kicsít "make small" (in <u>kicsitő</u>)	Éva	5;7,6	Kenyeres 1928:87

- b) Alternatively, the noun may be a created entity which is the typical product of an activity, as in (d) above:

eljegyez "engage"	bemennyasszonyít "enbriden"	Éva	6;1,28	Kenyeres 1928:62
magasságát lebecsüli "underestimate its height"	letörpít "down+dwarf+make"	Éva	6;2,3	Kenyeres 1928:62-63

- c) It is not entirely clear whether -ít may be used to express the action typically involved in using a certain Instrument; if not, these forms are errors and belong in Chapter 7.

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
vödörrel merít "dip with a bucket"	vödörít "use a bucket"	Kari	3;-	Simonyi 319
maskarákat "wear masks"	elmaskárit "perf.+masks+use"	Éva	7;1	Kenyeres 87

-kodik, -kedik, -ködik: a very productive suffix making nouns and adjectives into verbs expressing the typical manner of conduct of the Agent (after final vowels, an /s/ or /l/ may be present).

furcsán mozog "moves strangely"	furcsakodik "strange+act"	Kari	4;-	Simonyi 318
szépnek néz ki "llok pretty"	szépekedik "pretty+act"	Éva	5;2	Kenyeres 52
úgy viselkedik mint egy vizsla "act like a vizsla (dog)"	vizslálkodik "vizsla+act"	sister	10;-	Zsidó 92
jól viselkedik "behave well"	jókalkodik "well act"	K.P.	3;-	Szerető 1931
ridegen viselkedik "act sternly"	ridegenkedik "sternly+act"	-	-	A. Vértés 1971:43

-odik, -edik, -ödik: a productive suffix coding the activity characteristic of making an adjective realized.

elaludt a gyufa "the match went out"	elvilágosodik "out+light+ became"	Jolán	2;5	Endrei 464
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-ul, -ül: a common suffix forming verbs expressing the action typical in making an adjective realized.

lillá válik "become purple"	lilul "purple+become"	Éva	6;5,17	Kenyeres 1928:63
megázik "get soaked"	levizesül "down+watery+become"	Éva	3;0,4	Kenyeres 1928:62

Nearest Adult	Neologism	Child	Age	Source
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-ol, -el, -ül, -l (ik): Many of the functions of this suffix are identical to those of the -ozik suffix discussed at the beginning of this section.

a) the noun as an Agent which acts in some typical fashion.

jár mint egy vonat "move like a train"	vasutol "railroad+act"	Éva	2;4	Kenyeres 87
lehull (papiros) "flutter down (paper)"	lepillangol "down+butterfly +act"	Éva	2;6,14	Kenyeres 87
ömlik "pour"	kancsal "act like a pitcher" (in <u>kancsalít</u>)	niece	-	Verő 263
úgy csip, mint egy darázs "bite like a wasp"	darázsolik "act like a wasp"	Jolán	2;11	Endrei 465
dolgozik mint a szuster "work like a shoemaker"	suszterol* "act like a shoemaker"	Margit	2;8	Endrei 526

b) the noun as an instrument which is utilized in some typical fashion:

karddal vív "duel with a sword"	kardol "sword+use"	Éva	3;1	Kenyeres 1928:62
zörög a kulcsokkal "rattle the keys"	kulcsol** "key+use"	Nanus	3;3	Simonyi 318
meglök a falóra ingáját "knocks the pendulum of the wall-clock"	ingál "pendulum+use"	Éva	2;0,4	Kenyeres 86

*This form exists in a derogatory sense.

** This form exists with the meaning, "use a key on a door."

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
krétával rajzol "sketch with chalk"	krétál "use chalk"	Éva	2;11,25	Kenyeres 1928:62
bezár kulccsal "lock with key"	bekulcsol "use a key"	Éva	6;6,16	Kenyeres 1928:62
c) the noun as a <u>transferred object</u> which is given or provided to something or somebody.				
cédulát ráragaszt "stick a tag on"	becédulál "in+tag+give"	Éva	2;9,9	Kenyeres 1928:32
d) the noun as a <u>created entity</u> which is the typical product of an activity.				
dirib-darabra tör "break to pieces"	diribol "pieces+make"	Ferike	4;6	Endrei 525
As a variant of this pattern, the noun is a vocalization created by the action of the verb.				
"make the sound of cooing doves" (sec. 3.61c)	purgol "'purg'+say"	Éva	2;6	Kenyeres 1928:63
kárt mond "say 'pity'"	károl "'pity'+say"	Éva	6;8,28	Kenyeres 1928:63
"make a sound to scare away cats" (sec. 3.61c)	elkusipol "away+'kusip'+say" (=shoo away)	Éva	4;9	Kenyeres 1928:87
e) the noun as the <u>object removed</u> from something.				
morzsát kiráz "shake out crumbs"	kimorzsal "out+crumb+take"	Éva	2;1,31	Kenyeres 1928:32
f) the noun as the typical <u>location</u> of the activity.				
utcán sétál "stroll on the street"	utcál "act like on the street"	Katóka	1;6	Simonyi 318

<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
megköt a nyakon "bind up on the neck"	nyakol "act like at the neck"	Éva	2;8,23	Kenyeres 62

g) Or the verb may indicate the process of making an adjective realized.

undokoskodik "behave disgustingly"	undokol "act disgusting"	Éva	6;2,3	Kenyeres 62
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-ász(ik), ész(ik) A suffix which forms verbs expressing the action of catching, picking, or hunting some patient. Not very productive.

babokat szed "picks beans"	babászik "beans+gets"	-	-	Csapodi 466
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5.32 Nominal suffixes

Nominal suffixes serve to make new nouns from verb or noun roots; thus they are either deverbative or denominative.

5.321 Deverbative nominal suffixes

-ó, -ó A highly productive deverbative suffix. As was the case for several of the verb formatives, the types of relations this suffix expresses parallel certain deep structure categories. Although these neologisms could all be rendered by attaching the English suffix -er to the verb in the English translation, it is clear that further information on the deep structure category of the formed noun is of assistance in an accurate interpretation of the meaning of the neologism.

a) The noun which is a product of the formation is an agent which typically engages in the activity characteristic of the verb.

szempilla "eyelash"	pillogó "blinker"	Éva	3;3,7	Kenyeres 1928:87
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<u>Nearest Adult</u>	<u>Neologism</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
szemöldök "eyebrow"	haragudó "thing that gets angry"	-	-	Székely 63
aki csinál "he who does"	csináló "doer"	Emőke	4;0,12	Meixner
aki segít "he who helps"	segítő "helper"	Emőke	"	Meixner
kémény "chimney"	füstölő "smoker"	Pali	3;3,18	Meixner

b) Or the noun which is a product of the formation is an instrument typically involved in completing the action of the verb.

ceruza "pencil"	író "that with which one writes"	Éva	1;8,8	Kenyeres 1928:86
zsinor "cord"	kötő "that with which one binds"	Éva	3;3,7	Kenyeres 1928:87
rongy "rag"	pucó "that with which one cleans"	Laci	1;9	Balassa 1893:68
sztereoszkóp "stereoscope"	kukucsoló "that with which one goes peek-a-boo"	Tibor	6;2	Barcsai 31
orrkenőcs "nose salve"	bekenő "that with which one spreads in"	Márti	2;1,18	Meggyes 47
kalapács "hammer"	dolgozó "that with which one works"	Kari	2;0	Simonyi 319
olló "scissors"	vágó "that with which one cuts"	Kari	2;0	Simonyi 319
ceruza "pencil"	író "that with which one writes"	Kari	2;0	Simonyi 319

<u>Nearest Adult</u>	<u>Neologisms</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
kapa "hoe"	kapáló "that with which one hoes"	-	-	Csapódi 465
ceruza "pencil"	rajzoló "that with which one sketches"	Lili	-	Ponori 1905:434
pacika "stick" (for glueing)	enyvelő "that with which one glues"	Lili	-	Ponori 1905:438
festék "paint"	nyomó "that with which one presses"	Józsi	2;9,8	Meixner

c) Or the noun may express the typical location of the activity of the verb.

szék "chair"	ülő "that on which one sits"	Józsi	2;9,15	Meixner
palló "board-walk"	körüljáró "that on which one walks around"	Lili	-	Ponori 1905:438

-oda, -ede, -öde: this suffix indicates the typical location of an action.

mosogató edény "washing dish"	puccoda "place where one cleans"	Lili	-	Ponori 1905:435
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-at, -et: this suffix indicates the product of a function.

hang "sound"	hallat "that which we derive from hearing"	Nanus	6;-	Simonyi 318
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-ság, -ség: This suffix is fairly rare and unproductive as a deverbative, but highly productive as a denominative. As a deverbative it expresses here an abstract material involved with the action of the verb in any of the ways discussed for the general verbalizers above.

Nearest Adult Form	Neologism	Child	Age	Source
borogatás "covering"	borítság "material which covers"	Kari	4-8	Simonyi 318
nadrágtartó "suspenders"	szorítság "that which tightens"	Kari	6;-	Simonyi 318
játékosság "playfulness"	játszaság "quality which plays"	Piroska	-	Trencsény 264

-és, -ás: The noun formed by this suffix expresses a product of the activity of the verb.

öltözet "dress"	öltöztetés "material put on in dressing"	-	-	Csapodi 465
haláleset "fatal case" (<u>meghalás</u> exists with the meaning "demise.")	meghalás "dying"	Margit	5;6	Endrei 526

5.322 Denominative nominal suffixes

-os, -es, -ös, -as, -s: indicates the individual whose profession typically involves the action of the verb.

katonatiszt "soldier"	parancsolatos "he who works with orders"	Kari	5;-	Simonyi 319
zenész "musician"	cimborás "he who works with a 'cimborá'" (see section 3.62)	Piroska	-	Trencsény 264
fogorvos "dentist"	fogas "he who works with teeth"	Piroska	-	"

-ság, -ség: expresses an abstract quality involving the activity of the verb.

rendetlenség "disorderliness"	vásárság "marketness"	Piroska	-	Trencsény 264
drágaság "luxury"	aranyosság "goldness"	F.D.'s son	4;-	Székely 63

Nearest Adult Form	Neologism	Child	Age	Source
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The -ság, -ség suffix may also be used after occupations and titles to indicate respect. Such usage is approximated in English "your ladyship" or "your holiness."

mennyasszonyság "brideness"	-	-		Ponori 1871:9
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5.33 Adjectival suffixes

-as, -es, -s: forms an adjective which indicates being in possession of the quality or quantity of the noun.

éhes "hungry"	étvágyas "appetite-y"	Kari	6;-	Simonyi 319
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-só, -ső: forms adjectives of position from adverbs.

szélső "side"	oldalsó "side-y" (also in <u>legoldalsóbb</u> "most to the side")	Kari	5;-	Simonyi 319
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-ős, -ös: This is a common deverbative suffix with a rather broad semantic range. When attached to a verbal root, it expresses the quality of typically being the agent or experiencer of the action of the verb. Its closest English counterpart is "-y" attached to verbs to produce child forms such as "breaky." In Hungarian, some of the adjectives formed this way are also used as nominal (Tompa, 1970:385).

finom eső "fine rain"	porzós "dustsey"	Lili	-	Ponori 1905:434
tilos "forbidden"	tiltatos "forbidsey"	Lili	-	"
sokat ruggant "kicks a lot"	ruggantos "kicksey"	Lili	-	"
törékény "fragile"	törős "breaky"	Jolán	1;11	Endrei 463
szomjas "thirsty"	iszos "drinky"	Éva	4;4	Kenyeres 1928:62
viszketős "itchy"	vakaros "scratchy"	Éva	5;0	"

Nearest Adult Form	Neologism	Child	Age	Source
nyílas "full of spittle"	didlis "droolsey"	Éva	2;2,13	Kenyeres 1928:62
aki sokat találgat* "who's always finding things"	találgatos "findsey"	Jolán	3;3	Endrei 466
*see section 5.311 for <u>találgat</u> as a neologism.				
csúzli "slingshot"	csurizós (=csúzliizós) "slingshot+verbalizer+adjectivizer"	Józsi	2;11,25	Meixner
lövöldöző "shooting"	lövöldős (=lövöldözős) "shootsey"	Józsi	3;1,26	Meixner
pucolt "cleaned"	pucos "cleany"	Pali	3;5,20	Meixner
fodrász "barber"	borotválós "shavey"	-	4;-	Kemper
billiárd "billiards"	lökös "pushy"	Kari	4;-	Simonyi 319

In the above neologisms, the verbal base refers to an action of which the qualified noun is an agent. Less frequently, the verbal base may be taken in a causative sense.

olyan amit le lehet nyalni "such that one can swallow it"	nyalós "swallowy"	Éva	2;11,24	Kenyeres 1928:62
olyan amit szeretni lehet "such that one may love it"	szeretős "lovey"	Margit	4;-	Endrei 526

5.34 Adverbial suffixes

In traditional grammar the adverbial suffix -nként is treated as a flectional suffix. However, its productivity is decidedly circumspect and it might be better considered to be a formative. Its meaning is "every ___ :". Thus hét "week" + -nként = hetenként "weekly, every week."

Nearest Adult Form	Neologism	Child	Age	Source
sokat egyszerre " a lot at a time"	sokenként "every much, much at a time"	Piroska	-	Trencsény 264

In this error, the parent tells the child to eat the little pieces of meat on her plate egvenként "one at a time". The child replies that one can also eat them sokenként "many at a time."

5.35 Compound Neologisms

Just as children evidence their productive knowledge of morphological devices through neologistic formations, they display their knowledge of the rules of compound formation through creating neologistic compounds. In order to enter into a compound, the component lexical items must relate to each other in some manner specified by the rules of compound formation. These relations are characterizable in terms of deep structure or semantic relations.

- a) The first element of the compound may be a patient which is acted upon by the second element. The second agential element is often a deverbative noun which relates to the patient in terms of the action of its root verb, but it may also be a simple noun root which relates to the patient through some other verb not present in the surface compound. In either case, the structure is Patient + Agent.

gyógyszer "medicine"	fájgyógyító "pain+cure+er" (curer cures pain)	Lili	-	Ponori 1905:436
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Nearest Adult Form	Neologism	Child	Age	Source
ridikül "purse"	pénztartó "money+hold+er" (holder holds money)	Lili	-	Ponori 1905:436
kalauz "conductor"	jegybácsi "ticket+man" (man gives tickets)	Éva	1;10,27	Kenyeres 86
síkpor "taic" (=federweiss)	cipőliszt "shoe+flour" (flour polishes shoes)	Kari	4;-	Simonyi 319
huzós játék "pulling toy"	liba-huzó "goose+pull+er" (puller pulls goose)	Józsi	2;10,0	Meixner
manikűrös kisasszony "manicure girl"	körömös néni "nail+ish lady" (lady cuts nails)	-	-	Székely 63
látyszerész "optician"	szemszerész "eye+ware+maker" (waremaker fixes up eyes)	G.B.	5;6	Kardos 1936
lámpa "lamp"	villany-égető "electricity+ burn+er" (burner burns electricity)	Józsi	3;0,23	Meixner
falvédő "wall guard"	falterítő "wall cover" (cover covers wall)	-	4;-	Kemper 2

b) Frequently, the first element is related to the second as an adjective is related to its noun, through modification.

paradicsomos étel "tomato dish"	pirosebéd "red meal" (meal is red)	Éva	2;2,7	Kenyeres 1928:86
vasúti átjáró "railroad over- crossing"	szárazhíd "dry bridge" (the bridge is dry)	son	5;-	Kardos 1896
az ágy amely fent van "the bed which is upstairs"	féntágy "up bed" (the bed is up)	Lili	-	Ponori 1905:436
az ágy amely lent van	lentágy "down bed"	Lili	-	"

Nearest Adult Form	Neologism	Child	Age	Source
c) Similarly, the two nouns may be related by the copula and judged as <u>equivalent</u> .				
csontváz "skeleton"	csontember "bone man" (the man is bone)	László	3;5	Barcsai 31
csontváz	csontember	Tibor	5;11	Barcsai 31
báránnyfelhő "lamb cloud"	borjúfelhő "sheep cloud" (the sheep is a cloud)	Etelka	3;-	A. Vértess 1953:42
virág-szerű csalán "flower-like nettle"	virágcsalán "flower-nettle" (the nettle is a flower)	Emőke	3;4,20	Meixner
d) The first element may be a verb in the form of a participle which expresses the action of the second element, the <u>agent</u> noun.				
léggömb "balloon"	röptülőlabda "fly+ing+ball" (the ball flies)	-	-	Székely 63
e) The first element may be the <u>location</u> where the second element is typically located.				
átjárónház "house with a passage-way" (=Durchhaus)	utcaház "street house" (the house is on the street)	son	5;-	Kardos 1896
karkötő "bracelet"	kargyűrű "arm-ring" (the ring is on the arm)	László	3;5	Barcsai 31
motoros bácsi "motorcycle man"	motorbácsi "motorcycle+man" (motorcycle+ish man) (the man is on the motorcycle)	Pali	3;3,18	Meixner

Nearest Adult Form	Neologism	Child	Age	Source
f) The first element may be the <u>possessor</u> and the second item the <u>possessed</u> .				
palyaház "railway station"	utazóház "traveler's house" (the house belongs to travelers)	Kari	4;-	Simonyi 319
igazolványi arckép "identification photograph"	vonatkép "train photo" (the photo belongs to the train, or is used by the people on the train.)	Lili	-	Ponori 1905:438
tolvajkulcs "thief key" (=skeleton key)	rabkulcs "prisoner key" (the key belongs to the prisoner)	László	5;-	A. Vértés 1953:42
(There seems to be a confusion between <u>prisoner</u> and <u>thief</u> .)				
szemüveg "eyeglass"	szemtükör "eye mirror" (the mirror belongs to or is used by the eye)	Margit	3;6	Endrei 526
verkli "hurdy-gurdy"	zeneskatulya "music box" (music belongs to the box)	Éva	3;7,3	Kenyeres 1928:87
g) One pattern of compound formation is rather peculiar to Hungarian. In this pattern, the first element is a <u>patient</u> and the second is a <u>location</u> at which an agent typically affects the patient through the action of the verb.				
erkély "balcony"	utcanéző "street+see+er" (place where one sees the street)	Tibor	4;10	Barcsai 31

5.4 Failures to insulate lexical items

Insulated lexical items are those whose semantics suggests that they should be susceptible to analysis, but which, in fact, cannot be properly and efficiently produced through analysis, and must be insulated against analysis. These items are maintained as amalgams and insulated against analysis by strengthening their recall availability as amalgams. Our discussion of failures to insulate lexical items falls into four parts: failures to insulate items where formative suffixes compete, failures to insulate items where flectional suffixes compete, failures to insulate items where idiosyncratic root variations compete, and failures to insulate portmanteau and morphologically opaque items. For a more complete discussion of the theory involved see Part I section 2.31..

5.41 Failures to insulate items where formative suffixes compete

Just as the English suffixes -ment, -tion, -al, and \emptyset compete as deverbative nominalizers, so Hungarian illustrates numerous areas where roughly synonymous suffixes overlap. In some cases, there exist criteria for the separation of these suffixes by minor features of the roots to which they attach. Elsewhere, the attachment of one suffix rather than another seems purely idiosyncratic. In such cases each combination must be insulated against formation by one of the competing suffixes.

5.411 Deverbative verbal suffixes

a) Among the numerous frequentative suffixes, there are -dogál, -degél; -gat, -get; -gál, -gél; and kál. In the following forms, the child fails to insulate forms produced with one of these frequentatives against the attachment of one of the others. Note that we do not call these forms neologisms.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
mondogat "keep saying"	mondogál "keep saying"	Kari	4;-	Simonyi 318
söpröget "keep sweeping"	söprögél "keep sweeping"	Kari	4;-	Simonyi 318
szálldogál "fly about"	szállkál "keep flying"	Nanus	3;6	Simonyi 318
repked "keep flying"	röpdögél "keep flying"	Kari	4;-	Simonyi 318

b) Both -at, -et and -tat, -tet code Causativity.

lefolyat "down+drain+caus." (=let drain)	lefolytat*	Laci	3;6	Balassa 1893:72
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* This form also happens to mean "institute proceedings."

c) Also -ít and -dít are competing causative suffixes. The latter, although not uncommon, is rather unproductive. This may be attributable to the fact that it attaches to many verb roots which are now "passive" (section 3.131 of Part I, just before the list of non-concurrent affixes).

mozdít "move+caus."	mozgít "move+caus."	Éva	2;5	Kenyeres 1928:87
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(moz+dít)

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
perdíft "spin+caus." (per + -díft)	peregíft "spin+caus." (pereg + -íft)	Rózsi	2;-	Kardos 324

5.412 Denominative verbal suffixes

a) Both -ol, -el, -öl, -l and -oz, -ez, -öz, -z are denominative verbalizers which cover a wide range of possible semantic structures. Here lexical errors occur along the dimensions of use of an instrument,

kövez "cobble"	kövekel "use stones"	-	-	Ponori 1871:7
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action upon a patient,

ebédel "dine"	ebédez "act upon a meal"	Emőke	2;11,9	Meixner
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(actually, ebédez is now acceptable as a variant of the more common ebédel)

and action which results in a created entity.

besorol "put in a row"	besoroz "make into a row"	Kari	3;-	Simonyi 318
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(In the meaning of "call to military service" besoroz is conventional.)

b) Both -ít and -ol, -el, -öl, -l may form verbs whose action serves to make an adjective realized.

megsimít "smoothen"	megsimál "make smooth"	Piroska	-	Trencsény 264
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c) Both -ódik, -ődik and -odik, -edik, -ödik, as pseudo-reflexive verbalizers, can attach to roots and express the action which makes an adjective realized.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
rám nehezedik "on-me be-heavy"	rámnehezekedik "on-me be-heavy"	Em5ke	3;10,23	Meixner

d) Each of the suffixes -ol etc. and -oz etc. can serve to form verbs whose root is a transferred object.

bekormoz "begrime"	bekormít "begrime"	Laci	2;5	Balassa 1893:72, 142
elkormoz "engrime"	elkormít "engrime"	Laci	2;5	"
megkarcol "scratch up"	megkarcít "scratch up"	Rózsi	2;-	Kardos 324
aranyoz "engolden"	aranyít "engolden"	Piroska	-	Trencsény 264

Or they may be attached to a noun to form an action in which that noun is an agent.

lovagol "act like a knight, i.e. ride"	lovagoz "act like a knight"	Jolán	3;2	Endrei 465
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5.413 Deverbative nominal suffixes

Each of the suffixes -ék; -ás, -és; and -at, -et form verbs which realize the noun as a product of the action of the verb.

maradék "remnant, that which remains"	maradás "that which remains"	Lili	-	Ponori 1905:435
ugrás "jump"	ugrat "jump"	Kari	4;-	Simonyi 318
rakás "store"	rakat "store"	Kari	4;-	Simonyi 318

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
bukás "fall"	bukat "fall"	Éva	2;2,7	Kenyeres 1928:86

5.414 Denominative nominal suffixes

Both -áros and -s etc. denote a member of a profession dealing with the root.

kocsmáros "inn-keeper"	kocsmás "inn-keeper"	Kari	5;-	Simonyi 319
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5.42 Failures to insulate items where flectional suffixes compete.

Competition of flectional suffixes in minimal.

Correspondingly, there are few reported errors of this variety.

a) Generally, the superessive is represented by -on, -en, -ön, -n, but a handful of roots takes the older -ott, -ett, -ött suffix. All such forms should have their superessive insulated.

helyett "place+super." (=in place of)	helyán "place+3PS poss. +superessive"	Pali	3;3,23	Meixner
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b) Generally, the adverbializing suffix is -an, -en, but -ul, -ül occurs with a few forms. Here, inn- and onn- have no free existence (i.e. they resemble the "passive" verbal roots).

innen "from here"	innul "here+ly"	Imre B.	3;-	Simonyi 322
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<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
onnan "from there"	onnul "there+ly"	Imre B.	3;-	Simonyi 322
c) Although it might be possible to govern the use of the various diminutives through complex phonological rules, the productivity of such rules is doubtful and exceptions to these rules abound.				
apuka "father+dim."	apaka "father+dim."	Márti	1;10,11	Meggyes 45
kockácska "block+dim."	kockaka	Márti	1;10,27	"
kesztyűcske "glove+dim"	kesztűke	Márti	1;11,21	"
vizecske "water+dim"	vizeke	Márti	1;10,13 2;0,28	"
takarócska "blanket+dim"	takaróka	Márti	1;10,21	"
kakáócska "cocoa+dim."	kakáóka	Márti	2;0,13	"
vödöröcske "bucket+dim."	vödörke	Márti	2;1,7	"
ajtócska "door+dim."	ajtóka	Márti	2;1,9	"
ceruzácska "pencil+dim."	ceruzaka	Márti	2;1,11	"

5.43 Failure to insulate items where roots compete

In section 4.1 we discussed learning of root alternation patterns which could be controlled by phonological rule. In these patterns, the root typically undergoes an alteration before a variety of suffixes, so that it would be uneconomical to attempt to learn each of

the root-suffix pairings as a separate lexical amalgam. Furthermore, most of the changes involved in 4.1 were phonologically non-complex. In this regard, the changes of section 4.13 are more complex and it is likely that they are controlled through the coding of parallel roots in the lexicon. Although errors in the choice of such parallel roots are actually lexical errors of the type to be discussed in this section, they were included in the chapter on morphology because they are traditionally considered to be based upon morphological alterations. The errors discussed below can be seen as further examples of the type of section 4.13.

a) The 3PS indefinite past of the verbs iszik "drinks" and eszik "eats" illustrate the idiosyncratic roots iv- and ev- rather than the regular* roots i- and e- which appear elsewhere in the past tense. Thus, the forms ivott and evett, or the roots iv- and ev- for the 3PS indefinite past must be insulated.

* As noted in section 3.131 of Part I, verbs of Root Type XIV have a root for tenses and moods other than the imperative, present, and conditional of the shape i(v)-, e(v)-, or te(v)-. However, the rule for the insertion of this final /v/ is dependent upon the occurrence of a non-deletable vowel at the beginning of the first suffix. Since the past begins with a deletable vowel, the insertion of this /v/ is blocked. Thus the /v/ of evett and ivott cannot come from this source. Rather it seems to require insulation. We should note that the past tense assumes its full -ett, -ott forms only in the 3PS of these verbs, although some verbs take the full form throughout.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
evett "he ate"	ett "he ate"	Miklós	6;4	Barcsai 31
evett	ett	Éva	3;0	Kenyeres 1928:35
evett	ett	Iaci	2;4	Balassa 1893

b) One of the roots undergoing v-insertion stands out by reason of the fact that its accusative fails to undergo the required insertion. This accusative must, therefore, be insulated.

szót "word+acc."	szavat "word+acc."	Éva	8;2,3	Kenyeres 1928:31
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c) A handful of nouns form possessives by dropping their final vowels (see section 3.131 of Part I, Root Type VII). These forms may either be produced by creating a rather uneconomical phonological rule or by insulating the possessives in question.

anyja "mother+3PS poss."	anyája "mother+3PS poss."	Kari	4;-	Simonyi 321
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d) The root falu "village" takes the form falus- before the adjectival locative suffix -i. The resulting form is best produced through insulation.

falusi "village+ish"	falui "village+ish"	Piroska -		Trencsény 264
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e) The comparative of the word sok "much" utilizes the idiosyncratic root tő- to form több "more," which can only be maintained by insulation.

több "more"	sokabb "much+er"	Nanus	5;-	Simonyi 319
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<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
többet "more+acc."	sokabbat "much+er+acc."	Ferike	4;-	Endrei 524

f) The word második "second" is formed from the root más "other," rather than from the numeral kettő "two," as the normal pattern requires.

második "other+th" (=second)	kettedik "two+th" (=second)	Miklós	6;0	Barcsai 31
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g) For some reason, the root of the verb szárazít "to dry" shows deletion of the second syllable of the adjective száraz "dry" which would normally serve as the base.

szárazít "dry+make"	szárazít "dry+make"	Kari	3;8	Simonyi 318
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h) The adjective éhes "hungry" is formed from the root eh- and the adjectival suffix -es. This is to say that it is not really analysable (compare 5.222). It must be insulated against formation from étvágy "hunger."

éhes "hunger+ish"	étvágyas "hunger+ish"	Kari	6;-	Simonyi 319
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i) One of the most wide-spread errors in Hungarian child speech involves the failure to insulate personal pronouns against analysis. Specifically, the possessive, accusative, and nominative of all the personal pronouns can be most economically produced by total insulation. There are areas in the paradigm where some regularity of

formation exists, but it is not easily expressed in productive rules. Most of the errors that follow are multiple errors in that they not only show failure to insulate the item the child seeks to produce, but they also use in their formation roots derived from over-analysis. (sec. 5.22) of non-analysable insulated items, i.e. other personal pronouns. The first, very common, error type involves use of the pseudo-base of the second person possessive (ti- from tied "yours") for the formation of the first person possessive.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
enyém "mine"	tiem "your+lPS poss."	-	-	Csapodi 465
enyém	tiem	Margit	2;8	Endrei 525
enyém	tiem	Hajnalka	-	Keresztes 33
enyém	tiem	"aproság"	-	A. Vértes 1953:34
enyém	tiem	Éva	2;1,3	Kenyeres 1926:55,1928:56
enyém	tiém	Éva	2;4,14	"`
enyém	tiem	Rózszi	2;6	Kardos (cited by Kenyeres)
enyém	tiem	Ilonka	-	Ponori 1871:9 1905:399

This same root may also be over-generalized to the lPP possessive:

miénk "ours"	tienk "you+lPS poss."	-	-	Csapodi 465
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Adult Form	Child Form	Child	Age	Source
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Or the child may use this root as some general root for personal pronouns and base an accusative upon it.

minket "us"	tinket "you+1PP poss+ acc."	"aproság"	-	A. Vértés 1953:34
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Working the other way round, the child may over-analyze the 1PS enyém "mine" and extract the pseudo-root eny- or enyé-, by removal of the known 1PS poss. suffix. This pseudo-root then serves as the basis for formation of 2PS pronouns.

tied "yours"	enyid "I+2PS poss."	Lili	-	Ponori 1905:399
tied	enyéd	Rózsi	2;6	Kardos 297
tied	enyéd	"aproság"	-	A. Vértés 1953:34
tied	enyid	-	-	Csapodi 465

Or the child may use this pseudo-root to form the 2PP possessive:

tietek "yours (2PP)"	enyétek "I+2PP poss."	-	2;-	Kardos 297
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Within the accusative paradigm, we find over-analysis of téged "you-acc." in which the known 2PS poss -ed is removed, leaving the base teg-.

engemet "me-acc."	tégemet "you+1PS+acc."	Éva	2;0,26	Kenyeres 1926:53
engemet	tégemet	Rózsi	2;6	Kardos 297
engemet	tégemet	Margit	2;8 to 3;0	Endrei 526
tieteket "you-pl.-acc."	tégeteket "you+2PP+acc."	-	-	Kardos 324

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
titeket "you-pl.-acc."	tégeteket "you+2PP+acc."	-	-	Csapodi 465
titeket "you-pl.-acc."	tégetek "you+2PP"	Éva	3;3- 5;10,6	Kenyeres 1926:54 1928:55
titeket "you-pl.-acc."	tégetek "you+2PP" (in <u>tégetekkel</u> "you+2PP+instrumental")	-	-	Csapodi 465

Or the child may generalize the root eng- derived from false analysis of engem "me-acc."

téged "you-acc."	enged "me+2PS"	-	-	Csapodi 465
engemet "me+acc."	engedet "me+2PS+acc."	Zoli	2;0,2	MacWhinney

Another source of a root is the 1PP accusative bennünket, which may provide the pseudo-root benn- after removal of the accusative -et and the 1PP possessive -ünk.

engemet "me+acc"	bennemet "we+1PS+acc."	-	-	Ponori 1905:399
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Or the child may take the 3PS familiar pronoun maga as some sort of basic root and seek to form nominatives of other persons from it.

te "you"	magad "you+2PS" (in <u>magaddal</u> "you+2PS+instr.")	Jolán	2;7	Endrei 464
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It is an interesting fact that, in the active search for some root which can serve as a stable base for the formation of personal pronouns, the child seldom attempts to generalize a form isolated in one case to a formation in another case. When the child does generalize in this way between cases, it is by taking the nominative pronoun

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
as the base.				
enyém "mine"	éné "I+sign of poss."	Margit	2;6	Endrei 525
engemet "me+acc."	émt (=ént) "I+acc."	Éva	1;11	Kenyeres 1928:55

5.44 Failures to insulate portmaneu items

In the previous sub-sections 5.41-5.43 we have discussed lexical errors due to failure to insulate items against formation through substitution of a competing root or suffix. Here, the items to be insulated cannot properly be analysed into root and suffix, but are morphological units. However, the semantics of these units are easily analysable into two parts, each of which could be represented by a separate conventional item. In order to prevent this analysis of the unanalysable, these forms must be insulated by increasing recall availability. There are two varieties of forms involved here: portmaneu forms and other morphologically opaque forms.

a) Portmaneu forms:

nincs "is-not"	nem van "not is"	Éva	2;8	Kenyeres 1928:45
nincs	nem van	Emőke	3;4,20 3;5,2 3;7,11	Meixner
nincs	nem van	Pali	3;3,28 3;5,20	Meixner
sincs "is-neither"	se nincs "neither is-not"	Józsi	3;1,26	Meixner
sincs	se nincs	Pali	3;2,2 3;5,2	Meixner

Adult Form	Child Form	Child	Age	Source
sincs "is-neither"	se van "nor is"	Jolán	2;7	Endrei 464
sem "nor"	is nem "also not"	Éva	2;0,22	Kenyeres 1926:64
úgysem "not-even"	úgyse nem "not-even not"	Emőke	3;5,20	Meixner
sincsen "neither-is"	is nincsen "also is-not"	Pali	3;1,8	Meixner
sincsen "neither-s"	sem nincsen "nor is-not"	Gyurka	-	Jozefovics 1937
sincsenek "neither-are"	sem vannak "nor are"	Éva	5;10,24	Kenyeres 1928:45

b) Some forms appear to be morphologically analysable, but are actually opaque. The form nekik "to them" has a dative root nek-, but the -ik residue is not a suffix for 3PP. The regular 3PP poss. is -ük.

nekik	nekük, nékük	Kari	2-5	Simonyi 322
nekik	nekük	Emőke	4;2,4	Meixner

c) The suffix -d codes for "2PS-Definite-Imperative," but there also exist the separate suffixes -i "Imperative" and -od, -ed, -öd "2PS Definite." In the following errors, Zoli uses the two analytical suffixes together in place of the single suffix -d.

add	adjad	Zoli	2;2,0	MacWhinney
mutasd	mutassad	Zoli	2;2,5	MacWhinney

5.5 Evaluation and Discussion

Having now reported all examples of child neologisms and neologistic-like errors, we should turn our attention to an evaluation of the information we may derive from this data. First, we have seen that Hungarian children illustrate productive use of a vast range of formative suffixes. In fact, a list of the suffixes utilized in these neologisms starts to approximate a list of the more productive suffixes of the language. The majority of the neologisms were produced through application of the more common and productive suffixes, but many of the child neologisms show usage of formative which the adult language more or less ignores in the creation of new words.

From the viewpoint of Hungarian child language studies, it is important to observe the relative productivity of the various suffixes in child language; but, for the comparative study of language acquisition, the data on neologisms provide a more important kind of information. In the course of our analysis of these forms, we found that, given a noun or verb root, we could interpret the basic semantic area of the neologism simply by knowing something about the deep structure relation governed by the formative suffix. Thus, given the neologism vasutol "train+nominalizer" and the information that vasut functions as an agent, we know that this new form must refer to acting in a manner typical of a train. On the

other hand, if we are told that vasut functions as a location, we know that the neologism refers to an action which typically takes place on a train. In English, such facts may seem obvious. But when we turn to a language like Hungarian we find that formatives tap a far wider array of deep structure notions. Moreover, these relations appear in formed words with greater frequency. Let us list the categories which we found necessary for the interpretation of the neologisms:

Verbal Categories:

Iterative
Frequentative
Momentaneous
Inchoative
Reflexive
Passive
Causative

Phrasal Categories:

Agent
Patient
Instrument
Transferred Object
Object Removed
Created Entity, Product
Location
Adjective Realized

The compound neologisms required utilization of these further categories:

Identity
Modification
Possession

The categories of Profession and Abstract Quality were of some importance for the denominative nominals, but these categories would be of doubtful universal importance.

Workers in child language who are attempting to investigate the underlying semantic structure of child

speech (see Slobin et al. 1972) have found that categories much like those above are necessary for the description of some of the earliest utterances. Thus, the use of such categories in these neologisms probably occurs much after their original appearance in separate lexical items. However, the important point is that these forms demonstrate a higher, more conscious use of old basic categories in new forms.

We should also note that the material of section 5.4 provides some fairly good evidence of the power of lexical analysis. It almost seems that some child at some time must attempt every conceivable analysis in the language. Moreover, there are certain obvious analyses, such as those of section 5.43i, which must be attempted by nearly every Hungarian child.

5.6 Studies of the normative aspects of lexical development

Hungarians have devoted a large portion of their research in language acquisition to questions of vocabulary development. This is of varying interest to us today; perhaps only the data on the acquisition of flectional suffixes strikes directly at some of the issues in modern developmental psycholinguistics. Section 5.61 reviews this data and section 5.611 evaluates the findings on the acquisition of flectional suffixes. Section 5.62 deals with the acquisition of roots in the child's early vocabulary and some attempt to estimate the size of the vocabulary of adolescents. Section 5.63 deals with data on the acquisition of the parts-of-speech and detailed reports of the emergence of certain grammatically important words. Section 5.64 deals not with the child's vocabulary, but with the baby-talk forms of the language to which he may be exposed. These last three sections are included solely for the benefit of other researchers who might be looking for data on, say, universals in baby-talk forms or learning of numerals, etc. Accordingly, we not evaluate this data, but include it for reference purposes.

5.61 The acquisition of flectional suffixes

Although several observers have recorded the appearance of the first case forms, no report gives a complete and integral picture of the learning of the entire system of flectional suffixes. Moreover, we have almost no normative data about the time of the first appearance of formative suffixes.

One of the more complete accounts of the acquisition of grammatical morphemes is provided by Balassa (1893: 67, 143 and 1920:132-134) and is summarized below:

<u>Age</u>	<u>Appearance</u>
1;0	first word
1;2	first sentence
1;7	Laci's first words include three cases in apparently productive use: <ol style="list-style-type: none"> 1) Accusative <u>-t</u> in <u>narancsot</u> "orange+acc." and <u>findzsát</u> "coffee pot+acc." 2) Illative <u>-ba</u> in <u>cékbe</u> "chair+illative" and <u>bobába</u> "room+ill." But Balassa (1893:141) suggest that this use is not productive. 3) Allative <u>-hoz</u> in <u>anyváo</u> "mother+allative." Laci uses past tense forms, but this use is not yet productive. Balassa found that, up to this age, Laci only used inflected forms when they were provided by a previous adult model.
1;8	The inflections of the previous month gain wider currency. The allative is confused with the adessive and sublative (section 7.321).

- 1;9 The dative -nak, -nek enters; but it is confused with the allative (section 7.321). The verb is inflected for the LPS (section 7.315). The use of the past tense has not become productive and distinctive; Balassa says that it refers to recently completed actions.
- 1;10 The sublative -ra, -re, the superessive -n, the sign of possession -é, the 3PS possessive suffixes -a, -e, and the 3PP Indefinite suffix -nak, -nek all enter now as productive forms. Uncertain use of the definite article begins. The sublative is also correct in the idiom vigyázzon Lacikára, "Watch out for Laci."
- 2;0 The LPS Definite suffix -m is differentiated from the LPS Indefinite suffix -k.
- 2;2 The first compound sentence. Verbs in the LPP.
- Simonyi's account (1906:321-323) is somewhat more sketchy. He reports the following landmarks in Kari's early development:
- 0;9 Kari spoke her first sentence ka pi (=katona pipál "soldier smokes"). Interpolating from this fact, we might set the time of the first word at ~0;7-8.
- 1;3 The diminutive -ka, -ke enters as the first suffix.
- 1;5 The instrumental -val, -vel, the sublative -ra, -re, and the frequentative -gat, -get all appear. In the LPS of the verb the Definite -m is distinct from the Indefinite -k. The ordering of attachments of Plural + Accusative is correctly handled, and the negative morpheme nem enters.

From his other girl, Nanus, Simonyi reports that at 1;3 the allative became productive and at 1;4 the LPS possessive, the dative, the inessive, and the sign of possession all appeared.

Várga (1921:150) only cites the first three inflections acquired by Béluš at 1;7: the accusative, the inessive, and the sign of possession. Szinkovich (1921:94) reports on the following appearances during his subject's development:

- 1;5 First sentences
- 1;6 The past tense appears in the form elment "left," but note that this form, as it was used, may have been a statement of absence rather than a relation between two time states. The child also used infinitives at this time as in enni! "give me something to eat!"
- 1;7 The sublative and the causative-final (beneficial?) -ért "for the sake of, in order to obtain" are productive at this age.
- 1;8 The sublative is occasionally confused with the superessive; the accusative is not yet acquired.

Mikes's observations of two girls bilingual in Hungarian and Serbo-Croatian were particularly sensitive to the question of when use of a form could be termed productive. For this reason, here results can be considered valuable for our purposes, even though they deal with bilingual subject. Eszter's acquisition can be summarized in this way:

- 1;4 The first productive suffix is the plural -k.
 Mikes also reports an imperative-indicative contrast in the verb, but the example is ambiguous.
- 1;5 The accusative -t and the locative (in what form?) both enter.
- 1;6 The dative and the comitative appear.
- 1;9 The illative, elative, sublative, and the superessive appear.
- 1;10 The delative emerges.
- 1;11 The adessive joins the other locatives.
- For the second subject, Eta, Mikes cites this data:
- 1;5 The locative appears (in what form?).
- 1;6 Plural -k appears.
- 1;7 The illative, elative, accusative, dative, and comitative all enter in this month. The imperative is differentiated from the indicative.
- 1;8 The sublative and the superessive appear.

Lovász, in his free-speech sampling of three three-year-olds and three five-year-olds, found an increased use of the indefinite conjugation and the past tense in the older group. However, neither group used many future verbs or plurals. Moreover, 2PP verbs, conditionals, and participles are quite absent from his samples. Lovász believes that some of these delays in acquisition can be attributed to formal difficulties and others to cognitive difficulties. Although Lovász's distinction seems valid in principle, his application of the distinction seems unmotivated. Lovász also notes that both groups control

the Indefinite-Definite contrast and the use of the Imperative.

The most complete picture of the order of appearances of the various flectional suffixes in a single Hungarian child is that provided by Kenyeres. Kenyeres's observations are scattered throughout his two major works on child language; this list has been compiled by unifying his many references to first appearances:

- 0;9,22 First clear use of a word (1926:5).
 1;0,2 First clear use of a two-word sentence (1926:25).
 1;3,17 Éva begins to use the accusative, but only by 1;5,19 is the use "conscious" (1926:27).
 1;5,3 The allative enters and becomes frequent by the month's end (1926:28).
 1;5,4 The 3PS possessive appears, but its use is not clearly productive (1926:28).
 1;5,5 Plural forms are frequent after this time, but Kenyeres (1926:29) holds that the plural is not used consciously until 1;7.
 1;5,17 The first past-tense form ement "left" appears, but no productive use of the past tense suffix is yet evidenced (1926:35).
 1;5,21 The inessive appears (1926:29).
 1;5,26 Both the dative (as indirect object) and the allative are used on this day, but the use of the allative seems due to imitation. Generally,

- the dative is used where the allative is required. (1926:29).
- 1;6 In addition to its established use as indirect object, the dative is used in the possessive construction to mark the possessor during this month. Kenyeres does not cite the exact day of emergence (1926:29).
- 1;6,6 The infinitive -ni occurs as the first verbal inflection (1926:33).
- 1;6,7 The sign of possession -é is first reported (1926:54).
- 1;6,17 From this date Kenyeres cites many examples of the 3PP Indefinite -nak, -nek (1926:30, 31, 34).
- 1;6,25 At this time Kenyeres reports the first LPP Indefinite -fuk; its use is not clearly productive in the example which Kenyeres gives (1926:34).
- 1;7,3 The first forms in LPP Definite -fik are reported (1926:34).
- 1;7,9 The LPS verbal suffix -m is first used consciously (1926:33).
- 1;7,15 The adessive enters; it is at first confused with the superessive and the allative (section 7.321) (1926:29).
- 1;7,16 The sublative is correctly used (1926:29).
- 1;7,23 The comitative is correct; the ablative is used in an idiom, but not as a true ablative (1926:29).
- 1;8,0 Although Éva has used 2PS verbs from 1;5,28 (1926:32), the conscious use of this person only

- began after 1;8 (1928:33). Kenyeres does not separate Definite and Indefinite forms in his discussion.
- 1;8,20 The 1PS Indefinite -k is acquired (1926:33).
- 1;10 Around this time (1926:37) Éva begins to distinguish the imperative mood and its marker -j.
- 2;1,18 The 2PP Indefinite -tek is the last personal verbal suffix to enter, but even at 2;4 its use is rare (1928:34).
- 2;2 Éva has used the compound future fog + Infinitive since 1;8, but only now does its use become "conscious" (1928:35, 1926:35). Although the conditional -na, -ne has been used since 1;10,9, this is the time of its first productive use (1926:36).
- 2;6 Productive use of the comparative (1926:42, 1928:44). From 1;11,12 comparatives had been used without correct meaning.
- 3;0 Productive use of superlative (1926:42 and 1928:44). From 2;5,8 Éva used superlatives without understanding their meaning.
- 4;5 Productive use of the hyperlative (1926:42 and 1928:44). Although Meggyes devoted little space to observations regarding the first appearances of the various flectional suffixes, it is possible to pick up some information on

this topic by going through her data with an eye toward the first reported uses of a given suffix. Thus, some of the following items are marked with an asterisk, if it is possible that they were used before the date given. For some other suffixes, Meggyes reports the actual time of first appearance.

- 1;0 First word
- 1;6 First two-word sentence (Meggyes 61)
The allative -hoz etc. appears at this time, but productive use begins at 1;8,17.
- 1;8 The diminutive enters at least by this time (47).*
- 1;8,15 The nominative \emptyset is differentiated from the Accusative -t.*
- 1;8,17 The illative (Meggyes 49) and the accusative were acquired at least by this time. The accusative is combined correctly with the plural at this date; this points towards a much earlier time of acquisition. The plural is also evidenced by this time.*
- 1;9,24 The 3PS possessive appears by this time in a variety of constructions (Meggyes 49).*
- 1;9,25 The dative -nek, -nek enters first as the marker of the possessor in the possessive construction (Meggyes 50).
- 1;10,13 The 1PS possessive -m enters (Meggyes 53).
- 1;10,15 The other diminutive -cska, -cske appears (Meggyes 46). The instrumental -val, -vel is first reported (Meggyes 50).* The past tense suffix is used at this time for recently completed actions (Meggyes 57).

- 1;10,21 The dative is now used as an indirect object (Meggyes 50). The sign of possession appears.
- 1;10,25 Márta uses lesz "will be" to express futurity, but this is not a suffix, and productive use of the compound future is not yet evidenced.
- 1;11 The infinitive -ni is used (Meggyes 47)*
- 2;0,13 The causal-final -ért appears (Meggyes 50).
- 2;0,23 The adessive occurs, but is not yet productive (Meggyes 50).
- 2;1,5 The composed future fog+Infinitive appears, but not productively.
- 2;1,11 The superessive appears (Meggyes 50).
- 2;2,23 The translative-factitive participial ending -va, -ve enters (Meggyes 29).

Several authors have been interested in grouping the various verbal suffixes and making statements about the nature of the first verbs. Thus, Balassa (1920:58, 105) found that Laci's first verbs were either 3PS Indicative, 2PS Imperative, or 3PS Imperative. Balassa found that Viktor's observations agreed with his own. Meggyes (57) added the 2PS Indicative to this list. These accounts have lumped together differences in definiteness and, perhaps, tense of the verb. This is a problem which plagues all of these reports of early verbal suffixes. However, these reports do point to the fact that early vocabulary has few plural or first person forms. Kenyeres (1926:33) reports

infinitives used in the imperative sense (somewhat as in German) from 1;6,6. Although Kenyeres found occasional usage of the LPS verbal suffix throughout the month of 1;6, it was only used consciously by 1;7,9.

5.611 Evaluation and discussion

Despite the varying quality of these reports and the large individual differences recorded, it is possible to state some general principles governing the acquisition of flectional suffixes. Students of Indo-European child language have observed that the appearance of the first two-word sentence commonly proceeds the first productive morphology by a full year. Stern (1965:248) notes:

Der flexionslose Zustand dauert ungefähr ein Jahr lang durchschnittlich bis 2;0; die in der Literatur verzeichneten Flexionsanfänge bewegen sich zwischen 1;10 bis 11 (Tögel, Oltuscewski, Scupin) und 2;2 bis 4 (Preyer und Günther Stern). Nach neueren vergleichenden Feststellungen von Hetzer und Reindorf beginnt die Flexion bei Kindern gehobener Schichten durchschnittlich im letzten Viertel des 2. Jahres, bei Proletarierkindern kaum vor 2;2.

The Hungarian data clearly demonstrate that productive morphology begins well before 2;0. This will become clearer in Part III. In fact, the data from Balassa, Kenyeres, Simonyi, and Meggyes show that the first productive morphology follows the first word with a rather constant delay of six or seven months. The constancy of this delay contrasts with the inconstancy of the delay between the first word and the first two-word sentence. In the Hungarian literature, this delay ranges from about one month to fully six months.

Stern (1965:199) cites no precise figure for the delay between first word and first sentence, perhaps because there is such variation in this gap. The constancy of the gap between the first word and the first productive morphology is predicted by the model of Part I as a result of the dependence of superimposition upon factors of processing capacities which would be similar for most children, given the basic exposure to input. The inconstancy of the gap between the first word and the first sentence suggests that children are able to put together sentences with varying degrees of reliance upon superimposition of syntactic patterns from adult models. Resolution of this issue requires development of the kind of detailed analysis of the rules of early syntax which is only now beginning.

The Hungarian data shows that the emergence times of productive morphology and child syntax may be significantly closer in an agglutinative language than in inflecting Indo-European languages. Burling (1959) found a similar pattern in the development of his Garo-English-learning son. However, I am not aware of any evidence which demonstrates that productive morphology may begin before the appearance of the first two-word sentence. In his French review of his Hungarian work, Kenyeres points to an early appearance of an accusative inflection, but productive use of the accusative only occurs by 1;5. It often happens that a number of the child's first words are learned as amalgams with suffixes

attached, but such forms do not demonstrate productive morphology. We should observe that the fact that certain syntactic patterns should be acquired quite early is predicted by those aspects of the model of superimposition which hold that free-rules affecting large semnets of the input will be the first rules acquired. Thus, a syntactic rule which places the agent before the action is of great generality and should appear at an early stage.

Turning to the order of appearance of the various noun suffixes, we find that the accusative, the plural, and some locative generally figure as the first three suffixes in productive use. Among the locatives, the allative is generally the earliest, with the inessive only slightly later. After this first group of suffixes, there follows a group which seldom appear as the first two or three suffixes, but which are nonetheless only slightly later in acquisition. These include the dative, the illative, and the instrumental-comitative. A third series of suffixes include the sublative, the superessive, first person possession, third person possession, and the sign of possession. In some reports these suffixes occur amongst the first four or five, while in others they appear only after a larger number of suffixes have already emerged. The elative, the adessive, the causal-final, and the translative-factitive are the last suffixes acquired during the period for which we have reports. The acquisition of the less common noun suffixes has not yet been studied. We should also note that both Simonyi and Meggyes report use of the

diminutive among the first two suffixes, but other researchers have made no mention of its first appearance. It may well be that the earliest suffixes include the diminutive along with the plural, accusative, inessive, and allative.

Among the verbal suffixes, the past, the 1PS indefinite, the infinitive, and the imperative (in what form?) are the earliest. They generally enter together with the second series of noun suffixes. The 3PP Indefinite, the 1PS Definite, and the LPP of both Definite and Indefinite enter along with the later noun suffixes. In general, Indefinite forms are productive before Definite forms. Both the nominative of the noun and the 3PS Indefinite of the verb are uninflected roots; for this reason we cannot talk of the time of acquisition of these forms. Further study of the acquisition of the various verbal suffixes will have to pay more attention to separating out the Definite and Indefinite forms.

Granted the obvious limitations of the presently available data, there is nonetheless sufficient evidence in the Hungarian literature and the observations of Part III to permit us to consider the question of the determinants of the order of emergence of the various suffixes. The early emergence of the plural, accusative, inessive-illative, and allative indicate to us that the chief determinant of early emergence is not over-all morphological complexity, since the accusative certainly requires the operation of a

great many rules throughout its paradigm, nor the semantic "complexity" of the various morphemes, since the several locative suffixes are of roughly equal complexity and nonetheless emerge at quite different times. Rather, it appears that the chief determinant of the order of emergence is the frequency of the morpheme in the amalgams used by the child. Note that this determinant is not directly identifiable with the frequency of the morpheme in adult speech, but relates more closely to the functional weight of words inflected with the given morpheme for children in their second year. If this preliminary conclusion stands up upon examination with more carefully gathered data, it would provide evidence in support of the model of acquisition of section 2.3 of Part I.

5.62 Acquisition of roots

Balassa (1893:64-67) reports on Laci's vocabulary development from the time of the first word at 1;1 until the age of 1;8. Words acquired at one period were considered to be included in the vocabulary of the succeeding months.

Age 1;0,25

<u>Word</u>	<u>Meaning</u>	<u>Source</u>	<u>Meaning</u>
á á	stand	áll	stand
tátá	bye-bye	pápá	bye-bye (baby-talk)
é é	leave, fall	el	away

Age 1;1

te	please, take	tessék	please!
ki	leave room	ki	out

Age 1;2

bábá	child, doll	baba	child, doll
ányá	mother	anya	mother
páppá	father	papa	father (baby-talk)
bica	Vica	Vica	nursemaid's name
cica	cat	cica	cat
pápá	someone leaves	pápá	good-bye (baby-talk)
gyi, gyű	said when on a wagon	gyi, gyű	getty-up

Age mid-1;2

pápá	he leaves	pápá	good-bye (baby-talk)
appá	lifting, dropping	hoppá	lifting, dropping

<u>Word</u>	<u>Meaning</u>	<u>Source</u>	<u>Meaning</u>
<u>Age late-1;2</u>			
dádá	anger	dádá	you will get a beating (baby-talk)
nána	watch out	nana	watch-out (baby-talk)
gyere	come!	gyere	come!
ámmá	soon	hamar	soon
bize	water	viz	water
teje	milk	tej	milk
keze	hand	kéz	hand

Age 1;3

báttá	cotton	vatta	cotton
bú	bovines	bű	bovines(baby-talk)
Dedzõ	Dezsõ	Dezsõ	man's name
tészta	pastry	tészta	pastry
táto	soldier	katona	soldier
báci	uncle, man	bácsi	uncle, man
tájcá	kreuzer	krajcár	kreuzer

Jablonkay's (1905:149-151) report covers a similar period of vocabulary acquisition:

Age 0;11

baba	child, doll	baba	child, doll
mama	parent	mama	mother (baby-talk)

Age 1;1

tácsi	donkey	csacsi	donkey
káge	dog	kutya	dog
kr-kr	ball	onomatopoeia	

Word	Meaning	Source	Meaning
<u>Age 1;2</u>			
á-bá	uncle, man	bácsi	uncle, man
nenne	aunt, woman	néni	aunt, woman
maj	monkey	majom	monkey
a-hó	snow	hó	snow
e-hő	rain	eső	rain
ká-ká	clock	onomatopoeia	
tej	food	tej	milk
á-á-á	reading	onomatopoeia	
ámpa	lamp	lámpa	lamp
abba	ball	labda	ball
má	button	gomb	button
<u>Age 1;3</u>			
āma	apple	alma	apple
tűsz	needle	tű	needle
papa	father	papa	father (baby-talk)
apā	father	apa	father

Past the point of 1;3 Jablonkay's report becomes fragmentary.

Endrei's report (462) is complete for the first four month's of Jolán's development:

Age 1;2

lá	lamp	lámpa	lamp
ló	horse	ló	horse
jó	good	jó	good
hó	snow	hó	snow

<u>Word</u>	<u>Meaning</u>	<u>Source</u>	<u>Meaning</u>
baba	child, doll	baba	child, doll
mama	mother	mama	mother
<u>Age 1:3</u>			
lápa	lamp	lámpa	lamp
ó	clock	óra	clock
tej	milk	tej	milk
ba	band, gang	banda	band, gang
tá	bye	tá	bye (baby-talk)
<u>Age 1:4</u>			
tesz	please	tessék	please
felvenni	put on (shoes)	felvenni	put on
levenni	take off (shoes)	levenni	take off
ukor	sugar	cukor	sugar
ama	apple	alma	apple
<u>Age 1:5</u>			
bölcs	crib	bölcső	crib
vi	flower	virág	flower
pá	pillow	párna	pillow
pojc	peel (apple)	pucol	clean, peel
memle	bread roll	zsemle	bread roll
gá	roll!	guritsd	roll!
alsz	sleep	alszik	sleep
itt	here	itt	here
ott	there	ott	there
ide	hither	ide	hither
oda	thither	oda	thither

Kereszter reports only the very first words from Hajnalka in the period from 0;7-0;10 (1940:24).

papa	father	papa	father (baby-talk)
papi	food	papi	food(baby-talk)
dádá	get hit	dádá	you will get a beating(baby-talk)
baba	doll	baba	child, doll
tätä	pretty	csecse	pretty(baby-talk)
nene	aunt, woman	néni	aunt, woman
pipi	chicken	pipi	poultry (baby-talk)
mama	mother	mama	mother (baby-talk)

For reasons of space limitation we pass over the reports of Donner, Viktor, Csizmadia, Kemper, and Szakács, although we refer to their results elsewhere. Szakács examined the active and passive vocabulary of an 12-year-old dull-normal child. The bulk of the work was involved in the determination of the child's passive vocabulary through use of a dictionary of the more basic words in Hungarian. Of the first 4732 words in the dictionary, the child understood 3572. Extrapolating this figure to the rest of the dictionary, the child's passive vocabulary was estimated at 14,572 words.

We now turn to a more detailed review of Kenyeres's detailed and informative observations of early vocabulary development.

0;7,2 Éva lay down on a small blanket on the floor and, turning to her parents, said ejjaa. Kenyeres notes how this resembles the words haja, haja often used when putting her to sleep. He notes that she may be communicating the fact that she is lying down.

- 0;7,17 Dele, gyele "come, come!" occurs in her babbling and engve occurs as a produce of ejnye "Goodness!"
- 0;8,5 Similarly, tente baba "sleep baby" occurs in babbling.
- 0;8,20 Atite, mama, baba all occur as babbling forms of conventional items. Kenyeres notes that early lexical items may lack morphological shape and may be present only in comprehension, or they may possess only morphological shape, while being semantically empty.
- 0;9,3 The often-heard phrase ál a baba, ál "The baby stands, stands" is repeatedly imitated as álababba.
- 0;9,10 Shaking her head and saying baba, baba "baby, baby" she rejected her soup. The reference of the utterance is unclear.
- 0;9,12 Looking in the mirror at her image, Éva exclaims babba...eej, eej "baby....eej, eej." Perhaps this is the first clear-cut case of the use of a lexical item.
- 0;9,20 Hearing the lowing of cattle in the distance, Éva replied with several open /e/'s, as if imitating the cattle's sounds.
- 0;9,30 Reaching for her father's hat, she said adede... adide...adeje...ededej...ede, ade! in an attempt to say add ide "Gimme!"
- 0;10 Her mother was prepared to leave, but she wanted to stay. Her mother said pápá "bye-bye" to her, and Eva replied with tátá (=pápá), as an expression of her desire to stay. Kenyeres takes this as the first intelligent utterance, but notes that the baby-sitter had reported a similar occurrence as early as 0;8.
- 0;10,25 She regularly uses tátá to express a desire to leave.
- 0;11,6 She uses tá to express her desire to get pushed in her wagon.
- 0;11,3 She uses the word titi "chicken" to draw attention to chickens, dogs, cows, or other animals. She also says titi to pictures and windows, perhaps because she hopes to see animals in them, or already saw animals in them. A few days later Kenyeres notes that titi refers to any moving object.

- 0;11,9 With the forms nene, nenye, nane, nini, nyenye, mimi, and nenne Éva reproduces baby-talk nini "lookie!" Although she used the word as an ostensive, she also used it to express her wish to pick up things or to be picked up. Thus, when she wanted her father to pick her up, she would say nini!. When she wanted him to carry her somewhere, she would say tátá to express motion.
- 0;11,14 Looking at her father, she said papapa (papa"father") twice.
- 0;11,16 Looking out to the yard where she often sees chickens, Éva says tititi, even though no chickens are in sight. When they come out she says nyinyi tititi tititi (look, chickens, chickens), her first sentence.
- 1;0,2 The forms te, tete, teii, tesz, tetszi, tee, heti, tetisz, and tetszé all based on adult tessék "please!" are used throughout the second year. At first the word is used to request and to offer, whereas the adult form is only used to offer.
- 1;0,13 Baba "baby" is used for pictures, particularly for those in which there are people. Mama is used for her mother and pictures of women's faces. Kenyeres notes that at this time words are often uttered for practice or the sake of voicing the child's thoughts.
- 1;0,15 Food is given its baby-talk name papi, but this is also extended to the napkin at the table.
- 1;1,2 She uses her version of cipő "shoe" which is pipi to refer to her leg and stockings also. Tehe, hete, heeheehe was used as an imitation of the hotness of a stove she touched.
- 1;1,6 Her father asked: "Where is the doll?" and she replied o (=ott "there") pointing to the doll's picture.
- 1;1,16 Mem and ne (=nem "no" and nem kell "don't need") are frequent. She uses the case suffixes bá and be without roots to ask for her blanket. Kenyeres explains that she extracted this from questions like abba takarjalak? "Should I wrap you in that?" However, this explanation is not entirely satisfactory.
- 1;1,18 Landing on the floor, she says puf as a sound imitation of the thudding noise.
- 1;1,30 Ee with accompanying facial expressions is her

word for anything bad. This sound is the conventional baby-talk form for defecation.

As Éva's vocabulary expands in the subsequent months, Kenyeres's report becomes more selective. However, other sections treat various aspects of this later development.

In sharp contrast to Kenyeres's in-depth diary investigation of early vocabulary, we have Cser's (1935, 1939) investigation of the vocabularies of a thousand boys and girls between the ages of ten and fourteen. Cser asked his subjects to write as many words as possible in fifteen minutes, excluding proper nouns and inflected forms. This "free-association" method has been developed by B.R. Buckingham and applied by E.W. Dolch at Illinois and D.A. Prescott in Geneva. Since this method had been used with large numbers of English, French, and Hungarian children, Cser and Kováts(1937) felt that they could compare the results cross-culturally. In this regard, the Americans wrote more words in fifteen minutes than the French and the French wrote faster than the Hungarians. Cser explains his results by pointing to the possibility that the reformed hand-writing system used in America worked to the advantage of the students from Illinois. However, French and Hungarian schools taught similar writing systems, and calligraphy alone cannot explain the performance differences. Cser then attempts to demonstrate that the Hungarian production, although smaller in quantity, was richer in variety than the French. Although Cser may be correct in this last hypothesis, he invalidates his

conclusions by comparing two hundred Hungarians with 104 French, in effect biasing the richness of the data in the Hungarians' favor.

Among the many inadequacies of Cser's study and the free-association approach to vocabulary investigation, the most glaring is the researcher's failure to allow for the structural differences peculiar to the Hungarian language. Kelemen (1954) outlines the difficulties involved in determining what is a Hungarian word. In our discussion, we are interested in phrasing this question as "What are the lexical items of Hungarian?" Cser's results suggest to us that lexical items are most available to recall in an analytic language (English) and less available to recall in an agglutinative language (Hungarian). Inasmuch as French retains some of the inflectional patterns of Latin, words may not be as fully available as in English. Involved in the recall problem may be the need to select among more alternatives in the case of Hungarian. Thus the Hungarian student wishes to write as a word szépség "beauty," but realizes that the root szép "pretty" can be obtained through removal of the -ság-ség suffix. The student pauses to make his decision as to what is a Hungarian word, while the American has written down "pretty" and "beauty," certain in his conviction that they are two different words. In conclusion, we note that cross-cultural comparisons of elicited vocabulary must account for the relation of the eliciting procedure to the structure of the language.

Apart from these cross-cultural results, Cser found vocabulary growth with age and consistent sex differences in type and nature of the vocabulary elicited. None of these results are surprising. The major result of his study is the frequency dictionary of those words which reputedly form the core of the vocabulary of adolescent Hungarians. A. Vértés (1953:38) notes that the frequencies with which words were written in the thousand protocols examined give a false picture of the actual occurrences of these words in child speech. Thus, these relatively infrequent words occur with great frequency in the protocols: ceruza "pencil" 66%, radír "eraser" 33%, toll "pen" 60.8%, szivacs "sponge" 30.1%, oroszlán "lion" 11%, and tigris "tiger" 7.3%. On the other hand, these common words occurred infrequently in the protocols: én "I" 1.2%, enyém "mine" .3%, reggeli "breakfast" .7%, and édesanya "mother" .4%. An even more telling comparison can be made by noting how many of the 2143 words elicited by Kemper from a normal four-year-old of normal linguistic ability also occur in Cser's dictionary. Certainly the vocabulary of a four-year-old differs from that of the thirteen-year-old, but the four-year-old's knowledge must form a sub-set of the knowledge of the older child. However, it was possible to identify only 1063 words cited by both Kemper and Cser. This means that 1080 words of the four-year-old, over half of her vocabulary, do not appear in Cser's dictionary of adolescent language. Of these excluded

forms, verbs form a disproportionate segment, leading us to believe that the method of free-association used by Cser systematically excluded certain varieties of words.

Somfai's 1968 study of the vocabulary of thirty-four eleven-year-olds from Szeged, on the basis of seventeen written compositions from each child, yielded 6293 types from 26769 tokens. Cser found 2600 types from 15,437 tokens in the protocols of 200 eleven-year-olds. This might suggest that Somfai's approach may more efficiently determine the range of eleven-year-old vocabulary. However; neither Somfai, nor Cser, nor any Hungarian to date has made a successful assessment of the vocabulary of any given age-group of children.

5.63 Data on the acquisition of the parts-of-speech

One of the frequent concerns of vocabulary studies has been the determination of the proportion of the various parts of speech at different developmental levels. Related to this is the interest in establishing the average size of the vocabulary of children of a given age. Both forms of analysis are fraught with difficulties arising from the fluidity of grammatical categories in early speech, on the one hand, and from our inability to accurately assess the limits of the active and passive vocabularies, on the other hand. Moreover, researchers have not all examined the same set of part-of-speech categories, and most reports fail to state criteria for assigning a given item to a given part-of-speech. With this caveats, we may report the

following findings.

5.631 Quantitative findings

Jablonkay (1905:149) reports the active vocabulary of his son at 2;0:

225 nouns
125 verbs
29 adjectives
14 pronouns
31 adverbs
3 numerals
32 other

459 total

Várga (1921:150) reports Béla's active vocabulary at 1;7.

141 nouns (object)
23 nouns (human)
9 verbs
7 adjectives
1 numeral
5 interjections and negatives

186 total

Várga also reports that Béla's total vocabulary at 1;6 was 70 words. Eperjessy (1906:130) reports from a boy of seven years an active vocabulary of:

2788 verbs
1536 nouns (object)
443 nouns (human)
102 nouns (proper)
222 animal names
200 plant names
461 collective nouns
46 geographical names
188 abstract nouns
433 adjectives
120 adverbs
68 numerals
37 pronouns
12 postpositions

6698 total

Eperjessy's total of 6698 suggests that 142 words were not placed in categories, since the reported numbers only sum to 6556. Donner reports vocabulary growth during three months from 2;4 to 2;6. Although he notes that up to one-fourth of the words used at one time were not used in the next period, Donner does not drop these words from his vocabulary totals, but carries them along.

<u>Age 2;4</u>	<u>Age 2;5</u>	<u>Age 2;6</u>
49 nouns	96 nouns	132 nouns
12 verbs	36 verbs	70 verbs
4 adjectives	9 adjectives	21 adjectives
7 pronouns	11 pronouns	15 pronouns
7 adverbs	13 adverbs	18 adverbs
0 numerals	0 numerals	5 numerals
15 interjections	45 interjections	50 interjections
<hr/>	<hr/>	<hr/>
94 total	211 total	313 total

Donner also reports on the varieties of nouns at these ages:

12 proper	18 proper	22 proper
8 food	20 food	21 food
8 animal	10 animal	13 animal
2 clothes	4 clothes	12 clothes
2 body part	8 body part	12 body part
17 objects	36 objects	52 objects

Viktor reports part-of-speech data from Matildka at five different stages:

<u>Age 1;9,3</u>	<u>Age 1;9,10</u>	<u>Age 1;9,22</u>
16 nouns	21 nouns	32 nouns
5 verbs	7 verbs	8 verbs
2 demon. pronouns	3 demon. pronoun	3 dem. pronoun
13 interjections	17 interjections	21 interjections
<hr/>	<hr/>	<hr/>
36 total	48 total	1 adjective
		<hr/>
		65 total

<u>Age 1;10,6</u>	<u>Age 1;10,20</u>
37 nouns	41 nouns
12 verbs	14 verbs
3 dem. pron.	3 dem. pron.
2 adjectives	2 adjectives
1 adverb	4 adverbs
24 interjections	25 interjections
<hr/>	<hr/>
79 total	89 total

Looking at the occurrences of three parts-of-speech in compositions of thirty-four eleven-year-olds, Somfai (89) found 10244 verbs, 14121 nouns, and 2404 adjectives. These tokens represented 1887 verb types, 2539 noun types, and 1877 adjective types. Examining the verbs, Somfai found: 15.1% reflexive, 3.0% frequentative, 2.0% momentaneous, 1.5% causative, and .03% potential. Each of these categories is reflected through overt suffix marking. In addition, he noted that 22.5% of the verbs were denominative and 52.5% had a verbal prefix associated.

In his sample of 24% of a twelve-year-old's passive vocabulary, Szakács found the following proportion of the parts-of-speech:

Verbs	1481
Common nouns	1521
Proper nouns	66
Adjectives	552
Numerals	12
Pronouns	52
Articles	3
Postpositions	11
Adverbs	169
Qualifiers	29
Conjunction	8
Other	21

It must be remembered that Szakács's 24% sample was taken from the letters A-E of a small bilingual dictionary. It would appear that these letters do not represent an entirely

representative sampling of the entire lexicon.

In his free-speech sampling of three five-year-olds and three three-year-olds, Lovász noted that the older group used more abstract words and had a higher type/token ratio. Only the older group used many numerals; neither group used many postpositions; and in both groups the type/token ratio was higher for nouns than verbs. Sugárné reports having taped four fifteen-second samples from each of thirty nursery-school children, but the actual figures she presents must have been based upon a far-larger sample. The samples are divided into 1) free speech among children, 2) adult-child explorative interaction, 3) speech elicited by animal pictures of Bellak's "Children Apperception Test-Supplement," and 4) story-completion based on L. Düss's projective story-test. Three age groups were separated: ten three-year-olds, ten four-year-olds, and then five-year-olds. Sugárné examines differences in the three age groups across the four tasks in regards to total output and proportion of the various parts-of-speech. Unfortunately, she reports no significance levels for any of her findings; in fact it appears that many of her results do not obtain high levels of significance. However, her general observations of an increase in output with age and changes in the proportion of the various parts-of-speech across tasks are undoubtedly correct. Of the four situations, free-speech tended to maximize the percentage of verbs, whereas adult-child exploration tended to distribute occurrences most evenly across

the parts-of-speech, and the picture-test elicited the highest number of nouns. Sugárné's results could have been made more valuable by the inclusion of data on the relation of type/token ratios to frequency of occurrence; without this information we may mistake frequent repetition of a small group of words for general diversity.

5.632 Qualitative findings

Several investigators have looked more closely at exactly which items are those which the child first acquires in each of the part-of-speech categories.

a) Nouns: Meggyes (26) found that Márti's nouns at 2;0-2;2 named bodyparts, clothes, toys, common useful items, food, or apartment furnishings. In the last section we noted that Donner divided early nouns into these categories: proper, food, animal, clothes, body part, and objects. Viktor found similar categories.

b) Verbs: There are few observations on the lexical nature of child verbs (but see Somfai's observations for school age children above). Dezső (1970:82) and Meggyes (27) agree that many early combinations of verbs and verbal prefixes, or copular and adverb, such as addide "give here" or ottvan "there is" actually function as units.

c) Adjectives: Among her first six words, Jolán (Endrei 462, see previous section) used the adjective jó "good." Following Stern (1965:224), Kenyeres finds that most early adjectives are evaluative and non-objective. Éva's first

adjectives include the onomatopoeic tehe "hot" at 1;1,2 (see section 3.61), baby-talk csecse "pretty" at 1;4,14, csunya "ugly" said to a black spot on a pillow at 1;6,16, baby-talk bibis "hurt" said to a spot on a doll's head at 1;4,5, szép "pretty" from 1;4,22, pici "wee" said unproductively at 1;5,16 and 1;6,24, kis "little" also used unproductively from 1;8, forró "hot" from 1;6,6, meleg "warm, hot" from 1;6,6, and rossz "bad" with increasing productivity from 1;7,8. Other adjectives appearing later in the second year include nehéz "heavy," jó "good," hideg "cold," piros "red" (but Éva used it as "colored"), nagy "big," kemény "tough, hard," piszkos "dirty," cukros "sugary," lyukas "full of holes," véres "bloody," álmos "sleepy, tired," szomjás "thirsty," erős "strong" (but used as "heavy," as with a heavy woman), aranyos "darling," helyes "pretty" (said of a doll's appearance), magas "high," vizes "wet," üres "empty," kék "blue" (accidentally correct), fehér "white" (also said to green objects), rongvos "ragged," fekete "black" (said for yellow-brown), poros "dusty," zsiros "greasy," lisztes "floury," and sárga "yellow" (accidentally correct). Of these words, the only ones which Éva controlled fully at 2;0 were jó "good," rossz "bad," szép "pretty," csunya "ugly," kicsi "little," nagy "big," meleg "hot," hideg "cold," nehéz "heavy," and piszkos "dirty" (1926:40, 1928:39). Throughout her third year, Éva showed curiosity in naming colors, but only by 3;6 was Éva able to name most colors and shades successfully (Kenyeres 1928:42).

Donner reported édes "sweet," szép "pretty," nagy "big," kicsi "little," pe (=csunya) "ugly," jó "good," and forró "hot" (first five from Donner:124, last two from Donner:127) as the adjectives present in the vocabulary of a boy at 2;4. In the month of 2;5 (Donner: 130), piros "red," hosszú "long," and nehéz "heavy" join the other adjectives. In the month of 2;6 (Donner:140) new adjectives are: kis "little," kicsike "little+dim.," kedves "dear," aranyos "darling," csunya "ugly," bitang "rascal," fekete "black," sötét "dark," lyukas "full of holes," bibis "hurt," beteg "sick," villanyos "electrical," and bűdös "smelly." Jablonkay (151) found that his son could distinguish at 2;0 between kerek "round" and nem kerék "not a wheel" and between kicsi "little" and nagy "big." Jablonkay also claims the child could distinguish the colors sárga "yellow" and piros "red" even before 2;0. Among his first six words at 1;6, Ferike (Endrei 524) used bo (=bolond) "foolish." Viktor (66) reports Matildka's first adjectives as occurring at 1;9,22, joined at 1;10,6 by piszkos "dirty" (Viktor 70).

Searching through Kenyeres's examples of early uses of adjectives, Meggyes concluded that Éva's early adjectives were used as complements, rather than as attributives (28). Commenting on her own data, Meggyes found that Márti's adjectives up to 2;2 were not used in any truly productive fashion; rather they seemed to function as parts of well-

learned combinations or units. The most common adjectives were also used as nominals: hó ban a pios 1;10,21 (28) "Where is the red one?" Deictic adjectives: Kenyeres (1926:50, 1928:52, 75) reports ilyen "like this" at 1;10, olyan "like that" at 2;0, and ugyanolyan "just like this" at 3;6. The deictic question milyen? "of what nature?" was used correctly from 1;11 entering after the questions mi? "what?," hol? "where?," hova? "whither?," and mért? "why?."

d) Adverbs

Locatives: Balassa (1893:66) reports ide "hither" at 1;4, arra "there+sublative" and erre "here+sublative" at 1;5, oda "thither" and ott a "there the" at 1;6, and bele "into it" at 1;7. Donner (127) noted arra "here+sublative," ottan "there," ide "hither," be "into," ki "out of," le "down," and föl "up" at 2;4. At 2;7 onnan "thence" joined the others (130). Jablonkay (150) reports arra "there+sublative" and erre "here+sublative" from 1;5; these are joined by ott "there" and ide "hither" at 1;6. Endrei (462) reports itt "here," ott "there," ide "hither," and oda "thither" from Jolán at 1;5.

Kenyeres (1926:43, 1928:46) reports at 1;1,6 Éva replying with ó (=ott) "there" and pointing to a baby's picture, when asked "Where is the baby?" By 1;7, Éva correctly distinguished itt "here" and ott "there." Other locatives entered in this order: fönt. "above" at 1;7,9, erre "here+sublative" at 1;8,8, lent "below" at 1;8,9, kint "outside" at 1;9,12, messze "far away" at 1;9,24,

oda "thither" at 1;10,2, előre "forwards" at 1;10,3, kifelé "outwards" at 1;10,23, arra "there+sublative" at 1;11,12, and innen "hence" at 1;11,16. At 1;6,27 hol "where" appeared as the second question word (1928:74), only three weeks after mi? "what?" However, at 1;9,27 hova "whither" and at 2;3,3 honnan "whence" enter. Balassa reported hol? "where?" at 1;8; Donner found it at 2;4; and Meggyes (27) reports it entering well before 1;9.

During the period before observations began at 1;9, Márta acquired hol? "where?," itt "here," ott "there," benne "in it," fel "up," and ki "out" (Meggyes 27). Between 1;9 and 2;0, ide "hither," oda "thither," and onnan "thence" (non-productive) entered. In the period between 2;0 and 2;2 new entries were: fent "above" and hátul "behind."

Manner: Adverbs of manner generally enter later than locatives. Éva (1926:44, 1928:46) used szépen "nicely" at 1;10, csendesen "quietly" at the same time, egészen "entirely" at 1;10,29, erősen "strongly" at 1;11,5, jól "well" at 1;11,9, hamar "soon" at 2;0,1, nagyon "very" at 2;1,10, and nehezen "with difficulty" at 2;2,30. From 1;9, Éva used hogy "how," így "in that way," and így "in this way." The question hogy? "how?" was used from 1;9 (1928:75, 76), but was only correct from 2;6. Egyedül "alone" appears at 2;1,3 and együtt "together" at 2;3,25. Meggyes (27)

also reports hogy, úgy, and inkább "rather" entering non-productively around 1;10; nagyon "very" enters productively at this time. In the periods between 2;0 and 2;2, egészen "entirely" and gyálog "on foot" enter usage.

Temporal: The temporal adverbs recorded by Meggyes (27) enter with the manner adverbs after the basic locatives. Between 1;9 and 2;0 Márta acquires máskor "at another time," most "now," este "at night," and már "already," although the latter was bound to formulaic use. In the time from 2;0 to 2;2 Márta began to use akkor "at that time," maid "at that future time," megint "again," mindig "always," and mindjárt "right away." Kenyeres (1926:46, 1928:46) observed Éva's use of akkor "then," mindjárt "right away," maid "at a future time," most "now," már "already," and sokáig "for a long time" in the time from 1;9 to 2;0; but these words were either immediate imitations, mistakenly used, or non-productive. Between 2;1 and 2;4 Éva began to use máma "today," máskor "at another time," egyszer "once," régen "at long time ago," azután "after that," holnap "tomorrow," and este "in the evening." Éva uses délben "at noon" at 2;4,16, délelőtt "forenoon" at 2;5,8, éjjel "at night" at 2;5,16, and karácsonykor "Christmas time" at 2;11,8. All of these words were subjected to occasional erroneous usage. Beginning with the age of 3;6, Kenyeres reports learning of temporal adverbs without the errors that plagued earlier acquisition. Éva distinguished nappal "in the day" and éjjel "at night" at 3;6, délelőtt "forenoon" and délután "afternoon" at 4;1,20, tegnap

"yesterday," ma "today," and holnap "tomorrow" at 4;1,22, and holnapután "day after tomorrow" and tegnapelőtt "day before yesterday" from all the other days at 4;6. Unfortunately, Kenyeres failed to tell us when Éva learned to correctly use the temporals she misused so frequently (see section 7) between 1;7 and 3;6. Although it may have entered earlier, Balassa (73) reports mikor? "when?" at 3;6. Meggyes (27) reports unproductive use of mikor? between 2;0 and 2;2. Kenyeres found mikor at 1;10, but its use as question, rather than a conjunction, only began around 3;9 (1928:82). The question meddig? "until when?" was first produced correctly at 5;1.

Truth-value: Hungarian grammar separates out as modosító szók "qualifiers" those adverbs which qualify the truth-value of the proposition. Kenyeres reports use of the volitional nem "no, I forbid" from 1;1,16 (1926:44, 1928:45), propositional nem "not" from 1;7, igen "yes" from 1;8, and talán "perhaps" from 1;10,6 (the latter was not productive until around 2;3). Balassa found volitional use of nem from 1;19. Donner found igen and nem at 2;4 and talán at 2;6. Viktor reports nem from 1;9; and Endrei reports one example including nem from 1;8. Meggyes (35) found nem already firmly established before observations began, but igen emerged at 1;10 at the beginning of observations. Bizony "certainly" appeared at 2;0 and csak was used formulaically at this time.

e) Postpositions

Balassa (1893:70) found that Laci erroneously used mellé "to beside" and után "after it" (a possessed special root) around 2;3 (see section 7.314). At 2;6 Laci correctly used the postposition alul "below" in the morphologically incorrect form lellül (see section 7.312b). Endrei (526) found morphologically incorrect, but semantically correct, use of felé "towards" (see section 7.21g) in Margit at 4;10. Meggyes (34) found only one postposition in Márti's speech up to 2;2. At 2;0,7 Márti asks to have her foot tucked back under the blanket: takaró alá! "under the blanket!"

From the paucity of reports of early postpositions, it should be clear that this part of speech is the slowest to emerge. Here, Kenyeres's observations in his 1928 work (49-51), and to a lesser extent his 1926 work (49-50), offer most of the available information on the development of Hungarian postpositions. At 1;8,30 Éva used the pronominalized postposition mellém "to besides me." She used alul "below" for alá "to under" at 1;9,30, alatt "under" correctly at 1;10,2, and után "after it" in coordination with után "after" at 1;10,7 and 1;11,5. Between 2;0 and 2;3 Éva made use of alá "to under," alatt "at under," után "after," and mellett "at besides"; she was also able to use the unit háttam mögött "behind my back." The use of között "between" and fölött "above" was often incorrect from 2;3 to 5;0 (see section 7.314); moreover, the directional suffixes on the postpositions caused problems even up to 3;3 (see section 7.321).

From 3;3 Éva began to use előtt "before" as a temporal; this is the first temporal usage of a postposition. In the year between 3;0 and 4;0 Éva (Kenyeres 1928:49) began to use körül "around," nélkül "without," and közben "during." The latter was incorrectly used as an adverb meaning "meanwhile" at 3;10,18, although at 5;4,27 and 6;1,3 she correctly used the adverb aközben "in the meanwhile." From 4;0 Éva began to use helyett "instead of" and felé "toward." From 5;0 Éva used óta "since" and régóta "for a long time," but often incorrectly. Although Éva used mulva "having past (temporal)" from 3;0, she often used the time expression by itself, omitting mulva, i.e. at 4;5,7 she said nem tudom hány nap és húsvét "I don't know how many days and Easter." She meant, "I don't know in how many days it will be Easter." From 5;7 she used mulva correctly. The entrances of túl "beyond" and kívül "besides" before 6;0 were similarly plagued with errors, as were ellen "against," miatt "because," iránt "toward, in regard to," táján "in the vicinity of," and hosszatt "long (time)" which entered in the seventh year. Not until 7;10 did Éva use the postposition képest (with -hoz on the noun) "in relation to."

f) Pronouns

Deictics: Although the deictic pronouns are usually the first to emerge, only Kenyeres (1926:50, 1928:52) supplies accurate information regarding the time of their acquisition: from 1;0 Éva uses ez "this" to ask for things; during this period the phonological shape sharpens from e

to ez. By 1;6 she uses az "that" distinctively. Among the adjectival deictics, ilyen "like this" enters at 1;10, olyan "like that" at 2;0, ugyanolyan "just like that" at 3;6. Meggyes (29) also found ez in phrases such as ez mi? "what is this?" before observations began. Az entered somewhat later at 1;11. The deictics were used in declaratives of the form "this is a ____."

Personals: At 2;0 Laci (Balassa 1893:69) used maga "you, semi-formal" as his first personal pronoun, followed in the same month with én "I" used at first as a possessive adjective before the noun. At this same time Laci used nekem "to-me." Throughout the third year the morphology of the pronouns caused many errors (see 7.22c, 7.11k, 4.11d, and 4.11 and elsewhere for pronoun errors). Donner reports enyém "mine" and én "I" at 2;4, and te "you-familiar," tied "yours," neki "to-him," and másik "other" at 2;6. Endrei (462) found Jolán using én "I" at 1;6 and én is "me too" at 1;9; his use of neki "to-him" at 1;10 is incorrect. Ferike (Endrei 524) misused én is "me too" at 1;8.

Éva (Kenyeres 1926:53, 1928:54) used neki "to-him" as her first pronoun at 1;6,6 and nekem "to-me" at 1;7,16. At 1;8 Éva used én is "me too," and by 1;10 she was, like Laci, marking possession by placing én "I" before the noun possessed. Also at 1;8 Éva used velem "with-me" and engemet "me+acc." From 1;10 to 2;6 Éva used te "you-familiar" exclusively as a possessive, substituting the form magad "you-semiformal+2PS poss." for the 2PS pronoun. The 3PS

pronoun ő entered at 1;10,1, but was incorrect for several months. Plural pronouns in the third person, such as ők "they+acc.," náluk "by-them," nekik "to-them," and velük "with-them" entered between 2;3 and 2;5. A 1PP form velünk "with-us" is reported from 2;4,8, but the first 2PP forms appear at 3;3 and are incorrect.

Meggyes found én "I" before the observational period began at 1;9, but its usage was not always correct. Meggyes (30) notes its productive use beginning at 2;1,4. Te "you-familiar" began to enter after 1;10. Other pronouns included neki "to-him" from 1;10, hozzám "towards me" from 2;0,28, velem "with-me" from 2;1,19, and érte "for-him" incorrectly used at 2;2,23.

Possessives: Ponori (1905:436), Balassa (1893:68), Kenyeres (1926:54, 1928:56), and Meggyes (51-52) all report that the development of possessive constructions, sometimes without correct marking of possessor and possessed, precedes the emergence of possessive pronouns. Kenyeres's report is the most detailed. There we find possessive constructions like mama szeme "Mommy eye" at 1;6,7, possessivized forms as papájé "Daddy's" also at 1;6,7, nouns possessed by first person such as füle "my ear" at 1;6,15, and the first possessive pronouns enyém "mine" appearing productively only at 1;11,8. At 1;11,13 Éva used ővéje (=ővé) "his" and at 2;1,3 tied "yours-familiar." Each of these forms was involved in numerous morphological, semantic, and syntactic errors, as was miénk "ours" which entered at 2;7,26. Meggyes (31) reports the first possessive

pronoun as ővé "his" at 2;1,3 and the second as tiem (=tied) "yours-familiar" at 2;1,21.

Indefinites: Kenyeres (1926:55) reports use of másik "the other" from 1;7 and egyik "the one" from 1;10, but even at 2;9 their use was overly concrete. She correctly used mind "each" from 1;8,14, valami "something" from 1;9,27, valaki "someone" from 1;11,4, and semmi "nothing" from 1;11,6. At 4;1 Éva also learned akármi "anything," akármennyi "however much," and akármily "whatever kind." The pronoun egymás "one another" appeared at 2;3. Meggyes (30) reports the appearance of másik "other" with nouns at 1;10, mindenki "everyone" at 1;11, and valaki "someone" after 2;0. Mind and minden "each" were used by 2;0, but were not always correct. Meggyes reports the reflexive magaddal "by yourself" in non-productive form at 2;0,17. Meggyes found ki? "who?" as one of the first pronouns, entering along with the deictics before 1;8. The pronoun mi? "what?" was also present before 1;8 in the question form mi ez? Kenyeres (1928:73) found the mi ez? question as early as 1;6. Both authors found mit csinálsz? "What are you doing?" appearing along with the mi ez? question.

g) Articles:

In section 4.12a we discuss morphological difficulties associated with the use of the definite article. Balassa (1893:68, 71) reports the first use at 1;10. Donner reports

the definite article at 2;6. Endrei (525) reports that at 2;6 Margit used only the form a, but Endrei fails to give a date for the earliest uses of the article. Only Meggyes (32) reports difficulties with the semantic and syntactic use of the definite article. Although Márta used the article correctly from 1;9, she would often fail to use the article after this time when it was required. On the other hand, she would use it before vocatives at 1;10,24. At 1;9,22 it modified an infinitive: in nem szabad a kimenni "not allowed:(the) to leave." Similarly, at 2;2,2 it was superfluous in meg a takaritni "still (the) to clean." It also appeared, as at 1;10,11, after indefinite verbs as in kérünk a táskát "want+1PP the satchel+acc." where its use contradicts the conjugation of the verb. Kenyeres (1926:57) reports the indefinite article correctly used from 1;9; Endrei (463) also reports a correct use of the indefinite article from Jolán at 1;10; and Meggyes reports sporadic use from 1;9. Jablonkay reports that at 1;4 both articles, along with sok "many" and mennyi "how many" entered his child's vocabulary.

h) Numerals:

As we have noted, Jablonkay (149) found both articles, along with sok "many" and mennyi "how many!" at 1;4, but kettő "two" only appears at 2;0. Simonyi (321) reports morphologically incorrect use of kettő "two" from Nanus at 1;6. Balassa reports use of kettő at 1;8, Meggyes (32) found két "two" at 2;1,18, sok "many" at 1;10, and több "more" in the unit nincs több? "Isn't there any more?" from 2;0,16.

Kenyeres reports kettő from 1;7 and több, sok and ennyi entering at 1;8. Around 1;11 Éva began to use elég "enough." Fél "half" and egész "whole" were correct at 2;4, and kétszer "twice" was correct at 2;5. Éva learned három "three" at 3;8, and could occasionally use négy "four" at this time, but further progress with the numbers was very slow. From 1;9 Éva used questions with hány "how many?," but even by 3;1,4 she had not learned to use it properly. G. Dienes (Kenyeres 1928:60) reports correct use of both egy "one" (the indefinite article) and kettő "two" at 1;3.

i) Interjections

Meggyes (35) reports that between 1;10 and 2;0 Márta used ajaj de "oh how!," ejnye! "Goodness!," hű! "my!," nahát "well!," and jujisztenem "oh, my God!" Other writers report occasional uses of conventional interjections and child forms, but seldom note the time of emergence.

j) Conjunctions

See section 6.4.

k) Idioms

Kenyeres (1928:96) lists Éva's use of thirty idioms and sayings from 2;6,14 to 8;3. In part because these expressions lose so much in translation, we will not present further details here. Following Piaget's examination of the 8-11 year-old's ability to interpret folk-sayings figuratively, Kenyeres found that from 6;3,11 to 8;4,7 Éva would interpret both idioms and sayings concretely.

5.64 Baby-talk items

Ferguson (1964) tabulated thirty baby-talk forms across six different languages. The total number of baby-talk items in the lexicon of the Hungarian adult community far exceeds this. Ferguson observes that baby-talk words are particularly susceptible to diffusion through borrowing; the reader may note that many of the Hungarian forms listed below closely resemble baby-talk items in other languages of Europe and Western Asia. Although no exhaustive catalogue of Hungarian baby-talk has yet been compiled, it was possible to make a first approximation toward such a compilation by examining a number of short articles from the Magyar Nyelvőr and Magyar Nyelv, and by checking the older reports against the reports of native speakers. The earlier articles often report on baby-talk forms current in specific areas of Hungary. The various sources of the following summary are abbreviated as follows:

- Pon: Ponori's article of 1871 which lists baby-talk forms without any mention of the area of Hungary in which they were common,
- Bán: Bánóczi's 1874 collection of baby-talk from Adánd in Somogy county,
- Bor: Borcsa's 1874 collection from Bácsfalú in Brassó county,
- Fer: Ferenczi's 1876 collection from Kiskufélegyháza,
- Ném: Németh's 1881 collection from Domokos in Szolnok-Doboka county,

- Kim: Kimmach's 1897 collection from Karcag,
Som: Somssich's 1898 collection from Ózd. Since this collection mixes baby-talk and child words together, only the clearest examples are used,
Voz: Vozáry's 1917 collection from Ugocsa, Szatmár, and part of Hajdu county,
Olt: Oltyán's 1917 collection from Szalonta, except where Irtás is noted, and
Kel: Kelemen's 1970 examples from his book on Hungarian interjections.

Most baby-talk forms group together rather naturally in relation to the conventional adult item which they most closely resemble. In addition, baby-talk words are clustered in a fairly limited set of semantic domains. Below we use twelve areas to include all the reported baby-talk forms.

<u>Adult Form</u>	<u>Baby-talk</u>	<u>Source</u>
1) Animals:		
bárány "lamb"	bari	Fer
borjú "sheep"	meme	Bor
csirke, tyuk "chicken, rooster"	pipi pizse pityi	Fer, Kim Bán Kim
tyuk "rooster"	lulu potú tutu tyu-tyu	Kim Kim Kim Voz
liba "goose"	biba bibi biri	Kim Fer, Kim Fer
kis liba "little goose"	papatyi	Kim
kacsa "duck"	kácskacs	Fer

Adult Form	Baby-talk	Source
galamb "dove"	putus	Kim
madár "bird"	badár	Kim
macska	cica cici piszi	Fer, Kim Bán Bor
kutya "dog"	kuszi kutyú kutyó motyus	Bán Fer Kim Kim
ló "horse"	cócó maci	Bor, Sziv, Fer, Kim Fer, Bán
csikó "pony"	paci	Bán
malac "piglet"	kucu manka mancsi	Kim Voz, Kim Voz, Kim
sertés "pig"	cséka coca	Bor informant
nyúl "rabbit"	nyuszi nyusz	Kim informant
tehén "cow"	boca boci bú	Sziv Voz, Kim Fer, Bán, Kim
tehén, ökör "cow, ox"	bubus	Olt
2) Body parts:		
láb "leg"	bábó bábá labintó	Bor, Sziv, Fer, Voz, Kim Bán Olt
orr "nose"	cicsi nózi	Kim Kim

Adult Form	Baby-talk	Source
kéz "hand"	kacsi kacso kacsó kucsó	Bor, informant Sziv, Fer, Bán, Kim informant Voz
fej "head"	kokko kuko kukó kobak	Fer Kim informant informant
fog "tooth"	guzi	Fer
fenék "bottom"	popo	informant
pofa "cheek"	pofi	informant
seb "wound"	bibi	Bor, Voz, Kel
sebes "wounded"	bibis	Voz, Bán, Kim, Kel
emlő "mammary"	cici cucli dici didi dudi dudli sziszi	Fer, Voz, Sziv, Kim informant Voz Kim Fer, Kim informant Fer
3) <u>Relations:</u>		
anya "mother"	mámmá mamma nyanya	Fer, Voz, Kim informant Bán, Voz, Kim
apa "father"	apus pápá papa táttá	Bán Voz, Kim Voz, Kim Fer
bácsi "uncle, man"	ácsí	Kim
néni "aunt, woman"	nene	Fer, Pon

<u>Adult Form</u>	<u>Baby-talk</u>	<u>Source</u>
nagymama "grandmother"	mamama ómama	Kim Kim
nagyapa "grandfather"	nada	Kim
dajka "nurse"	dada	Fer, Bán, Kim
4) <u>Clothes:</u>		
ruha "clothes"	lulu	Kim
bugyogó "underpants"	gugyigó	Olt (Irtás)
cipő "shoes"	pampa pűpű potyi	Kim Kim Sziv
harisnya "stockings"	istilyimpi pimpi simpi	Kim Kim Kim
5) <u>Qualities:</u>		
aranyos "darling"	analos	Bán
szép "pretty"	baba csecse csicsés csicsós csicse	Bor Fer, Pon, Bán, Kim Voz, Kim Voz, Kim Olt
forró! "hot!"	picc	Voz
kövér "fat"	dundus	Kim
6) <u>Foods and Eating:</u>		
alma "apple"	bojó	Fer, Kim
cukor "sugar"	kó kukor ú	Kim Kim Kim

Adult Form	Baby-talk	Source
gyümölcs "fruit"	bojó	Voz
hús "meat"	pecsi (from <u>pecsenye</u> "roast")	Kim
kalács, kenyér "sweetbread, bread"	kácsi papa popa pupa	Bor, Sziv, Fer, Voz, Bán, Kim Sziv, Fer, Voz, Kim Bor, Voz, Olt, Kim Kim
krumpli	pityi (from <u>pityóka</u> "spud") pimpi pupi pumpu	Bor Bán Bán Kim
kukorica "corn"	budsi	Kim
leves "soup"	bebes	Bán
palacsinta "pancake"	lingó	Olt
páliszka "hominy"	pikka	Bor
szalonna "bacon"	bakrac	Kim
tej "milk"	tejci	Kim
tojás "egg"	kokó kuku kukó	Bor Pon Kim
étel, eszik "food, eat(verb)"	csocsa csócsa csocsál (verb) csócsó hamham hámhám hami-hami mámma pápá pápál (verb) papi popál (verb)	Voz, Kim informant Csúry(1929), Kim, Ném Fer informant Fer, Pon, Kel Kel Bán Bor, Bán informant Bor Olt

<u>Adult Form</u>	<u>Baby-talk</u>	<u>Source</u>
ital, iszik, igyál "drink, drink(verb), drink!"	brrr títü títül (verb) űhm	Fer Bor Fer Bán
víz, vizet! "water, water!"	bürr locsi (from <u>locsol</u> "sprinkles") tutu títü	Kim Kim Pon, Olt Bor, Sziv, Fer, Voz, Olt, Kim, Kel
7) <u>Other Objects:</u>		
valami ijesztő, ördög "frightening thing, devil"	bubus bakk bumbus vankuly	Fer Kel (Ny. Füz. 56:20) Som Kim
ejjeli edény "chamber-pot"	birbi	Sziv
kis rékli "little hand-organ"	bajkó	Bán
könyv "book"	bécé (from <u>ábécé</u> "alphabet")	Voz, Kim
gyertya "candle"	buci	Bán
sipka "whistle"	süstü	Pon
tűz "fire"	tűzsi zsizsi	Fer Fer, Sziv, Pon, Voz, Bán, Kim
hold "moon"	kácsi	Kim
templom "church"	ganga	Bor
kés "knife"	kókó	Voz, Kim
8) <u>Bodily Functions:</u>		
vizel "urinate, urine"	pisí	Fer

<u>Adult Form</u>	<u>Baby-talk</u>	<u>Source</u>
székel "defecate, feces"	kaka kaki száni (infinitive) ééni " e - e	informant informant Kim informant Kel
köthög	kuci-kuci kuc-kuc	Bán Kel
fingrik "fart"	pú	Kel
böfög "belch"	böfi-böfi	Kel
9) <u>Sleeping:</u>		
aludjál, aludj, aludni, alszik "sleep!, to sleep, sleeps"	belbel beli-beli belbelik buji csicsi csicsike csicsis csicsijja (bubújja) csucsulj hájcsi hájcsiba haja hajakaba hajóba hajsó nunúl tutul	Bor, Kim Ném Ném Fer Kel Meggyes (36) Fer, Kim, Kel Kel Voz, Kim informant Bán, Kenyeres Kim, Kenyeres informant Fer, Bán Kel Nem Kim
bölcső "cradle"	csicsija-bumbuja	Olt
feküdj le, lefekszik "lie down! lies down"	csucsuba csücsübaba lécencél letentél penci le tente tenti le tente-tente	Bán informant Olt informant Bán Sziv, Fer, Voz, Olt, Kim, Kel, Kenyeres informant Pon

10) Other Activities:

állj, fölállni "stand!, to stand up"	áli ácsi	Bán Sziv, Kim
bucsúzó, Szervusz "salutation, Good-bye"	pá pápá táj táj-táj	Kim, Kenyeres, Kel Kim, Kenyeres, Kel Kim informant
sétálni "go for a walk"	bű csecsebe	Voz Kim
táncol "dance"	cini-cini cini-ci tánci-tánci	Kel Kel Bán, Kel
sírás "crying"	düdü bő-bő bű-bű búj-bú brűhűhű hűp-hűp	Pon Kel Kel Kel Kel Kel

11) Forms said while engaging in a specific activity:

bujósdí, bújocskázik "hide-and-peek" "peek-a-boo"	kukucs tutucs kukucsi kukucsál (verb) kukucsál	Pon, Bán, Kim Kel Kel Pon, Kel informant
ülj, ül "sit!, sit"	csücsü csücsül (verb) csücs, csücs	Bor, Bán Fer, Pon, Voz, Kim Kel, Értelmező Szótár
csiklandoz "tickle"	csik-mak-mak bizserél kuc-kuc	Kel Hamvai Kim
simogat "caress"	ciróka-maróka	Kel
"said while lifting, jumping etc."	hoppá oppá happá appá hoppla hopla napuca	Kel Kel Fer, Kel Fer, Kel Kel Kel Sziv

<u>Adult Form</u>	<u>Baby-talk</u>	<u>Source</u>
hintázik "teeter-totter"	hinnahinna hinta-palinta	Bán Kel
"said while staring" (see <u>kukucs</u> above)	kukk	Kel
csokol "kiss"	puszi oba	Bán, Fer, Voz, Kim Kim
bathe	csur-csur pancsi pancsi-pancsi	Fer Kim Meggyes

12) Warnings:

"you'll get it"	dádá kekec	Bán, Kim, Kel Kenyeres, Meggyes Kel (Bakonyalja)
"watch out"	nana	Kim
hand slap	pacsi	Kim

In 1929 Bálint Csűry made the first observations of rules governing the formation of baby-talk words. He noted a pattern of deletion of final consonants in inflected forms, particularly in the imperative:

<u>Adult Form</u>	<u>Baby-talk</u>	<u>Remarks</u>
csócsálj meg	csócsa meg	see above for "eating"
ne piszkálj	ne pizska	
hallgass oda már	hálga már	
tentélj	tente	see <u>tente</u> above
sántíts	sánti-sánti	
mutasd csak	muti csak	
koldulj	kódu-kódu	
csücsülj be	csücsü be	
guggolj le	gugg le	

However, Csűry also notes that some of these forms, and certain other forms might also be produced by taking the first syllable of the verb as the root and suffixing -i or -u as verbal diminutives according to vowel harmony:

játszik	játszi
dugd bele	dugu bele
ne ugass	ne ugu
táncolj	tánci-tánci
sántikálj	sánti-sánti
mutasd csak	muti csak

Whereas some of the other forms present the first syllable uninflected:

guggolj le	gugg le
csűcsűlj le	csűcs le

A similar process was reported by Jozefovics:

repűlűgűp "airplane"	repsi	Jozefovics 1935
tánc "dance"	táncsi	Jozefovics 1935

Moreover, there is a great deal of evidence of productivity of a rule by which the initial syllable of a root is extracted and used as a base for either the diminutive -csi or the diminutive -i. This process appears active not only in slang formations, but also in baby-talk creations.

Jűzsef Kelemen's etymological study of baby-talk tűtű "water, drink" cites an impressive array of sources to document his proposed origin for the word. Kelemen notes that the Czuczor and Fogarasi dictionary found tűtű to be derived from ital "drink" through repetition of the initial

syllable "it-it" and subsequent metathesis, followed by labialization. Kelemen concedes the important role of reduplication in baby-talk and notes that many such words are formed through the child's tendency to reduplicate the first syllable of multi-syllabic words. However, Kelemen notes, not all reduplications can be so explained. Thus, although baby-talk káká "coffee" originated from the child's production of kávé "coffee," baby-talk pipi bears no such relation to csirke "chicken." He holds that the series cici-csicsi-sziszí (~csšcs) "mammary" displays the role of sound symbolism in reduplication, and he maintains that the series tütü-tütü-püptü-tutú is similar. Pointing to the existence in the dialects of the variations tr-, pr- and ptr- as substitutes for t- and p- in onomatopoeic words, Kelemen would expect the forms ptrüptrü, ptüptü, trütrü, and prüprü as variants of tütü. In fact, after having delivered his paper, Kelemen was informed that ptrüptrü does exist in baby-talk as a variant of tütü. Kelemen was also able to locate references to the forms ptrütü, prütü, and trütü. It thus appears that the labial motion involved in these sounds is intended to inform the child of the relation of water to the act of drinking. If it is true that the ptr--tr--pr--t- alternations series is only operative in onomatopoeic words, than Kelemen is right in viewing tütü as onomatopoeic, synchronically. However, the possibility of an origin from ital through reduplication sometime in the past is not fully precluded.

6.0 Learning of syntactic rules

In the context of our present developing interest in the child's acquisition of syntax, the scarcity of data on the Hungarian child's acquisition of syntactic patterns is certainly disappointing. In this chapter we review the limited data which has been gathered on the subject, together with certain theoretical formulations. In section 6.1 we consider errors in the use of the rules governing the attachment of affixes to roots. In section 6.2 we discuss violations of the basic principles of compound formation. In this regard, we might note that the child neologisms of section 5.34 above should be referred to as illustrations of the productivity of the compound-forming rules. Those forms were included in the previous chapter precisely because they were syntactically correct, although lexically deviant. In section 6.3 we treat errors in the ordering of words. In section 6.4 we turn our attention to inappropriate confluents and analyses; these errors violate both lexical and syntactic rules. In section 6.5 we examine errors based upon coding of phrasal units; in the same section we discuss the very little known about learning of discourse agreement in Hungarian. In the final sections, we turn our attention to normative data. In section 6.6 we cite reports of early sentences; in section 6.7 we discuss theoretical problems raised by topic-comment relations; in section 6.8 we review Meggyes's observations of the sequence of acquisition of syntactic patterns in

Márti; and in section 6.9 we discuss learning of sentence conjunction and coordination. Finally, we conclude the chapter with evaluation and discussion of the data in section 6.10.

6.1 Errors in the ordering and attachment of suffixes

We have already encountered several types of errors in suffix placement in section 5.2. However, the errors in that section appeared to be most satisfactorily accounted for as errors in analysis, rather than as errors in the learning of the rules governing suffix ordering. Specifically, in section 5.215 we observed a number of cases of incorrect ordering between suffixes and prefixes and between suffixes and the negative particle. Each of these errors can be viewed as the attachment of an inflection to an unanalysed, but inflected, base. In section 5.213 we found suffix reduplication also indicating underanalysis; again syntactic rules governing suffix ordering are broken in that no suffix should be ordered after itself, but the basic error is that of underanalysis. The situation with the superfluous elements of 5.214 is similar.

In section 3.4 we discussed order-based relations between sound segments. It appears that flectional morphology is also subject to the processes of metathesis and assimilation. Of course, flectional morphemes are ordered through transformations, rather than Markov-process rules. Moreover, syntactic transformations base their operation upon the occurrence of given semantic relations in semological structure. Thus errors in suffix attachment may be attributable to several factors.

6.11 Attachment errors motivated by non-lexicalization

In the following child errors a morpheme is generated which is usually associated with the main verb of the utterance. However, the child fails to lexicalize the noun to which the suffix should attach. Such errors are lexical mistakes in that the case suffix should not be lexicalized unless its root is also lexicalized (i.e. its lexicalization should be blocked by ellipsis). However, a syntactic error is also involved in that the child ends up attaching the case suffix to a root with which it has no direct semantic relation:

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
fűzetbe "note-book+illat."	fűzetet "note-book+acc."	Márti	1;11,8	Meggyes 51
(in: <u>fűzetet ír</u> . "She writes a note-book" for <u>fűzetbe ír</u> "she writes into a note-book.")				
Sömpikének "Sömpike+dat."	Sömpikét "Sömpike+acc."	Márti	1;10,15	"
(in: <u>épitem a Sömpikét</u> "I am building Sompike" for <u>épitem a Sömpikének</u> "I am building for Sömpike.")				
nénike "aunt+dim."	nénikét "aunt+dim+acc."	Márti	1;9,22	"
(in: <u>elviszi nénikét</u> "She takes away aunt" for <u>elviszi a nénike</u> "The aunt takes away.")				
bácsi "uncle"	bácsinak "uncle+dat."	Éva	1;6,8	Kenyeres 1926:26
(in: <u>add ide bácsinak # nem</u> "give here to uncle # no" for <u>nem adja ida a bácsi</u> "The uncle doesn't give it here.")				

In each of these errors the reports give use reason to believe that some noun in semological structure failed to achieve lexicalization. Specifically, fűzetet ír "note-book+acc. writes" could have been szavakat ír a fűzetbe "She

writes words into the note-book." Épitem a Sömpikét could have been, perhaps, a tornyot épitem a Sömpikének "I am building the tower for Sömpike." Elviszi nénikét "She takes away aunty!" could have been elviszi a nénike a játékot "The aunty is taking away the toy." And add ide bácsinak# nem, with some corrections, could have been a bácsi nem adja ide nekem "the uncle is not giving to me." Looking forward to the errors treated in 7.241, we find that, in most of these cases, reconstruction of fuller, less elliptical, underlying sentences fails to account for the confusions between flectional suffixes listed in that section. However, in section 7.241b, a few of the confusions could conceivably be the results of generation of suffixes to attach to non-lexicalized roots. The errors from Józsi at 2;9,10, Éva at 2;2,13, Gyurka, and Pali at 3;1,8 are the possible candidates here, but it seems more likely that they are actually examples of confusions regarding semantic content.

6.12 Suffix assimilation and metathesis

In suffix assimilation and metathesis errors can not be attributed to failures to lexicalize, i.e. to ellipsis. Rather, these errors appear to be due to inadequacies in the syntactic rules attaching suffixes to nouns. It may be that the strategy for attachment of suffixes is at first based upon surface order relations. Thus, the child attempts to attach the accusative or dative to the noun following the verb. This may be a result of the fact that

many suffixes are generated chiefly by looking at the verb. Thus, attachment to a given noun is a secondary consideration and requires further coordination. Note that it would be difficult to interpret these assimilations as exclusively phonological or surface phenomena, since they are both progressive and retrogressive and occur over far greater separations than the usual phonological assimilations. Moreover, they do not always function to add information where it is doubtful, since often the additional information is superfluous.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
Mártinak "Márti+dat."	Mártit "Márti+acc."	Márti	1;10,13 1;10,15	Meggyes 51

(in: csinálja vacsorát a Mártit "makes dinner+acc. Márti+acc."
for csinálja vacsorát a Mártinak "makes dinner+acc. Márti+for.")

Sömpi "Sömpi"	Sömpinek "Sömpi+dat."	Márti	1;10,25	"
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(in: Hozta neki ceruzát a Sömpinek "She brought her a pencil to Sömpi" for hozta neki ceruzát Sömpi "Sömpi brought her a pencil.")

macik "bear+pl."	macinak "bear+acc."	Márti	2;2,11	Meggyes 51
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(in: Ide nem támaszkodnak a macinak "They don't hold on here for the bear!" for Ide nem támaszkodnak a macik! "The bears don't hold on here!" The plural suffix -nak seems to be replacing the noun plural -k. Probably, the dative -nak is not involved.)

Nagymamák "Grandma+dat."	Nagymamát "Grandma+acc."	Márti	1;11,11	Meggyes 50
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(in: visszük a nagymamát kockát "Let's take Grandma+acc. block+acc." for visszük a nagymamának kockát "Let's take Grandma+dat block+acc.")

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
egy "one"	egyet "one+acc."	Józsi	3;1,6	Meixner
(in: <u>Még egyet ilyent</u> "Still one+acc. such-as-this+acc." for <u>még egy ilyent</u> "still one such-as-this+acc.")				
nagy kockát "big block+acc."	nagyot kockát "big+acc. block+acc."	Józsi	3;6,9	Meixner
(as in above example)				
tőle "elative+3PS"	tőlem "elative+1PS"	Pali	3;5,20	Meixner
(in: <u>megijedtem tőlem</u> "I was frightened of myself" for <u>megijedtem tőle</u> "I was frightened of him.")				
indul "start"	indulni "start+infin."	Józsi	3;0,23	Meixner
(in: <u>ez is következni indulni</u> "This also to starts to follow" for <u>ez is következni indul</u> "This also starts to follow.")				
odaadni "over+give+infin."	odaadnit "over+give+infin. +acc."	Zoli	2;2,0	MacWhinney
(in: <u>azt is odaadnit</u> "that+acc. also over+give+acc." for <u>azt is add oda</u> "that+acc. also give over")				

We have only one reported example of suffix metathesis, and this involves two suffixes, the dative and the possessive, which are closely related in a single construction, the possessive construction.

az autónak a karikája "the auto+dat. the wheel+poss."	a karikának az autója "the wheel+dat. the car+poss."	Józsi	2;11,24	Meixner
(=the car's wheel) (=the wheel's car)				

Actually, the suffixes maintain the order -nak... -ja of the possessive construction, while the roots metathesize. The final effect is double incorrect attachment.

6.13 Simple attachment errors

As we observed in section 6.11, attachment errors may bespeak both lexical and syntactic difficulties. However, simple attachment errors may occur even when the root to which the suffix should attach is lexicalized and when no assimilation or metathesis is involved. The literature reports errors involving the verbal prefix and the question particle -e which should be attached to the predicate, i.e. the main verb or predicate complement. For the latter, the problem is that the -e particle, as a modality element (Fillmore, 1968), relates to the whole proposition, rather than just one noun phrase or verbal element. The child has learned that suffixes are attached to the elements in which they stand in semantic relation. But, in the case of -e, the child doesn't know what element that should be. The errors are:

Adult Form	Child Form	Child	Age	Source
megnézem hogy jó-e "perf.+see+LPS that good-whether" (=I'll see whether	megnézem-e jó "perf.+see+LPS -whether good it's good)	Éva	2;3	Kenyeres 1928:38
otthon van-e "at-home is-whether" (=Is it at home?)	otthon-e van "at-home- whether is"	Éva	3;10	"
ezt elviheti-e nagy mama "this+acc. away+ take+potent.+3PS- whether Grandma" (Can Grandma take this away?)	ezt-e elviheti nagy mama-e "this+acc.-whether away+take+potent. +3PS Grandma+whether"	Éva	5;0	"

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
feljöhét-e "up+come+potent.- whether" (=Can he come up?)	fel-e jöhét "up-whether come+potent."	Éva	6;8,30	Kenyeres 1928:38
maga szereti-e a csontot "you like-whether the bone+acc." (Do you like the bone?)	maga szereti a csontot-e "you like the bone-whether"	Laci	2;5	Balassa 1893:71
merveri-e "perf.+beat- whether" (=Will he beat it?)	nem veri meg-e "not beat perf.-whether"	Laci	2;5	"
ebbe van-e tea "in-this is- whether tea" (=Is there tea in this?)	ebbe nincs tea-e "in-this is-not tea-whether"	Laci	2;5	"

The use of the question particle is restricted to yes-no questions and requires that the question be phrased affirmatively, a restriction which Laci violates in the last two errors cited. Balassa comments that Laci regularly places the questions particle on the last element of the sentence, whether or not that element is a main verb or predicate complement. This strategy reminds us of the extraposition of the negative element found by Bellugi. Éva, on the other hand, seems to attach the particle to the first element in the sentence.

The other major group of simple attachment errors involves incorrect placement of verbal prefixes. The verbal prefix is normally attached before the verb root, but is placed after the root when some other element is focused. This postposing of the verbal prefix is caused by the fact

that focus is placed on an element by placing it before the verb root. Alternatively, the verb itself may be focused, as in a question or command. This also causes the verbal prefix to be postposed. The problem is complicated by the fact that a set of modal or auxiliary verbs can be placed between the verbal prefix and the verb root, when no element is focused. In this case, the verb is suffixed with the infinitive marker -ni. In Hungarian orthography meg akarok nézni "perf. want see+inf." (=I want to see) is represented as three words. However, the auxiliary or modal akarok fails to receive word stress, and megakarok nézni would be a better representation of the division in terms of intonational words. This means that, when no element is focused, the verbal prefix is attached not to the embedded infinitive, but to the auxiliary through prefix-raising. However, when there is a focused element, the prefix attaches to the embedded infinitive. Given all these ordering possibilities, it is not surprising to find some child errors:

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
1) When the verb stem is focused, as in the imperative, the prefix should follow the verb. Here the child places it before the verb, although the verb is imperative.				
nézzük meg "see+imp.+1PP perf." (=Let's see!)	megnézzük "perf.+see+ imp.+1PP"	Éva	2;6	Kenyeres 1928:38
nézzük meg	megnézzük	Zoli	1;8,6	MacWhinney

Adult Form	Child Form	Child	Age	Source
menjünk be "go+imp.+lPP in"	bemenjünk "in+go+imp.+lPP"	Zoli	1;8,6	MacWhinney
nyissuk ki "open+imp.+lPP out"	kinyissuk "out+open+imp.+lPP"	Zoli	1;8,6 2;0,0- 2;0,5	MacWhinney
csukjuk be "close+imp+lPP in"	becsukjuk "in+close+imp.+lPP"	Zoli	1;10,2 2;2,0	MacWhinney
tegyük le "put+imp.+lPP down"	letegyük "down+put+imp.+lPP"	Zoli	1;10,3	MacWhinney
keressük meg "seek+imp+lPP perf."	megkeressük "perf.+seek+imp.+lPP"	Zoli	1;10,3	MacWhinney
fogd meg "grab+2PS-imp. perf."	megfogd "perf.+grab+ 2PS-imp."	Zoli	1;10,5	MacWhinney
menjünk oda be "go+imp.+lPP-ind. thither in"	bemenjünk oda "in+go+imp.+lPP thither"	Zoli	2;2,0	MacWhinney
nyiss ki "open+2PS-imp. out"	kinyissni* "out+open+2PS-imp."	Zoli	2;2,0 (four times)	MacWhinney

*This infinitive form is used as an imperative, as a part of a general usage style Zoli developed at this time. The important point is that Zoli took kinyiss, an imperative with an incorrectly fronted prefix, as the base. (Compare section 5.215).

- 2) The neutral position of the verbal prefix is before the verb root, but it only appears in this position when it is focused. The verbal prefix will receive focus only when no other element is focused. In the following errors the child incorrectly assigns focus to either the verb or the subject in yes-no questions, perhaps influenced by the obligatory focusing of question words in wh-questions. The focused element should have been the verbal prefix.

Éva megfürdik? "Éva perf.+bathes?" (=Is Éva bathing?)	Éva fürdik meg? "Éva bathes perf.?"	Éva	2;6	Kenyeres 1928:38
elkeverjem? "up+mix+imp.+lPS" (=Should I mix it up?)	keverjem el? "mix+imp+lPS up"	Eva	2;6	Kenyeres 1928:38

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
visszadom, jó? "back+give+1PS, O.K.?"	adom vissza, jó? "give+1PS back O.K.?"	Zoli	2;2,0	MacWhinney
<p>3) When some element other than the verbal prefix receives focus, it obligatorily precedes the verb. In the error types below the child assigns intonational focus correctly, but fails to postpose the verbal prefix.</p> <p>a) A common error is to prepose the verbal prefix after the negative, even though the negative is focused whenever it appears.</p>				
Nagymama nem vette ki... "Grandma not took out" (=Grandma didn't take it out...)	Nagymama nem kivette... "Grandma not out+took"	Éva	2;6	Kenyeres 1928:38
nem eszem meg "not eat+1PS perf." (=I don't eat it up)	nem megeszem "not perf.+eat+1PS"	Laci	2;2	Balassa 1893:70
én nem tiprok rá "I not trample +1PS on-it" (=I won't trample it)	én nem rátiprok "I not on-it+trample+1PS"	Józsi	2;11,24	Meixner
nem eszi meg "not eat+3PS perf." (=He doesn't eat it)	nem megeszi "not perf.+eat+3PS"	Zoli	1;10,0	MacWhinney
nem megyek be "not go+1PS in"	nem bemegyek "not in+go+1PS"	Zoli	1;10,0	MacWhinney
nem adja oda "not give+3PS over"	nem oda adja* "not over give+3PS"	Zoli	1;10,0 2;2,0 (three times)	MacWhinney
<p>* Although <u>oda</u> is not formally a prefix, it patterns like a prefix syntactically.</p>				
nem szedtem le "not gather+past+1PS down"	nem leszedtem "not down+gather+past+1PS"	Zoli	2;2,2	MacWhinney
nem rontottam el "not break+past+1PS away"	nem elrontottam "not away+break+past+1PS"	Zoli	2;2,0	MacWhinney

Adult Form	Child Form	Child	Age	Source
nem rontom össze "not break+LPS apart"	nem összerontom "not apart+ break+LPS"	Zoli	2;2,0	MacWhinney
nem karmolok meg "not scratch+LPS perf."	nem megkarmolok "not perf.+ scratch+LPS"	Zoli	2;2,0	MacWhinney
nem ütött meg "not hit+past perf."	nem megütött "not perf.+ hit+past"	Zoli	2;2,5	MacWhinney
nem állítom meg "not stand+LPS perfective"	nem megállítom "not perf.+ stand+LPS"	Zoli	2;2,0	MacWhinney
nem csíp meg "not bite perf."	nem megcsíp "not perf.+bite"	Zoli	2;2,5 (twice)	MacWhinney
nem viszem ki "not take+LPS out"	nem kiviszem "not out+take +LPS"	Zoli	2;2,0	MacWhinney
nem kapcsolják össze "not hook+3PP together"	nem összekap- csolják "not together+ hook+3PP"	Zoli	2;2,0	MacWhinney

b) Another common error is to prepose the verbal prefix after a noun which is obligatorily focused because it appears with the operator is "also." In these utterances én "I" is the focused element and receives intonational focus.

én is csüccsülök le "I also sit+LPS down"	én is lecsüccs- ülök "I also down+ sit+LPS"	Zoli	2;0,0	MacWhinney
én is megyek oda "I also go+LPS thither"	én is oda megyek "I also thither go+LPS"	Zoli	2;0,0	MacWhinney
majd én is mosom meg "then I also wash+LPS perf."	majd én is megmosom "then I also perf.+wash+LPS"	Zoli	2;2,0	MacWhinney

Adult Form	Child Form	Child	Age	Source
én is mászkok be "I also climb+ LPS in"	én is bemászkok "I also in+ climb+LPS"	Zoli	2;2,2	MacWhinney (three times)
én is mászkok ide be "I also climb+LPS here in"	én is ide bemászkok "I also here in+climb+LPS"	Zoli	2;2,2	MacWhinney
mindjárt én is megyek föl "right-away I also go+LPS up"	mindjárt én is fölmegyek "right-away I also up+go+LPS"	Zoli	2;2,2	MacWhinney
én is megyek be "I also go+LPS in"	én is bemegyek "I also in+go+LPS"	Zoli	2;2,0	MacWhinney

- c) In addition to these fairly common errors, other focused elements also appear before erroneously preposed prefixes. The focused elements received intonational stress.

most nekem mutatod meg a kockát "now to-me show +2PS perf. the block+acc."	most nekem megmutatom kocka "now to-me perf.+show+ LPS block"	Zoli	2;2,0	MacWhinney
a másikat dobott be "the other+acc. throw+past in"	másikat bedobt "other+acc. in+throw+past"	Zoli	2;2,0	MacWhinney

- 4) For a few verbs such as kell "be-necessary," akar "want," and fog "will" the verbal prefix is lifted from the subordinate clause and placed before the auxiliary-like verb in the main clause. Some successes of this sort from Zoli at 2;2 are reported in Part III, as a part of the learning of prefix-raising. In the first of the two errors below the verbal prefix is postposed rather than lifted to the higher proposition. In the other errors, lifting is generalized to the case when the verb of the main proposition is not an auxiliary:

úgy kell megcsinálni "thus is-necessary perf.+do+infin."	úgy kell csinálni meg "thus is-necessary do+infin. perf."	Zoli	2;2,0	MacWhinney
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<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
megyek megnézni "go+LPS perf.+ see+infin."	meg megyek nézni "perf. go+LPS see+infin."	Kari	5;6	Simonyi 323
elmegyek leszedni a rózsát "away+go+LPS down+ pluck+infin. the rose+acc."	a rózsát el megyek szedni "the rose+acc. away go+LPS pluck+infin."	Zoli	2;0,2	MacWhinney

Lovász reported no errors in the placement of verbal prefixes in his sample of the speech of three 3-year-olds and three 5-year-olds. This finding is somewhat surprising in light of the numerous errors from Zoli and 2;2 and seems to reflect the smallness of his samples.

6.2 Errors in compound formation

Erroneous compounds are forms which do not adhere to the basic syntactic rules which govern the types of relations which may be expressed through compounds. Each of the following compound types lies outside the set of permitted compound relations.

- a) The child sets up the first element as the agent and the second as the action, expressed by a main verb. (Here the child should have formed a compound along the principle of 5.34d or 5.34f.)

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
szélroham "a gust of wind"	szél-fúj "wind-blow"	Lili	3;3	Ponori 1905:436

- b) In the reverse of this error the first element is a main verb expressing an action and the second the agent of the action:

szélroham "gust of wind"	fúj-a-szél "blows-the-wind"	Márti	1;10,20	Meggyes 36
kéményes ház "chimneyed-house"	füstölház "smokes-house"	Józsi	3;1,10	Meixner

- c) Or the first element is an action and the second its patient:

kézbefogni való taska "a satchel to be grabbed in the hand"	kézbefog-taska "handgrab-satchel"	Emőke	3;2,25	Meixner
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- d) The order action + agent is permissible, if the action is suffixed by a participial formative; but in this error the child attempts to use this structure for the relation of action + patient:

fogkefe "toothbrush"	mosófog "washer-teeth"	Józsi	3;1,10	Meixner
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- e) There are no compound patterns which have adverbs as their first element; here the child is simply attempting to nominalize a phrase:

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
csigavonal "spiral"	mindig-be "always-in"	Tibor	4;2	Barcsai 31
szendvics "sandwich"	össze kenyér "together+bread"	Laci	3;6	Balassa 1893:73
amikor a szél nem fúj "when the wind doesn't blow"	semmi-szél "none-wind"			
that part of the violin which did not have a "frog" grip	nem-béka	Lili	-	Ponori 1905:436

- f) In section 5.34g we found that a compound formed of a patient and its action could serve as the name of a location where the patient typically engages in the action, but here the child attempts to substitute an instrument for the location in the format of

(Patient + Action)_{Location}

kancsó "pitcher"	tejiszó "milk+drink+er"	Józsi	3;0,23	Meixner
tőgy "udder"	tejivó "milk+drink+er"	-	4;-	Kemper 2

- g) Although there exists a pattern (Participle +Location) where the participle expresses the action which typically occurs at a location, in these errors the child attempts to form a compound based on a verb root, rather than a participle, and another based on a patient rather than a location.

játszótér ahol ugranak "playground where they jump"	ugratér "jump+ground"	Lili	-	Ponori 1905:434
tér ahol kottákat játszanak "ground where they play musical scores"	kottatér "score+ground"	Lili	-	Ponori 1905:434

6.3 Errors in word-order

Because Hungarian word-order is relatively free, and because it is difficult to study learning of optional syntactic patterns, observations of errors in word-order are generally limited to certain obligatory patterns.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
a) Unless it is a predicate adjective, the adjective must always follow the noun.				
ez is egy szép virág "This also a pretty flower"	ez is virág, szép "this also flower, pretty"	Jolán	1;10	Endrei 462
még egy egér "still one mouse"	egér még egy "mouse still one"	Zoli	1;10,0	MacWhinney
b) The negative is placed before the element it negates. If the entire sentence is negated, it is placed before the main verb.				
Éva nem evett zsírt a bögréből "Eva not ate lard+acc. the mug+delative"	Éva se zsírot bögréből evett* "Eva neither lard+acc. mug+delative ate"	Éva	2;4	Kenyeres 1928:72
*This utterance is full of other mistakes.				
elment nem Landok felé, hanem.... "away+went not Landok towards, but..."	elment Landok nem* felé, hanem... "away+went Landok not towards, but ..."	Lili	-	Ponori 1905:436
c) The particle <u>is</u> "also," like its English counterpart, must directly follow the noun to which it is attached. Here it follows the verb. However, we should note that Zoli corrected himself after a pause lasting about six seconds.				
én is kapom "I also get+1PS"	én kapom is "I get+1PS also"	Zoli	1;10,0	MacWhinney

Adult Form	Child Form	Child	Age	Source
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d) The past conditional is formed by placing the conditional element volna after the past tense of the verb. Perhaps these errors are influenced by the inappropriate connotations we discuss in the next section:

elementél volna "away+went+2PS conditional" (=you would have left)	volna elementél "conditional away+went+2PS"	Jolán	2;4	Endrei 464
becsuktam volna "in+close+past+ 1PS conditional" (=I would have closed)	volna becsuktam "conditional in+close+past+1PS"	Jolán	2;4	Endrei 464
a szája nőtt volna "the mouth+3PS poss. grow+past conditional" (=His mouth would have grown)	nőtt a szája volna "grow+past the mouth+3PS poss. conditional"	Nanus	3;-	Simonyi 322
a feje leszakadt volna "the head+3PS poss. down+break+past conditional" (=His head would have fallen off)	leszakadt a feje volna "down+break+ past the head+ 3PS poss. cond."	Nanus	3;-	Simonyi 322

It may be that difficulties the child experiences in learning to attach the conditional particle are similar to those involved with the question particle, in that both reflect modalities and both refer to the entire proposition and not just the verb.

e) The possessive construction requires that the possessor precede the possessed.

papának a szeme "daddy+dat. the eye+3PS poss." (=Daddy's eye)	szeme a papának Éva "eye+3PS poss. the daddy+dat."	Éva	1;6,7	Kenyeres 1926:54
Évi babának a szeme "Éva baby+dat. the eye+3PS poss." (=Baby Eva's eye)	szeme Évi babának "eye+3PS poss. Évi baby+dat."	Éva	1;6,7	"

Adult Form	Child Form	Child	Age	Source
Mártikának a gyógyszere "Martika+dat. the medicine+3PS poss." (=Martika's medicine)	gyógyszere Mártikának "medicine+3PS poss. Martika+dat."	Márti	1;9,24	Meggyes 52

6.4 Inappropriate conflations and analyses

Lexical items may be viewed as packages of semantic information that conflate (Talmy, 1972) underlying propositions and features in various ways. Linguistic analysis often seeks to reverse lexical conflation in order to isolate out fundamental semantic elements. In child language we find errors which deviate from the lexical standards of the adult language in both directions.

a) Erroneous conflations seem to involve over-generalizations of conflationary patterns present in the standard language. Thus, the standard language conflates two propositions by attaching a verbal prefix to a verb root. For example, felreptül a madár "up+flies the bird" can be viewed as a conflation of fel(megy) a madár "up(goes) the bird" and reptül a madár "flies the bird." But no verb is allowed to express successive conflations by attachment of more than one verbal prefix. In these errors two verbal prefixes attach to one verb.

Component Propositions	Conflation	Child	Age	Source
a) belerakjuk "illative+stack +LPP"	belerakjuk össze "illative+ stack+LPP together"	Pali	3;3,27	Meixner

<u>Component</u>	<u>Conflation</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
b) összerakjuk "together+stack+lPP"				
a) előveszem (=I take it out)	előveszem föl az asztalra	Pali	3;3,28	Meixner
b) felteszem az asztalra (=I put it up on the table)	"out+take+lPS up the table+subl." (=I take it out up onto the table)			
a) visszategyűk "back+put+imp+lPP" (=Let's put it back)	vissza eltegyűk (=Let's put it away back)	Zoli	1;8,6	MacWhinney
b) eltegyűk "away+put+imp.+lPP" (=Let's put it away)				
a) Moncsi megütötte "Moncsi perf+ hit+past+3PS"	Moncsi elütötte meg "Moncsi away+ hit+past+3PS perf." (=Moncsi knocked it off completely)	Zoli	2;2,0	MacWhinney
b) Moncsi elütötte "Moncsi away+hit+ past+3PS" (=Moncsi knocked it off)				
The conditional is not a conflation of two propositions,				
but a union of a proposition with a modality element.				
However, parental interpretations of some child conditionals				
suggest that they are conflations of dual conditions:				
a) ha a kutya nem a képen volna (=if the dog were not in the picture)	volna megharapna Jolán "conditional perf.+bite+cond." (=it would it would bite)		2;0	Endrei 463

Component Propositions	Conflation	Child	Age	Source
b) megharapna (=it would bite)				
a) mi lett volna? (=What would have happened?)	volna leesettem a kanálvízbe* "cond. down+fall +past+LPS the canal+water+illative"	Éva	2;11	Kenyeres 37
b) ha beestem volna a kanálisba (=if I had fallen into the canal)	(=What if I had fallen into the canal?)			
* <u>kanális</u> "canal" is incorrectly produced as <u>kanál</u>				

a) jó lett volna (=it would have been nice)	volna nem pisiltem, volna nem a földre	Jolán	2;6	Endrei 464
b) ha nem pisiltem volna (=if I hadn't pissed)				
a') jó lett volna (=it would have been nice)				
b') ha a földre pisiltem volna (=if I had pissed onto the ground)*				

* Jolán ended up pissing in his pants, rather than onto the ground.

In each of these rather tortuous conflations additional errors are made which somewhat obscure the over-all effect.

However, it does seem that children are attempting to interpret the conditional volna as expressive of some general proposition such as "in another state of affairs, in a better world." The sentences then read as "in another state of affairs, the dog would bite," "in another state

of affairs, I would fall into the canal," and "in another state of affairs, I wouldn't have pissed; in another state of affairs, I would have at least pissed onto the ground."

b) Locative adverbs and postpositions seem particularly subject to inappropriate analysis. Here the adverb utána is a conflation of "after" as in "run after" and "it" as the object of the running. Alatta is "under it."

In the analysis the noun incorrectly appears on the surface.

<u>Adult Form</u>	<u>Analysis</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
utána "after+it"	utána virág "after+it flower"	Éva	1;10,7	Kenyeres 1926:49
alatta "under+it"	kerék alatta "wheel under+it"	Józsi	3;0,23	Meixner

Or both the object and the postposition may be analysed out:

utána "after+it"	utána virág után "after+it flower after"	Éva	1;10,7	Kenyeres 1926:49
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Or the child may pull out the features of approximation or motion from the postposition.

a labda az asztal alatt van (=the ball is under the table)	a labda alatta van az asztalnál (=the ball is under by the table)	Laci	-	Kallos 410
asztal alól (=out from under the table)	onnét az asztaltól (=from there from the table)	Józsi	3;2,6	Meixner

6.5 Errors involving phrasal units and discourse agreement rules:

Occasionally, a child treats an entire memorized phrase as if it were a lexical item. Adults do the same thing when they cite song titles, etc.

<u>Adult Form</u>	<u>Child Form</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
ez még mi? "this still what?"	ez még mi az "this still 'what's that'?"	Józsi	2;9,5	Meixner

(Here the unit was mi az? "what's that?")

kérem a mesét "want+LPS the story+acc."	kérem meséld nekem "want+LPS 'tell me the story'"	Zoli	1;10,0	MacWhinney
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(Here the unit was meséld nekem "tell me the story.")

most én csinálók "now I do+LPS"	most én mennek "now I 'they go'"	Zoli	2;2,3	MacWhinney
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(Here the unit was mennek "they go." Zoli meant to say that it was now his turn to roll the toy penguins and say, "Look how they are rolling.")

Another rare consequence of the coding of words into phrases is the blending of two phrases, in this case two idioms:

<u>Source A</u>	<u>Source B</u>	<u>Blend</u>
visit, mint a sakál "it screams, like a jackal"	izzad, mint a ló "it sweats, like a horse"	izzadok, mint a sakál "I sweat, like a jackal"

-- Józsi at 3;4,8 from Meixner

Further examples of this may be found in section 3.62.

Hungarians have devoted little attention to the learning of discourse agreement rules (Ervin-Tripp, 1970a), although the effects of discourse pressure upon the personal

suffixes has been frequently noted. Here we cite a violation of the rule which holds that affirmative replies to yes-no questions must be given by repeating the verbal prefix:

Question: Nem szedjük össze?(=Shouldn't we gather them up?)

<u>Adult Answer</u>	<u>Child Answer</u>	<u>Child</u>	<u>Age</u>	<u>Source</u>
de igen, össze "but yes, together"	de igen, szedjük "but yes, we gather"	Pali	3;3,18	Meixner

We should add that the verb root is correctly given as an answer to a yes-no question, when no prefix is present.

6.6 Reports of the first sentences

Turning now to non-error data, we will first review reports from Jablonkay, Szinkovich, Varga, Donner, Balassa, Simonyi, Viktor and Kenyeres of the first sentences uttered by their subjects. We do not include early utterances reported by Endrei, since they are few in number and are apparently examples of early errors, rather than typical early forms. The data cited here should provide information regarding the presence of semantic universals underlying early syntax; such evidence will be evaluated in section 6.7.

a) Jablonkay (149) reports only the very first utterances:

<u>Child utterance</u>	<u>Adult morphemes</u>	<u>Adult sentence</u>
Age 1;2: mama bua	mama varr "mama sews"	mama varr "mama sews"
papa á-á-á	papa olvas "papa reads"	papa olvas "papa reads"

Child utterance Adult morphemes Adult sentence

Age 1;3

nenne há	néni fáj woman hurts	a néninek fáj the woman+dat. hurts (=it hurts the woman)
baba majd e (perhaps an imitation)	baba majdnem elesett baby almost fell	baba majdnem elesett baby almost fell

b) Szinkovich (1921) reports only the first few sentences:

Age 1;5

cucu picci	cukor picci sugar little	kérek egy picci cukrot want+1PS a little sugar+acc.
paci víz	paci víz horsie water	a paci vizet visz the horsie water+acc. takes
picci tel-tel	picci tej little milk	picci tejet kérek little milk+acc. want+1PS

c) Varga also reports only the first few sentences (147):

Age 1;4

itt a óa	itt az óra here the clock	itt az óra here the clock
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Age 1;5

Many sentences of the form ott a X "there (is) the X."

d) Simonyi (322) reports a larger number of early sentences from Kari:

Age 0;9

ka pi	katona pipál soldier smokes	katona pipál soldier smokes
	<u>or</u> katona pipa soldier pipe	katona pipát használ soldier uses a pipe

From 0;9 to 1;4 Simonyi says that sentences typically have uninflected nouns and inflected verbs, such as in the following two examples:

<u>Child utterance</u>	<u>adult morphemes</u>	<u>Adult sentence</u>
tuta tejjesse	kutya keresse dog search+imp.	a kutyát keresse meg the dog+acc. search+imp. perf.
hozza tá	hozza kávé brings coffee	hozza a kávéét brings the coffee+acc.

Age 1;4

tűz kálába	tűz kályhában fire oven+inessive	tűz van a kályhában fire is the oven+iness.
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Age 1;5

puszit lónak	puszit lónak kiss+acc. horse + dat.	puszit ad a lónak kiss+acc. gives the horse+dat.
mos szappannal	mos szappannal wash soap+instr.	mos szappannal wash soap+instr.
nem áll	nem áll not stand	nem áll not stand

From Nanus, Simonyi relates only a few early forms:

Age 1;0-1;3

tato gyi	katona gyi soldier getty-up (gyi=baby-talk)	a katona nyargál the soldier gallops
nizi tato	kéz katona see soldier	nézzük a katonát see+lPP the soldier+acc.

Age 1;3

mēni mamáó	menni mamához go+infin. mother+allative	mamához akarok menni mother+all want+lPS go+infin.
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e) Balassa (1893:65) cites a large number of early sentences from Laci. In general, these sentences are offered as examples of the highest syntactic level at a given age:

<u>Child utterance</u>	<u>Adult morphemes</u>	<u>Adult sentence</u>
<u>Age 1;3,10</u>		
cita telé	Vica tej Vica milk	Vica, tejet kérek Vica, milk+acc. want+1PS
dádá cita	dádá Vica angry Vica (<u>dádá</u> =baby-talk)	Vica, mérges vagyok veled Vica, angry am+1PS with-you
<u>Age 1;5</u>		
nyissa ajtó	nyissa ajtó open+imp door	nyissa ki az ajtót open+imp. out the door+acc.
<u>Age 1;6</u>		
paci eles	paci elesik horsie fall	a paci elesett the horsie fell
ébitte anyja	elvitte anyja away+took mother +3PS poss.	elvitte az anyja away+took the mother +3PS poss.
tati nincs ément nőná	Kati nincs elment konyha Kathy is-not away+went kitchen	Kati nincs itt, elment a konyhába Kathy is-not here, away+ went the kitchen+illative
<u>Age 1;7</u>		
étőjzte acita	eltörte Lacika away+broke Lacika	eltörte Lacika away+broke Lacika
il lacita	ül Lacika sits Lacika	Lacika ül Lacika sits
il cékbe	ül a széken sits the chair +inessive	a széken ül the chair+superessive sits
tiz ég	tűz ég fire burns	ég a tűz burns the fire
bátotta pindzát	bántotta findsát hurt+past coffee-pot+acc.	bántotta a findzsát hurt+past the coffee-pot+acc.
<u>Age 1;8</u>		
tati ozza babát	Kati hozza babát Kathy brings doll+acc.	Kati hozza a babát Kathy brings the doll+acc.

<u>Child utterance</u>	<u>Adult morphemes</u>	<u>Adult sentence</u>
tati ébitte ammát	Kati elvitte almát Kathy away+took apple+acc.	Kati elvitte az almát Kathy away+took the apple+acc.
acita ide teszi babát	Lacika ideteszi babát Lacika here+puts doll+acc.	Lacika ideteszi a babát Lacik here+puts the doll+acc.
annes hozzon puhá bize aptyána	Ágnes hozzon pohár viz apukának Agnes bring+imp. glass water father +dat.	Ágnes hozzon egy pohár vizet apukának Agnes bring+imp a glass water+acc. father+dat.
aptya issa puhá bize	apuka iszik pohár viz Daddy drinks glass water	apuka egy pohár vizet iszik Daddy a glass water+acc. drinks

Age 1;9

tejet észit aci	tejet eszik Laci milk+acc. eats Laci	Laci tejet iszik Laci milk+acc. drinks
szejeti annyát	szereti anyját likes mother+3PS poss.+acc.	szereti az anyját likes the mother+3PS poss +acc.
teles a lacita bácit	keres a Lacika bácsit seeks the Lacika uncle+acc.	Lacika keresi a bácsit Lacika seeks the uncle +acc.
cekre űni édes aptya	székre űlni édesapa "chair+subl. sit +infin. dear-father	édesapa a székre űl dear-father the chair+ subl. sits
bigyázzon acitára	vigyázzon Lacikára watch-out+imp. Lacika+sublative	vigyázzon Lacikára watch-out+imp. Lacika+sublative
őbabát bęgye ki	hőbabát vegye ki snow+baby+acc. take+imp. out	vegye ki a hőbabát take+imp. out the snow+baby+acc.

<u>Child utterance</u>	<u>Adult morphemes</u>	<u>Adult sentence</u>
nyissa ki ajtót	nyissa ki ajtót open+imp. out door+acc.	nyissa ki az ajtót open+imp out the door+acc.
aptya iszit télát	apa iszik teát father drinks tea+acc.	apa teát iszik father tea+acc. drinks
tisasszony ütek diványon	kisasszony ültek diványon miss sits+3PS divan+superess.	kisasszony ül a diványon miss sits the divan+superess.
aptyának páj ujja	apának fáj ujsa father+dat. hurts finger+ 3PS poss.	apának fáj az ujsa father+dat. hurts the finger+3PS poss.

f) Donner (132, 142) cites a large number of sentences from the speech of a child just beginning to speak. Donner's report is valuable, because he cites all of the sentences he recorded during his observations.

Age 2;3 to 2;4

apa dele	apa gyere father come+imp.	apa, gyere father, come+imp.
báci szőjő	bácsi, szőlő uncle, grape	bácsi, szőlőt kérek uncle, grape+acc. want+1PS
csicsi baba	csücsü baba sitty baby (both items are baby-talk)	csücsülj baba sit+imp. baby
atjá tutojt	adjál cukort give+imp. sugar +acc.	adjál cukrot give+imp sugar+acc.
tutát ijj	kutyát ír dog+acc. writes	kutyát rajzol dog+acc. sketches

Child utterance	Adult morphemes	Adult sentence
ozza be	hozza be bring+imp in	hozza be! bring+imp in
tűz van	tűz van fire is	tűz van fire is
tuta pee	kutya pe dog nasty (pe=baby-talk)	a kutya csunya the dog nasty
tojnë pe	Kornél pe Kornél nasty	Kornél csunya Kornél nasty
tetjét paabász	tessék plajbász please pencil	tessék, a plajbász please, the pencil
baba aludj	baba aludj doll sleep+imp.	baba aludj doll, sleep+imp.
pele tutjot	bele cukrot into-it sugar+acc.	tegyél bele cukrot put+imp. into-it sugar +acc.
ne tej	nem kell not is-necessary	nem kell not is-necessary
mét edet	még egyet still one+acc.	még egyet still one+acc.
én isz	én iszik I drink(3PS)	én is iszom I also drink+LPS
ot papájni	ott papálni there eat (papálni=baby-talk)	ott akarok enni there (want+LPS) eat +infin.
toci ajja	kocsi arra carriage to-there	a kocsi arra megy the carriage to-there goes
án ója	hány óra how-many hours	hány óra how-many hours (=what time is it?)
bácsi met tá	bácsi megy tá uncle goes bye (ta=baby-talk)	a bácsi sétálni megy the uncle walk+infin. goes

<u>Child utterance</u>	<u>Adult morphemes</u>	<u>Adult sentence</u>
tuta paabász	kutya plajbász dog pencil	plajbással rajzoljon a kutyát pencil+instr. draw+imp the dog+acc.
namama tá	nagymama tá Grandma tá	a nagymama elment Grandma left
tejenen ebédet	köszönöm ebédet thank+LPS meal +acc.	köszönöm az ebédet thank+LPS the meal +acc.
nat tuta	nagy kutya big dog	ez nagy kutya this big dog

In addition to these twenty-four reported two-word utterances, Donner observed several uses of inflected words appearing as monorhemic utterances at this time. These included nouns inflected for the accusative, possessive, or the sign of possession. At age 2;5 Donner collected 81 utterances; of these 23 were one-word, 43 two-word, 11 three-word, and 2 four-word utterances. If this is an accurate account of all the utterances observed, the M.L.U. is 1.90. Due to space limitations, we cannot cite all the utterances of the month of 2;5.

g) The most valuable material on early syntax of a Hungarian child comes from Kenyeres (1926: 25-26), who lists the "principal" sentences used by Éva from 0;11 to 1;6. Presumably, by talking about the "principal" sentences in her speech, Kenyeres means the principal syntactic patterns.

Age 0;11

nyinyi tititi	nini pipi lookie chickee (both items are baby-talk)	nézd, csirkék look+imp chickens
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<u>Child utterance</u>	<u>Adult morphemes</u>	<u>Adult sentence</u>
nini # tática	nini tática lookie bye (both items are baby-talk)	nézd, megy look, it-goes
<u>Age 1;0,2</u>		
mama tá	Mama tá Mama bye	mama elment Mama left
<u>Age 1;1,30</u>		
papa dádá	Papa dádá Papa angry (<u>dádá</u> =baby-talk)	Papa megvert Papa hit me
<u>Age 1;2</u>		
teté bo	tessék gomb please button	tessék, itt a gomb please, here's the button
<u>Age 1;2,22-24</u>		
mammo tetisz	Mama, tessék Mama, please	Mama, tessék Mama, please(fill this glass)
Papa ih	Papa ír Papa writes	Papa ír Papa writes
Mama hajti	Mama hajcsizik Mama sleeps (<u>hajcsizik</u> =baby-talk)	Mama alszik Mama sleeps
<u>Age 1;3,0-4</u>		
baba tánci	baba tánci doll dancey (<u>tánci</u> =baby-talk)	a baba táncol the doll dances
mama, mama teti	Mama, Mama, tessék Mama, Mama, please	Mama, Mama, tessék Mama, Mama, please
(In the above example, Éva was not offering her mother something, but telling her father how she wanted to take his picture into the other room to show to her mother.)		

<u>Child utterance</u>	<u>Adult morphemes</u>	<u>Adult sentence</u>
papi nem	papi nem eaty not (papi=baby-talk)	nem kell enni-való not is-necessary food
<u>Age 1;4,22-24</u>		
pápá baba	pápá baba bye-bye doll (baba=baby-talk)	szervusz, gyerekek good-bye, children
adide te papa	addide könyvet Papa gimme book+acc. Papa	add ide a könyvet, Papa give+imp. here the book +acc., Papa
<u>Age 1;5</u>		
Mama heja	Mama haja Mama hair+poss.	Mama, dörzsöld meg a fejemet Mama, scrub+imp. perf. the head+1PS poss.+acc.
papa nész	Papa nézd Papa look+imp.	Papa, nézd! Papa, look!
<u>Age 1;5,1</u>		
dősz mama	jössz, Mama come+imp, Mama	Végy karra Take me into your arms
(The use of <u>jössz</u> is a reaction to discourse pressure from the question directed to her, "Are you coming?")		
<u>Age 1;5,10</u>		
baba ide oh	baba ide ül doll here sits	Éva ide ül Éva here sits
<u>Age 1;5,17</u>		
ement hau	elment vau-vau left wow-wow	elment a kutya left the dog

Child utterance Adult morphemes Adult sentence

Age 1;6.1 to 1;6.8

mama ement tátábo	Mama elment tátába Mama left bye-bye+illative (<u>tátá</u> =baby-talk)	Mama elment sétálni Mama left walk+infin.
Evike pipiket nész	Evike pipiket néz Evike pipi+pl+acc. sees (<u>pipi</u> =baby-talk)	Evike csirkéket akar nézni Evike chickens wants see+inf.
dön Vajisz	jön Valika comes Valika	jön Valika? comes Valika?
addide bászinek ---nem	addide bácsinak nem gimme uncle+dat. no	a bácsi nem adja ide nekem the uncle not give here to-me (compare 6.1)

Kenyeres continues to cite utterances beyond the age of 1;6. One characteristic of his data throughout is the fact that Eva is fairly consistent in placing the Agent before its verb. In fact, most of her longer sentences show an SVO ordering.

h) Finally, we may cite a few early sentences recorded by Viktor:

Age 1;9.0 to 1;9.3

ata # kő	add kő give+imp stone	add ide a kavicsot give+imp here the gravel+acc.
ááá # mamá	oda mama thither mama	vigyetek oda mamához take me there to mama

Child utterance Adult morphemes Adult sentenceAge 1;9,3 to 1;9,10

ada # baba	oda baba thither doll (Matildka calls the mirror a "doll" because her own reflexion is often seen in it.)	ott van a tükör there is the mirror
------------	--	--

Age 1;9,10 to 1;9,22

agya # baba	add baba give+imp. doll	add ide a tükört give+imp here the mirror +acc.
bü # csecse	bü csecse water nice (both words are baby-talk)	jó a víz good the water
néne # mana	néni Mama aunt Mama	nénivel megyek Mamához aunt+commit. go+IPS mother+allative
nyényé # kő	nézd kő see stone	nézd a követ see the stone+acc.
apla # abla	hoppá labda whoops ball	leesett a labda fell the ball

6.7 Topic-comment and ellipsis

Examining a small corpus from Józsi Lengyel between 2;0 and 2;2, László Dezső (1970) found strong evidence for early learning of certain topic-comment rules of word-order. At the two-word utterance stage, verbs received stress whether in first position or not. Nouns in first position were always stressed, but nouns in second position were sometimes unstressed. Dezső explains this by noting that the modality (imperative, question, etc.) associated with verbs may lead to emphasis and fronting through focusing rules. Dezső, along with Leontyev (1965), believes

that, when this does not occur, the child is most inclined to use SOV word-order, since this order serves to place focus upon the object, and Dezső finds that such a focus is "natural," since the object is generally of greatest communicative salience. If this is true, Dezső reasons, we gain evidence for the claim that the SOV order and the _____ accent pattern associated with it are the original patterns of language.

Dezső observes that emphasis patterns in Józsi's speech reflect changing psycholinguistic states. Thus, when Józsi first said CSUNYA # PANCSE "UGLY # POOL," he emphasized both elements, perhaps as a result of the fact that neither were available as topics and both were produced through a search of the lexicon. Józsi then repeated himself CSÚNYA panyi and CSÚNYA a panyi. In each repetition emphasis was removed from panyi "pool," which had now become a topic. Elsewhere, Dezső also notes the early union of the vocative with the agent or experiencer. He demonstrates how the vocative may be distinguished through situational information, even when intonational cues are insufficient. Use of such information is also proposed in Bloom (1970), and Dezső detects the same kind of deletion of sentence elements as Bloom described.

In her examination of elliptical sentences (63-66, 77-78), Meggyes notes that ellipsis generally preserves those parts of the communication which may be considered "new information." She notes that elliptical one-word

sentences generally name objects, demand objects, imitate previous utterances, or make commands. When Márta requested objects, she usually attached the accusative -t. The two- and three- word elliptical utterances Meggyes cites (66) are mostly expanded noun phrases. Among the various elliptical types Meggyes reports, there is only one example of an Object-Subject sentence of the type frequently reported by Bloom (1970). This utterance is icát a Szömpike "cat+acc. (draws) the Sömpike" from 1;11,8. We might add that Object + Subject or Subject + Object constructions are entirely non-existent in the data reported in Part III. Meggyes also noted the presence of utterance-internal pauses (75-76) and found that pauses tended to precede that element of the sentence which was newest to the system and least well-practiced. Often this element was the object; but in some sentences each element was preceded by a pause, while other sentences had no pause at all.

Much of our own discussion of syntactic learning in Part III concentrates upon acquisition of the semological and syntactic rules governing both topic-comment and focusing. Particularly in sections 5.32, 5.42, 5.52, and 5.62 we discuss errors produced by over-generalization of the early pattern of verb-fronting. Rather than repeat those observations here, we will refer the reader to the sections we have mentioned.

6.8 Observations of the acquisition of syntactic patterns

In her first set of observations, Meggyes summarized Márta's syntactic development from 1;9,15 to 2;0, noting these structures:

- 1) elliptical utterances (see 6.7),
- 2) equative sentences with an adjective or noun comment as the first element and a noun topic as the second element: nagyon édes a Márta "very sweet the Márta,"
- 3) negatives with nem "no" generally following the word negated (35, 66) with an emotional-volitive meaning,
- 4) an order relation in which the verb preceded the subject (68) or vocative subject,
- 5) an order relation in which the subject generally preceded the object, although a few exceptions are noted, and
- 6) an order relation in which the verb usually preceded the object (68), although some exceptions are noted.

Summarizing the relations 4-6 in the first period, we find that the structures VS, VO, and VSO occurred as basic orders, while SV, OV, SVO, VOS, and OVS occurred as exceptions.

Other relations also found at this time included:

- 7) positioning of the dative after the verb, subject, and object, while the dative pronoun neki "to-him" was placed directly after the verb and before the subject and object whenever it appeared (70),
- 8) like verbs, adverbial units such as ott van "there is" or hocsinál? "what sound does ___ make?" preceded the subject,
- 9) subjects modified by masik "other," mind "each," or az a "that" would precede their verbs. This appears to

point to the presence of a rule assigning topic status to such NP's, and

10) modifiers of all kinds preceded nouns in Márta's speech.

Meggyes's observations continued during the months from 2;0 to 2;2. Chief among the new syntactic patterns entering at this time were the following:

- 1) The negative structure X + Neg changed to the adult structure Neg + X. In the first period negatives apparently seldom appeared in sentences with more than two elements. In the second period negatives appear along with two or three other sentence elements; in these later sentences it becomes evident that the negatives are ordered in relation to the elements they modify and not the sentence as a whole.
- 2) There was a slight increase in the SV structure, so that both VS and SV were equally common.

6.9 Sentence compounding

The most extensive observations of compounding (or coordination) and subordination in early Hungarian child speech were made by Szászokó (1952) on seventy nursery-school children between the ages of 2;9 and 3;11. Szászokó collected from one to four examples from each of the children and labeled them according to various categories of traditional grammar. Szászokó was not a linguist, and errors in linguistic judgment were made in the process of this labeling. Moreover the categories are not sufficiently fine-grained to reveal the exact semantic content of the various constructions. Therefore we have relabeled the utterances

Szászkó gathered. The position of the conjoined or subordinated material in the following utterance types is indicated by dots (....). The frequent introducer azért mert "'cause" was excluded by Szászkó.

<u>Structure</u>	<u>Translation</u>	<u>Frequency</u>
...és...	and	58
... és ... és ...	and ... and	6
... meg	in addition	1
... akkor ...	then (time)	4
... mikor ...	when	1
mikor akkor ...	when ... then ...	3
... most mikor ...	now when	1
... majd ...	subsequently	1
... és azért ...	and therefore	1
... azért ...	therefore	1
... azért mert ...	because	1
azért ... mert ...	therefore...because...	3
... mert ...	because	6
... de ...	but	10
... csak ...	only	1
nem ... hanem ...	not ... but ...	2
azért ... hogy ...	therefore ... so that	1
... hogy ...	so that	2
úgy ... hogy ...	in such a manner... that...	1
ha ... akkor...	if ... then ...	6

<u>Structure</u>	<u>Translation</u>	<u>Frequency</u>
<u>Subordinations:</u>		
azt mondja ...	he says (direct)	4
azt mondja hogy ...	he says (indirect)	7
<u>V</u> hogy	<u>V</u> that ...	5 (different verbs)
<u>N</u> aki	<u>N</u> who ...	1
ott ahol ...	there where ...	3
olyan ami ...	such which ...	1

In addition to the 131 sentences summarized above, ten sentences contained a mixture of compoundings:

- (2;11,8) Ide jöttem, de visszamegyek, ha rossz leszel.
I came here, but I'll go back, if you're bad.
- (2;9,2) Anyu mondja-hogy ha rossz leszel, tudod, hogy mi lesz a vége.
Mommy says that, if you are bad, you know what the result will be.

Keresztmama vette; mert anyu elment dolgozni hogy szép ruhát vegyen.
Godmother bought it, because mommy went to work so that she could buy pretty clothes.
- (2;11,19) Azért jöttem ide, mert anyukám azt mondta, hogy itt sok játék és játszok.
Therefore I came here, because my mommy said that here (are) many toys and I play
- (3;0,3) Az utcán is láttam olyan nagy macskabácsit akinek van hosszú bot és ment a másik oldalra és verte a malacokat.
On the street too I saw such a big cat-uncle who had a long stick, and he went to the other side and beat the pigs.
- (3;0,19) Nem, mert azzal nem szabad ide jönni, mert ellopják.
No, because one can't come here with that, because they steal it.

The other four sentences simply illustrate és "and" conjoining two clauses, the second of which contains azt mondja, hogy "he says that..."

The diary reports give us examples of even earlier compounding. Endrei (462) reports ha nem bogár, akkor madár "if not a bug, then a bird" from Jolán at 1;8. At 1;10 Jolán began to use asztán "then" as a conjoiner; and, at 2;0, Endrei reports verd meg, mert büdös vagyok "beat him, cause I'm smelly" (Jolán meant to say, "Beat my brother Feri, because he says I'm smelly.) Balassa (1893:70-71) reports logical conjunction at 2;4, still without formal markers: ott ment a vonat, füstöl "there went the train, it puffs"; anyika monta, szabad "mommy said, permitted"; eszt megettem, aszt kapom "this I ate, this I get." At 2;7 Laci began to use mert "because," de "but," and azért mert "therefore because." Donner (141) reports is "also" at 2;5 and és "and" at 2;6, but cites no examples.

Meggyes (77) reports juxtaposition of sentences at 1;11 still without productive use of conjunctions. After having juxtaposed sentences in antithesis for two months, Márti first used hanem "but" at 2;1,7. At 1;11,20 mert "because" was used to join clauses; at 2;0,19 ha "if" entered; and hogy "that" was first used to introduce indirect discourse at 2;0,27. Of the coordinating conjunctions, és "and" occurred from 1;10,7, but only to join nouns or to begin an utterance. From 1;10,0, Márti

correctly used is "also"; from 1;11,17 she used meg "and, in addition," but with the definite article attached in the form meka or mega.

Kenyeres provides the most complete longitudinal data on the acquisition of Hungarian conjunctions. At 1;6,28 (Kenyeres 1926:60, 1928,63) Éva pointed at one button and said gomb "button"; then she pointed to another button and said az is gomb "that's also a button." Éva's first coordinating conjunction was azután "then, afterwards" at 1;10,12. From 1;11,18 Éva used akkor "then" like azután to enumerate events in temporal sequence. From 1;11,23 Éva used meg "and, in addition" to coordinate nouns. Beginning at 1;11,17 Éva frequently use vagy "or," but generally made errors in its usage. She would use it when no selection was required, or when illetve "or rather" was required. Moreover, from 2;5 to 2;11 she would add an incorrect and superfluous vagy before the first alternative, i.e. vagy ... vagy ... "either or" At 1;11,5 de "But" appeared in the sense of German doch which contradicts the previous speaker's proposition; by 2;3 it was also used in the sense "but" to coordinate clauses.

From 2;0,11 Éva uses se "nor," but with attendant syntactic and morphological difficulties (see 5.23). When és "and" first appears at 2;2,3, for the first month Éva confuses it with is "also" and fails to state the second conjoined proposition. Ha "if" enters at 2;2,28,

hanem "but rather" at 2;3,12, and megis "nonetheless" at 2;3,7. Although Éva used pedig "but however" from 2;3,4, errors occurred (Kenyeres is not specific) even at 2;10. By 2;3 Éva joined clauses with hogy "so that," although from 2;0 she just juxtaposed the causing proposition with the resultant proposition. In the month of 2;5 hogy was also used in its sense of "that (simple subordination)" and "in such a manner, how."

The temporal structure mikor ... akkor ... "when then..." was correct from 2;9 (Kenyeres 1928:65) and we have noted the early appearance of the temporal akkor and aztán (= azután), but Éva had difficulties with other temporal conjunctions. Mielőtt "before" was used at 2;4,7, but at 3;0,19 it was incorrectly attached to the second clause. Mióta "since" was used at 4;5,14, but only as an imitation of an earlier sentence; its next appearance (Kenyeres 1928:68) is at 8;1,29. Even by 8;6 Éva had not yet used miután "before" (Kenyeres 1928:69); miközben "while" first occurred at 8;3,27. Mihelyt "just as soon as" appeared at 4;9, but was only used correctly after 5;10. When mire "by the time that" entered at 5;1,3, it was used in the sense of mihelyt, but by 5;1,21 it was used correctly. Similarly, amint "as soon as," which occurred at 5;2,6 was continually confused with mihelyt. The word mialatt "while" was used from 5;8,3, but until 8;6 it was regularly used where the semantically more exact míg "as long as" would have been appropriate. Although

Éva used the structure addig ... míg ... "as long as" at 2;4,9, her usage was incorrect even at 4;11,2 (Kenyeres, 1928:64).. When the word addig "until" was used by itself, beginning with 2;4,18, it was also often incorrect.

The comparative mint "like" was used in elliptical constructions from 2;1,10 (Kenyeres 1928:64): úszok, így mint a kígyó "I am swimming just like a snake." At 2;4,15 the structure így ... ahogy ... "thus ... like ..." was correct. Mintha "as if" was correctly used with the conditional from 3;5. From 2;2,30 mint was also used to introduce complete clauses (Kenyeres 1926:65).

Other conjunctions include csak "just, only" from 2;4 and csakhog "just with the exception that" from 3;1. Éva was able to use hát correctly from 2;2,20 in the exclamatory sense "well what then?" However, its use as a causal conjunction "well, then, to be sure" was still incorrect at 6;8,14 and perhaps later. Azonban "however" appeared at 6;0,4 as a result of imitations, but by 6;5,15 its use was correct and productive. Sőt "and indeed" was correct from 6;5,10; the structure mind ... mind ... "both ... and ..." was correct at 6;6,15. Ellenben "on the contrary" was used once incorrectly at 6;3,17. The structure akár ... akár ... "either ... or ..." was used once incorrectly at 6;3,27. Mivel "inasmuch as" was correct from 6;8,29; and ugyan "anyway" was used correctly at 6;4,27.

From 1;10,22 to 2;0 Kenyeres (1926:62, 1928:72) reports juxtaposed clauses which required mert "because"

(see above regarding Jolán Endrei). which was nonetheless absent. Only at 2;2,8 was mert used to join clauses. However, from 2;1,21 to 2;3,9 mert and azért mert "therefore, because" were used unintelligibly to reply to questions containing miért? "why?" After 2;3,9 Éva's answers to the question became meaningful; her use of mert to join clauses had already been correct earlier. When we look at Éva's use of mért "why?" in questions (Kenyeres 1928:77-82) we find that, entering around 1;10, it is the fourth question form, following mi "what?," hol "where?," and hova "whither?" Although Kenyeres holds that the child's use of mért? is qualitatively different from the adult's, his four pages of child questions serve only to illustrate that the child's knowledge of causes and effects is far more limited than that of the adult.

Baranyai, in her 1958 report, found that the number of subordinate clauses used by children increases in the age between six and fourteen. Lovász, studying three three-year-olds and three five-year-olds, found an increase in coordinate structures, but no increase in subordination. Lovász questioned whether the increase found by Baranyai in older children was not due to failure to control variables among the groups studied.

6.10 Evaluation and Discussion

Certainly, the information now available on the development of Hungarian syntax has scarcely scratched the surface of a potentially fascinating topic. The errors of section 5.34 provide evidence of the productivity of compound-formation rules, but section 6.2 shows that children make errors in formulating the exact shape of some of these rules. For example, an agent may be followed by its verb, only if that verb is nominalized in the compound; but in 6.2a the child fails to do this. Or a compound may be formed of a patient as the first element and its action in the form of a participle as the second element; but in section 6.2d the child inverts this order.

The data on mistaken word-order indicate that most such errors involve words and particles which are not clearly bound to any one element of the sentence in a semantic relation. Thus, the child makes errors in attaching the question particle, the negative, and the conditional particle volna precisely because he does not sense clearly that these elements modify or relate to any particular element of the sentence; rather, they derive from the modality component and are attached to the verb because it is the element which most characterizes the sentence as a whole. This interpretation of the order errors stems from the view of syntactic learning developed in Part I; learning of syntactic rules was seen as the acquisition of

of order relations between two lexical items which stand in some direct semantic relation. Difficulties with the learning of the order of the verbal prefix are influenced by the fact that there are so many possible positions for the prefix, each of which is determined by functional, rather than inherent, features.

The data on inappropriate confluations provide additional evidence of the operation of conflation not just in the lexicon, but also its effects upon syntax. In the reports of early sentences from eight different authors, we find many representative examples of early Hungarian child speech. It immediately appears from these examples that the first sentences of the Hungarian child are much like the first sentences of the Samoan child (Kernan, 1967), the Luo child (Blount, 1967), the Finnish child (Bowerman, 1971), or the child learning any of the Indo-European languages. This is to say that the first words are mostly uninflected (section 5.411), even when some inflection would be required by the adult language. The elements of these early sentences are related in ways which have been observed by Slobin (1970), Schlesinger (1970), and Fillmore (1968): agent + action, experiencer + experience, agent + patient, modifier + modified, location + located, action + patient, action + instrument, negation + negated, action + locative direction, patient + function, and deixis + thing-pointed-at. Additionally, we find that the vocative combines with elements in a less direct way, as in the examples from Iaci Balassa at 1;3,10. We may interpret

these sentences best by taking the non-vocative element as a sentence in itself, i.e. "milk"= "I want milk" and "angry"= "I am angry." The vocative then relates to this entire proposition. We are not suggesting that the child is actually expressing the expanded proposition, but that he would like the listener to understand something like it. At 1;5 Kari Simonyi used the structure patient + beneficiary, a rather rare form. Also rare is the patient + existential structure in the sentence tűsz van "fire is" from Donner's subject. Finally, the sentence néni mama "aunt Mama" from Viktor's subject can be viewed as comitative + locative goal or as agent + locative goal, where the goal is the patient's goal. In either case, it is a rare structure for an early utterance.

In general we find extremely few reports of errors in the ordering of relations which may be based upon features inherent to lexical items. Non-inherent orderings may be either semantic or functional. Semantic orderings include the ordering of the subject and its verb or the object and the verb. As we will see in Part III, such relations are of secondary importance in Hungarian, with functional relations governed by topic-comment and focusing determining the order of the major constituents. However, a number of investigators have observed certain consistencies in ordering of the major constituents irregardless of functional relations. Thus, Kenyeres reports the Agent consistently appearing before the verb, while Meggyes and Balassa report significantly more fronting of the verb.

It is our opinion that the whole question requires more attention to the role of functional features. In this sense, much of the available data can only be used to generate questions.

The extrapositioning of the dative, locative, and negative found by Meggyes, as well as the extrapositioning of the particle -e found by Balassa, are further examples of the tendency for new elements to be first acquired at the periphery of the utterance.

7.0 Acquisition of semantic structure

Our discussion of semantic learning focuses mainly upon the detection of semantic error, since this is the nature of the data available in the literature. According to the model put forth in Part I, the semological representations of lexical items include both inherent semantics and, in the case of affixes, a context-specification. Errors in the coding of the latter are discussed in 7.1, while errors in the coding of the former are discussed in 7.2. The further division of the topics in this chapter is discussed under each of those headings. In section 7.3 we turn to a brief consideration of non-error data, and in section 7.4 we evaluate our knowledge of semantic learning in Hungarian.

7.1 Errors due to deficient context-specifications

In Part I section 2.13 we observed that roots are generally specified in the lexicon only in terms of their inherent semantics, whereas affixes require not only the presence of the categories they inherently express, but also the presence of the correct features on the roots to which they attach, or the other affixes with which they conjoin. In the first part of this section we deal with errors due to mistaken specifications of the context to which the suffixes immediately relate. In the second part of this section we deal with errors due to mistakes in the specification of contexts at a remove.

7.1.1 Specification of items to immediate contexts

a) In section 5.33 we observed a number of neologisms based upon use of the adjectivalizing suffix -ós, -ős, -s. This suffix may only be attached to a verb. Attachment to an adverb, as in this error, is a violation of context-specification.

Adult Form	Child Form	Child	Age	Source
belső "inner"	bents, benns "inny"	Pali	3;2,24	Meixner

b) The denominative adjectivalizer -tlan, -tlen etc. expresses absence of an object and never occurs with verbs. The error below might be compared with English "wornless" for "unworn."

nem kopott "not worn"	koptalan "wornless"	Piroska -	Trencsényi 264
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c) The child must learn that the comparative -abb, -ebb.

-bb applies only in the context of an adjective with the feature /+comparable/.

Adult Form	Child Form	Child	Age	Source
több "more"	elegebb "enough+er"	Kari	4;-	Simonyi 321
nagyon csöpp "very wee"	csöppebb "wee+er"	Kari	4;6	Simonyi 321
messzebb "farther"	túlabb "beyond+er"	Miklós	8;4	Barcsai 31
nagyon csöpp "very wee"	csöppebb "wee+er"	Jolán	3;2	Endrei 465

The findings of Donaldson and Wales (in Hayes, 1970) suggest that the child's understanding of certain relational concepts may differ from the adult's. Thus, it may be that these errors are errors in the inherent semantics of the roots. For example, the child may think that elég "enough" codes implicit comparison to some standard of acceptable quantity, but that such acceptability may vary in degree.

d) Additionally, the child must learn that the comparatives cannot attach to a negated root. Just as in English we say the "least hot" rather than the "most not hot," Hungarians must use legkevésbé "least" rather than leg nem- N -bb for the negative superlative. This learning probably involves both insulation of legkevésbé (section 5.44) and refinement of the context of the superlative.

Adult Form	Child Form	Child	Age	Source
a legkevésbé forró "the least hot"	legnemforróbb "the most not hot"	Jolán	3;2	Endrei 465

az az ostor amelyik nem törött "the whip which isn't broken"	leg-nem-törött ötötöb ostor "most not broken whip"	Lili	-	Ponori 1905:436
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(Additionally, the superlative is an error here, since only two items are being compared.)

e) Limitation of the context-specification in regards to the feature /+delimitable/ seems to confront the child with a problem similar to that mentioned just above. Suffixes such as -nként "so many by so many" and -ig "until, up to ___" can only apply to nouns marked as /+delimitable/.

sokan "in large numbers"	sokenként "many by many"	Piroska -	Trencsény 264
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f) The suffix -i, when used with locations, expresses "belonging to ___." In this usage, the noun must be at a stationary place, but here the child applies the suffix to a root expressing the feature /-approximation/.

itteni "from here"	innen "from from here"	Kari	4;-	Simonyi 321
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g) The diminutive suffix -ka, -ke is specified as meaning "little N." However, children may find its meaning so general as to apply to other parts of speech besides nouns. It is quite difficult to translate a diminutive verb into the adult language. It is almost as if what is involved here is essentially verbal play.

Adult Form	Child Form	Child	Age	Source
nem "no"	némkē "no+dim."	Márti	1;8,17	Meggyes 46
hozom "bring+1PS"	hosszomka	Márti	1;8,17	"
itt van "here is"	itvanka	Márti	1;10,20	"
nem kell "not necessary"	nemkellke	Márti	2;1,9	"
ejnye "goodness!"	ejneke	Márti	1;10,17	"
semmi "nothing"	semmike	Márti	1;9,25	"
tiszta "clean"	tisztaka	Márti	1;10,23	"
bebúj(ik) "in+hides"	bebújka (in <u>bebújkázott</u>)	Józsi	3;1,27	Meixner
agyonlövöm "apart+shoot+1PS"	agyonlövőcskézem	"	3;4,8	Meixner

This last example is not an error, but is included to demonstrate how the child makes use of a particular productive pattern of word formation. In this pattern, a verb referring to a play activity, such as "shooting," is created by attaching first the diminutive and then the denominative verbalizer -z(ik). For example, fog "catch" becomes fogocska "catch+diminutive" and then fogocskázik "to play tag." This is a legitimate formative device only when the activity is some children's game.

h) For no obvious semantic reason, the past conditional of "to be" uses as its basis not the copular, but the verb "to become." It is not clear whether this contextual restriction is marked on the verb "to become," the conditional sign volna, or both.

Adult Form	Child Form	Child	Age	Source
lett volna "became+cond." (=would have been)	volt volna "was+cond."	Éva	6;5,12	Kenyeres 1928:37

i) The child must learn that, for each of the Hungarian cases and postpositions, there exists a special root to which the personal suffixes attach to produce the forms of the declension of personal pronouns.*

* Accusative and possessive personal pronouns tend rather to be constructed upon the basic nominal+case pattern, but their formation is highly irregular. As we noted in section 5.42i, it is likely that pronouns in these paradigms must be learned as items and insulated against analysis. For an alternative approach to the Hungarian pronoun system, the reader may wish to consult Rice (1967:91 et passim). We believe that Rice's account of pronoun formation, while ingenious, fails to account for the fact that the special roots appear sometimes in their front-vowel shape and sometimes in their back-vowel shape (i.e. nál- and hozz-, but től- and benn-). An additional problem for Rice's attempt to relate the special roots to the case morphemes is the presence of additional alterations found in the special roots (i.e. -ra ~ rajt- and -ből ~ belől-). On the other hand, Rice's explanation seems tenable in the case of the postpositional system which illustrates no such alternations of the base in forming pronouns. Furthermore, no observation of incorrect ordering of postposition + personal suffix has yet been reported, although this may be a function of frequency.

The order of these elements is Special Root + Personal Suffix. Such forms constitute apparent exceptions to the basic flectional rule of the language which holds that case follows the nominal upon which it operates. Although we need more data on the question of learning of these forms, it may be that the apparent exception to the order nominal + case is avoided by marking these special roots with the feature /+nominalized/. This feature could be assigned through a semological rule. In order to bar formation of inflected personal pronouns through the attachment of the standard case suffix to some pseudo-root of the pronoun (section 5.43i) or the nominative of the pronoun, the availability of the special roots must be increased. This is a complex learning question, and we are still not sure what is involved, but we offer these errors are examples:

Adult Form	Child Form	Child	Age	Source
<u>Nominative pronouns as bases:</u>				
velünk "with+lPPposs."	minkkel "us+with"	-	-	Kallos 409
nekünk "to+lPP poss." (=to us)	minknek "us+to"	Kari	2;-	Simonyi 321
velem "with+lPS poss." (with me)	émmel (=énnel) "I+with"	Éva	2;0	Kenyeres 1928:52
mi felénk "we towards+ lPP poss." (=towards us)	mink felé "we towards"	Margit	4;10	Endrei 526

Adult Form	Child Form	Child	Age	Source
nekünk "to +1PP poss."	minknek "us+dat."	-	-	Székely 63
neki "to +3PS poss." (the 3PS poss. form is idiosyncratic to this root)	őnek "he +to"	Éva	2;10	Kenyeres 1926:54

Accusative pseudo-roots as bases:

rám "to+ 1PS poss."	engemre "me+to"	Ferike	2;5	Endrei 524
belém "into+1PS poss."	engembe "me+into"	-	-	Simonyi 321
hozzám "towards+1PS"	engemhez "me+towards"	Ferike	2;5	Endrei 524

Possessive pseudo-roots as bases:

nekem "to+1PS poss." (=to me)	enyimnek "mine+to"	Kari	1;-	Simonyi 321
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Deictics as the base:

neki "to+3PS poss." (=to him)	annak "that-one+to"	Éva	2;9	Kenyeres 1928:52
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(In: annak is "to that one also" which was given as an answer to the question apukádnak is? "To your daddy also?")

Inflected pseudo-forms (section 5.43i) as bases:

veled "with+2PS poss." (=with you)	engeddel "me+2PS+with"	-	-	Csapodi 465
veletek "with+2PP poss."	tégetekkel "you+2PP poss.+with"	-	-	Csapodi 465

If the special roots are in fact coded as nominals, attachment to them of a diminutive suffix is understandable:

nekem "to me"	nekecském "to+dim+me"	Mihály	3;-	Simonyi 319
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j) There also exists a set of restrictions upon the possible co-occurrences of suffixes upon a single root.

Foot:

Here we note just a few violations. In general, plurality must be deleted with formative suffixes. This restriction could be marked on the context of the plural suffix.

In English, one may "stone" a witch even though several stones are thrown. This error is similar to saying in English, "I stones the witch."

Adult Form	Child Form	Child	Age	Source
kövez "stone+verbal formative"	kövekel "stone+pl.+ verbal formative"	"heard by Döbrentei in 1828"	-	Ponori 1871:9

In the context of possession, the plural -k is replaced by the plural -i:

kiéi "who+sign of poss.+pl."	kiék "who+sign of poss. + pl."	Laci	3;6	Balassa 1893:72, 142
többeim "other+pl+1PS poss."	többiekem "other+pl.+ 1PS poss."	Zoli	2;0,2	MacWhinney

k) The suffix -ik nominalizes ordinal numbers. Here the child attempts to attach it to a descriptive adjective:

hányadika (="which numbered") "how-many+ nominalizers+ 3PS poss."	milyenike (="which kind") "what-like+ nominalizer+ 3PS poss."	-	-	Csapodi 466
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l) The postpositions között "between, among" and közé "from between, among" can only attach to a plural noun root.

a picik között "between the little ones"	picik között "between the little one"	Józsi	3;1,10	Meixner
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Adult Form	Child Form	Child	Age	Source
se jók, se rosszak közé "among neither the good, nor the bad"	a semmi közé "among the nothing"	Éva	3;0,19	Kenyeres 1928:49
a többi között van a J. bácsié "among the other is Uncle J.'s"	a J. bácsi között "among the Uncle J.'s"	Éva	3;0,19	Kenyeres 1928:49

m) The root al- "bottom" forms a more suitable base for certain forms than the common verbal prefix le- "down." Specifically, the suffixes -ul which adverbializes positions and -só which adjectives positions require that the position be located with respect to a physical body. The root al- fulfills this condition, while the prefix le- is related to the position of the speaker and not a third person or body. Moreover, al- relates to a position, while le- relates to direction or motion.

alul "under"	lellű (=leül)	Laci "under"	~2;8	Balassa 1893:72
alul "under"	levű (=leül)	Piroska	-	Trencsény 264
alulról "out from under"	leürű (=leülről)	Kari	5;6	Simonyi 322
alsó "the lower"	leső "the lower"	Kari	5;-	Simonyi

n) The indefinite article is intonationally integrated into the following noun, so that it acts almost like a prefix. Its context is specified to include only count nouns:

egy homokszemet "a sand-grain+acc."	egy homokot "a sand+acc."	Józsi	3;4,8	Meixner
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Adult Form Child Form Child Age Source

o) The Locative suffix -ig "up to the point of N" requires a noun in its context-specification. Here its attachment to the verbal prefix le- "down" may be stimulated by the form lefelé "downwards" which shows attachment of a locative suffix to the prefix:

lefelé	leig	Kari	4;-	Simonyi
"downwards"	"down+up-to"			321

p) The possessive suffixes must also attach to either nouns or nominalized adjectives:

belseje	belűje	Kari	4;-	Simonyi 321
"inside(adj.)+ poss." (=its insides)	"inside(adv.) +poss."			

q) In paragraph (i) just above, we saw how the possessives could attach to nominalized special case roots to form personal pronouns. However, the context of this formation requires a nominalized form. Here the child uses an adjective base:

elėje	elsője	Józsa	3;1,20	Meixner
"in-front-of+ 3PS poss."	"first+3PS poss."			

r) In (d) above, we saw errors of attachment of the comparative to non-comparable adjectives. Here the comparative is attached to a noun:

több	csomóbb	Pali	3;5,20	Meixner
"more"	"bunch+er"			

s) Both of the verbal suffixes -ít and -odik may attach to an adjective, but the child uses an adverb base:

Adult Form	Child Form	Child	Age	Source
gyorsít "quickens"	hamarít "soonens"	-	-	Csapodi 466
hajnalodik* "dawns"	koránodik "earlies"	Tibor	6;9	Barcsai 31

*attachment of the suffix to a noun, as in this form, is rare but acceptable.

t) Similarly, the suffix -an, -en, -n requires the context of an adjective, not an adverb:

hamarosan "quickly"	hamaran "soonly"	Kari	4;-	Simonyi 323
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u) The negative imperative ne "lest," which always precedes the negated imperative verb, actually conveys the same inherent semantics as the basic negative "nem." The only difference here is in the context-specification of the former which requires an imperative verb. Some over-generalizations of the basic negative are:

ne mutogasd!	nem mutogasd	Emőke	3;7,15	Meixner
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"don't show it!" "not show it!"

v) The conditional particle volna is specified only for the context of the past tense, and its use with the present conditional violates this specification:

ülnél "sit+cond.+2PS"	ülnél volna "sit+cond.+2PS conditional particle"	Kari	5;-	Simonyi 322
beeresztne "in+cross+ cond."	beeresztne volna (as above)	Kari	4;-	Simonyi 322
köllene "be-necessary +cond."	köllene volna	Kari	3;-	Simonyi 322
kapna "get+cond."	kapna volna	Nanus	3;-	Simonyi 322
szeretnék	szeretnék volna	Éva	8;1,29	Kenyeres 1928:37

Adult Form	Child Form	Child	Age	Source
megrugnám "perf.+kick +cond.+IPS"	megrugnám	Éva	5;9,27	Kenyeres 1928:37
kellene* "be-necessary+cond."	kellene volna	Margit	5;-	Endrei 526

*Actually, the use of the present tense was an error here. However, given the decision to use the present, the presence of volna is a mistake.

w) In the introduction to this section we noted that context-specifications are of primary importance for affixes. It is interesting to note that certain lexical items which might be formally considered as roots (as in points h, t, u, and v above) are nonetheless specified to occurrence in quite specific contexts. These same lexical items (conditional, negative imperative marker, inchoative etc.) may appear in other languages as affixes. Here we note a use of the inchoative kezd "begins" with a stative verb which has no delimitable beginning or end:

én előbb voltam	előbb kezdtem	-	-	Csapodi 466
ezen a helyen	itt lenni			
"I was in this place first"	"I began to be here first"			

x) The adjective kicsi "small" takes on the form kis, when used in modifier position before the noun. Similarly, kettő "two" becomes két in this context. Up to the age of 2;2,0 Zoli continuously used kicsi in all contexts. At the time of 2;2,0 Zoli made this error in only about 50% of the relevant contexts. Certainly other observers have noted failure to use kis, although reports on this subject are generally absent. Probably, the phenomenon is so common as to escape mention.

7.12 Specifications of items to non-immediate contexts
 (Agreement)

The model proposed in Part I provides us two alternative means of treating the process of agreement or concordance. In the terms of that model, agreement may be produced either by shaping the context-specifications of certain grammatical lexical items in such a way that the occurrence of features on roots related semantically to the roots to which the grammatical items relate may determine the shape of the grammatical items, or by specifying the action of a semological rule which serves to copy features present in some area of semological structure onto a related area of semological structure. In a sense these two forms of explanation may seem terminological variants. However, it may be that semological rules have an effect upon semantic structure and can modify cognition indirectly. If any such effect is noted for an agreement relation, it would seem that the description through semological rule more accurately reflects the nature of the agreement. Here, we will treat agreements as if they only involved learning of the specifications of non-immediate contexts.

a) If a noun is modified by an adjective which inherently implies plurality, plural morphemes may not be attached to the noun: sok fa is literally translated as "many tree." Errors here involve failure to omit the plural when the adjective codes for plurality:

Adult Form	Child Form	Child	Age	Source
sok kecske "many goat" (=many goats)	sok kecskék	Éva	2;10,3	Kenyeres 1928:35
sok gidát "many fawn+acc."	sok gidákat "many fawn+pl.+acc."	Éva	3;4,21	"
minden könyved "every book+2PS poss."	minden könyveid "every book+ pl.+2PS poss."	Éva	4;2,25	"
ennyi lyuk "so-many hole"	ennyi lyukak "so-many hole+pl."	Éva	6;0,6	"
sok alagút "many tunnel"	sok alagutak "many tunnel+p."	Éva	6;9	"
malac mind "pig all"	malacok mind "pig+pl. all"	Éva	1;8,21	Kenyeres 1926:30
sok fa "many tree"	sok fák "many tree+pl."	Jolán	2;5	Endrei 464
sok mindenféle "many all-type"	sok mindenfélék "many all+type+pl."	Margit	2;6	Endrei 525
hány bugyogó "how-many panty"	hány bugyogók	Margit	2;6	Endrei 525
a többi* gyereket "the other child+acc."	a többi gyerekeket "the other child+pl.+acc."	Pali	3;0,12	Meixner
*többi means "the several others, the others."				
sok bácsi "many uncle"	sok bácsik "many uncle+pl."	Pali	3;0,12	Meixner
sok lovacska "many horsie"	sok lovacskák "many horsie+pl."	Pali	3;3,15	Meixner
sok krumplit "many potato+acc."	sok krumplikat "many potato+pl.+acc."	Pali	3;5,20	Meixner
sok pálca (=pálcika) "many rodlet"	sok pálcák "many rodlet+pl."	Józsi	2;9,4	Meixner

b) In addition to the first-remove agreement between the suffix on the noun and the quantifying adjective, there is the second-remove agreement in number between the adjective and the verb which stands in semantic relation with the modified noun, if that noun is the subject of the verb. Thus, when there is an inherently plural quantifier modifying the subject, the verb should be singular.

Adult Form	Child Form	Child	Age	Source
sok kecske van ott "many goat are there"	sok kecskék van ott "many goat+pl. are there"	Éva	2;10,3	Kenyeres 1928:35
mért van ennyi lyuk "why is so-many hole?"	mért vannak ennyi lyuk "why are so-many hole?"	Éva	6;0,6	Kenyeres 1928:35
ott sok alagút volt "there many tunnel was"	ott sok alagutak voltak "there many tunnels were"	Éva	6;9	Kenyeres 1928:35

The same agreement with the quantifier at second-remove occurs when the noun modified is deleted in the surface structure and the quantifier nominalized.

mind elesett "each-one fell"	mind elesettek "each-one falls"	Laci	2;0	Balassa 1893:70
mind alszik "each-one sleeps"	mind alszanak "each-one sleep"	Márti	1;11,17	Meggyes 48

Furthermore, there is evidence that this agreement between verb and quantifier is not just an agreement of verb with noun which is dependent upon prior formation of

of the agreement between noun and quantifier. If the relation were such a two-stage arrangement, rather than a direct structure (although including the noun-quantifier relation, as a part of the structure of the context), we should not have errors in the number of the noun accompanied by correct agreement between quantifier and verb. But we do find such agreements:

sok fa van	sok fák van	Jolán	2;5	Endrei 464
"many tree is"	"many trees is"			
sok hal van	sok halak van	Jolán	2;6	Endrei 464
"many fish is"	"many fishes is"			

c) The child must learn to bring all adjectives in the noun-phrase into agreement with the quantifier. This means that the plural suffix must be inactivated throughout the noun-phrase.

ez a sok pálca	ezek a sok	Józsi	2;9,4	Meixner
"this the many stick"	pálcák "this+pl. the many stick+pl."			

Additionally, the deictic adjective must eventually be brought into agreement with each and every inflection on the noun. Here there is agreement for the accusative, but not for the plural even though no quantifier is present:

azokat a	azt a	Zoli	2;2,3	MacWhinney
golyókat	golyókat			
"that+pl. the ball+pl.+acc."	"that+acc. the ball+pl.+acc."			

d) The child must learn to specify the verbal suffixes to agree with plurality on the subject. In these errors a plural subject is given a singular verb:

Adult Form	Child Form	Child	Age	Source
a lányok hozták "the girl+pl. bring+3PP past"	lányok hozott Éva "girl+pl. bring+3PS past"	Éva	2;5	Kenyeres 1928:34
hol vannak a halacsák? "where are the fish+dim.+pl."	hol van a halacsák? "where is the fish+dim.+pl."	Éva	2;6	Kenyeres 1928:35
mennek a tehenek "are-going the cattle"	megy a tehenek "goes the cattle"	Margit	2;6	Endrei 464
hol vannak a könyvek "where are the books?"	hol van a könyvek "where is the books?"	Márti	1;9,22	Meggyes57

*Meggyes attributes this error to the unitary nature of
hol van "Where is?"

szedünk me "gather+1PP we"	szedek mi "gather+1PS we"	Éva	2;6	Kenyeres 1928:34
ti hova mentek? "you+pl. whither. go+2PP"	tiktek hova mész "you+pl. whither go+2PS"	Jolán	2;6	Endrei 464

Alternatively, the subject may be singular and the verb
plural:

én kinyitom "I out+open+ 1PS"	én kinyissuk "I out+open+ 1PP"	Zoli	2;2,3	MacWhinney
én elbújok "I away+hide+ 1PS"	én elbújunk "I away+hide+ 1PP"	Zoli	2;2,5	MacWhinney
én is megyek "I also go+1PS"	én is megyünk "I also go+1PP"	Jolán	1;9	Endrei 462
a maci alszik "the bear sleeps"	a maci alszanak* "the bear sleep+3PP"	Márti	1;11,7	Meggyes 57

* Meggyes attributes this error to the use of the same verb
correctly in plural form in the immediately preceding
child sentence.

Adult Form	Child Form	Child	Age	Source
szaladnak a gyerekek "run+3PP the children"	szaladnak a gyerek* "run+3PP the child"	Márti	1;10,17	Meggyes 57

* Meggyes attributes this error to Márty's sense that gyerek "child" may already be a plural, since it ends in -ek. (Compare section 5.22.)

A number of other agreement errors from Zoli involve the use of his name as subject together with a verb in the 1PP. A child's use of his name for self-reference is discussed in section 7.23b. The additional error here is a failure to mark agreement for number and person on the verb. It is possible that the errors of 7.24ld are also errors of agreement. However, since the subjects-of-the-sentences are not expressed on the surface it is difficult to be sure that the error is not in subject selection.

Zoli mosakodik "Zoli wash+ reflex." (or <u>én mosakodom</u> "I wash myself")	Zoli mosakodunk "Zoli wash+reflex. +1PP"	Zoli	1;8,6	MacWhinney
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Zolika épít "Zoli builds"	építünk Zolika "build+1PP Zolika"	Zoli	1;8	MacWhinney
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e) Both predicate adjectives and predicate nominals must agree in number with the subject, whether or not that subject is expressed in the surface.

zöld (a lámpa) "green (is the lamp)"	zöldek* "green+pl."	Zoli	1;8,6	MacWhinney
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* The use of the plural was influenced by Zoli's use of zöldek as a response to a previous plural elicitation question.

Adult Form	Child Form	Child	Age	Source
fáradtak vagyunk "tired+pl. are+ lpp"	fáradt vagyunk "tired are+lpp"	Éva	2;6	Kenyeres 1928:34
ezek a Barna gombjai "this+pl: the Barna button+ 3PS poss.+pl."	ez a Barna gombjai "this the Barna button+3PS poss. +pl."	Zoli	1;8,6	MacWhinney
ezek csunya galambok "this+pl. ugly dove+pl."	ez csunya galambok "this ugly dove+pl."	Zoli	2;2,0	MacWhinney
azok galok "that+pl. gal+pl."	az galok "that gal*+pl."	Zoli	2;2,5	MacWhinney
* gal= nonsense word				

f) There is extensive agreement in Hungarian for negation. According to one of these agreement patterns, a negated indefinite subject pronoun requires the verb to show agreement by taking the negative se, rather than nem. As we saw in section 5.44, se combines with nincs and nem to form the terms sincs and sem. Here the child fails to show agreement with a negative subject.

senki sincs "no-one is- neither"	senki nincs "no-one is-not"	Józsi	2;11,24	Meixner
senki sem "no-one neither"	senki nem "no-one not"	Józsi	3;0,23	Meixner

g) One of the most interesting characteristics of Hungarian is the fact that verbs agree with the feature /± definite/ on the object. There are two conjugations differentiated on this basis. Balassa (1893:134) claimed that verbs are often first acquired in the forms of that

conjugation in which they are typically used. If verbs are used in a stereotyped fashion, this may reduce errors in conjugation form. This may explain the fact that foreigners find it so difficult to mark definiteness on the verb, whereas child errors are not overly numerous. However, the fact that Meixner found so many errors through her more representative sampling procedure suggests that previous authors have simply failed to report errors in conjugation use, perhaps finding them so frequent as to be uninteresting. These errors are of two types: substitution of the indefinite for the definite and substitution of the definite for the indefinite. Here we list the former type of error:

Adult Form	Child Form	Child	Age	Source
szeretném ezt a képet nézni	szeretnék ezt a képet nézni	Éva	2;6	Kenyeres 1928:33
"like+cond.+1PS (as in the Adult def. this+acc. the picture+acc. see+infin.) Form, but with an indefinite verb.)"				
nézd, hogy mit csinál "look+2PS-def. that what+acc. does"	nézz	Józsi	2;9,5	Meixner
átlépjük "across+step+1PP-defin."	átlépünk	Józsi	2;9,15	Meixner
firkálta össze "scribble+past +3PS-defin. together"	firkált össze	Józsi	2;11,24	Meixner

Adult Form	Child Form	Child	Age	Source
a lovat lövi le "the horse+acc. shoots+3PS-def. down"	a lovat lő le	Józsi	2;11,24	Meixner
nyomd meg ezt "press+2PS-def- imper. perf. this+acc."	nyomj meg ezt	Józsi	3;1,10	Meixner
becsavarta az óránkat "in+screw+ 3PS-def.-past the watch+LPP poss.+acc."	becsavarott az óránkat	Józsi	3;4,28	Meixner
add meg azt a kanalat "give+2PS-def- imp. perf. that+acc. the spoon+acc."	adjál	Józsi	3;4,28	Meixner
akarja "wants+3PS-def."	akar	Emőke	3;7,2	Meixner
elteszem "away+put+LPS- def."	elteszek	Pali	2;11,10	Meixner
megcsináltuk "perf.+do+past +LPP -definite"	megcsináltunk	Pali	3;0,8	Meixner
főlrugják a falat "up+kick+3PP- def. the wall+acc."	főlrugnak a	Józsi	2;9,4	Meixner
rajzoljuk a cicát "draw+LPP-defin. the cat+acc."	rajzolunk	Márti	1;10,27	Meggyes 58
kérjük a táskát "ask+LPP-def. the satchel+acc."	kérünk	Márti	1;10,11	Meggyes 59
dobálsz "throw+2PS-def."	dobálsz*	Márti	1;10,11	Meggyes 59

* Meggyes attributes this error to the presence of the same verb in this indefinite form in the preceding utterance.

Adult Form	Child Form	Child	Age	Source
begombolom (a gombot) "in+button+LPS- def. (the button+acc.)"	begombolok	Zoli	2;0,2	MacWhinney
nem tudom a halacskámat megfogni "not can+LPS-def. the fish+dim.+LPS poss. perf.+grab+ infin." (=I can't grab my fishie)	nem tudok halacskámat	Zoli	2;0,3	MacWhinney
megnyomja a lábamat "perf.+press+ 3PS-def. the foot+LPS poss.+acc."	megnyom a lábamat	Zoli	2;2,0	MacWhinney
megszurta a fát "perf.+pierce+ past+3PS-def. the tree+acc."	megszúrta a fát	Zoli	2;2,5	MacWhinney
a kalácsot kérem "the bread+acc. want+LPS-def."	a kalácsot kérek	Zoli	2;2,5	MacWhinney
hadd nézzem ezt "let+2PS-def- imp. see+LPS- def-imp this+acc." (=Let me see this.)	hadd nézzek ezt	Zoli	2;2,3	MacWhinney
kinyitom (az ajtót) "out+open+LPS -def (the door +acc.)"	kinyitok	Zoli	1;8,6	MacWhinney
nem kérem (az ágyikót) "not want+LPS- def. (the bed+ dim.+acc.)"	nem kérek	Zoli	1.8,6	MacWhinney
nem kérem (a halacskát) "not want+LPS- def. (the fish+ dim.+acc.)"	nem kérek	Zoli	1;8,6	MacWhinney

Adult Form	Child Form	Child	Age	Source
kérem (a kéményt) "want+1PS-def. (the chimney+acc.)"	kérek	Zoli	1;8,6	MacWhinney
a kicsit dobja "the little-one +acc. throw+3PS- def."	kicsi dob	Zoli	1;8,6	MacWhinney
kérem (a halacsksát) "want+1PS-def. (the fish+dim+ acc.)"	kérsz* "want+2PS-ind."	Zoli	1;8,6	MacWhinney
hozd "bring+2PS- def.-imp."	hozok* "bring+1PS- ind.-indicative"	Zoli	1;8,6	MacWhinney
* Both of these errors involve confusions of person, as well as conjugation. The second error occurred three times and also involves confusion of mood.				
adom a puskát "give+1PS-def. the rifle+acc."	adok	Pali	2;11,10	Meixner
építjük a házat "build+1PP- def. the house+ acc."	építünk a házat "build+1PP-ind. the house+acc."	Zoli	1;8,6	MacWhinney

A roughly equivalent number of errors involve the reverse over-generalization, namely the substitution of the definite for the indefinite.

ilyeneket adjak apukának "such+pl+acc. give+1PS-ind.- imp. daddy+dat."	ilyeneket adjam apukának	Éva	2;1	Kenyeres 1928:33
szeretsz-e engemet* "like+2PS-ind. -question me"	szereted-e engemet	-	-	Ponori 1871:9

*The pronouns of the first and second persons constitute indefinite objects.

Adult Form	Child Form	Child	Age	Source
szeretlek "like+1PS- 2PS*"	szeretem téged "like+1PS-def. you"	Jolán	2;0	Endrei 463
* The indefinite second person object is integrated into this suffix, so that both subject and object are expressed in one suffix.				
nyaklancot bevarr (-fűz) "necklace+acc. in+sews-ind."	nyaklancot bevarrja	Józsi	2;9,10	Meixner
koccintsunk "clink+1PP-ind."	koccintsuk	Józsi	3;1,10	Meixner
csinálok házikót "make+1PS-ind. house+acc."	csináalom házikót	Pali	2;11,9	Meixner
mindent elad "everything+acc." away+sells-ind."	mindent eladja	Pali	3;3,19	Meixner
hozott neki ceruzát "bring+past-ind. to-her pencil+acc."	hozta neki ceruzát*	Márti	1;10,25	Meggyes 59
* Meggyes attributes this error to the fact that <u>hozta neki</u> "he brought it to him" functions as an amalgam.				
adj (sütit) "give+2PS-ind. -imp. biscuit+ acc."	adod "give+2PS-def. indicative"	Zoli	1;8,6	MacWhinney
adj már sütit "give+2PS-ind.- imp. already biscuit+acc."	add már sütit	Zoli	1;8,6	MacWhinney
ott házat építjük "there house+ acc. build+imp. +1PP-ind."	ott építjük házat	Zoli	1;8,6	MacWhinney (three times)

Adult Form	Child Form	Child	Age	Source
szedtünk kavicsot "gather+past+ 1PP-ind. gravel+acc."	szedtük kavicsot	Zoli	2;0,0	MacWhinney
keress engemet "seek+2PS-ind. -imp. me"	keresd engemet	Zoli	2;0,2	MacWhinney
husikát kérek "meat+dim+acc. want+1PS-ind."	kérem husikát	Zoli	2;0,2 (twice)	MacWhinney
husikát kérek (as above)	kérem egy (husikát) "want+1PS-def. a (meaty)"	Zoli	2;0,2	MacWhinney
megmutatok egy... "perf.+show+ 1PS-ind. a..."	megmutatom egy...	Zoli	2;2,0	MacWhinney
másikat kérek "other+acc. want+1PS-ind."	másikat kérem "other+acc. want+1PS-def."	Zoli	2;2,2	MacWhinney
halacskát kérek "fish+dim.+acc. want+1PS-ind."	halacskát kérem	Zoli	2;2,0	MacWhinney
nem tudok vizet hozni "not can+1PS- ind. water+acc. bring+infin."	nem tudom vizet "not can+1PS-def. water+acc."	Zoli	2;2,4	MacWhinney

In addition to these over-generalization of the conjugations for transitive verbs, we also have a set of over-generalizations of definite suffixes to verbs which are inherently intransitive and therefore incapable of ever assuming definite suffixes.

Adult Form	Child Form	Child	Age	Source
leszek "will-be+LPS"	leszem	Pali	3;3,15	Meixner
megörült "perf.+rejoice+ past-ind."	megörülte	Emőke	4;1,20	Meixner
bújj Moncsi "hide+imp. Moncsi"	bújd Moncsi "hide+2PS-def. imp. Moncsi"	Zoli	1;8,6	MacWhinney
(see also <u>bújj eld Moncsi</u> in section 5.215)				
beférünk "in+fit+1PP-ind."	beférjük	Zoli	2;2,5	MacWhinney
hintázzunk "rock+imp.+1PP- ind."	hintázzuk	Zoli	2;2,5	MacWhinney

7.2 Errors in the coding of semantic content:

Detection of errors in child semantics relies both on cues provided by the structure of the child's utterances and upon our knowledge of the communicative intent of the child. In discussing semantic errors, we always want to know how or why a researcher posits a given semantic structure to the lexical items used by the child. For this reason, we organize our present discussion of these errors according to the means by which they were detected. The most unequivocal proofs of semantic deviancies are provided by redundancy and contradiction between lexical items. These proofs are discussed in section 7.21 as proofs based upon inter-word relations. Also within the scope of the sentence, but on a somewhat higher level, we may locate syntactic proofs of semantic deviance; these proofs are reviewed in section 7.22. Often enough, the only proof available to us upon which we may base our judgments regarding child errors is that provided by the communicative situation and our assessment of the child's communicative intent. Errors detected through use of such evidence are discussed in section 7.23. Finally, there are certain errors which we detect through use of our knowledge of the syntax of the sentence and its agreement relations, together with the facts of the communicative intent we attribute to the child. Observations based upon such proof are treated in section 7.24.

7.21 Errors detected through intra-word relations:

7.211 Errors detected through redundancies:

In section 5.213 we discussed a large number of errors illustrating suffix reduplication. Evaluating the results of the discussion of all forms of under-analysis, we concluded that, except in the youngest children, amalgams were coded in a semantically correct fashion. However, full consciousness of the composition of many of these amalgams awaited morphological analysis. In the present section we deal with somewhat similar errors, which are nonetheless fundamentally different in nature. The roots of this section may be morphologically opaque (as in section 5.44b), but are semantically analysable. Because of their morphological opacity, children may fail to code the relevant dimensions of the semantics in the precision which would otherwise be obtained with analysable items. When certain features are vague or altogether absent, the child attempts to code them through attachment of some suffix. But, in the eyes of the adult language, this suffix redundantly expresses just that information on the root which the child has failed to code correctly.

For organizational purposes, we may further divide these errors into redundancies between roots and suffixes, redundancies between roots, and redundancies between suffixes.

7.2111 Redundancies between root and suffix:

Adult Form	Child Form	Child	Age	Source
vagy "you-are"	vagyol "you-are+2PS"	Hedvig	2;0	Csapodi 467
vagy	vagyol	Nanus	3;-	Simonyi 322
megy "you-go"	megyő (=megyel) "you-go+2PS"	Nanus	3;-	Simonyi 322
ti "you-pl."	titek "you-pl.+2PP"	Éva	3;3	Kenyeres 1928:55
ti "you-pl"	tiktek "you-pl.+2PP"	Jolán	2;5	Endrei 464
meghint "sprinkle up"	meghinte* "sprinkle up repeatedly"	Kari	4;-	Simonyi 318
* The suffix <u>-ez</u> redundantly codes duration and repetition of short actions which is already inherent in the verb root.				
elront "away+break"	elrontít* "away+break+ transitivizer"	Laci	2;6	Balassa 1893:72,142
elránt "away+snatch"	elrántít* "away+snatch+trans."	Laci	2;6	" "
bemárt "malign"	bemártít* "malign+trans."	Laci	2;6	" "
takar "cover"	takarít* "cover+trans." (in <u>takarító</u>)	Piroska	-	Trencsény 264
* These four forms show redundant addition of the trans- itivizing suffix <u>-ít</u> to roots which are already trans- itive. In the case of <u>takarít</u> , there exists a form <u>takarít</u> which means "to clean."				
holnap "tomorrow"	holnapon* "tomorrow+on"	Hedvig	1;-	Csapodi 466
tegnap "yesterday"	tegnapon "yesterday+on"	Hedvig	1;-	Csapodi 466

* These two forms show redundant use of the temporal-locative superessive. In Hungarian, as in English, one says "on Thursday," but not "on tomorrow." The temporality of "tomorrow" is coded as inherent.

Adult Form	Child Form	Child	Age	Source
így "thus"	ígyen* "thusly"	Nanus	2;-	Simonyi 322
* In Hungarian, the adverbiality of "thus" is inherent.				
első "first"	elsődik* "first+th"	Nanus	~2;6	Simonyi 319
*As in English, the item "first" already codes ordinality.				
beledug "stick in"	beledugaszt* "stick-in+trans."	Nanus	2;-	Simonyi 318
* As with <u>-it</u> just above, <u>-aszt</u> redundantly codes transitivity.				
kinyil(ik) "opens out"	kinyilódik* "opens out+refl.-pass."	Józsi	3;4,8	Meixner
elenyészik "dissolve away"	megenyésződik* "dissolve up+refl.-pass."	Emőke	3;10,11	Meixner
szétromlik "fall apart"	szétromlodik* "fall apart+refl.-pass."	Emőke	3;11,19	Meixner
kell "is-necessary"	kelledik* "is necessary+refl.-pass." (in <u>köllödjön</u>)	Emőke	4;1,14	Meixner
* Each of these four forms shows redundant addition of the pseudo-reflexive-passive suffix <u>-odik, -edik, -ödik</u> which makes intransitive processes out of transitive actions.				

7.2112 Redundancies between roots:

Just as the suffix may code information already inherent in the root, so a root may code information already conveyed by another root. Both in root-suffix redundancies and root-root redundancies we cannot determine which item has caused the error, unless we have for more information on other errors in which these items appear and the general distribution of these items in the child's speech.

Adult Form Child Form Child Age Source

a) A group of errors involve redundant negatives. It may be that these redundancies are encouraged by the redundancies required by negative agreement (section 7.12f).

nincs "is-not"	nem nincs "not is-not"	Józsi 3;1,10	Meixner
sem "not-neither"	sem nem "not-either not"	Pali 3;2,2	Meixner
se megy "nor goes"	se nem megy "nor not goes"	Éva 2;0,15	Kenyeres 1926:61
nincs "is-not"	nem nincs "not is-not"	Margit 5;-	Endrei 526
se "nor"	nem se "not nor"	Miklós 5;-	Barcsai 31
sincsen "nor-is"	sem nem sincsen "noe not is-not"	Gyurka -	Jozefovics

b) Another group of errors involves the feature /-approx/ coded on verbs of motion:

utazunk "we travel"	megyünk utazni "we go to travel"	Margit 2;6	Endrei 525
elindultam "away+start+past"	elindultam menni "away+start+past LPS go+infin."	- -	Csapodi 466
indulok "I start to go"	indulni megyek "I go to start to go"	Margit 2;6	Endrei 525

c) The root bír "be able to" already codes ability:

elbírom "perf.+be-able +lPS"	el tudom bírni "perf. can+lPS be-able"	-	4;-	Kemper
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d) The adjective kezű "handed" is redundant joined here by the neologistic form kiskezes "small-handed" which expresses much of the same content:

Adult Form	Child Form	Child	Age	Source
kiskezű "small-handed"	kiskezes kezű "small-handed handed"	Jolán	3;2	Endrei 465

7.2113 Redundancies between suffixes:

The reduplications of section 5.213 were based upon under-analysis. However, superfluous suffix use may occur even when the root may have been analysed. In the following example, it appears that Laci senses the difference between the adjectival gerundive suffix -ott and the adverbial gerundive suffix -va. In this error, use of the two suffixes shows specifically an incorrect coding of the adverbial gerundive suffix.

kinyitott ajtó "out+open+ed door"	kinyitottva ajtó "out+open+ed+ed door"	Laci	2;-	Balassa 1893:70
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7.212 Errors detected through contradictions

Contradictions, like redundancies, may be between root and affix or root and root. Some of the contradictions between roots involve major constituents of the sentences and begin to involve us with semantic and syntactic levels above the word. Evidence from contradictory usage, like evidence from redundant usage, is ambiguous in terms of telling us which member of the pair was represented incompletely, causing the error.

7.2121 Contradictions between root and affix

Adult Form	Child Form	Child	Age	Source
a) One common group of errors illustrates contradiction between the directionality of the root and the directionality of the verbal prefix.				

Adult Form	Child Form	Child	Age	Source
felöltözük* "up+put-on" (=get dressed)	fölvetkőzük "up+take-off"	Laci	-	Balassa 1893:139
felöltöztet* "up+put-on+caus" (=make get dressed)	fölvetkőztet "up+take-off+caus"	Piroska	-	Trencsény 264
levetkőztet* "down+take-off +caus."	leöltöztet "down+put-on +caus."	Piroska	-	"
levetköz "down+take-off"	leöltöz "down+put-on"	Jolán	2;0	Endrei 463
*In these words, <u>fel</u> "up" and <u>le</u> "down" mean, respectively, "on" and "off." Thus, it is a contradiction to say "on+take-off."				
becsomagol "in+package"	beold* "in+undo"	Laci	-	Balassa 1893:139
* The verb <u>old</u> "undo" implies "taking out, or packing out"; thus, the contradiction is "in+take-out."				
kinyit(szemet) "out+open(eyes)"	kihuny "out+close-eyes"	Rózsi	2;-	Kardos 324
felgyújt "up+light"	felolt "up+put-out-light"	-	-	Verő 263
szétszed "apart+take"	leépít* "down+build"	Éva	2;3,3	Kenyeres 1928:86
* Building is not a reversible act; one cannot build down, only destroy.				
kipihenni magát "out+rest self+acc."	elfáradt* "out+tired"	Éva	6;8,29	Kenyeres 87
* In the process of tiring, one moves into tiredness. This movement is reversible; but, when reversed, it is no longer tiring, but waking.				
felnyilik "up+open"	felpakkolódik "up+pack+reflex."*	Lili	-	Ponori 435
* As in the example <u>beold</u> above, packing is a uni-directional activity, which must move inward. <u>Fel</u> "up," in this case, would mean "out" or "apart," and the contradiction would be "apart+packs-itself-together."				
felébred "up+wake"	kimerül (álomból) "out+fall-asleep"*	-	-	Verő 263

Adult Form	Child Form	Child	Age	Source
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* The verb merül "plunge, dive" is used in the idiom álomba merül "plunge into dreams, i.e. to fall asleep."

The above examples, like all incorrectly prefixed Hungarian verbs, are further examples of inappropriate confluations (section 6.22). Here, no syntactic rule is violated; rather, semantic-coding errors are evidenced. In each of the above errors the directionality of the action or process is lexically determined. This is to say that some other root exists to express the reverse of the process or action in question and that the child's error is simply a failure to select the correct lexical items on the basis of its semantic specification. In the following errors, the process or action is inherently irreversible and the child's attempt to treat it as reversible shows not only semantic, but even cognitive error. Since such cognitive errors are few in number, and since the attribution of the source of error to cognition is often disputable, we have not established a separate chapter for the treatment of cognitive errors.

felgyújt (gyertyát) "lights (candle)"	visszafúj* "back+blows"	Laci	-	Balassa 1893:139
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* i.e. this is used as the reverse of "blow out."

kijön(a vízből) "out+comes (from the water)"	kifulladás* "out+drowns"	youngest child	-	Csapodi 466
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* This is acceptable not as the reverse of belefullad "into+drowns," but as "become winded" with ki functioning as a perfective, not a locative.

Adult Form	Child Form	Child	Age	Source
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b) If the root expresses a permanent inherent condition, it is contradictory to add a suffix which indicates causing this condition. Thus, the verb különbözik "differ" cannot be caused. Actually, the child is not attempting to express causation of differences, but forcing of a comparison. Thus, the error shows that különbözik is probably mis-coded as "stand in comparison."

összehasonlít	összekülönböztet	Éva	6;11,19	Kenyeres 87
"together+compare"	"together+differ+caus."			

c) The plural may not be attached to roots already coding plurality, but not this error:

mind	mindek	Márti	1;11,17	Meggyes 48
"all"	"all+pl."			

d) A root which is /-count/ should not take the plural, unless, of course, reference is made to a number of mass collections.

piszok	piszokok	Emőke	2;11,22	Meixner
"filth"	"filths"			

7.2122 Contradictions between affix and affix

It is also possible for the work of one affix to undo that of another. Here a prefix for perfectivity is combined with a suffix for non-perfective intransitive functioning.

még is van csinálva	még is csinálódik	Józsi	2;11,25	Meixner
"perf. also is done"	"perf. also is doing itself"			

7.22 Errors detected through inter-word relations

These errors are of two major types: those which involve contradictions between major sentence elements in their syntactic roles and those which involve violation of part-of-speech requirements.

7.221 Contradictions between major sentence elements

a) There are three types of evidence which point towards incorrect coding of the feature /-transitive/ on verb roots. In the first of these, a verb root which is inherently Intransitive appears with a complement in the accusative. Below, the Hungarian verbs for "fight" and "go over, cross" cannot take the accusative, whereas their English equivalents can.

Adult Form	Child Form	Child	Age	Source
verekszik velem "fights with-me"	verekszik engem "fights me"	Jolán	2;3	Endrei 464
átment rajtam "over+went on+me"	átment engem "over+went me"	Jolán	3;3	Endrei 466
veszekszik velem "squabbles with-me"	veszekszik engem "squabbles me"	Ferike	2;5	Endrei 524

In the above examples, the correct form is produced by placing the complement in a case other than the accusative. In the following forms, the intransitive verb must be replaced by another transitive lexical item:

Adult Form	Child Form	Child	Age	Source
elbújtatom a halacszkát "away+hide+caus.+1PS-def. the fish+dim.+acc."	elbújok a halacszkát "away+hide+1PS-ind. the fish+dim.+acc."	Zoli	1;10,5	MacWhinney
elgurítottam "away+roll+trans.+past+1PS (=I rolled it away)	elgurultam "away+roll+intrans.+past+1PS (=I rolled away.)	Zoli	1;10,0	MacWhinney
állít (játékokat) "erect (toys)"	áll (játékokat) "stand(toys)"	Márti	1;11,1	Meggyes 39
altatja Jancsikát "put Johnny to sleep"	alszik Jancsikát "sleep Johnny"	Márti	1;11,8	Meggyes 39
lenyírta a hajadat "down-cut the hair+2PS poss."	lenőtte a hajadat "down+grew the hair+2PS poss."	Éva	2;10,9	Kenyeres 1926:66

Secondly, the inappropriate transitive structure may reveal a pair of conflated propositions (sections 6.22, 7.2121a, and 7.22b) of which one is transitive.

nyúlj utána és vedd ki "reach after it and take it out"	nyúdí ki "reach it out"	Nanus	2;6	Simonyi 321
sürgönyöz és hoz valakit "telegraph and bring someone"	sürgönyöz valakit (ide) "telegraph someone here"	Lili	-	Ponori 1905:437

A third type of proof is offered by combination of intransitive verbs with the passive construction "van ve" which parallels the English "is en."

Adult Form	Child Form	Child	Age	Source
nem jól van fektetve "not well is lie+caus+pass." (=It hasn't been laid down to rest correctly.)	nem jól van fektűdve "not well is lie+pass."	Jolán	2;0	Endrei 463
nem jól van űltetve "not well is sit+caus.+pass." (=It hasn't been seated properly.)	nem jól van űlve "not well is sit+pass."	Jolán	2;0	Endrei 463
felkeltem "up arose+LPS" (=I arose)	fel vagyok kelve "up I-am arise+pass."	Jolán	2;4	Endrei 464

b) Another group of contradictions revealed through syntactic relations involves directionality of the verb root conflicting with directionality of a locative suffix on a locative complement of the verb. Here, as elsewhere, evidence from contradiction fails to tell us whether it is the verb root or the locative suffix whose coding is incomplete.

mesélj az én csirkémről "tell <u>of</u> my chicken"	mesélj az én csirkémre "tell <u>onto</u> my chicken"	Éva	2;4,1	Kenyeres 1926:32 1928:32
mért ebből a könyvből olvasol "why do you read from this book?"	mért ebbe a könyvbe olvasol "why do you read into this book?"	Éva	3;3	Kenyeres 1928:32
nem iszom belőle "I don't drink from it"	nem iszom benne "I don't drink into it"	Éva	6;5,8	Kenyeres 1928:32

Adult Form	Child Form	Child	Age	Source
mit gondol erről a szépről "what do you think of this beauty?"	mit gondol erre a szépre "what do you think onto this beauty?"	Kari	4;-	Simonyi 323
hol vesztettem a krajcáromat "where did I lose my kreuzer"	hova vesztettem a krajcáromat "to-where did I lose my kreuzer"	Kari	2;-	Simonyi 323
azt ismerem, azt a kis házat "that I remember, that little house"	attól* ismerem attól a kis háztól "from that I remember, from that little house"	Éva	6;7,5	Kenyeres 1928:32

* These two errors seem also to involve inappropriate conflation (compare section 6.22, 7.2121a, and 7.22a) of a proposition containing directionality. In the first example, the extra proposition might be: hova ment? "to-where did it go?"; in the second the extra proposition might be: messze vagyok attól a kis háztól "I am far away from that small house." (Éva was gazing down at the house from a hill.)

c) Adjectives may contradict features on the nouns they modify. Here the contradiction is between the adjective and the diminutive suffix on the noun:

nagy ház "big house"	nagy házikó "big house+dimin."	Józsi	3;1,7	Meixner
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7.222 Violations of part-of-speech requirements

Braine (1971) has shown how a child, when presented with a new lexical item in the syntactic form of a verb or noun, will often mistake the part-of-speech of the new item, apparently failing to derive this

information from the syntax of the input. In English the process of zero-derivation is more active than in Hungarian; nonetheless, examples of errors in the part-of-speech categories abound in the Hungarian data. In some cases (i.e. Kenyeres 1928:61) authors indicate how the original sentence-frame in which the child heard the word gave ambiguous part-of-speech information. Thus, at 1;9,9, Éva was about to eat an unripe grape cluster and was told ne egye meg, mert nem jó, savanyú "Don't eat it, because it's no good, sour." Here, savanyú "sour" could be understood as an object, action, or quality. Éva chose the former alternative and named all grapes savanyú. Although most authors provide neither the sentences from which the word was acquired nor the sentences in which it was misused, those reports which are complete confirm the general statement: errors in part-of-speech features are either attributable to ambiguities in the acquisitional context or the child's need to create a word to express himself.

a) Erroneous nouns:

from adjectives:

Adult Form	Child Form	Child	Age	Source
szőlő "grape"	savanyú "sour"	Éva	1;9,9	Kenyeres 1928:61
bogyó "berry"	csunya "ugly"	Éva	1;11,9	Kenyeres 1928:61

Adult Form	Child Form	Child	Age	Source
karika "disc"	zöld "green"	Zoli	1;8,6	MacWhinney
magnó "tape-recorder"	aranyos "darling"	Zoli	1;8,6	MacWhinney
vér "blood"	véres "bloody"	Józsi	2;9,4	Meixner
készítmény "preparation"	kész "ready, prepared"	Józsi	2;9,5	Meixner
<u>from verbs:</u>				
magnó "tape-recorder"	tánci "dance!(baby-talk)"	Zoli	1;8,6 (three times)	MacWhinney
autó "car"	autóz(=autózik) "travel by car"	Zoli	1;8,6	MacWhinney
gomb "button"	fénylik "glitters"	Éva	2;1,2	Kenyeres 1928:61
labda "ball"	gurul "roll" (in <u>gurumat</u>)	Éva	2;3,11	Kenyeres 1928:61,86
kés "knife"	megfarag, farag "carve up, carve"	Éva	2;3,11	Kenyeres 1928:61
szaloncukor "taffy"	bontsd ki "unwrap"	Márti	2;-	Meggyes 39
kenőcs "salve"	beken "spread on"	Éva	1;10,10	Kenyeres 1928:61
hely "place"	fér "fit"	Margit	3;-	Simonyi 320
<u>from interjections:</u>				
jármű "vehicle"	gyi "getty-up"	Kari	5;-	Simonyi 320
b) <u>Erroneous verbs:</u>				
<u>from nouns:</u>				
ül "sits"	szék "chair"	Zoli	1;8,6	MacWhinney

Adult Form	Child Form	Child	Age	Source
karamboloz "have an accident"	karambol* "accident"	Emőke	4;2,4	Meixner
ágyaz "make the bed"	ágy "bed"	-	-	Csapodi 466
ebédel "dine"	ebéd "dinner"	Hedvig	2;-	Csapodi 466
fáj "hurt"	láb "leg"	first girl	1;6	Csapodi 466
elkerít "fence it"	kertész "gardener"	Éva	2;11,27	Kenyeres 1928:52
gyújt (lámpát) "light(lamp)"	villany "electricity" (in <u>felvillany</u>)	Éva	2;11	Kenyeres 1928:87

* The child may sense that the final -ol is a denominative verbalizing formative suffix. However, in this particular item, the -ol is a part of the root.

from adjectives:

megenged "permit"	szabad "allowed"	Kari	4;-	Simonyi 320
hervad "wilt"	lomha "sluggish" (in <u>meglomha</u>)	-	-	Csapodi 466
pihen "rest"	álmos "sleepy" (in <u>kialmos</u>)	Laci	2;10	Balassa 1893:72
elkészül "prepare"	kész "ready"	Laci	-	Balassa 1893:143
kérek "I want"	csecse "nice"	youngest daughter	1;-	Csapodi 465

from interjections:

bújik "hides"	kukucs "peek-a-boo" (in <u>elkukucs</u>)	Éva	1;11,22	Kenyeres 1928:63
esik "falls"	puff "puff!" (in <u>lepuff</u>)	Éva	1;10,9	"

Adult Form	Child Form	Child	Age	Source
c) <u>Erroneous adjectives:</u>				
<u>from adverbs:</u>				
messze "far away"	soká* "for a long time"	Nanus	5;-	Simonyi 320
* In dialects this use may be permissible.				
<u>from nouns:</u>				
hidegfürdői "of the cold bath"	hidegfürdő "cold bath"	Lili	-	Ponori 1905:436
<u>from verbs:</u>				
viszketős "itchy"	viszket "itches"	Ilon P.	5;-	Simonyi 320
viszketős	viszket	Iduska	4;-	Simonyi 320
fájós "painful"	fáj "hurts"	Iduska	4;-	Simonyi 320
piros "red"	heehee (=tűz) "fire" (=onomatopoeic neologism)	Éva	1;2,12	Kenyeres 1926:8

d) Erroneous adverbs:from adjectives:

jól "well"	jó "good"	Józsi	3;1,20	Meixner
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e) A special case of erroneous adjectives from nouns:

Commonly, the child attempts to form his own version of the possessive structure by using possessivized nominals as possessive adjectives. In English we can do this in sentences such as This is John's book and This book is John's. But Hungarian restricts possessivized nominals such as John's to use as independent noun-phrases.

Presumably, children are encouraged to develop a pattern like that in English through comparing sentences such as ez a könyv szép "this book is pretty" with ez a könyv Jánosé "this book is John's." In other words, the possessivized nominal as a predicate complement is taken to be a predicate adjective. In these errors, the children imitate the English pattern:

Adult Form	Child Form	Child	Age	Source
az én ruhám "the I clothes +LPS" (=my clothes)	enyém ruha "mine clothes" (=mine clothes)	Éva	1;11,8	Kenyeres 1926:54
az ő nyakkendője "the he tie+3PS" (=his tie)	zövéje nyakkendő "his tie" (=his tie)	Éva	1;11,13	Kenyeres 1926:55
a te levesed (=your soup)	tied leves (=yours soup)	Éva	2;4,3	"
ez kinek a helye (=this is whose place?)	ez a kié hely (=this is whose place?)	Éva	2;4,7	"
a Mártikának banánja (=Martika's banana)	Mártikáé banán (=Martika's banana)	Márti	1;10,29	Meggyes 52
a Mártika ruhája (=Martika's clothes)	Mártikáé ruha (=Martika's clothes)	Márti	1;11,17	Meggyes 52
az én pénzem (=my money)	az enyém pénz (=the mine money)	Pali	3;3,23	Meixner
a te kabátod (=your coat)	a tied a kabát (=the yours the coat)	Józsi	2;11,25	Meixner
az én virágom (=my flower)	enyém virág (=mine flower)	Zoli	1;8,6	MacWhinney
az én kabátom (=my coat)	az enyém a kabát (=the mine the coat)	Józsi	2;11,25	Meixner

Adult Form	Child Form	Child	Age	Source
az atya kanala (=father's spoon)	atyái kanál (=father's spoon)	Laci	1;10	Balassa 1893:68
az apa kalapja (=father's hat)	aptyái kala (=father's hat)	Laci	1;10	Balassa 1893:68
az apa kalapja (=father's hat)	aptyái kala (=father's hat)	Laci	1;10	Balassa 1893:68
a Laci kalapja (=Laci's hat)	Lacié kala (=Laci's hat)	Laci	1;10	Balassa 1893:68
a Zolika köténye (=Zolika's apron)	a Zolikái a kötény	Zoli	1;8,6	MacWhinney

Moving away from this structure, the child may keep the possessive nominal as an adjective, but mark the possession with the possessive suffix:

a Mártika mukája "the Martika muka+3PS poss."	Mártikáje mukája "Martika's muka+3PS poss."	Márti	1;10,15	Meggyes 52
az apa inge "the father shirt+3PS poss."	apái dzsingejje "father's shirt +3PS poss."	Márti	1;11,13 "	
az apa almája "the father apple+3PS poss."	apái almája "father's apple +3PS poss."	Márti	1;11,21 "	
a Mártika almája "the Martika apple+3PS poss."	Mártikái almája "Martika's apple+3PS poss."	Márti	1;11,21 "	

Under the influence of this rather habitual use of the possessive nominal in the place of the dative in the possessive construction, the child may be led to confuse the dative itself with the possessivized nominal:

Adult Form	Child Form	Child Age	Source
hol van a Mártikáé "where is the Martika's"	hol van Mártikának "where is Martika+dat."	Márti 1;9,25	Meggyes 52

Some of the above errors show failure to attach the possessive suffix to the possession and are therefore relevant to section 7.246. Others involve a confusion between the dative and the sign of possession and are therefore relevant to section 7.241b.

This section has dealt with errors in part-of-speech which may be detected through syntactic frames. In section 7.11 we dealt with a number of part-of-speech errors that could be detected through violations of the context specifications of suffixes. The data of this section should be compared to the data found there. Also the reader should note that use by the child of his own name for self-reference (section 7.23b) is a substitution of a noun for a pronoun.

7.23 Errors detected only through knowledge of the child's communicative intent (Semantic extensions of one root for another of the same part-of-speech)

The errors in semantic content to be discussed in this section have often been called semantic extensions. They include the use of a root of a given part-of-speech by a child in a situation where an adult would judge that the communicative intent of the child could be more properly coded through use of another root of the

same part-of-speech. Here, the use of the "wrong root" is not detected by syntactic anomalies (as in section 7.222), by lexical anomalies (section 5.4), or by morphological anomalies (section 4.1). Rather, it is apparent from the situation that the child really means to refer to some object, action, or quality other than that to which he actually refers. It is true that such information may be misleading or ambiguous. If we are writing with a pencil and a child says to us, "want pen," we imagine that he wants the pencil and has incorrectly called it a pen. Alternatively, the child may be telling us "I would prefer to have a pen, rather than that pencil you're drawing with." As the child gets older, as his sentences become less elliptical, the chances of misinterpreting his intentions diminish. In this section we are forced to rely upon the accuracy of the judgments made by the various authors we cite. For an interesting review of reports of semantic generalizations in the international literature, see E. Clark (in Moore, 1973).

a) Noun extensions: (nouns to nouns)

Adult Form	Child Form	Child	Age	Source
l6, teh6n, macska kutya "horse, cow, cat" "dog" (four-legged animals in general)		-	2;4	Donner 128
horgol6 t6 "darning needle"	oll6 "scissors"	-	2;4	Donner 128
rajzol6s "drawing"	6r6s "writing"	-	-	Csapodi 466

Adult Form	Child Form	Child	Age	Source
rajzolás "drawing"	írás "writing"	Márti	-	Meggyes
rajzolás "drawing"	plájbász "pencil"	-	2;4	Donner 128
lekvár "jam"	méz "honey" (in <u>mézes</u>)	Piroska	-	Trencsény 264
nóta "song"	hang "sound"	Lili	-	Ponori 1905
talp "sole"	tenyér "palm"	Kari	4;-	Simonyi 319
titok "secret"	vétek "sin"	Kari	5;-	Simonyi 319
játék-verkli "toy hurdy-gurdy"	muzsika "music"	Éva	2;3,17	Kenyeres 1928:87
bolt, üzlet, piac "store, business, market"	kirakat "shop window"	Rózsi	2;-	Kardos 324
pehely "down"	vatta "cotton"	Laci	1;4	Balassa 1893:139
folyó, patak "river, brook"	kanális "canal"	Laci	-	Balassa 1893:138
falevél "tree leaf"	virág "flower"	Laci	-	"
tej "milk"	reggeli "breakfast"	Laci	-	"
hordó "barrel"	kiöntés "spilling"	Józsi	3;0,16	Meixner
gombostű "straight pin"	varrótű "sewing needle"	Józsi	3;0,16	Meixner
zsiráf "giraffe" (there may be klang-association here)	zebra "zebra"	Józsi	3;0,16	Meixner
lakat "padlock"	lakatkulcs "padlock key"	Józsi	3;1,10	Meixner

Adult Form	Child Form	Child	Age	Source
zongora "piano"	muzsika "music"	Józsi	3;1,17	Meixner
sütő "cooking oven"	gép "machine"	Józsi	3;1,27	Meixner
vacsora "supper"	ebéd "dinner"	Józsi	3;1,27	Meixner
egér "mouse"	cinége "tom-tit"	Józsi	3;6,9	Meixner
csillag "star"	lámpa "lamp"	Emőke	3;7,18	Meixner
mérleg "scale"	közért "grocery-store"	Pali	3;3,1	Meixner
puha pokróc "soft blanket"	torna "gymnastics"	Pali	3;3,19	Meixner
csőr "beak"	száj "mouth"	Józsi	2;9,10	Meixner
gereblye "rake"	kasza "scythe"	Józsi	2;9,10	Meixner
betű "letter" (a toy)	bácsi "man, uncle"	Józsi	2;9,15	Meixner
sakkfigura "chess figure"	sakk "chess"	Józsi	2;11,0	Meixner
óraszíj "watch band"	óra "watch"	Józsi	2;11,24	Meixner
fedő "lid"	tető "roof"	Józsi	2;11,24	Meixner
kerék "wheel"	karika "ring"	Józsi	2;11,24	Meixner
állatkert "zoo"	állat "animal"	Józsi	2;11,24	Meixner
kecske "goat"	szarvas "deer"	Éva	2;6	Kenyeres 1928:38
kagylóhéj "shell"	csigabiga "snail"	Éva	2;6	Kenyeres 1928:38

Adult Form	Child Form	Child	Age	Source
katona "soldier"	apja* "father+3PS poss."	Matild	1;9	Viktor 54
növendék-leány "girl student"	Terka* "Terka"	Matild	1;9	Viktor 54
kocsis "driver"	Mihály* "Michael"	Laci	-	Balassa 1893:138
szamár "donkey"	Tündér* "Fairy"	Kari	5;-	Simonyi 320
* In each of these cases, the name of an individual is generalized to other members of its class, i.e. all donkeys are called by the name of one donkey.				
tükör "mirror"	baba* "baby, doll"	Matild	1;9	Viktor 59
tükör	baba*	Éva	0;9,10	Kenyeres 1926:5
* The child called itself <u>baba</u> "baby" and often saw its own reflection in the mirror.				
kicsi ember* "small man"	baba "baby, doll"	Éva	1;2,11	Kenyeres 1926:8
* Or, in general, people in pictures.				
könyv "book"	biblia "Bible"	Matild	1;9	Viktor 64
mérleg "scale"	óra "clock"	Bélus	1;7	Varga 147
mama "Mama"	apa "Papa"	-	0;11	Jablonkay 149
tej "milk"	étel "food"	-	1;3	"
állat* "animal"	titi (=pipi) "chicken" (baby-talk)	Éva	0;11,3	Kenyeres 1926:6
*Or, in general, anything that moves.				
szalvéta "napkin"	papi "food"(baby-talk)	Éva	1;0,15	Kenyeres 1926:7
láb, harisnya "leg, stocking"	pipi (=cipő) "shoe"	Éva	1;1,2	"

Adult Form	Child Form	Child	Age	Source
ló "horse"	didi (=nyuszi) "bunny"	Éva	1;2,11	Kenyeres 1926:8
tűzpiszkáló vas "fire-prodding iron, fire-iron"	tűz "fire"	Éva	1;2,11	"
egér "mouse"	pipi "chicken" (baby-talk)	Éva	1;3,16	"
elhasznált gyufaszál "burned-out match-stick"	tűz "fire"	Éva	1;4,9	"
kecske "goat"	didi (=nyuszi) "bunny"	Éva	1;4,17	Kenyeres 1926:9
ág "branch"	hapi (=virág) "flower"	Éva	1;4,17	"
ág "branch"	bot "stick"	Éva	1;5	"
tó (Balaton) "lake (Balaton)"	pancsi "splishy, wader"	Józsi	2;1,10	Dezső 1970:97
hajszál "strand of hair"	haj "hair"	Márti	1;11,0	Meggyes 39
hold "moon"	villany "electric light"	Márti	2;0,24	Meggyes 39
fésű "comb"	frizura "haircut"	Márti	2;-	Meggyes 39
Márti named each of her books by the things on their covers	e.g. kukuri, mi, télapó, piros, Hermann bácsi, etc. "Santa Claus, red, etc."	Márti	1;8	Meggyes 40
könyv "book"	Pintér "Pinter's literary history"	Imre	3;-	A. Vértés
folt "stain"	rongy "rag"	-	-	Székely 63

Adult Form	Child Form	Child	Age	Source
tűske "thorn"	szurok "tar"	-	-	Székely 63
jó kutya "good dog"	jó kislány "good girl"	-	-	Székely 63
rossz fiú "bad boy"	rossz kislány "bad girl"	Monika	2;6	A. Vértes 1953:25 1971:42
orrlyuk "nostril"	orr "nose"	Laci	-	Kallos 410
kenyér "bread"	zsemle "semolina roll"	Tádé V.	1;4	A. Vértes 1953:25
állat "animal"	vau-vau "bow-wow"	Julianna	1;3	"
folyó "river"	Duna "Danube"	general	-	"
kép "picture, image"	tükör "mirror"	Margit	2;8	Endrei 525
titok "secret"	súgás "whispering"	Jolán	3;2	Endrei 424
néni "aunt, woman"	anyuka "mommy"	Zoli	1;8,6	MacWhinney
Moncsi "Moncsi"	Zolika "Zolika"	Zoli	1;8,6	MacWhinney
in: <u>Zolikáé</u> "Zoliká's" for <u>Moncsié</u> "Moncsi's"				
Moncsi "Moncsi"	Andi "Andi"	Zoli	1;8,6	MacWhinney
in: <u>Andié</u> "Andi's" for <u>Moncsié</u> "Moncsi's" (three times)				
Moncsi "Moncsi"	Andika "Andika"	Zoli	1;8,6	MacWhinney
kötény "apron"	gomb "button"	Zoli	1;8,6	MacWhinney
Moncsi "Moncsi" (who happened to be a little girl play-mate)	néni "aunt, woman"	Zoli	1;8,6	MacWhinney

Adult Form	Child Form	Child	Age	Source
kar "arm"	kéz "hand"	Éva	2;3,13	Kenyeres 1928:86-87
in: <u>kitarja kezét</u> "she opens her hands" for <u>kitarja karját</u> "she opens wide her arms."				
kalapács "hammer"	balta "hatchet"	Zoli	1;8,6	MacWhinney
róka "fox"	farkas "wolf"	Zoli	1;8,6	MacWhinney
gyerek "child"	fiú "boy"	Zoli	1;10,0	MacWhinney

b) Pronoun extensions: (pronouns for pronouns)

te "you-familiar"	én "I"	Ferike	1;8	Endrei 524
te	én	Márti	1;10,13	Meggyes 30
maga "you-formal"	ő* "he"	Ferenc	4;0	Kardos 1935
maga	ő*	Éva	1;10,1	Kenyeres 1926:53
* The other formal is <u>ön</u> . There may be some klang-association between <u>ön</u> and <u>ő</u> .				
engem "me+acc."	tégedet "you+acc."	Éva	1;8	"
engemet "me+acc.+acc."	tégedet "you+acc."	Éva	1;8,14	Kenyeres 1926:53

In section 7.2321b we treat confusions of pronoun case.

The multiplicity of address forms in Hungarian makes acquisition of person on the pronoun, noun, and verb an arduous task. The child must learn that, when speaking, he is always én "I," but that, when addressed, he may be te "you-informal," maga "you-formal," "my dear little boy" or a number of other forms. Learning of the feature /± speaker/ requires an apparently difficult decentration.

Extension of this learning to pronouns, noun suffixes, and verb suffixes does not occur all at once. The child may code the person of the verb correctly, while mistaking the person of the subject pronoun. Thus, for example, Balassa (1893:67 and 1920:133) reports that up to 1;9 Laci used 3PS verb + Name to talk about his own actions. However, at 1;9, Laci began to use 1PSverb + Name for this purpose. Similarly, Jablonkay reports 3PSverb + Name up to 2;7 and 1PSverb + Name after 2;7. Jablonkay also found that, for a short time at 2;7, his child used the combined form 3PSverb + 1PS pronoun + Name. It seems, then, that each of the various lexical expressions of deep-structure person must develop somewhat independently.

In some further reports of the learning of person, we find that Kenyeres (1926:33-34) observed Éva using a 3PSverb at 1;4,21 with no surface subject for reference to her own activities. From 1;5,1 to 1;7,29 Éva used 2PSverb without a surface subject to express the first person's activities. From 1;6,22 Éva used 1PS verb without a surface subject as the general means of expressing first person actions. The developmental sequence observed by Kenyeres differs from that observed by Balassa and Jablonkay principally in the fact that Éva avoided use of pronoun subjects. Around 1;8,20 the 3PS verb + Name form also appeared in Éva's speech. Mikes (1967:293) found Ester and Eta using 3PS verb + Name at 1;7. Mikes correctly observes that use of Name for self-reference

is a semantic extension like those reviewed throughout this section. Meggyes (54) reports that the first verbs referring to Márta's activity as a speaker were 2PS verbs, learned as a result of discourse pressure (i.e. being addressed in the 2PS). These verbs were common from 1;6 to 2;0, disappearing toward the end of this period. Somewhat after the 2PS forms, 1PS and 3PS forms were used for self-reference; both forms continued on into the third year. Meggyes reports only one example of 2PSverb + Name (1;10,25), but many examples of 3PS verb + Name from the period between 1;9 and 2;2. Meixner found that Józsi used 3PS + Name as late as 2;9,10 and 3PSverb + 1PS pronoun at 3;2,23, but both of these errors were only isolated occurrences.

At the time of our first observations at 1;5,2 and 1;6,29, our own subject Zoli used only his name for self-reference. At the time of the third observational period at 1;8,6, Zoli was still referring to himself almost exclusively by his name, although we do find an isolated use of the 1PS pronoun in the sentence én elbújok "I hide+1PS," which contrasts with elbújok Zolika is "hide+1PS Zolika also" and Zolika is elbúj "Zolika too hides." On the other hand, 1PS verbs were frequent when no surface subject was expressed. At 2;0,0 there is one erroneous use of the second person for self-reference, even when no discourse pressure is present: te voltál

"you were" for én voltam "I was." From 2;0,0 self-reference is accomplished nearly exclusively by the use of LPS verbs with and without the LPS personal pronoun.

Further errors involving person involve personal possessive suffixes on the noun, personal suffixes on the verb, or the possessive suffixes on the special adverb roots. These further errors are treated in sections 7.241 c-d which should be compared with the results of this section.

c) Adjective extensions: (one adjective for another)

szines "colorful"	piros "red"	Éva	1;8,22	Kenyeres 1926:39
magas "high"	nagy "big"	Éva	1;10,19	Kenyeres 1926:39
nehéz "heavy"	erős "strong"	Éva	1;11,9	"
zöld "green"	fehér "white"	Éva	1;11,11	Kenyeres 1926:40
sárgásbarna "yellow-brown"	fekete "black"	Éva	1;11,23	"
magas "high"	hosszú "tall"	Józsi	2;11,15	Meixner
összes "all"	egész "each"	Józsi	3;0,23	Meixner
másik "other"	egyik "one"	Józsi	3;1,17	Meixner
jó "good"	szép "beautiful"	-	2;4	Donner 128
nagy "big"	hosszú "long"	-	2;5	Donner 139
rossz "bad"	csúnya "ugly"	-	2;4	Donner 128

Adult Form	Child Form	Child	Age	Source
kényelmes (főtel) "comfortable(chair)"	kövér "fat"	Lili	-	Ponori 1905:437
ráncos "wrinkled"	öreg "old"	Kari	4;-	Simonyi 320
bátor "brave"	büszke "proud"	Kari	4;-	Simonyi 320
sok "many"	mennyi "how many?"	-	-	Csapodi 466
sok	mennyi	Hajnalka	-	Keresztes 34
sok "many"	amennyi "as many as"	Zoli	2;0,2	MacWhinney
ügyes "clever"	okos "intelligent"	Laci	-	Kallos 410
idős "aged"	nagy "big"	Laci	-	Kallos 410
hófehér "snowwhite"	havas "snowy"	Margit	3;2	Endrei 526
nehéz "heavy"	erős "strong"	-	4;-	Kemper 2
kicsi "little"	alacsony "low"	-	4;-	Kemper 2
ellenkező "opposite"	másik "other"	Márti	2;1,3	Meggyes 39
magas "high"	hosszú "long; tall"	Pali	3;3,15	Meixner
szomjas "thirsty"	éhes "hungry"	Kari	3;-	Simonyi 323
hány "how many?"	mennyi "how much?" (in the incorrect form <u>mennyes</u> "the which- munched?" instead of <u>hányas</u> "the which- numbered?")	Kari	6;-	Simonyi 318
d) <u>Verb extensions:</u> (verb for verb)				
szól "sounds off"	hangzik "makes a sound"	Lili	-	Ponori 1905: 437

Adult Form	Child Form	Child	Age	Source
megvan "still exists"	él "lives"	Lili	-	Ponori 1905:437
remeg (miután keserűt eszik) "trembles (after having eaten something bitter)	villámlik "flashes lightning"	Piroska	-	Trencsény 264
ír "write"	rajzol "sketch"	-	-	Csapodi 466
ír "write"	rajzol "sketch"	-	2;6	Donner 130
fáj "hurts"	ég "burns"	-	2;6	Donner 138
kopaszt "pluck"	hámoz "peel"	-	-	Csapodi 466
volt "was"	lett "became"	Laci	2;5	Balassa 1893:71,142 1920:142
szeret "like"	akar "want"	Kari	3;-	Simonyi 322
felvesz "pick up"	felkel "get up"	Kari	3;-	Simonyi 322
lebeg "flutter"	nyújtzkodik "stretch oneself"	Nanus	1;6	Simonyi 320
leold "turn off"	leköt "untie"	Nanus	3;-	Simonyi 320
kioldoz "undo"	kikötöz* "fasten on"	Nanus	3;-	Simonyi 320
* The second meaning of <u>kikötöz</u> is nearly identical to <u>kioldoz</u> .				
lebeg "flutters"	csingilingiz "goes 'ting-a-ling'"	Laci	-	Balassa 1893:139
lármázik "makes noise"	trombitál "trumpets"	Laci	2;5	Balassa 1893:70,139
elmegy "leaves"	elmúlik "passes away"	Lili	-	Ponori 1905:437

Adult Form	Child Form	Child	Age	Source
levesz(karperecet) "takes off (bracelet)"	nyit "opens"	Laci	1;6	Balassa 1893:69
feltör (diót) "break up (nut)"	levág "cuts down"	Laci	2;0	Balassa 1893:69
kérem "I want" (=please, may I have some)	tessék "let it please you" (=please, take some)	Monika	2;6	A. Vértés 1971:42
kérem	tessék	Zoli	1;8,6 (frequent)	MacWhinney
mindig egy helyen van "stays in one place (-animate)"	lakik "dwells" (+animate)	Laci	-	Kallos 410
fölszáll (füst) "rises (smoke)"	repül "flies"	Jolán	1;11	Endrei 463
tiktakol "goes tik-tak"	zongorázik "plays the piano"	Margit	3;-	Endrei 463
mosolyog "smiles"	örül "rejoices"	Margit	4;-	Endrei 526
tessék "please have some"	adjál "give me some"	Matild	1;9	Viktor 53
tessék "please have some"	köszönöm "I thank you"	Matild	1;9,10	Viktor 59
kérem "I want"	tessék "please have some"	Éva	1;0,2	Kenyeres 1926:6
vedd ki "pick up+imp."	nini "lookie" (baby-talk)	Éva	0;11,9	Kenyeres 1926:5
összeüti "strikes together"	koccint "clinks"	-	4;-	Kemper 2
olvas "reads"	nézeget, lapozgat "looks at, turns the pages"	Márti	2;-	Meggyes 38

Adult Form	Child Form	Child	Age	Source
ég (villany) "burns (light)"	süt "shines"	Márti	2;0,16	Meggyes 39
keres "seeks"	talál "finds"	Éva	2;3,4	Kenyeres 1928:86
összeszámol "counts up together"	összecsinal "mess up one's pants"	Józsi	2;9,4	Meixner
evez "rows"	lapátoz "shovels"	Józsi	2;9,8	Meixner
felsorol "lists, arranges in a row"	összeszámol "counts up"	Józsi	2;9,10	Meixner
fűz (nyaklancot) "strings (necklace)"	bevarr "sews"	Józsi	2;9,10	Meixner
leesik (labda) "falls (ball)"	lemegy	Józsi	2;9,10	Meixner
gereblyéz "rakes"	riszál "sways to and fro"	Józsi	2;9,10	Meixner
feldönt (autót) "knocks over (car)"	kimerít "uses up"	Józsi	2;11,24	Meixner
szétjött "came apart"	elkötötték "they undid"	Józsi	2;11,25	Meixner
elképzel "imagines"	rágondol "thinks of "	Józsi	3;0,16	Meixner
kibont "undoes"	kiveszik "takes out"	Józsi	3;1,6	Meixner
volt "was"	eltelt "past (time)"	Éva	6;11,20	Kenyeres 1928:50
kinyilik "opens out" (intransitive)	kicsinálódik "it is getting done out, or working itself out"	Józsi	3;1,7	Meixner
kinyít "opens out" (transitive)	kicsinál "does out"	Józsi	3;1,7	Meixner

Adult Form	Child Form	Child	Age	Source
ebédel "dines"	vacsoráz "sups, has supper"	Józsi	3;1,7	Meixner
rajzol "sketches"	ír "writes"	Józsi	3;1,17	Meixner
síel "skis"	korcsolyázik "skates"	Józsi	3;1,26	Meixner
reggelizik "breakfasts"	ebédel "dines"	Józsi	3;1,27	Meixner
szánkázik "sleds"	korcsolyázik "skates"	Józsi	3;1,27	Meixner
kapkod "snaps up, buys up"	elkap "snatches, grabs"	Józsi	3;6,9	Meixner
teniszezik "plays tennis"	pingpongozik "plays ping-pong"	Emőke	3;11,19	Meixner
elfelejt "forgets"	elfelejtkezik "overlooks"	Emőke	4;0,19	Meixner
megfejt "milks"	kiszed (tejjet) "removes (milk)"	Pali	3;3,23	Meixner
küld "señds"	hív "calls"	Laci	2;5	Balassa 1893:71
kiváncsi van "is curious"	bámul "wonders"	Kari	4;-	Simonyi 320
elborul "darkens, clouds over"	kiborul* "gets upset"	Olga	-	A. Vértes 1953:42
* The difference between the roots <u>borul</u> in these two different forms involves basic differences in the lexical features of each of the roots. Thus, there seem to be two homonymous forms here.				
zavar (notát) "disturbs (song)"	elvisít "away+screams"	Jolán	2;0	Endrei 463
megy "go"	jön "come"	Zoli	2;2,3	MacWhinney
in:	<u>jönnek a vécére</u> <u>mennek a vécére</u>	"they're coming to the W.C." "they're going to the W.C."		

Adult Form	Child Form	Child	Age	Source
kinyit "opens"	ad "gives"	Zoli	1;8,6	MacWhinney
in: <u>adtad már ajtót</u> "give+past+2PS definite already door+acc." for <u>nyisd ki az ajtót</u> "open+2PS-def.-imper. out the door+acc." Thus, there is not only semantic extension but also an erroneous use of the past tense.				
ad "gives"	kap "receives"	Zoli	1;8,6	MacWhinney
in: <u>cukor kaptok Zolikának</u> "sugar receive+2PP-indef. Zolika+dat." for <u>cukrot adnak Zolikának</u> "sugar+acc. give+3PP Zolika+dat." Zoli's sentence includes not only semantic extension of <u>kap</u> , but also omission of the accusative and use of the 2PP where the 3PP is required. These latter errors can be traced to the fact that a preceding sentence by a teacher was <u>kaptok cukrot délben</u> "receive+2PP sugar+acc. at-noon."				
forog "turns"	tánci "dance!" (baby-talk)	Zoli	1;8,6	MacWhinney
in: <u>bácsi, tánci a magnó</u> "Uncle, the tape-recorder is dancing" for <u>bácsi, forog a magnó</u> "Uncle, the tape-recorder is turning." Since the baby-talk <u>tánci</u> is actually an imperative, there is also an error in the choice of mood. Of course, there is also a semantic extension of <u>magnó</u> "tape-recorder" for <u>tekercs</u> "reel."				
elmegy (valami mellett)	elmulik (valami)	Lili	-	Ponori 1905:437
"pass (by something)" "(something) passes"				
in: <u>nem mult még el a templom</u> "not pass still away the church (=The church still hasn't passed by.) for <u>nem mentünk el a templom mellett</u> "not pass+1PP away the church beside." (=We haven't passed the church.)				

Adult Form	Child Form	Child	Age	Source
e) <u>Adverb extensions:</u> (adverb for adverb)				
holnap "tomorrow"	tegnap "yesterday"	Nanus	5;-	Simonyi 320
holnap	tegnap	"frequent"	-	Verő 263
holnap "tomorrow"	máma "today"	Éva	2;8,26	Kenyeres 1926:46
tegnap este "yesterday evening"	máma "today"	Éva	2;8,26	Kenyeres 1926:46
azonnal "right away"	holnap "tomorrow"	Éva	2;3,14	Kenyeres 1926:46
valamikor "sometime"	egyszer "once"	Éva	2;0,24	Kenyeres 1926:46
magam "by myself"	egyedül "alone"	Éva	2;0,2	Kenyeres 1926:44
sokáig "for a long time"	régen "a long time ago"	Éva	1;11,4	Kenyeres 1926:46
ide "hither"	oda "thither"	Józsi	2;0,26	Dezső 1970:98
in: <u>addoda</u> "give there" for <u>addide</u> "give here."				
is "also, too"	se "neither, nor"	Zoli	2;2,3	MacWhinney
ide "hither"	itt "here"	Zoli	1;8,6	MacWhinney
in: <u>itt teszem</u> "here put+1PS" for <u>ide teszem</u> "hither put+1PS."				
ott "there"	oda "thither"	Zoli	1;8,6	MacWhinney
in: <u>oda nem volt magnó</u> "thither not was tape-recorder" <u>for ott nem volt magnó</u> "there not was tape-recorder"				
in: <u>az oda</u> "that thither" for <u>az ott</u> "that there."				
ide "hither"	oda "thither"	Zoli	1;8,6 2;2,2	MacWhinney
in: <u>gyere, bácsi, oda</u> "come, uncle, thither" for <u>gyere, bácsi, ide</u> "come here, uncle."				

Adult Form	Child Form	Child	Age	Source
oda "thither"	ott "there"	Zoli	1;8,6	MacWhinney

in: ott a másik "there the other" for oda ment a másik
"thither went the other."

in: nem ott is "not there also" for nem akarok oda menni "not want+LPS thither go+infin."

in: nem ott "not there" for nem akarok oda menni
"not want+LPS thither go+infin."

in: ott a másik # autóba "there the other # car+inessive"
(=There is the other car) for oda akarok menni a másik autóba "thither want+LPS go+infin. the other car+inessive."

hova "whither"	merre "in what direction"	Emőke	4;2,4	Meixner
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adverbs based on special locative roots:

benne "in-it"	bele "into-it"	Laci	1;7	Balassa 1926:44
felém "towards-me"	hozzám "to-me"	Éva	2;11	Kenyeres 1928:55

in: nézz hozzám "look to me" for nézz felém "look toward me."

adverbs based on postpositions:

mögötted "behind you"	előtted "in front of you"	Éva	2;0,25	Kenyeres 1926:49
azalatt "during that time"	azóta "since that time"	Éva	6;0,3	Kenyeres 1928:50
azóta "since that time"	azalatt "during that time"	Éva	6;8,6	Kenyeres 1928:50
ezért "because of this"	emiatt "due to this"	Éva	4;8,29	Kenyeres 1928:51
elébe "in front of her"	utána* "after her"	Éva	2;2,30	Kenyeres 1926:49

in: szaladjak utána? "Should I run after her?" for
szaladjak elébe? "Should I run to meet her"

elébe (as above)	utána*	Laci	2;1	Balassa 1893:70
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* The phrase szalad utána "runs after it" may function as an amalgam.

Adult Form	Child Form	Child	Age	Source
f) <u>Conjunction extensions:</u> (conjunction for conjunction)				
mert "because"	hogy "so that"	Józsi	2;11,24	Meixner
hogy "so that"	mert "because"	Pali	3;3,18	Meixner
míg "until"	ha "if"	Éva	2;5,25	Kenyeres 1926:64
mikor "when"	ha "if"	Éva	2;7,14 2;11,23	Kenyeres 1926:48
akkor "then"	mégis "nevertheless"	Éva	2;10,24	Kenyeres 1926:64

7.24 Errors detected through use of both syntactic and semantic evidence (Semantic extensions of one affix for another or between an affix and a root)

Because affixes are deeply involved in the syntax of the sentence, errors which involve the substitution of one affix for another may often be detected through both syntactic and semantic irregularities. For example, if the child says, "I sneezed off of the book," we detect the semantic anomaly through the inaccuracy of the description, i.e. we saw that, in fact, he sneezed onto the book. Additionally, we find the combination of sneeze with off of in violation of the inherent directionality of the verb.

In section 7.222 we dealt with extensions between parts-of-speech of roots; in section 7.23 we dealt with extensions of roots which preserved the part-of-speech category. Here, we treat extensions involving all types

of affixes, as well as extensions between affixes and roots. For the most part, these extensions are detected by both semantic syntactic cues, but a few cases are revealed by only semantic deviance. However, in order to discuss morphologically and syntactically similar phenomena in place, we treat all extensions involving affixes in this section.

7.241 Extensions of one flectional suffix for another:

a) Extensions involving the locative cases:

The Hungarian locative system is built around three surface characteristics (enclosure, plane, and point) and three motion characteristics (approximation, distancing, and stasis). The system of verbal prefixes and locative postpositions involve other dimensionalities. Confusions of the locative case suffixes involve one or more of the features mentioned.

Adult Form	Child Form	Child	Age	Source
-be "illative"	-böl "elative"	Rózsi	before 2;0	Kardos 324
in: <u>hadd ülök öledböl</u>	"Let me sit out-form-in your lap."			
-hez "allative"	-nál* "adessive"	Éva	1;8,10	Kenyeres 1926:29
in: <u>pipiknál</u>	"by the chickens"			
-nál "adessive"	-hoz* "allative"	Laci	1;11	Balassa 1893:68
in: <u>Lacikához</u>	"toward Lacika"			
* These forms are permissible in dialects from northeastern Hungary.				
-re "sublative"	-ről "delative"	Éva	2;2	Kenyeres 1928:32
in: <u>tüsszentem a könyvről</u>	"I sneezed off-of-on the book."			

Adult Form	Child Form	Child	Age	Source
-on "superess."	-nál "adess."	Éva	1;8,10	Kenyeres 1926:29
in:	<u>itt maradjon tiszta papirosnál</u>	"It should stay here by clean paper."		
-ra "sublative"	-hoz "allative"	Laci	1;10	Balassa 1893:67
in:	<u>asztalhoz</u>	"toward the table"		
-ra "sublative"	-ba "illative"	Laci	general ~2;0	Balassa 1893:69
in:	<u>utcába</u>	"into the street" (Hungarian marks the street as a plane.)		
-on "superessive"	-ba "illative"	Józsi	2;9,4	Meixner
in:	<u>ebbe</u>	"into this" and <u>abba</u>	"into that"	
-ra "sublative"	-ba "illative"	Józsi	3;1,6	Meixner
in:	<u>beköti a nyakamba</u>	"He in-ties into my neck."		
-be "illative"	-re "sublative"	Józsi	3;1,6	Meixner
in:	<u>erre ki szokott ülni?</u>	"Who used to sit onto this?"		
-en "superessive"	-be "illative"	Józsi	3;2,6	Meixner
in:	<u>fejbe áll</u>	"he stands into his head"		
-ra "sublative"	-ba "illative"	Jolán	2;7	Endrei 464
in:	<u>Losoncba</u>	"in Losonc" (Hungarian marks some cities as enclosures.)		
-ra "sublative"	-ba "illative"	Márti	2;1,26	Meggyes 49
in:	<u>lábamba</u>	"into my foot" (The treatment of body parts as enclosures occurs frequently in Márty's speech and also in some dialects.)		
-hoz "allative"	-on "superess."	Márti	2;0,24	Meggyes 50
in:	<u>ablakon</u>	"on the window"		
-nél "adessive"	-hez* "allative"	Márti	2;1,18	Meggyes 50
in:	<u>doktornénihez</u>	"to the lady doctor's office"		
-be "illative"	-ből "elative"	-	4;-	Kemper 2
in:	<u>egyből</u>	"from one"		
* permissible in dialects of northeastern Hungary				

Adult Form	Child Form	Child	Age	Source
-re "sublative"	-be "illative"	Zoli	1;8,6	MacWhinney
in: <u>fejembe</u> "head+lPS poss.+illative" for <u>fejedre tetted</u> (=You put it on your head.)				
-nál "adessive"	-hoz "ablative"	Zoli	1;8,6	MacWhinney
in: <u>anyucihoz</u> "mommy+allative" for <u>anyucinál voltam</u> "mommy+adessive was+lPS" (=I was near mommy.)				
-hoz "ablative"	-ra "sublative"	Zoli	1;10,2	MacWhinney
in: <u>menjünk fára</u> "Let's go up the tree" for <u>menjünk fához</u> "let's go toward the tree."				
-nál "adessive"	-ra "sublative"	Zoli	2;0,2	MacWhinney
in: <u>ott a fára</u> "there the tree+sublative" for <u>ott a fánál</u> "there the tree+adessive"				
-ra "sublative"	-tól "ablative"	Zoli	2;2,0	MacWhinney
in: <u>főlmászni attól</u> "let's climb from that" for <u>főlmászni arra</u> "let's climb onto that."				
-ba "illative"	-ból "relative"	Zoli	2;2,5	MacWhinney
in: <u>ebből teszem</u> "this+relative put+lPS" for <u>ebbe teszem</u> "this+illative put+lPS"				

Locative postpositions are composed of a base referring to position in Euclidean space, followed by a suffix marking motion to or from or position at. In the following errors we find confusion of one of these directional suffixes for another.

-ett "at"	-é "toward"	Iaci	2;1	Balassa 1893:70
in: <u>mellé</u> "towards next to" for <u>mellett</u> "at next to"				
-é "toward"	-öt "at"	Éva	2;3,21	Kenyeres 1926:49
in: <u>mögött</u> "at behind" for <u>mögé</u> "toward behind", in <u>hátam mögött</u> "behind my back" a common phrase.				
-ól "from"	-att "at"	Éva	3;0,20	Kenyeres 1926:49
in: <u>alatt</u> "at under" for <u>alól</u> "from under" in the phrase <u>terdem alatt</u> "under my knee."				

Adult Form	Child Form	Child	Age	Source
-é "toward"	-ől "from"	Éva	3;3,14	Kenyeres 1926:49
in: <u>elől</u> "from in front of" for <u>elé</u> "toward in front of"				
-ött "at"	-ől "from"	Éva	5;11,10	Kenyeres 1928:49
in: <u>közül</u> "from between" for <u>között</u> "between"				
-á "toward"	-ul "from"	Éva	1;9,30	Kenyeres 1926:49
in: Adult Question: "To where did it roll?" Zoli's Answer: <u>alul</u> "out from under"				

Locative suffixes are also used figuratively in temporal expressions and in the comparative. The comparative uses the adessive to mark the standard of comparison.

-nál "adessive"	-tól "ablative"	Jolán	3;2	Endrei 465
in: <u>én tőletek hosszú vagyok</u> "I am tall from by you." rather than "I am tall by you." Also in <u>az enyém kicsi az apukáétól</u> "mine is small by father's."				

The use of the superessive in the comparative form meaning "in addition to this" seems idiomatic. Probably the phrase is learned as a unit.

-en "superessive"	-nél "adessive"	Éva	6;2	Kenyeres 1928:51
in: <u>ennél kívül</u> "by this outside" (=in addition to this) for <u>ezen kívül</u> "on this outside" (=in addition to this)				

The ablative -tól pairs with the terminative -ig in the expression "from.... up to" The child may reverse this dimension:

-tól	-ig	Kari	4;-	Simonyi 323
in: <u>eddig fogva</u> "up to here starting" for <u>ettől fogva</u> "from here starting"				

The historical derivation of the dative from the allative is reflected in child confusions of these two cases. Such confusions seem to be based upon a perception of the locative component of the dative:

Adult Form	Child Form	Child	Age	Source
-hoz "allative"	-nak "dative"	Nanus	1;4	Simonyi 323
in: <u>Nanuskának</u> "to Nanuska"				
-hoz	-nek	Éva	1;5,26	Kenyeres 1926:29
in: <u>papánek</u> "to papa"				
-hoz	-nek	Éva	1;6	Kenyeres 1926:29
in: <u>mamánek</u> "to mama"				
-hoz	-nak	Zoli	2;0,2	MacWhinney
in: <u>bácsinak</u> "to uncle"				
-hoz	-nak	Laci	1;9	Balassa k893:68
in: <u>Lacikának</u> "to Lacika"				
-nak	-tól	Rózsi	before 2;0	Kardos 324
in: <u>megmondalak nattatátul</u> "I will tell on you from Grandpa" (Directionality is also reversed.)				

The following confusion between the sublative and the translative-factitive may be influenced by their phonological resemblance (i.e. through klang-association), although the common directionality may also play a role here:

-pé (assimilation of vé) "becoming"	-re "sublative"	Kari	4;0	Simonyi 323
in: <u>én szépre teszlek</u> "I will make you to pretty." for <u>én széppé teszlek</u> "I will make you become pretty."				

b) Extensions involving the other major cases:

Here we treat semantic extensions involving confusions of the dative, accusative, and instrumental cases. Additionally, we include here material on confusions of pronoun forms in these cases which otherwise would have been included in section 7.23b.

engem	nekem	Rózsi	before	Kardos
"accusative+1PS"	"dative+1PS"		2;0	324

in: ne bántsd nekem "Don't hurt to me."

engem	neked	Éva	1;8	Kenyeres
"accusative+1PS"	"dative+2PS"*			1928:55

in: apa, fölveszi neked "father, picks up to-me."
(Also the verb is erroneous.)

* This is an error of person like those of section 7.25.

nekem	engem	Éva	2;11	Kenyeres
"dative+1PS"	"acc. +1PS"			1928:55

in: engem nem szokták ilyenvel csinálni (ilyen szerszámmal)
"they didn't use to make me with such things (such tools)"

őt	neki	Jolán	1;10	Endrei 463
"3PS+acc."	"dative+3PS"			

in: huzzad neki "put for him"

-re "sublative"	-t "acc."	Józsi	2;9,10	Meixner
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in: tűzet teszi "he puts fire" for tűzre teszi "he puts to fire."

-ra "sublative"	-t "acc."	Éva	2;2,13	Kenyeres
				1926:53

in: magát húz(za a keztyűjét) "he pulls himself (the gloves)"
for magára húzza a keztyűjét, "he pulls his gloves onto himself"

- | Adult Form | Child Form | Child | Age | Source |
|--|---------------|-------|-------|---------------------|
| -val "instr." | -t "acc." | Józsi | 3;1,6 | Meixner |
| question: <u>mivel játszol?</u> "What are you playing with?" | | | | |
| answer: <u>karácsonyfát</u> "Christmas tree+acc." | | | | |
| -val | -t | Pali | 3;1,8 | Meixner |
| in: <u>másik dobozt is játszunk</u> "We'll play another box too." | | | | |
| (The verb <u>játsszik</u> "play" may take an accusative, if it is the name of the game being played.) | | | | |
| -ra "sublative" | -val "instr." | Kari | 3;- | Simonyi 323 |
| in: <u>éhes vagyok kávéval</u> *"I am hungry with coffee," for | | | | |
| <u>szomjas vagyok kávéra</u> "I am thirsty for coffee." | | | | |
| in: <u>szomjas vagyok borral</u> *"I am thirsty with wine" | | | | |
| (as above) | | | | |
| * These forms may be induced by phrase such as <u>tele vagyok kávéval</u> "I am full with bread." | | | | |
| velem | nekem | Éva | 2;11 | Kenyeres
1928:55 |
| "instrumental+lPS" "dative+lPS" | | | | |
| in: <u>te is tréfálj nekem</u> "you also joke-imp. for me" | | | | |
| for <u>te is tréfálj velem</u> "you also joke-imp. with me." | | | | |
| velem | engem | Éva | 2;0,9 | Kenyeres
1928:53 |
| "instrumental+lPS" "acc.+lPS" | | | | |
| in: <u>mit csinálsz engem?</u> "What are you doing me?" for | | | | |
| <u>mit csinálsz velem</u> "What are you doing with me?" | | | | |
| -tól "ablative" | -val "instr." | Zoli | 1;8,6 | MacWhinney |
| in: Adult: <u>elveszem tőled</u> "I will take it away from you." | | | | |
| Zoli: <u>és a Moncsival</u> "and Moncsi+instrumental" for | | | | |
| <u>és a Moncsitól</u> "and Moncsi+ablative." | | | | |
| -t "accusative" | -val "instr." | Zoli | 1;8,6 | MacWhinney |
| in: <u>oda elütött a Moncsival (a Zoli)</u> "There away+strike+past the Moncsi+instrumental (Zoli)" (=Zoli struck with Moncsi there.) for <u>oda elütött a Moncsit a Zoli</u> (=Zoli hit Moncsi over there.) | | | | |
| -nak "dative" | -t "accus." | Zoli | 1;8,6 | MacWhinney |
| in: <u>Zolikát is</u> "Zoli too" for <u>Zolikának is adjál</u> "Give to Zolika too." | | | | |

Adult Form	Child Form	Child	Age	Source
-é "sign of poss."	-t "accus."	Zoli	1;8,6	MacWhinney
in: <u>ez is Zolikát</u> "this also Zolika+acc." for <u>ez is a Zolikáé</u> "This also is Zolika's."				
-ban "inessive"	-nak "dative"	Zoli	1;8,6	MacWhinney
in: <u>nem férek autónak</u> "not fix+LPS car+dat." for <u>nem férek az autóban</u> "not fit+LPS the car+illative."				
-nak "dative"	-t "accus."	Zoli	1;8,6	MacWhinney
in: <u>Zolikát is</u> "Zolika+acc. also" for <u>Zolikának is (add cukrot)</u> "Zolika+dative also (give sugar+acc.)"				
-be "illative"	-t "accusative"	Gyurka -		Jozefovics 1937
in: <u>hagyjon engem békémet</u> "leave+3PS-imp. LPS-acc. peace+LPS poss.+acc." (=Leave me my peace.) for <u>hagyjon engem békébe</u> (Leave me in peace.)				
-ba "illative"	-t "accusative"	Zoli	1;10,0	MacWhinney
in: <u>menjünk homokot</u> "let's go sand" for <u>menjünk a homokba</u> "let's go into the sand (box)"				
engem "accusative+LPS"	nekem "dative+LPS"	Zoli	2;0,0	MacWhinney
in: <u>engem is</u> (=me too) for <u>nekem is (adjál)</u> (=Give me some too.)				
-val "instrum."	-t "accus."	Zoli	2;2,5	MacWhinney
in: <u>játszunk az a halacskát</u> "play+LPP that the fish+dim.+acc." (=We play that fishie.) for <u>játszunk avval a halacskával</u> (=We play with that fishie.)				
-val "instrum"	-t "accus."	Zoli	2;2,5	MacWhinney
in: <u>mossuk szappant</u> "wash+LPP-imp. soap+acc." (=Let's wash soap.) for <u>mossuk szappannal</u> "wash+LPP-imp. soap+instr." (=Let's wash with soap.)				
-val "instr."	-nak "dative"	Zoli	2;2,0	MacWhinney
in: <u>nekem beszélt</u> "dative+LPS speak+past-3PS" for <u>velem beszélt</u> "instrumental+LPS speak+past-3PS"				
-ba "illative"	-t "accus."	Zoli	2;2,2	MacWhinney
in: <u>másikat (tegyél)</u> "other+acc. put+imp.+2PS-ind." for <u>tedd a másikba</u> "put+2PS-imp. the other+illative"				
öt "3PS +acc."	érte "causal-final+3PS"	Márti	2;2,23	Meggyes 31
in: <u>hozta érte</u> "he brought it for him" for <u>hozta őt</u> "he brought him."				

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Adult Form	Child Form	Child	Age	Source
-m "1PS poss."	-d "2PS poss."	Emőke	3;2,23	Meixner
in: <u>terdeden</u> "on your knees" for <u>terdemen</u> "on my knees"				
-m	-d	Laci	-	Balassa 1893:142
in: <u>ceruzád</u> "your pencil" for <u>ceruzám</u> "my pencil"				
-e "3PS"	-m "1PS"	Zoli	1;10,0	MacWhinney
in: <u>kezemmel</u> "with my hand" for <u>kezevel</u> "with his hand."				
-m	-d	Zoli	2;0,2	MacWhinney
in: <u>engedet</u> for <u>engemet</u> (section 5.43i)				

d) Extensions involving verbal suffixes

1) Mood and tense:

-d "2PS imper."	-ni "infin."	Márti	2;1,3	Meggyes 57
in: <u>törölni</u> "to wipe" for <u>töröld</u> "wipe+2PS-imp." (From the age of 1;10 Márti frequently used infinitive forms of several verbs as imperatives. Zoli also used such forms from 1;10, as noted in section 3.4 of Part III.)				
-t "past"	-j "imper."	Éva	1;9	Kenyeres 1928:35
in: <u>verje meg</u> "beat him up+imp." for <u>megverte</u> "he beat him up."				
-ne "conditional"	-t "past"	Jolán	3;2	Endrei 465
in: <u>voltam</u> "I was" for <u>volnék</u> "I would be."				

2) The person of the verbal suffix (compare 7.23b):

Most of these errors, like the errors of person in section (c) above and many of the errors of 7.23b are due to discourse pressure, or the force of being addressed in the second person.

-om "1PS-def."	-od "2PS-def."	Kari	1;5	Simonyi 321
in: <u>tudod</u> "you know" for <u>tudom</u> "I know" as an answer to <u>tudod?</u> "do you know?"				

Adult Form	Child Form	Child	Age	Source
-ok "1PS-undef."	-sz "2PS-undef."	Kari	1;5	Simonyi 321
in: <u>akarsz</u> "you want" for <u>akarok</u> "I want" in reply to the question <u>akarsz</u> "do you want?"				
-am "1PS"	-ál "2PS"	Laci	1;10	Balassa 1920:102
in: <u>aludtál</u> "you slept" for <u>aludtam</u> "I slept"				
-em "1PS"	-ed "2PS"	Laci	1;10	"
in: <u>érted</u> "you understand" for <u>értem</u> "I understand."				
-em "1PS"	-d "2PS-imp."	Laci	1;10	"
in: <u>vedd ki</u> "take out" for <u>veszem ki</u> "I take out." (There is also a mood error here.)				
-om "1PS-def."	-od "2PS-def."	Hajnalka	-	Keresztes 33
in: <u>tudod</u> "you know" for <u>tudom</u> "I know," after which Hajnalka corrects her own error.				
-ők "1PS-ind."	-sz "2PS-ind."	Jolán	1;8	Endrei 462
in: <u>jössz</u> "you come" for <u>jövök</u> "I come"				
-ok "1PS-ind."	-sz "2PS-ind."	Jolán	1;8	Endrei 462
in: <u>akarsz</u> "you want" for <u>akarom</u> "I want."				
-él "2PS-undef."	-ek "1PS-undef."	Zoli	2;2,5	MacWhinney
in: <u>segítsek</u> "help+imp.+1PS-undef." for <u>segítsél</u> "help+imp.+2PS-Ind."				
-od "2PS-defin."	-om "1PS-def."	Zoli	2;2,5	MacWhinney
in: <u>nekem megmutatom</u> "dative+1PS perf.+show+1PS-def." for <u>nekem megmutatod</u> "dative+1PS perf.+show+2PS-def."				

7.242 Extensions of one verbal prefix for another:

le "down"	föl "up"	Éva	2;3	Kenyeres 1928:46
föl "up"	le "down"	Éva	2;3	Kenyeres 1926:43 1928:46
össze "together"	szét "apart"	Józsi	3;1,26	Meixner
in: <u>szétrakjuk</u> "let's stack them apart" for <u>összerakjuk</u> "let's stack them together."				
le "down"	el "out, over"	Józsi	2;9,10	Meixner
in: <u>eldülöm</u> "I tip over" for <u>ledöntöm</u> "I knock down."				

Adult Form	Child Form	Child	Age	Source
rá "onto"	meg "perf."	Jolán	2;5	Endrei 464

in: megesett a kocsi "the car completed falling" for rászett a hó a kocsira "the snow fell on the car."

(This error is open to various types of analysis. For example, it may be that the subject is kocsi "car" rather than hó "snow," or it may be that the child intended to say megesett a kocsira "it fell onto the car completely." In any case there seems to be some extension of még for rá.)

7.243 Extensions of one postposition for another:

előtt "in front of"	között "between"	Éva	2;3,2	Kenyeres 1926:49
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mögött "behind"	között "between"	Éva	2;3,2	Kenyeres 1926:49
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mögé "towards behind"	közé "towards between"	Éva	3;0,15	Kenyeres 1928:50
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in: lámpa közé bújj "hide towards between the lamp!"

között "between"	alatt "under"	Éva	3;1,22	Kenyeres 1928:50
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in: A piros meg a sárga alatt "under the red and the yellow" for a piros meg a sárga között "between the red and the yellow."

<u>házon túl</u> "beyond the house"	<u>házon át</u> "across the house"	Éva	5;11	Kenyeres 1928:51
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<u>úton túl</u> "beyond the street"	<u>úton kívül</u> "except the street"	Éva	6;5,14	"
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Additionally, we have observed in section 7.23f confusions between the postposition- and case-based adverbs azalatt, azóta, ezért, emiatt, mögöttem, előttem, and felém. Furthermore, in section 7.247 below we observe a number of confusions between postpositions and suffixes.

7.244 Extensions of formative suffixes:

Like detection of errors with flexional affixes and postpositions, detection of semantic extensions of formative suffixes often involves both semantic and syntactic evidence, although sometimes only semantic evidence can suggest that another suffix would have been better than the suffix the child chose. In some cases, it is not possible to specify another formative whose semantic field includes the meaning the child attempted to express. Such extensions are discussed separately below:

Adult Form	Child Form	Child Age	Source
-skodik "acts <u>Adj.</u> "	-zik "becomes <u>Adj.</u> "	Piroska -	Trencsény 264
in: <u>gorombázik</u> "becomes naughty" for <u>gorombáskodik</u> "acts naughty"			
-get "frequentative"	-ődik "reflexive-passive"	Manus 3;0	Simonyi 318
in: <u>legveződik</u> "fans itself" for <u>legvezget</u> "keeps on fanning"			
-tat "causative"	-oz* "frequentative"	Éva 2;6,16	Kenyeres 1928:87
in: <u>bebújoz</u> "keeps on hiding" for <u>bebújtat</u> "make hide" and			
in: <u>bebújozhat</u> "is able to keep on hiding" for <u>bebújtathat</u> "is able to make hide"			
* This suffix is homonymous with the multi-purpose denominative verbalizer; if the child intended to use that suffix, the error is in both inherent semantics and context-specification.			
-ő "that which <u>V</u> s"	-ni "the act of <u>V</u> ing"	Kari 3;-	Simonyi 323
in: <u>nem látok esni</u> "I don't see raining" for <u>nem látok esőt</u> "I don't see rain."			

Attempting to eliminate errors such as those observed in 4.12e, the child may assign some meaning to the meaningless marker of the 3PS Indefinite which only occurs on some verbs: -ik. In the first of these errors, the child uses -ik as if it were a general verbalizer such as -ozik; in the second, the child simply substitutes it for the unproductive suffix -en; in the third the substitution is for the caustive -et.

Adult Form	Child Form	Child	Age	Source
pénzzel játszik "he plays with money"	pénzik	-	2;-	Kardos 1901:297
csöppen "it drips"	csöppik	Nanus	2;4	Simonyi 320
csenget "he rings"	csengik	Jolán	2;3	Endrei 463

Extensions of formative suffixes to domains not included by other formative suffixes:

fešül "combs"	fešüködtet "causes to comb itself"	Kari	4;-	Simonyi 318
betakar "cover with blankets"	betakarödztat "cause to cover itself with blankets"	Laci	3;6	Balassa 1893:72
összehasonlít "resemble"	összekülönböztet "cause to compare"			-

In each of the above three examples, the child has attempted to reverse the reflexivity of the roots fešül, betakar, összehasonlít.
fešüködik, "combs itself," betakarödzik "covers itself,"

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Adult Form	Child Form	Child	Age	Source
az a cipő amelyikben sántikál	sántikáló cipő "limping shoe"	Lili	-	Ponori 1905:438

"the shoe in
which one limps"

Here, the adjectivalizing suffix -ó "_V_ing" is used
as if it were causative.

"juj"-t mond "says 'juj'"	jujjaszkodik "go 'juj'"	Éva	2;7,25	Kenyeres 1926:66
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Here, the suffix -aszzkodik is incorrectly analysed from
kapaszzkodik "grabs." Even so, it is not clear how the
child has given it the meaning of "make a sound like ___."

7.245 Omissions of affixes and postpositions:

The discussion of chapter 3 of Part III focuses upon the distribution of omissions of grammatical morphemes from obligatory contexts. The large number of such errors reported there suggests that the Hungarian observers have not paid particular attention to the question of morpheme omission. Detailed reporting of these omissions in this section would consume a great deal of space and would provide not concrete benefit beyond that of the discussion of Part III.

7.246 Semantic factors in superfluous affix usage:

In section 5.211 we discussed a number of reported errors with superfluous inflection. It seemed that, in the case of those particular examples, the superfluity was a result of incomplete analysis of amalgams. This is to say that the child is fully unaware of the presence

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of the inflection, thinking that he is using some basic form. In the error type we discuss in this section, the child senses that the inflected form contains some additional meaningful component, but is not yet fully in command of this meaning. This variety of superfluous affix use is really best thought of as incorrect assessment of the meaning of an element which is at least partially analysed. Given the postulate of section 2.3172 of Part I which holds that the effects of superimposition may be gradual, we can see that some of the superfluous affixes in this condition may be parts of amalgams, while others may be productively agglutinated. When we only consider isolated examples, it is not possible to distinguish the phenomena of section 5.211 from that of this section. However, when we have more extensive data from one child, as in the case of Zoli's use of the accusative at 1;8,6, we can recognize a general pattern of inability to control the semantics of a suffix.

Adult Form	Child Form	Child	Age	Source
oda (akarok menni) "thither(I want to go)"	odát "thither+acc."	Zoli	1;8,6	MacWhinney
lyuk van "hole is"	lyukat van "hole+acc. is"	Zoli	1;8,6	"
ez is van "this also is"	ezt is van "this+acc. also is"	Zoli	1;8,6	"
Zolikaé a kormány "Zolika's the wheel"	Zolikaé a kormányt "Zolika's the wheel+acc."	Zoli	1;8,6	"
elviszi Moncsi "away+takes Moncsi"	Moncsit elviszi Moncsi+acc. away+takes"	Zoli	1;8,6	"

Adult Form	Child Form	Child	Age	Source
elbújik a másik halacska "away+hides the other fishie"	csak másik halacsját elbúj "just other fishie+acc. away+hides"	Zoli	1;8,6	MacWhinney
ott van a másik "there is the other"	ott van a másikat "there is the other+acc."	Zoli	1;8,6	MacWhinney
itt a másik "here the other"	itt a másikat "here the other+acc."	Zoli	1;8,6 2;2,3	MacWhinney

Although we cannot be sure that none of these errors are precipitated by the presence of amalgams, we can be sure that the first is not so motivated, since odát, the accusative of a deictic adverb, could not have been found in the input. It does seem that Zoli illustrates a general inability to control use of the accusative, but it may be that this general pattern interacts with the presence of possible amalgams such as ezt is "this+acc. too" and másikat "other+acc." which often occur in correct contexts. See also Zoli's error in section 6.12.

7.247 Extensions of postpositions for suffixes:

One of the most frequent confusions which occurs between postpositions and suffixes is the use of volna (the past conditional particle, which patterns like a verbal postposition) for the present conditional suffix -ne.

adnának "give+cond.+3PP"	annak volna "give+3PP+volna"	Laci	3;6	Balassa 1893:72
beszélnek "speak+cond.+1PS"	beszélék volna "speak+1PS volna"	Kari	3;-	Simonyi 322
szeretne "like+cond-3PS"	szeret volna "like volna"	Kari	3;-	Simonyi 322

Adult Form	Child Form	Child	Age	Source
kinyitnám "out+open+cond. +LPS"	kinyitom volna "out+open+LPS volna"	Józsi	3;1,10	Meixner

Compare these errors with the redundant use of volna in the present tense discussed in section 7.1.

Other confusions of postpositions for suffixes involve the locative postpositions and the locative case suffixes:

szekrényen "on the chest"	szekrény alatt "under the chest"	Éva	2;1,3	Kenyeres 1926:49
szekrényen "on the chest"	szekrény fölött "above the chest"	Éva	4;0,20	Kenyeres 1926:50
sírba "in the grave"	sír mögé "behind the grave" (where they bury the soldiers)	Éva	3;0,4	"
asztal alól "from under the table"	onnét az asztaltól "from there from by the table"	Józsi	3;2,6	Meixner
kaftánra "onto the kaftan"	kaftán alá "towards under the kaftan"	Éva	2;0,18	Kenyeres 1928:49

One child was reported to have used locative adverbs as if they were postpositions substituting for suffixes.

ajtóban "door-in"	ajtó belen* "door in-it+ on"	child	3;-	Vozáry 1918 Szatmár
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* This illative pronominal adverb bele "into-it" has been additionally marked with the superessive -n.

szobából "room+relative"	szoba belől "room inside"	"	3;-	Vozáry 1918
konyhába "kitchen+illative"	konyha belé "kitchen into-it"	"	3;-	Vozáry 1918

Both belől and belé derived in the 13th Century from bél "inside." Later the illative and relative were derived

from these adverbs. Therefore, the child's productions retrace this development.

7.248 Extensions of roots for suffixes:

The potential suffix -hat, -het refers mostly to situationally-determined possibilities, while the auxiliary tud "is able to" refers more to capabilities of the Agent:

Adult Form	Child Form	Child Age	Source
leérhessen "down+arrive+ potent. +imp. +3PS" (=that he should be able to arrive)	le tudjon érne "down be-able+ imp.+3PS arrive+ infinitive"	Józsi 3;1,6	Meixner

When the surface subject of the verb kell "be necessary" is a noun, there may be a beneficiary in the dative case, i.e. kenyér kell nekem "bread is necessary to me" (=I need bread.) The child extends the meaning of beneficiary in such a structure to the meaning of agent of an embedded clause in structures which take an infinitive with kell, i.e. csinálni kell neked "to do is necessary for you." This is colloquial and the formal language provides that the subject of the infinitive should be marked with a personal suffix.

meg kell csinálnod "perf. is-necessary your-doing" '=You need to do it.)	meg kell csinálni neked "perf. is-necessary to-do for you"	Józsi 3;1,6	Meixner
haza kell menned (=You need to go home)	haza kell neked menni	Józsi 3;1,6	Meixner

Adult Form	Child Form	Child	Age	Source
kellett keresnem (I needed to search)	kellett nekem keresni	Józsi	3;1,17	Meixner
kellett hoznod (=You needed to bring)	kellett hozni neked	Józsi	3;1,27	Meixner

7.249 Extensions of suffixes for roots:

nekem "dat.+1PS"	-m "1PS"	Márti Józsi	1;8-2;2	Meggyes 53 Dezső
in: <u>add ide</u> "give+imp.+to-here+1PS" (=my give here) for <u>add ide nekem</u> "give+imp. to-here dat.+1PS (=Give me.)"				
rajta "on it" (adverb)	rá "onto" (verbal prefix)	Józsi	2;11,18	Meixner
megint "again"	vissza "back"	Éva	8;3,9	Kenyeres 1928:86
in: <u>visszaéreztem a fájdalmat</u> "I felt back the pain." for <u>megint éreztem a fájdalmat</u> "I felt the pain again."				
csaknem "nearly"	volna "conditional particle"	Laci	-	Kallós 410

Just of the extended meanings of some formatives (7.244) could only be registered by a complete phrase, this use of meg- "perfective" is equivalent to "finish the activity."

befejezték az evést "they finished the meal"	megettek "they ate up"	Laci	3;6	Balassa 1893:73
befejeztem a játszást "I finished the play"	megjátszottam "I played up"	Laci	3;6	"

7.25 Observations of non-deviant development of semantic features:

By looking at the emergence of lexical items with an eye towards the time of appearance of certain semantic features coded by these items, we can learn something about the ideas which are of first communicative importance to the child and we can set an upper limit to the emergence of these features in cognitive functioning. For example, Meggyes (60) notes that the personal suffixes on the verb enter between 1;8 and 1;10, whereas the entry of the personal pronouns is delayed until around 2;1 (30-31). The actual consolidation of the first person verbal suffix against its competitors in the second and third person (section 7.23b) only occurs when én "I" and enyém "mine" emerge after 2;1. We may also note that the possessive suffix of the third person -ja, -je, the sign of possession -é, and the dative in the possessive construction all enter between 1;9 and 1;10. The late emergence of the pronouns seems accountable to the fact that they have no functional load, having their content obligatorily expressed by the verbal suffix. Márta appears to "understand" the notions of person and possession by the age of 1;9. However, functional factors, morphological difficulties, and discourse pressure delay the final consolidation of the formal expressions of person and possession. In section 7.23b we observed that Éva

Kenyeres also evidenced later acquisition of pronouns than personal suffixes on the verb. Again, the fact that verbal suffixes are always required, while the pronouns are optional, seems to account for the sequencing. Additionally, we might argue that earlier acquisition of the personal suffixes is encouraged by the tendency to acquire amalgams. Along these lines, Meggyes notes that the fact that Márta began to use both the dative suffix -nak, -nek and the 3PS dative daverb neki "to him" at around 1;10 seemed to be "an individual characteristic, stemming from environmental influences." Evidently, Meggyes feels that the normal sequence of acquisition would show the case preceding the adverb, since the case appears in many amalgams, while the adverb appears alone or in a few limited phrases.

Meggyes reports correct use of the definite and indefinite conjugations beginning around 1;9 and complete by 1;11. Acquisition of this distinction affects around a dozen suffixes, and there is thus evidence for the appearance of the distinction along a broad front. Although use of the definite article begins around 1;9, definiteness on the verb is more stable than use of the definite article. Perhaps difficulty with the latter is due to segmentation problems (section 5.1). Meggyes observes that the first locative suffixes were those of proximate motion: the illative, the sublative, and the allative, all entering around 1;8. The locative adverbs and pronouns at this age are hol "where," itt "here,"

ott "there," benne "in-it," fel "up," and ki "out." Meggyes holds that Márta was using suffixes of proximate motion, while most of her locative adverbs and pronouns expressed position or stasis. In fact, the adverbs and pronouns seem to fill in for those semantic areas vacant in the suffix system. This matter should be pursued in examinations of data from other children.

Kenyeres (1926:29-33) found that, in the time from 1;7 to 1;9, several parallel developments bespoke the emergence of the semantic relations governing plurality. Although Éva had used the plural from 1;5,5, her "conscious" use of the marker only began around 1;7; at this time she began to establish agreement between noun and verb in number (7.23b). Also at this time, the word is "also" entered and was frequently used in structures such as szeme. Ez isz szeme "eye. This is also an eye." (1;7,8). The appearances of the words még "still, more," másik "other," kettő "two," mind "each," több "more," sok "many," ennyi "how many!" and egy "one" all in the period between 1;7 and 1;9 further testify to Éva's developing interest in the concept of plurality. In another comparison, Kenyeres found that the entry of the conditional mood at 2;2 was preceded by the first use of talán "perhaps" at 2;0,25 and paralleled by the first uses of ha "if."

7.26 Formal education and child language

The work of Baranyai, Lénárt, and Blaskovich sought to determine the ways in which the linguistic ability of the school-aged child (8-14) may limit and shape the type of language instruction from which he can profit. In the course of these studies, the teaching of reading, formal grammar, and composition was examined in light of the child's ability to benefit from the instruction. Much of this material has exclusively pedagogical import, but other aspects tell us something about the status of language in the adolescent. For this reason we turn to a brief survey of the findings of this research. The work reported in Baranyai (1958) was conducted in 1939-1941, but was not published at the time due to a paper shortage. Baranyai quizzed 556 children from 8 to 10 years of age to determine their comprehension of a series of one hundred words and phrases from their school readers. It was found that children of professional families from the city (Szeged) performed better in supplying explanations than did children from working class families in the suburbs of the city. The latter, in turn, performed better than children from the farming area around Szeged. Experimenter and investigation variables were not controlled. A further finding was that explanations or definitions of terms most often reduced the actual meaning of the terms defined by making them overly concrete.

Baranyai (1945) reports on a test of use of grammatical categories given 1078 children in Budapest between the ages of nine and ten. Baranyai (1947) reviews the theoretical

interpretation of the study. General findings were that two-thirds of the curriculum of the third grade was not learned, that girls performed better than boys, and that performance improved with age. Additionally, Baranyai was able to establish an order of difficulty in use of grammatical categories which was based upon the principle that the child begins grammatical analysis with the largest units. Thus, the sentence-types were easily learned by most children and the categories subject and predicate were nearly as easy, since they derive directly from the general relations holding sentences together. Here we might note that pauses occurring under certain conditions between the subject and the predicate in Hungarian sentences may have aided learning of these categories. Of the sentence constituents, Baranyai only discusses the accusative, locative, and temporal; she notes that the accusative is the most correctly perceived of these three, while the temporal is the least correctly perceived. These differences could be easily explained as results of clarity of morphological marking. According to Baranyai, syntactic categories are generally easier for the child to perceive than morphological categories. This she again attributes to the fact that the child begins all analysis with the meaning units of the sentence. Among the parts-of-speech, verbs are most clearly identified. Baranyai finds that children have attempted to learn the meaning of grammatical terms by associating concrete words with each category. Thus,

a child attempts to learn what a verb is by memorizing a set of verbs.

The 1951 article by Lénárt and Baranyai proceeds upon the basis of the theoretical formulations of the 1945 article. The authors report how modification of the curriculum in mathematics and grammar with the goal of encouraging abstract thinking raised performance in the experimental group by 27 and 25 percent. Looking at errors of grammatical analysis, Baranyai found that such errors are attributable to either 1) difficulties encountered by the child in understanding the "character" of grammatical terms, or 2) skewing of the application of grammatical terms by peculiarities of the actual lexical items, or 3) differences between the units of grammatical analysis and the intonational units of actual speech. In the first error-type a student calls the modified the modifier. In the second error-type the student picks "workers" as the subject of the sentence, "The plan-book is always in the workers' hands," because the student thinks of the workers as the most active, human entity in the sentence. In the third error-type, the student considers "good work" to be the subject of "Good work puts a stop to waste," since "good work" rather than just "work" is the intonational subject. If one goes over Baranyai's results from the viewpoint of generative transformational grammar, it appears that

many of the students' answers show that they are using categories of semantic structure, rather than surface structure.

Kerégyártó's scathing 1952 critique of Baranyai's work points to inadequacies in reporting, experimental design, linguistic analysis, control of experimental artifacts, and appreciation of prior research. Much of what Kerégyártó says makes good sense, although one can detect an ideological motivation behind his criticism. Certainly we need to know more about the status of language in older children, but it seems that a direct investigation of children's ability to control the terms of traditional grammar will provide us with very little of the information that we need.

Baranyai's 1958 report is based on data gathered between 1939 and 1943 from 102 Budapest children from six to fourteen years of age. She found that, in story re-telling, number, variety, and complexity of subordinate clauses increases with age, and that the types of clauses in the repetition often did not correspond with the types in the model. The 1959 study traces the learning of figurative words between the ages of nine and eighteen in one thousand subjects. The students were asked to write definitions of forty-two words from three groups: 1) words like "dull" with the meaning "not sharp" and the meaning "blasé"; 2) words like "unhewn" which have largely lost their original meaning; and 3) abstract words like "success." Words of the first type were not

given their figurative definitions (i.e. blasé) as one of the definitions provided by more than 66% of the group for any age group under fourteen years. This agrees with Kenyeres's (1928:97) observation that words are not used figuratively before eleven years of age. The more concrete the basic meaning of the word, the earlier the child may acquire the figurative meaning of the word. However, the complexity of the figurative meaning and the distance between the basic and figurative meanings also determines ease of acquisition. In the case of "abstract words" it was found that many of the words learned before thirteen years were acquired with over-concretized meanings.

Blaskovich's article in the same journal in the same year is based upon the data of Baranyai (1958) and develops a slightly different theoretical perspective. Blaskovich holds that up to the age of ten words are understood in concrete terms. If called upon to define a word, the child will talk about what that thing does, where it is located, what it is used for, and what other objects are associated with it. Between the ages of ten and twelve, the understanding of the basic meanings of words becomes conceptual. The process of conceptualization has five stages, according to Blaskovich.

- 1) The concept is first isolated from that which it is not;
- 2) The concept is identified with other similar concepts;
- 3) Hierarchical taxonomies are formed;

- 4) Distinctive features are isolated; and
- 5) A formal definition is abstracted.

In the period between twelve and sixteen, the adolescent first becomes capable of using words in their figurative meanings, but at first these figurative meanings are concretely defined. Only after the age of sixteen do figurative words undergo conceptualization.

Lénárt's study published in 1962 and 1963 is based upon a short test given 360 students between the ages of ten and fourteen. The examination was a modified multiple-choice test requiring altogether eighteen responses. Lénárt was interested in noting age changes in the types of semantic errors made by students (1962) and the incidental grammatical errors in their responses (1963). Although she did establish a pattern of growth with age, her conclusion regarding general processes of mental development are purely speculative.

Finally, mention should be made of Baranyai and Lénárt's 1959 book researching the development of the skill of written composition in the age from ten to fourteen. Of the five studies reported in the chapters of the book, the last two are the only ones which are not completely tangential to our present interests. These two studies are succinctly summarized in Baranyai (1959) and Lénárt (1959), both in English.

Part III

Zoli from 1;5 to 2;2

1.0 Gathering of the data

Between November 1970 and September 1971 it was my privilege to be a guest in the nursery which housed the National Institute of Nursery-School Methodology (BOMI). The nursery school had an average daily attendance of less than forty children. At the beginning of the school year in September the children ranged in age from one to three years. By the end of the year, those children who had passed their third birthday would be transferred from this bölcsöde "nursery" to an óvoda "pre-school." The well-equipped one-story building was divided into two wings so that the youngest children could be cared for separately from the older children. Four teachers were assigned to each of the two groups. Apart from the personnel of the Institute, additional staff members included the Director and Assistant Director, two maids, a cook, a washing woman, and a gardener. It seems that this nursery was somewhat unusual with its high personnel-pupil ratio. On the other hand, I was able to observe a number of other nurseries and public schools in the country of similarly high quality.

The course of a day's activities in a Hungarian nursery is more structured than in our own American nursery schools. Arriving even before 8:00 AM, the children are asked to change from their own clothes into nursery-school garb. Since all linen is washed at the nursery, this

saves the parents a certain amount of work. Children are given a small breakfast shortly after arrival and then allowed to play throughout the morning. In inclement weather the children may remain inside the entire day, but the supervisors attempt to maximize the time the child spends out-of-doors. In Winter, the children are warmly bundled and taken out for a short play period when there is snow on the ground, or they are placed in cribs for a nap in the cold air. Morning play is interrupted daily for a glass of weak tea flavored with sugar and lemon. Lunch, usually a hearty meal, is served at noon. Afterwards, the children sleep for nearly two hours, and then wake for a play period of up to one hour before being taken home around 3:30.

It was in this context that I tape-recorded samples of spontaneous speech from six of the children. In order to allow the children full freedom of motion, a small Sony wireless microphone was sewn into a commercially-available smock for children. The transmitted signal was picked up by a Sony "Supersensitive" radio and then recorded onto BASF tape by a Uher 4200 recorder. In order to maximize spontaneity, two aprons were given out in each group on a given recording day. This way, no child could realize that he was a subject of study. Initially, some children balked at the task of putting on the smock, but in time they grew to ask for permission to wear the smock. Another initial problem was the child's desire to pull out the microphone to look at it. The microphone could

not be totally enclosed, since this would interfere with recording quality. Fortunately, the children rapidly lost interest in pulling the microphone out, and this problem disappeared.

The recordings tap a variety of situations within the nursery: indoor and outdoor play, small and large groups, groups with and without the participation of the researcher and nursery-school personnel. It was found that children produced the most when accompanied by one or two of their peers in a play-room indoors. For this reason, this is the most typical situation; but the children could not be kept indoors during the first days of Spring. The recordings were generally made during the morning play period which lasted about two hours. Each child was studied intensively for a week. Therefore, the total amount of recording time at a given level generally totals between six and eight hours. Children were reexamined at intervals ranging from one month to two months, depending upon the rate of change in their language. Of the six children initially studied, two were dropped from the total at an early point because they left the nursery. The four remaining children who were followed throughout the ten-month period included two girls and one boy in the youngest group and one girl in the oldest group. The observations of the youngest boy will form the material for the discussion of this Part. Hopefully, there will be an opportunity when the results from the other children can also be examined.

Zoli was born July 5, 1969. Zoli's mother was a clerk and his father was a technician in a photographic and optical store. Although his family was well-off financially, both he and his parents lived together in one small flat with his paternal grandparents. From the point-of-view of Zoli's linguistic development, this meant that he was exposed to a relatively larger amount of adult speech than children who have other siblings or who live with no adults other than their parents. Moreover, Zoli frequently paid visits to his maternal grandparents in the country; one such visit delayed the recording of the final period in September. It is possible that the relatively high proportion of adult input to Zoli's language learning resulted in a relatively straightforward series of advances without the presence of numerous non-adult lexical items or syntactic patterns.

Physically, Zoli showed no abnormalities, but he had a tendency towards what was diagnosed as "puerile breathing." Although his articulation could be rather accurate, this wheezing, together with other occasional performance factors, could make his utterances somewhat indistinct. At the time of the beginning of observations in December, Zoli was prone to cry for periods of time because of the absence of his mother, saying, "Mommy's coming right away." Towards the end of the period, Zoli showed some dependence upon the researcher, always tagging after him. In general, Zoli was a cooperative subject and showed little hostility or aggression towards his playmates.

The periods during which Zoli was observed, together with the number of utterances produced, the hours of observation time, and the mean length of utterance (M.L.U.) are as follows:

Table VIII-- Periods of Observation

<u>Period</u>	<u>Title</u>	<u>Age</u>	<u>Hours observed</u>	<u>No.utterances</u>	<u>M.L.U.</u>
Zoli I		1;5,2-5	4	51	1.10
Zoli II		1;6,29-30	6	228	1.58
Zoli III		1;8,6-8	8	2675	1.60
Zoli IV		1;10,0-6	7	1911	1.87
Zoli V		2;0,0-5	6	835	2.58
Zoli VI		2;2,0-3	7	1826	2.50

2.0 Method of analysis

The recordings were accompanied by notes explaining the child's motions through the room and the intent of his communications, much in the manner of Bloom's (1970) analysis of her data from three English-speaking children. Occasionally, it was possible to interpret unclear utterances by repeating them immediately afterwards. Each recording was replayed at home on the same day and any missing facts added at that time. In some cases it was possible to transcribe the data immediately; in other cases, work would pile up and delay transcription. The transcription was coarsely phonetic, only preserving fineness of detail where morphological factors were at play. In citing examples from the transcripts, much of this detail is omitted, since it only serves to confuse the presentation of examples.

2.1 A means of determining acquisition

Some of the data from our analysis has already been included in Part II. This is the data regarding errors and deviations from the norms of adult language behavior. In the present Part we are concerned with other than error-data on the acquisition of grammatical morphemes, the acquisition of phonological rules, and the acquisition of syntactic rules. In conducting this analysis, we have taken the notion of percentage of occurrence in obligatory contexts developed by Cazden (1968:435) and formalized by Brown (1973:14) and supplemented it with an analysis of the productivity of grammatical

morphemes.

Cazden sets the time of acquisition of a grammatical morpheme as that of "the first speech sample of three such that in all three the inflection is supplied in at least 90% of the contexts in which it is clearly required." Brown tells us that we may recognize an obligatory context through any one of four ways, or through a combination of these ways:

- a) Linguistic context: the child's own utterance. Thus, That book pronounced with an intonation that makes that a demonstrative pronoun calls for third-person copula and an article,
- b) Nonlinguistic context. If the child points as he speaks, then the copula should be in the present tense rather than the past or future, and if he points at a single book, the copula should be singular rather than plural. In the sentence in question it could be either uncontracted (That is) or contracted (That's).
- c) Linguistic prior context: from child or others. If this is the first mention anyone has made of the book, then the article ought to be the indefinite a. Had the noun been one that began with a vowel, such as eraser, then the obligatory indefinite would be an.
- d) Linguistic subsequent context. The mother may confirm and expand the child's utterance as: Yes, that's a book. Occasionally, the child himself expands his own utterance in this way. Coding for obligatory morphemes is a good deal easier than it is likely to seem when constraints are considered in the abstract. For the most part, the several constraints converge on a single form, and the adult native speaker can tell at a glance what that form is.

We feel that these criteria provide an essentially sound basis for judgments of morpheme acquisition (as opposed to morpheme productivity). Brown is correct in asserting that, "for the most part, the several constraints converge on a single form, and the adult native speaker can tell at a glance what that form is." As M.L.U. increases, the task of evaluating obligatory contexts becomes easier and easier. However, at the lowest levels of M.L.U., a large percentage of the contexts are not clearly obligatory. For example, if the child says autó "car," we do not know whether to assume that the context is ott van egy autó "There's a car" or kérem az autót "I want the car." This means that we do not know whether either the accusative or the definite article are obligatory in the utterance. Apart from problems peculiar to monomorphemic utterances, a number of grammatical morphemes are not fully predicted by context. For example, the occurrence of the diminutive suffix on a noun is governed by stylistic, rather than grammatical, considerations. In the examination of the acquisition of grammatical morphemes in Chapter 3 we will consider such problems in greater detail.

2.2 Measures of productivity

Having ascertained that a given morpheme is used correctly in a certain percentage of obligatory contexts, we are able to say something about the degree to which the child controls the semantics of the morpheme. However,

we are unable to state how this control is exercised. It may be that the accusative occurs correctly because the child possesses a large number of amalgams with nouns in the accusative and is in control of the semantics of the accusative. Alternatively, the child may have succeeded in isolating the accusative through superimposition and may use it productively. In this sense, use in amalgams is distinctly opposed to productive use. When we consider morphotactic rules and syntactic transformations, we are only interested in productivity, since the occurrence of some phonological alteration in an amalgam really tells us little about learning of the phonological rule involved. On the other hand, studies of morpheme acquisition may show us that a child controls either the semology or phonology of a lexical item, even before that item is productive. The possibility of control of certain basic semological features was mentioned in Prediction #9 of Part I.

Productivity is best demonstrated by the extension of a morpheme or rule to a new instance. Through the use of nonsense items, we can test for the productivity of morphemes and rules. In spontaneous speech data, such as that reviewed in this Part, we have no such experimental evidence and must limit our judgment of productivity to those errors and over-generalizations which betoken productivity. Additionally, we note that the use of a morpheme or rule in a wide variety of contexts suggests that this morpheme or rule cannot be generated simply through amalgams.

The reason why it is so important to make estimates of morpheme productivity is that these estimates are crucial to the accurate assessment of M.L.U. If a suffix shows no productivity, it need never be counted as an independent morpheme in the M.L.U. ratio of morphemes/utterance. However, if the suffix is always productively attached to the root, then it must always be counted in total number of morphemes in the utterance.

The present means of estimating productivity must be viewed as purely exploratory. Basically the estimate is based upon simultaneous use of five major criteria:

- 1) The number and range of roots with which the suffix cooccurs. If a suffix only occurs on one root, there can be little reason to impute productivity. It is also necessary to note whether the roots with which the suffix cooccurs also occur in several forms (i.e. with different suffixes). If a given root were restricted to cooccurrence with only one suffix, one would be cautious about imputing productivity.
- 2) The presence of error data can provide very strong evidence for morpheme productivity. Since erroneous forms are not found in the input, they must be the results of productive generation by the child.
- 3) Experimental data gathered from Berko-type tests or other work with nonsense items may illustrate clear productivity. Note that the issue of analogy vs. rules is not involved in productivity estimates, since either type of formation may be viewed as productive.
- 4) Consideration must also be given to the complexity level of the phonological rules involved in a given set of formations. For example, if a large number of

the child's plurals are formed through bound rules and it appears that the child is still at Level II (see section 3.32 of Part I) in his learning of the phonological rules involved in Hungarian plural formation, then it would be most unlikely that such forms should be the result of productive attachment.

- 5) Finally, productivity estimates of earlier periods form a base-line against which productivity at later times may be estimated. The disappearance of errors should not be taken to involve a decline in productivity.

It is not clear to what extent these working criteria can be further elaborated into a measure of morpheme productivity with statistically demonstrable reliability. For this reason, we must remind the reader that these estimates should be treated as nothing more than estimates. However, without attempting such estimation, we would clearly underestimate the M.L.U. for Hungarian children. Alternatively, one cannot simply assume that all morphemes, formative and flecnional, are productive in all utterances. In the age-level studied here, questions of non-concurrent productivity are not of importance, since there is no evidence for productivity of any formative suffix. Nonetheless, the problem of concurrent vs. non-concurrent productivity is of real importance beginning with the middle of the third year.

We should also note here that morphologically opaque forms must be counted as single lexical items in both child and adult speech. For example, engem "me"

is the accusative of the LPS Personal Pronoun, but it fails to show any evidence of the attachment of the accusative suffix. Although we list such forms in our tally of accusatives used by the child, they cannot figure into our estimates of percentage productivity.

Associated with the question of affix productivity is the question of root productivity. A general criteria of morpheme counting seems to be that all roots are judged to be lexical items, unless their appearance is limited to a small group of phrases. In theory, we could test the productivity of non-grammatical morphemes by setting up situations in which their use would be obligatory. We could ask children to name pictures in a book, or colors of beads. Much of this would amount to vocabulary testing and would only serve to convince us that most roots are productive. The few roots whose productivity we might question are those whose grammatical function requires that they be associated with some context-specification. Let us give an example of this problem. A Level III, Zoli used the phrase törpe bácsi "Uncle dwarf" to refer to a small plastic doll with a shape like that of one of Snow White's dwarfs in the Disney production. It was clear that bácsi "Uncle" was used quite productively at this time. In fact, it is likely that Zoli had had experience analysing phrases such as János bácsi "Uncle John" by subtracting the known bácsi and leaving a residue János which could then be assigned to the

individual person or object in question. If Zoli had only named the doll with the full form törpe bácsi, he would have been uncertain whether to count one or two lexical items. However, our analysis of the semantics of the phrase, together with our knowledge of the productivity of bácsi in Zoli's speech, would suggest that Zoli should have been able to associate törpe with the particular toy in question. It turns out that törpe was, in fact, an independent lexical item, since Zoli used it without bácsi and even inflected it for the accusative. On the other hand, at Level III, Zoli used the copula van only in phrases such as ott van "there is." Although Zoli was able to use ott somewhat productively, there is reason to believe that van was bound to phrasal appearance. The semantics of the copula must include a context specification, since the copula is deleted in certain constructions. Moreover, the exact meaning of the copula may be viewed as somewhat abstract. Here, semantic complexity, together with the distributional facts, points towards non-productivity of the copula. In the terms of the model of Part I, the nature of storage makes it possible for a lexical item to be productive and yet still participate in phrases and idioms. In our discussion of syntax, we will pay some further attention to these possibilities.

2.3 Calculation of M.L.U.

In addition to isolation of morphemes, calculation of M.L.U. requires isolation of utterances. The essential criterion we have adopted in isolating utterances is that an utterance should be a sequence of one or more meaningful items which may, through a process of reconstruction, be mapped onto a grammatical sentence. Below, we consider in some detail the steps required by this reconstruction. A second major criterion for utterance isolation is that utterances should be identifiable with distinct intonational groupings. For example, several repetitions of the same word can be judged as separate utterances, only when the intonational envelope for each repetition is complete in itself. In English, this usually means that, even on single words, intonation should rise in the middle and fall at the end, when a declaration is made. If the falling final contour is absent, we may be dealing with word repetition as a hesitation phenomenon and each repetition need not be assigned to a separate utterance.

It is not possible to judge utterance boundaries simply by the presence or absence of pauses, since both children and adults frequently split up and merge utterances. The most general key to utterance isolation seems to be mapping onto grammatical sentences. Reconstruction moves from left to right through the child's utterance; the goal is to integrate as many items as possible into one reconstructed sentence. In making the reconstruction, it

may be necessary to

- 1) correct lexical, phonological, syntactic, and semantic errors. All such corrections are done in the context of the known varieties of child errors in the language, i.e. in the context of the information of Part II;
- 2) insert missing lexical items. Such insertion can be backed-up by knowledge gained from studies of morpheme productivity, although circularity of prediction must be avoided;
- 3) detect hesitation phenomena and correct for their effects; and
- 4) make allowances for child ellipsis.

Child ellipsis differs from adult ellipsis in the sense that children are often ignorant of the rules permitting such formations. There is no clear evidence that, from the very beginning of speech, monorhemes are actually attempts to express both subject and predicate or both topic and comment. It may be that topic-comment structuring is a universal of semantic structure, but that in their first utterances children may utter comments without topics, or topics without comments. Mapping monorhemes and isolated noun-phrases onto sentences, we must interpolate missing comments or predicates.

As in the case of judgments of obligatory contexts, what appears to be a set of highly abstract criteria becomes rather concrete in practice. Perhaps the most difficult part of utterance isolation is the utilization of intonational data to separate repeated utterances

from hesitation repetitions; the border-line is often unclear. Hopefully, other researchers will continue to supplement these rather preliminary criteria with more explicit criteria of their own. It would seem that, when more fully defined, the M.L.U. figure could serve as an important base-line for cross-cultural studies. In the current work of Slobin and associates on Turkish, English, Italian, and Serbo-Croatian acquisition, M.L.U. figures are made less language-dependent by standardizing individual M.L.U.'s against a sample of at least 40 subjects in each language. Through such a device, it might be possible to subtract the inflations of M.L.U. which seem to occur in agglutinating languages such as Hungarian and Turkish. It may be that a more accurate index of linguistic maturity would be some composite score including the M.L.U. along with the type/token ratio. Later, we will discuss the possibility of situational factors affecting the M.L.U. figure.

Calculation of the M.L.U. has required us to establish criteria for isolating both the lexical item and the utterance. The decisions made here then feed into the three major topics we raise in this present work. In our study of productivity of phonological rules, it is important to know whether or not a suffix is productively attached to a root. In accounting for syntactic learning, isolation of productive lexical items

allows us to decide which ordering require explanation through syntactic rule. Moreover, delineation of the utterance allows us to see clearly the totality of semantic relations involving a given item. In our study of the acquisition of grammatical morphemes, estimations of lexical productivity provide us with a base-line against which we can judge varying levels of progressively fuller acquisition. Thus, we see that the M.L.U. is based upon certain fundamental decisions which affect a number of other measures.

3.0 Acquisition of grammatical morphemes

3.1 Zoli I

As we can see by glancing at Table VIII, at the time of the first observations Zoli is just beginning to produce significant quantities of speech. In view of our discussion in Part II section 5.411, we would not expect to find any productive morphology in a child with an M.L.U. of 1.10. However, it may be that Zoli has acquired at this time some sense of the diminutive -ka, -ke as a productive lexical item. Acquisition of the diminutive cannot be studied through observation of obligatory contexts, because the diminutive is a stylistic embellishment. In order to prove that the diminutive is productive, we need to find that the child uses a number of words both in their basic form and with the diminutive attached. In the few words we have gathered from this time (during four hours of observation!), Zoli uses only two diminutives: egérke "mouse+dim." and bácsika "uncle+dim." The latter is used twice to refer to the investigator. The important point is that bácsika contrasts with bácsi (without the diminutive), the latter being used eleven times. If we had more evidence of this sort, we could conclude that the diminutive is productive at Zoli I, but we have no more evidence. There are other grammatical morphemes at Zoli I. The accusative appears on an imitation; we find the past on the irregular elment "away+go+past"; and the definite article occurs in the phrases ott a

"there's the" and az anyuci. "the mommy." Of these, only the definite article shows any indications of potential productivity, in that it combines with at least two elements which also appear without the definite article. However, in view of the difficulty of the semantics governing the article, it is unlikely that there is any productivity at this time. In summary, the only morpheme which might show some productivity is the diminutive, and the diminutive is not really a grammatical morpheme, but rather a formative suffix.

3.2 Zoli II

Despite the large increase in M.L.U. at the level of Zoli II, Zoli's set of grammatical morphemes is modest. The flectional affixes which show any evidence of productivity are: the accusative, the sign of possession, the past, the 1PS definite*, the 3PS definite, certain prefixes, and the definite article. We will discuss these morphemes in that order, ending with a short discussion of Zoli's locative system and his use of diminutive formative.

In a total of sixteen obligatory contexts, Zoli provides only seven correct accusatives. It appears that, at this age, Zoli has just begun analysis of the accusative as a productive morpheme. Zoli's omissions of the accusative can be attributed to the general non-

* Unless possession is indicated by "poss.," all suffixes indicating person and number, such as 1PS, are verbal suffixes.

productivity of the suffix. In six of the nine omissions, Zoli fails to attach the accusative to telefon "telephone," but in three others the common words kutya "dog," baba "doll," and kicsi "little one" lack the inflection. In another sentence, Zoli correctly supplies the accusative, when asking for másik babát "another doll+acc." In general, it appears that Zoli has coded a number of his favorite roots in both nominative and accusative. When a root such as telefon, which is only coded in the nominative, is used, it results in accusative omission. For other nouns, however, Zoli selects the accusative amalgams with more than chance accuracy. These selections are correct morphophonemically, since they are generated as amalgams. Thus, babát "doll+acc." and törpét "dwarf+acc." show correct final vowel lengthening and toronyot "tower+acc." shows correct vowel-deletion. So far, we have presented evidence suggesting that the accusative is not productive, but accurately controlled through amalgams. Note that this, in itself, is evidence that the child is beginning to control the semantics of the accusative. Specifically, in all seven correct utterances, the accusative marks either an object which the child desires, or an object the child wants to build. Moreover, the child never uses an accusative amalgam when a nominative is required. It may be that the suffix has just begun to develop some independent productivity, since Zoli, in one utterance, says toronyt "tower+acc." without the required internal vowel-deletion. This contrasts with his correct use of

tornyot and points toward beginning productivity. In Table IX we chart figures for the acquisition and productivity of the various grammatical morphemes to be discussed in this chapter. In effect, that table is a summary of the results of the present discussion. Since Zoli uses the accusative in seven of the required sixteen contexts, acquisition is at the 44% level. In light of the discussion immediately above, we estimate productivity of the suffix at only 10%. Both figures can be found in Table IX.

Zoli uses the sign of possession -é nine times and makes no errors of omission. However, his use of the suffix is restricted to two lexical forms: Zolikaé "Zolika's" and Andié "Andi's." It is clear that Zoli has some awareness of the semantics of possession and the meaning of the sign of possession. In fact the sign of possession emerges before the possessive construction or the suffixes of personal possession. However, we cannot be sure at this time that the sign of possession is highly productive, since its occurrence pattern is too restricted. We might estimate productivity at 20%. However, it is clear that Zoli has control of the semantics of the sign of possession.

The past tense morpheme -ott, -ett, -ött, -t appears in seven utterances with no errors of omission. Two of these uses involve what appear to be non-referential phrases jött az anyuci "came the mommy" and anyuci elment "mommy left." In both cases, Zoli was simply vocalizing his desires or fears, since there was no evidence that his mother had either arrived or left recently. On the

other hand, Zoli may have been responding to some unknown cue regarding his mother's comings and goings, or he may have been verbalizing memories. The other five uses of the past conform to the general rule that early child pasts refer to immediately completed actions: elvette "away+take+past," elvitte a Moncsi "away+take+past the Moncsi," elvitte Andika "away+take+past Andika," megettem "perf.+eat+past," and elromlott "away+break+past." Given limitations in the child's ability to order events sequentially (Piaget, 1946), it is not surprising that the first past tense uses should be for immediately completed events. Zoli seems to be in command of the essential semantics of the past tense. However, there is little evidence that the morpheme is productive. Five of the six past tense verbs Zoli used are formed through irregular patterns; only elromlott "away+break+past" follows the general paradigm. It is unlikely that Zoli could have learned the difficult alternations involved here.

In a total of twelve obligatory contexts, Zoli supplied the LPS Definite five times. Of the five correct uses, four involved kérem "want+LPS" and one involved megettem "perf.+eat+past+LPS." In the past tense, the LPS definite is homonymous with the LPS indefinite; therefore, we have no clear evidence, in the case of LPS past forms, of awareness of the distinction between Definite and Indefinite conjugations. Nor is it likely that Zoli was clear about the definiteness of kérem, since

the verb kér usually takes a definite object in the utterances that might be produced by children. As we observed in section 7.23b of Part II, many children call themselves by their own name, rather than be the first person pronoun. It may be that the seven omissions of LPS suffixes are really errors in pronoun use, rather than suffix use. The one use of the LPS indefinite suffix -k in tornyot épitek "tower+acc build+LPS" seems rather exceptional. The correct OV word-order, the successful internal vowel-deletion in torony, the use of the accusative, and the LPS indefinite itself all suggest that this utterance is a memorized phrase. In general, we find no evidence for awareness of the indefinite-definite distinction, although there seems to be some beginning awareness of the semantics of a first person verb. There are no over-generalizations of the LPS to contexts requiring a 3PS verb; this indicates some control for the semantics of the first person singular. There is no evidence that either of the LPS suffixes are productive.

The 3PS indefinite is never omitted from required contexts, but occurs when the LPS is required. Since the 3PS Indefinite is a zero-derivation from the verb root, it is difficult to speak of either its acquisition or its productivity, just as it is difficult to speak of the acquisition of the nominative or the basic degree of the adjective. These forms only achieve definition through the progressive differentiation of the marked forms. On

the other hand, the 3PS definite has markers in all the tenses. Unfortunately, the past tense of the 3PS definite is -a, -e which is easily confused with the definite article -a on a following noun-phrase. In fact, the Definite conjugation seems to have arisen from such a source. Zoli uses 3PS definite past verbs eight times, but in each case this ambiguity arises. It may be that the child is coding both the verbal suffix and the article, but eliding them in pronunciation. In the present the 3PS definite has a clearer form -i, -ja. Zoli uses a 3PS definite present once: elveszi "away+take+3PS-def." If the omissions of the 1PS suffix were actually motivated by the presence of the child's name in semological structure, then six of these are also omissions of the 3PS definite, since the unmarked 3PS indefinite verb root is used, although the object is definite.

Zoli supplied verbal prefixes on seven verb forms. Five of these involve the prefix el- "away." Like the other locative verbal prefixes, el- codes not only direction or motion to a position, but may also code perfectivity or completion of an action. Thus, elment "away+went" codes an obvious movement away from the speaker, but elromlott "perf.+break+past" codes perfectivity of the "breaking," as well as some vague directionality of the broken particles. For Zoli's forms elment "away+went," elromlott "away+broke," elvitte "away+took," elvette "away+grabbed," and elveszi "away+takes" we have no occurrences of the verb roots independently of the verbal prefixes. For this reason, and because of the probable

difficulty the child would face in separating out the semantics of el-, we would conclude that it is not yet productive. In the form megettem "perf.+eat+past+1PS" we find the perfective prefix meg-, but it occurs nowhere else and there are no independent occurrences of the verb "eat." Only in the case of the prefix vissza- "back" do we find evidence of productivity: the child uses the verb root jön "come" both independently and in combination with vissza- in visszajön "back+comes." Although vissza-, like all verbal prefixes, codes a certain level of perfectivity, its chief function and main meaning is simply the coding of the Locative concept of returning to an earlier position.

As we mentioned just above, the 3PS Definite -a, -e may be confused with the definite article a. This means that, whenever a 3PS definite verb should be followed by a definite article, it is not possible to distinguish the effects of elision from the omission of either the article or the verbal suffix. For this reason such ambiguous cases cannot be included in the count of omissions vs. insertions in obligatory contexts. Wherever we discuss the definite article or the 3PS definite, henceforth such corrections have been made.

With this correction, we find that Zoli supplied the definite article nineteen times in a total of thirty-seven required contexts. It is clear that article usage is not determined solely by the existence of lexical amalgams linking articles to only certain nouns, since a

number of the nouns involved occur both with and without articles. The one exception to this general pattern of usage variation is the apparent amalgam az anyu "the mother." Zoli uses this amalgam as the chief way of referring to his mother and az occurs nowhere else. Although Zoli supplies the article at the 51% level, we should remember that such production is not strictly reflective of chance behavior. If Zoli didn't realize that the article has some function vis a vis the noun, his performance would be much worse. In fact, we never find the article used in any position other than prenominal. Zoli's performance at this age suggests that he is not yet aware that the article codes definiteness, but that he has deduced that it codes the feature /+quality/. This deduction may proceed from his knowledge of the syntactic distribution of the article. From similar information, the child may deduce that this item is specified for occurrence in the context of a root marked as /+object/. In order to learn how the article expressed definiteness, the child must subject a number of amalgams to lexical superimposition. It may be that such superimposition cannot occur until the child understands how some object may be indefinite. In the meantime, the child's usage of the article seems random within the area delimited by its deduced semantic feature of /+quality/. This randomness

may be a result of some ambiguity bias (section 2.317) in the coding of the context specification. This bias may reflect the fact that, in the input, nouns often occur without articles. In general, we would conclude that the article is partially productive at this time, but that it does not yet code definiteness. Productivity is estimated at 30%.

It is worth noting that, at Level II, Zoli shows no evidence of having acquired any of the locative suffixes. Instead, Zoli expresses locative notions through the use of the adverbials itt "here," ott "there," ide "hither," oda "thither," hol? "where?," and benne "inside it" along with the verbal prefixes vissza- "back" and el- "away." As we saw, the last of these is probably unproductive. Additionally, Zoli uses the phrase ott kint "there outside" in response to the query "Where's your mother?" It may be that this is simply a unit, but the fact that ott is common by itself and that analysis of ott kint should be transparent semantically and morphologically, might lead us to wonder whether Zoli might not understand its formation. If such units can be productively composed by very young children, this might be a reflection of the tendency for languages to concretize spatial areas (as in Thai, for example).

We saw that there was some evidence for the productivity of the diminutive at Level I. At Level II this evidence is somewhat more conclusive: each of the four roots to which Zoli attaches the diminutive is also present in an uninflected

form. Thus, it seems unlikely that each of these four diminutives could be nothing more than amalgams. It is difficult to assess the course of acquisition of the semantics of the diminutive, since use of the diminutive is up to the discretion of the speaker.

In addition to the grammatical morphemes we have discussed in some detail, Zoli also uses the infinitive, the imperative, the 2PP verbal suffix, and the plural without any evidence of productivity, but simply as fractions of amalgams.

In summary, Zoli seems to have developed some understanding of the meaning of a number of grammatical forms without developing much productivity of these forms. This apparent contradiction is explicable in terms of the model developed in Part I: the child developed facility with the semantics of the grammatical devices involved through first learning their use in amalgams. Later, when a number of amalgams are acquired, analysis and superimposition yield independent productive morphemes. Ease of analysis and superimposition can be affected by either semantic or morphological complexity. At this level, Zoli shows beginning productivity with the accusative, the definite article, and the prefix vissza- "back." Additionally, he makes use of a number of locative adverbs and the diminutive.

3.3 Zoli III

Our sample of Zoli's speech at Level III is far larger than the equivalent sample at Level II. Although Zoli talked far more at Level III, the M.L.U. shows only a slight increase. We believe that this is due to a tendency in the second sample for Zoli to produce utterances at the level of his competence. However, it appears that the growth in productivity of grammatical morphemes continues its increase at this time. In fact, as we shall see, there even seems to be a spurt in productivity of grammatical morphemes at this time. We shall treat the various morphemes in this order: the plural, the dative, the instrumental, the accusative, the sign of possession, the possessive suffixes, the 1PS verbal suffix, the LPP suffix, the 2PS suffix, the 3PS suffix, the 3PP suffix, the past, the imperative, the infinitive, the -ik marker, the various locatives, the definite article, the indefinite article, and the diminutive.

The first morpheme we will consider is the plural suffix: -ok, -ĕk, -ōk, -ak, -k, -ek. At Level II we found only one occurrence of the plural and that in an apparent amalgam csecsemōk "infants," used in reference to the room where the infants slept. At Level II we found no plural verbs or adjectives of plural quantity, but at Level III, as we shall see shortly, Zoli begins to use plural verbs with some frequency and the adjective sok "many" appears in the utterance ott sok autó van "there many car is." Given these changes in the verbs, we sensed

that the absence of the plural might be due to sampling error. In order to elicit plurals, we posed Berko-type questions essentially like those of the study in Part I. In response to nine such questions, Zoli supplied seven plurals and two forms which show final-vowel insertion, but no k-attachment. Only three of the nine questions involved nonsense words, but each of these three elicited correct plurals. In section 4.3 below we discuss phonological aspects of these plurals. In view of Zoli's excellent performance on the elicitation questions, together with the occurrence of incorrect linking-vowels in two of the plurals, we are impelled to conclude that the plural has some productivity at this time. We estimate this productivity at 60%. On the other hand, agreement errors from Zoli which we noted in sections 7.12d-e of Part II show that Zoli is not yet in full command of the semantics of the plural. However, it is my impression that the absence of unelicited plurals is not due so much to lack of semantic control, as to sampling errors.

In eleven obligatory contexts, Zoli used the dative a total of eight times. Five of the correct datives used the form Zolikának "Zolika+dat."; the other three correct datives were bácsinak "Uncle+dat.," Moncsinak "Moncsi+dat.," and the pronoun nekem "dat.+1PS." Since we have no further evidence from errors or use with nonsense words, we cannot conclude that the dative is highly productive at this time and we estimate productivity at 30%. However, the relatively high level of correct usage

in obligatory contexts shows that Zoli has control of the basic semantics of the case. Five of the correct uses involve the verb ad "gives" or the verb kap "get" incorrectly extended to mean "give." The other three correct uses involve varieties of possessive constructions: most nekem van törölközőm "now to-me is towel+1PS-poss.," ez bajusz a bácsinak "this moustache the uncle+dat.," and nincsen szék a Moncsinak "is-not chair the Moncsi+dat." In these sentences Zoli illustrates his ability to use the dative both when the possessor is attached to the possessed in a noun-phrase and when the possessor is made into the subject of the copula van or the negative copula nincsen. We also mentioned that there were three cases of omitted datives. In one of these the noun requiring the dative is the indirect object of ad "give." In the next possible omission it is not entirely clear that the dative is required. Thus, Zoli says Moncsi is "Moncsi too" to indicate that the experimenter should also give Moncsi a kiss. This elliptical phrase can be mapped onto either "Give Moncsi a kiss too!" or "Moncsi should also get a kiss from you." If we accept the latter, more complex, interpretation, no dative is required on Moncsi. The last omission involves a noun as a beneficiary. Zoli says szabad a Zolika "permitted the Zolika," when he means something like hadd legyen szabad a Zolikának "let it be permitted for Zolika." In general, we have seen that there is evidence that Zoli understands the use of the dative to mark the possessor or the receiver (which may

similar in semological structure), but that we cannot yet establish the productivity of the dative as a lexical item.

The instrumental-comitative -val, -vel etc., which was absent at Level II, appears to be partially productive at Level III. We estimate its productivity at 30%. Zoli uses the instrumental eighteen times, and it was not possible to identify a single context in which a required instrumental was omitted. Let us examine these eighteen uses of the instrumental by type. Five of these uses represent expressions of the comitative. These five are: elbúj Moncsival "hides with Moncsi," apucival mentem "with Daddy went+LPS," anyucival mentem "mommy+com. went+LPS," ottan lak kicsival "there lives little-one+com.," and Moncsival "Moncsi+com." The last of these five was simply an imitation of a previous adult sentence. In five other uses the instrument is a means of transportation, the automobile. Of course, it is possible that the child uses the instrumental in autóval "by car" in the sense of a locative or even a comitative; but there is no reason in Zoli's case to believe that it is not functioning as a true instrumental. Six other uses of the instrumental are associated with the verb játszik "plays"; in three of these the investigator asks Zoli mivel játszol? "What are you playing with?" and Zoli replies correctly törpebácsival "dwarf-uncle+instr.," róka-kómával "fox+instr.," and János bácsi pipával "Uncle John pipe+instr." The most clearly instrumental use of -val -vel is in the sentence ott mosunk szappannal "there wash+LPP soap+instr." The

attachment of the instrumental-comitative to a variety of bases at Level III forms a number of words which are unlikely candidates for amalgams. For example, the word törpebácsival "dwarf-uncle+instr." was correctly supplied as an answer to a question, but would have little other value in Zoli's speech. In 7.24lb we cite two confusions of the instrumental with other cases.

Zoli's use of the accusative presents us with a rather puzzling pattern. In a total of 193 obligatory contexts, Zoli supplies the accusative suffix -ot, -ét, -öt, -et, -t in 130 instances. This accuracy at the 71% level shows progress over the 44% accuracy of Level II. At the earlier level, there was evidence of beginning productivity, while it was clear that most of Zoli's accusatives were amalgams. In the present sample we have additional evidence of productivity in the form of erroneous formations, i.e. odát (section 7.24lb of Part II) and ért (section 5.43i of Part II). Moreover, the increase in Zoli's vocabulary means that we find a far greater variety of roots with accusatives at Level III. However, it is probably that, even at this time, many of the accusative forms are actually amalgams. The relative scarcity of erroneous formations should not be taken as proof that Zoli has acquired all the rules governing accusative formation at this time. Rather, he seems to be proceeding carefully with the process of analysis. For those items whose accusatives can be successfully generated through rules already under his command, the amalgams begin

to lose importance. Other forms are generated through amalgams and by-pass the productive rules. We estimate productivity at 45% for the accusative.

The puzzling aspect of Zoli's use of the accusative is not its role as a productive morpheme, but the fact that its omission occurs in a rather unpredictable manner. We have attempted to compare the 193 contexts in terms both of the verbs and object noun roots involved and have been unable to find, for example, that accusatives are frequently omitted with certain verbs or verb types, or that accusatives always are attached to certain nouns. Moreover omissions of the accusative do not seem to occur more in either simpler or more complex utterances. At Level II, it was possible to view the omissions of the accusative as results of the weak productivity of this morpheme. This was possible because we could view successful uses of the accusative as the result of use of amalgams. At Level III, however, this explanation is no longer available; since, as we have said, most nouns which appear with correct accusatives also appear with accusatives omitted. For this reason, we are forced to consider a more abstract account of accusative omissions, an account which may have some relevance to the earlier stage.

In section 7.247 of Part II we cited seven utterances in which Zoli used an accusative where the unmarked nominative was required. Additionally, we found an

extension of the accusative to a deictic adverb and its confusion with the dative and the sign of possession (section 7.24lb). Together, these errors demonstrate that Zoli is not yet in full command of the essential semantics of the accusative. In transcriptions from another subject, Andi, we find a similar pattern of over-generalization of the accusative to other cases. When this over-generalization is compared with the 63 omissions of the accusative, it leads one to suspect that the child is unable to form a clear concept of the accusative. In one version of semantic theory, the accusative is attached to that noun which is a patient in a deep structure clause which is subordinated to a causative verb. It is difficult to know how the child approaches such a formulation and what should be the component aspects of this learning. However it may be that it is not just isolation of the semological context of the accusative which presents a difficulty to Zoli, but also determination of the structural relations in any given utterance. In other words, until Zoli develops greater facility at recognizing the patients of verbs of clauses subordinated to clauses, there will be some error caused simply by the complexity of the determination of the accusative context.

Zoli uses the sign of possession -é forty-seven times in a total of fifty-four obligatory contexts. Identification of obligatory contexts for this suffix is not at all difficult, since both the syntax and the situation

often converge in providing unambiguous information. At Level II it was not clear whether the sign of possession was used productively. At Level III there is somewhat more evidence for its productivity, since the number of roots with the sign of possession has grown from two to six. We estimate productivity of the sign of possession at 55%. Since the sign of possession has only one form, and since its attachment alters roots only through the one rule of final vowel lengthening, there should be little difficulty in completing its analysis. It seems likely that the suffix is productive by this time. The correct usage rate of 87% approaches that of the criterion level of 90%. At this level, it seems that failures to use the sign of possession are due to performance factors rather than failure to understand the meaning of the suffix. Unlike the accusative, which was frequently confused with other cases including the nominative, there is no pattern of incorrect use of the sign of possession (but see section 7.222 of Part II for one error). For this reason, it is difficult to maintain that the child is experiencing difficulties in computing the semantics governing the suffix. In general, then, we find that the sign of possession has become productive and has nearly reached the criterion established for acquisition. Here we may also note that we have recorded only one occurrence of a possessive pronoun at Level III in the utterance nem a tied "not the your's."

Of the six suffixes of personal possession, singular and plural of the three persons, Zoli only makes use of

the 1PS poss. -om, -öm, -óm, -em, -am, -m and the 3PS poss. -a, -e, -ja, -je. Of these two the latter occurs somewhat more frequently with a total of nine appearances against four appearances of the former. Assessment of obligatory contexts for the possessive in Hungarian runs up against a number of problems and these problems are particularly acute in the case of the 3PS. When the possessor is expressed in the surface with a separate noun, it is easy to recognize omissions and correct usages. For example, if the child says ez a Moni autója "this the Moni car+3PS poss.," we assume that Moni is the possessor of the car and that the possession is correctly marked by -ja. If the child says ez a Moni autó "this the Moni car," we still assume that Moni is the possessor, but now we conclude that possession has not been coded and that the 3PS poss. has been omitted. At Zoli III we have nine such omissions. Five of these omissions are of the structure just discussed. Two occur when the possessed noun obligatorily bears an additional suffix: ez a Barna gombák "This the Barna button+plural" (=These are Barna's buttons) and János bácsi pipával "John Uncle pipe+instrumental" (=with Uncle John's pipe). In these two cases, addition of the possessive would incur problems with suffix ordering and/or context-specifications. In another omission, the possessor, which happens to be marked with the optional dative, follows the possessed; but it is clear from the situation that a possessive relation is intended: ez bajusz a bácsinak "this is moustache the uncle+dative." Finally, one omission occurs when the possessed object

is the subject of the copula: nincsen szék a Moncsinak "is-not chair the Moncsi+dat." (=Moni has no chair). Here the fact that szék "chair" should receive possessive inflection is clear from both the syntax and the situation.

However, when we turn our attention to assessing obligatory contexts in which the possessor is not lexicalized, we often cannot determine the child's referential intent. For example, Zoli says ez a kicsi kéménye "this the little chimney+3PS poss." (=This is its little chimney). At the time Zoli is looking out through a glass door towards a distant chimney atop a large hospital building. Perhaps, Zoli uses the possessive intentionally to express the fact that the chimney belonged to the large building as a part to the whole. On the other hand, it is also possible that the possessive is quite superfluous, or even that some other possessor is intended. Since the possessive suffix in Hungarian codes no gender, we cannot use the distinction in English between the genders of possessive adjectives to narrow down the possibilities for correct reference. In the case of seven of the nine uses of the 3PS possessive, there is no way we can be sure that the suffix is not superfluous (compare section 5.211 of Part II), since no possessor is lexicalized. In only one of these seven cases is there any information in the situation which mitigates for a conclusion that the suffix is used correctly. Here, Zoli is pointing to a car owned by Moni's father when he says apja az autó "father + 3PS poss. the car" (= her father's car).

This is a double possessive and the possessive suffix is omitted from the second possession, the car. The two correct uses of the possessive with a possessor lexicalized include one phrase from a popular song which is surely an amalgam and one phrase in which the possessive suffix may actually be nothing more than a linking-vowel not yet coded as /± segment/.

We have treated the 3PS possessive in such detail because it would be misleading to simply observe that it is supplied "correctly" in nine out of eighteen "obligatory" contexts. It is clear that Zoli has begun to use a number of possessive forms, but they are probably all amalgams. Moreover, in all of the cases except that of apja in apja az autó their attachment may be actually incorrect. Given this pattern, we might even imagine that the possessive on apja is superfluous. This interpretation is supported by the fact that Zoli says elment anyukája "away+went mommy +3PS poss." (=his mother left), when it is clear that he is simply talking about his own mother and should have said anyuka elment "mommy left." (See section 5.211 of Part II.) Not only is the suffix unproductive, but there is no reason to believe that Zoli fully understands its meaning.

The 1PS possessive occurs correctly four times in six obligatory contexts. Lacking a 2PS possessive, Zoli uses the 1PS possessive for the 2PS possessive in six cases with two lexical items (see section 7.241c of Part II). Together with these extensions of the suffix, the 1PS

possessive appears on five different roots. Only one of these five forms is suggestive of suffix productivity: this is the form sárgám "yellow-one+LPS poss." in the utterance van sárgám "I have a yellow-one." This utterance is a reply to the question, "Do you have pretty shoes?" In fact, Zoli was wearing white shoes and it is not immediately clear how this utterance should be interpreted. Although we cannot establish productivity of the LPS possessive above the 10% level, it does seem that Zoli understands the meaning of the amalgams in which it is involved. The omissions of the LPS possessive are the sentence ott én a apuci anyuci is "there I the daddy mommy also" and the phrase enyém virág "mine flower." In the former possession is expressed by the LPS nominative pronoun, while it is expressed by the LPS possessive pronoun in the latter. In the case of the LPS possessive it is somewhat easier to assess obligatory contexts than it was for the 3PS possessive, since the only candidate for the possessor is the speaker. Although we are never quite sure what the young child considers to be his own property, situational information suggests that Zoli only considers a few objects as clearly his own: kezem "my hand," sárgám "my yellow," fejem "my head," and papucsom "my slipper." In general, although the LPS possessive is controlled through amalgams, Zoli illustrates a relatively deeper control of its semantics than of the semantics of the 3PS possessive. This is understandable, since the 3PS possessive cooccurs with a wide array of possessors,

whereas the LPS possessive always refers to the speaker.

At Level II we found that, although there was no evidence for productivity of either of the LPS verbal suffixes, there were signs of a beginning understanding of the semantics of the first person verb. By Level III it is clear that Zoli has mastered the semantics of the LPS, since it is supplied in a total of fifty-eight contexts and omitted only once. However, the figure of fifty-eight includes all uses of a LPS suffix with the definite and the indefinite conjugations, the present and the past, the transitive and the intransitive, and verbs with and without the marker -ik in the 3PS indefinite. To separate out these dimensions, we need to consider three major groups of verbs. One set of verbs is marked with -ik in the 3PS indefinite present, i.e. alszik "he sleeps." These verbs are mostly intransitive, but include a few transitive forms. In the LPS present of both the definite and the indefinite, these verbs take the ending -om, -em, -öm in formal Hungarian. In colloquial Hungarian, however, the indefinite -ok, -ek, -ök is often used in place of the definite LPS. The distribution of the competing forms across sociolinguistic variables is a very complex question which we cannot handle here. Moreover, it appears that there are differences between verbs within this -ik group. For the intransitive verbs in this group, use of the colloquial pattern involves no special learning, while use of the formal pattern involves either the formation of insulated amalgams or a rule attaching the

definite suffix to verbs with a lexical encoding including -ik (i.e. a suffix-bound rule). At this time, Zoli uses the formal pattern in five contexts and the colloquial pattern in fifteen contexts. No transitive verbs are involved.

In order to follow learning of the contrast between the definite and the indefinite conjugations, we must turn our attention to verbs not marked by -ik. If these verbs are intransitive, the child should only hear them in the indefinite conjugation, since the definite conjugation requires a definite object. At Level III, Zoli attached the indefinite suffix -ok, -ek, -øk correctly seven times to five different roots. However, this still provides us no information about the learning of the definiteness contrast, since the child may be associating indefiniteness with intransitivity. It is the group of transitive verbs which are not marked by -ik which give us information about learning of this contrast. Zoli attaches the definite suffix -om, -em, -øm correctly twenty-one times to nine different roots. In the child's world, transitive activities usually have definite objects and use of the definite here could simply be associated with transitivity. On the other hand, use of Indefinite suffix on a Transitive verb could provide good evidence for acquisition of the definiteness contrast. We find four such uses in Zoli's speech at this time; all four are errors (see section 7.12 g of Part II for the examples.) It is in this

crucial category that we must find correct usage, before we can attribute to the child learning of marking of the verb for definiteness of the object.

Three errors provide evidence for some productivity of both LPS suffixes. For the indefinite, the form táncok for táncolok "dance+LPS" seems to be based upon Zoli's use of the noun tánc "dance" for the verb táncol "dances." For the Definite the use of toldom for tolom and addodam for oda adom (5.214 of Part II) show the presence of the superfluous 2PS definite imperative marker -d. The attachment of the definite suffix to this erroneous root amalgam indicates productivity. We estimate productivity for both suffixes at 30%. The increase in LPS is accompanied by a decrease in the use of the name Zoli for self-reference (see 7.23b of Part II).

In 7.24ld we see that the LPS indefinite occurs once where the 2PS indefinite is required, whereas the reverse substitution occurs seven times. On the other hand, in the same section, we find five cases of complex confusions, involving errors in mood as well as person, which are over-generalization in the opposite direction. Apart from person errors, there are four uses of the 2PS indefinite indicative in obligatory contexts. There are two occurrences of the 2PS definite imperative -d in obligatory contexts. Using Cazden's criteria, we would judge acquisition of the 2PS Indefinite Indicative at 80% and acquisition of the 2PS definite imperative at 100%. The two errors noted in section 5.215 of Part II, bújj elsz and bújj eld, indicate some beginning productivity for both of these suffixes,

which we estimate at 30%.

As we often noted, the 3PS indefinite present indicative is the basic form of the verb. We have seen above that many of Zoli's verbal inflections are only slightly productive. For this reason, it is not surprising that we find only one utterance in which the 3PS indefinite indicative is required and some other form is used. This one case is the sentence ott mennek autó where a 3PP is over-generalized (see section 7.12d of Part II). On the other hand, Zoli uses 3PS verbs with great frequency; in this sample we have sixty-five. Of these sixty-five, only eight are used where another form is required. In each of these eight over-generalizations, the 3PS definite is replaced by the 3PS indefinite. These results from Zoli agree with those of Part II section 7.12d in that the 3PS indefinite indicative appears to be involved in errors of agreement for number of the subject and definiteness of the object. Additionally, as evidenced by the lack of confusions involving the third person in section 7.24ld, the 3PS does not figure in any other error type. Evidence for the "productivity" of the 3PS zero-morpheme is difficult to obtain. The best evidence is Zoli's failure to supply the -ik ending required by certain roots (see section 4.12 e of Part II). Zole does this regularly with bújik. In general, we might ask whether it is accurate to consider a zero-morpheme as a productive linguistic device. Perhaps the acquisition of the 3PS indefinite can be described more accurately as the result of the process of differentiation

of the other persons, tenses, conjugations, and moods. In this sense, the 3PS Indefinite already shows some stability at Zoli II.

We observed only one 3PS definite present verb at Zoli II and there is little change in this regard at Level III. Zoli uses elveszi "away+take+3PS" once and omits the definite ending -ja, -i from four obligatory contexts. It is clear that this suffix is not yet present or productive. Other verbal suffixes in the present which show no productivity are the 2PP which appears only in an error motivated by discourse pressure (see section 7.214d, -tok for -nak) and the 3PP which appears only in an agreement error (section 7.12 of Part II). Interestingly enough, there were no contexts which required the presence of these plural suffixes. In general, the notion of plurality rarely appears in Zoli's speech. Although the plural appeared productive, its spontaneous use was minimal.

The one plural form of general currency in Zoli's speech is the LPP present indicative, both definite and indefinite. The LPP is widely used in addressing a young child, even when the child will only participate in the action of the verb in the role of observer (compare Meggyes's observations). The impact of this baby-talk style is reflected in the fact that Zoli's LPP verbs involve actions in which two may somehow participate together: building, going, dancing, searching, washing, giving, sitting, etc. Furthermore, this baby-talk LPP tends to have a weak imperative force. Of the twenty occurrences of LPP suffixes,

two involve verbs that are formally in the imperative mood, while another four are ambiguous for mood because of morphological over-lap. There is only one LPP in the past tense. Since Zoli's use of the LPP is so heavily intertwined with the baby-talk participatory-imperative, it usually occurs when either the LPS or the 2PS would be equally acceptable. There seemed to be no context where the LPP was clearly obligatory. Of course, this is due to our inability to measure the child's intentions with any precision. On the other hand, there were at least three cases (sec. 7.12d of Part II) where the use of the LPP was an error, because the surface subject was singular or because the subject could not possibly be plural. These errors suggest to us that the semantics of the LPP are not yet fully acquired. Indeed, use of verb of this shape seems limited by the pattern of the baby-talk LPP. The suffixes of the LPP, both definite -jŋk-juk and indefinite -unk, -ŋnk occur on a small number of roots. There are no errors suggesting productivity and there is no reason to believe that the suffixes of the LPP are productive at this time.

Zoli uses the past tense fifty-seven times without any apparent errors of omission. However, in section 7.241d of Part II, we found that seven of these fifty-seven uses are errors in which the past is confused with either the present or the imperative. Apart from these

erroneous forms, Zoli used sixteen different forms in his fifty correct uses of the past tense. Of these sixteen forms, seven are intransitive verbs which are correctly placed in the indefinite and six are transitive verbs which are all correctly placed in the definite. Three other forms are in the LPS past which is identical in both the definite and the indefinite. As in the present tense, there is no reason to believe that the child is aware of the definite-indefinite contrast rather than the transitive-intransitive contrast. Since all the past tense verbs are correctly formed morphologically, there is little evidence of productivity of the past tense suffix. Given the complexity of the rules governing formation of the past tense, we would expect some morphological errors, if the suffix were productive. On the other hand, the high percentage of correct usage indicates that Zoli has essential command of the semantics of the past tense. Apart from the seven errors, only one of the sixteen correct past tense forms refers to an action completed outside of the immediate past; this is the verb elment "away+go+past" in the formulaic expression elment dolgozni "away+went work+infin." (=She went away to work.) Zoli gives this utterance as a response to a question about where his mother is.

The three imperatives occurring at Level II were add ide "give here," nézzük meg "let's look," and menjünk "let's go." It is difficult, on the basis of just three forms, to speak of either productivity or the acquisition of the semantics of the imperative. Although we have more

data at Level III, it is still doubtful that the imperative has become either productive or acquired by this time. The imperative appears in only twenty of a total of forty-four obligatory contexts. Intransitive verbs are always correctly indefinite and transitive verbs are always correctly definite. The errors búj eld. Moncsi and toldom (5.215 and 5.214 of Part II) attest to productivity of the rather special 2PS definite imperative morpheme -d. This segment expresses mood, person, number and conjugation all at once; its productivity is estimated as 10%. There is no evidence for productivity of the sign of the imperative -j. Since this segment is involved in a number of rather complex phonological alternations, its acquisition should be delayed. The erroneous omissions of the imperative which can be found in section 7.214d involve over-generalization of the past indicative and the present indicative. Omissions of any verbal suffix will yield the 3PS present indicative, since that the basic form of the verb root. In general, Zoli seems to have made some beginning towards acquisition and productive formation of the imperative, but is experiencing difficulty with aspects of both the morphology and semantics of the mood. Contributing to Zoli's problems with grasping the meaning of the imperative seems to be discourse pressure and speaker-hearer confusion together with difficulty in freeing commands from specific situations. Where uncertainty arises, Zoli uses the more completely controlled present and past tense forms.

Zoli uses infinitives sixteen times at Level III. Seven verbs are involved in these instances. There is only one clear omission in the utterance még autózik "still drives-(in car)for még autózni akarok "still drive+infin. want+LPS." Half of the infinitives are used not as verbs of embedded clauses, but as imperatives, although this use is sub-standard. Embedded infinitives are subordinated to either "go" or "want." In general, usage of the infinitive appears to be highly restricted to a certain set of syntactic-semantic frames. There is no evidence of productivity of the morpheme.

Zoli's locative system evidences fundamental changes at Level III. There is an increase in both the number and variety of locative suffixes and verbal prefixes. At the same time, the locative adverbs such as ott, itt, oda, ide "there, here, thither, hither" lose their function as the chief means of locative expression and begin to be supplemented by the case suffixes and verbal prefixes. The result of this is a large proportion of locative utterances in which there are two locative elements. Of a total of sixty-nine locative utterances, twenty-five contain two different locative elements. In most of these cases, the second element is an adverb. In seven utterances the adverb appears with a case suffix; in eight utterances it appears with a verbal prefix; and in two utterances it appears with another adverb. In most of these

utterances the adverb is ide, oda, or ott. Other adverbs appear in these utterances: ott van benne "there is in-it," itt messze van "here far-away is," erre Moncsihoz "this+sublative Moncsi+allative," bújj el abba "hide+imp. away that+illative." Additionally, locative adverbs appear by themselves in nine utterances. The adverbs figuring in these nine utterances are hol "where?," alul "under (used incorrectly)," oda "thither," ide "hither," and ott "there." In addition to the numerous sentences in which the locative adverb is one of the two elements, we also find a sentence with two verbal prefixes vissza eltegyük "back away+put+lPP-definite" (use of two prefixes constitutes an error, see section 6.4a of Part II) and fölmászott a Moncsi fára "up+climb+past the Moncsi tree+sublative."

At Level II we found only the verbal prefixes el- "away" and vissza- "back" to be expressing locative notions. At Level III, these prefixes are joined by be- "into," föl- "up," and ki- "out." Generally, Zoli uses these prefixes correctly, although we cite two confusions in section 7.242 of Part II. Also, both be- "into" and vissza- "back" occur in sentence fragments without verbs. This usage, together with the emergence of forms in which the verbal prefix is separated illustrate that the prefixes have some existence apart from their combinations with specific verbs. Since verbal prefixes are not affected

by any of the morphophonemic rules, it is difficult to find positive evidence of productivity. However, it does appear that Zoli is in command of the semantics of these five locative prefixes and that productivity between 40% and 60% may be inferred. On the other hand, if the prefixes were not merely parts of amalgams, we might expect to find occasional errors of omission, but none occur.

One of the most significant developments at Zoli III is the emergence of locative case suffixes. These include the illative (homonymous with the inessive in the colloquial) ba-, be-, the allative -hoz, -hez, -höz, and the sublative -ra, -re. The latter is probably unproductive, occurring only in fára "onto the tree." However, the inessive-illative occurs eleven times with six different roots: szobába "into the room," ágyba "into bed," ölembe "into my lap," kezembe "into my hand," anyuciba "into mommy," and Zoltánba "into Zoltán." The latter two forms make little sense and seem to represent some attempt to use the illative as a general locative suffix. The allative occurs seven times with three forms: Moncsihoz "towards Moncsi," kicsimamához "towards little mama," and bácsihoz "towards uncle." The allative is used correctly to express motion towards a person, but there is one case where it is omitted from an obligatory context in oda anyuci "thither mother" for oda anyucihoz "thither towards mother." There are five utterances in which the inessive-illative is omitted from obligatory contexts. Additionally,

there is an omission of the superessive and the delative. However, Zoli has not yet begun to use these suffixes. In section 7.241 of Part II we cite two errors in which Zoli over-generalizes his two locative suffixes to areas of other locative suffixes. In general, the inessive-illative shows correct appearance in seven of the eleven obligatory contexts and is an over-generalization in four other cases. The allative appears correctly in six of seven obligatory context and is an error once. Both suffixes seem to be developing beginning productivity, but the semantics of the allative seem somewhat more clearly established. The acquisitional percentages are 86% for the allative and 64% for the inessive-illative; productivity is estimated at 50% for the allative and 30% for the inessive-illative.

In a total of 361 obligatory contexts Zoli uses the definite article correctly 211 times. This is an increase in correct insertion from the 51% level at Zoli II to the 58% level at Zoli III. Most of this increase can be attributed to reliable use of the article before /+human/ nouns; this strategy allows Zoli to properly insert the article in emergent possessive constructions such as a Béla ágy "the Béla bed" an possessive nominals such as ez a Moncsié "this is the Monci's." However, blanket application of this strategy results in errors as in tied, a Moncsi "yours, the Moncsi" where a vocative Moncsi is incorrectly given a definite article (in non-vocative uses the article would be acceptable). Most of what we had to say about the semantics of the definite

article at Zoli II also applies at this time. However, there is evidence of some increase in productivity at this time, since all of the nouns involved appear both with and without the article. Productivity for the definite article is estimated at 45%. In addition to the superfluous article with the vocative in the example cited above, there is one other occurrence of a superfluous definite article where an indefinite article or no article would have been correct.

Zoli uses the indefinite article only in the amalgam még egy "still one, another." The Hungarian indefinite article occurs less frequently than its English counterpart; where English uses the indefinite article Hungarian often has no article at all. However, Zoli does omit the indefinite article from three obligatory contexts. The preponderance of definite noun-phrases in Zoli's speech is indicative of the situation-bound nature of his discourse.

At Level III we find seven nouns which are used in both diminutive and non-diminutive forms. In fact, there is no diminutive which does not appear in non-diminutive form. We take this as good evidence that the diminutive is productive and acquired by this time. On the other hand, its productivity may be limited in the way formative suffixes often are, i.e. by lexical associations. We estimate productivity at 75%, considering possibly analysed associations as productive. There were thirty-two cases of diminutive usage in all.

3.4 Zoli IV

Whereas the period between Level II and Level III was marked by a rapid increase in the variety and productivity of grammatical morphemes, the period between Level III and Level IV shows a consolidation of the earlier gains, rather than introduction of new forms. For a number of the morphemes, percentage of utilization in obligatory contexts shows a clear increase. At the same time, the tendency for certain morphemes to be attached to a much larger variety of roots provides evidence for increased productivity. Despite these gains, the main improvements at this time are scored in the area of control over articulation. It is as if Zoli has achieved a number of successes in learning the basic elements of Hungarian, but cannot confidently proceed without patching up the numerous defects in his renditions of sounds.

We will deal with the various grammatical morphemes in the same order in which they were presented in the section immediately above. The first suffix we must consider is the plural. At Level IV we record, for the first time, three unelicited plurals kockák "blocks," gyerekek "children," and fiúk "boys." Each of the forms occurred twice; the latter two were accompanied by verbs correctly conjugated for the third person plural of the present indefinite indicative. In addition to these spontaneous plurals, we were able to elicit the plurals pupák "nonsense plural of pupa" and parnák "pillows." Both of these forms illustrate the operation of the rule of final-vowel-lengthening. It is interesting

to note that the first spontaneous plurals occur predominantly within the context of relatively complete utterances. Other suffixes, such as the accusative or the sign of possession, were used in monorhemes from the beginning of the observations. The difference here seems to lie in pragmatic aspects of language use. The child seldom needs the plural to convey his intent. If two objects are requested and the child only receives one, he simply says még egy "another." (There are forty-five uses of még egy at this level.) The real value of the plural is in relating the action of several agents to the same verb. In terms of the functional aspects of language, Zoli's utterances with spontaneous plurals were all exclamations of interesting events, rather than simple requests or commands. There were no instances of omissions of obligatory plurals. In view of the ease with which Zoli formed plural responses to Berko-type questions even in the preceding period, there seems to be nearly complete productivity for the plural.

Whereas we only observed three roots with datives at Level III, there are eleven different roots with the dative at Level IV. Of the thirty-one contexts in which the dative is obligatory, it occurs as required in twenty-six. In the five cases of omitted datives, Zoli uses the nominative pronoun én "I" rather than the dative pronoun nekem "to-me," even though he also uses nekem correctly seven times. These correct uses of nekem all involve the dative-beneficiary, whereas the incorrect omissions

involve the dative-recipient. The explanation for this patterning in the omissions is not immediately obvious. In addition to nekem, Zoli uses the dative-beneficiary five other times. Two occurrences of the dative are with the possessor in possessive constructions: a fának a kupája "the tree's cone" and Moncsinak a halacsját "Moncsi's fish+acc." Three other occurrences involve the verb kell "is-necessary" with the dative attached to the experiencer. The remaining datives involve recipients of the actions of giving and taking. At Level III only this latter usage of the dative was represented in the data, whereas there are four distinct uses of the dative at Level IV. Percentage of usage in obligatory contexts is 84% and productivity is estimated at 50%.

In the twenty-eight obligatory contexts for the instrumental, Zoli correctly supplied the suffix twenty-five times. This is acquisition at the 90% level and represents a slight decline from the 100% use in obligatory contexts of the preceding period. Such a decline surely represents sampling error, rather than some loss of facility with the suffix. Contrasted with Level III, the instrumental comitative is attached to a larger number of bases, thirteen as opposed to nine earlier, and occurs with a larger variety of verbs. Productivity is estimated at 50%.

The accusative is used correctly in a total of 228 of the 247 obligatory contexts. This is a proportion of 92% correct usage in obligatory contexts and is an increase of 21% over the 71% correct usage of Level III.

Productivity is attested by morphological errors such as pénzet "money+acc." for pénzt. However, the decline in morphological errors at this time cannot be taken as evidence for declining productivity. On the contrary, the accusative, like all the other suffixes at this time, combines with more roots than at Level III and it is increasingly likely that these combinations are productively formed. On the other hand, the five occurrences of the accusative where the unmarked nominative is required (section 5.211 of Part II) appear to be the results of use of amalgams. Taking these various facts into consideration, we estimate accusative productivity at 65% at this time. We might also note here that the first accusative personal pronoun enters at this time: engem "me." This pronoun is an insulated form (see section 5.43 of Part II) and cannot be produced through productive morphology.

The sign of possession is only used eight times at Level IV, always correctly, and in all the obligatory contexts. The high frequency of this morpheme in the data at Level III appears to be a result of Zoli's interest in the morpheme as a new and interesting device. At Level IV this interest has waned. At Level III we recorded the personal pronoun tied "your's" once; at Level IV we find five occurrences of enyém "mine." There is also the strange form enyémét "mine+sign-of-poss.+acc." which occurs once. This form further attests to productivity for the morpheme, which we estimate at 90%.

Zoli's possessive forms are still mostly 1PS and 3PS forms, although a few 1PP and 2PS forms enter at this time. Let us first consider the first person singular. In a total of thirty-one obligatory contexts, there is only one omission of a first person singular possessive. This represents 97% usage in obligatory contexts. We have already discussed the problems involved in assessing obligatory contexts for possessives and we will not repeat those observations here. All of Zoli's possessives are subject to these uncertainties. The fact that the 1PS possessive occurs on twelve different roots leads us to estimate productivity at 35%.

As we have already observed, it is even more difficult to assess obligatory contexts for the 3PS possessive. At Level IV there are seven occurrences of the 3PS possessive, all in permissible contexts. There were only two utterances in which a 3PS possessive was missing from an obligatory context; both of these involved the possessive construction with the possessor marked in the surface. The figure for acquisition is 78%. The error kupája for kupja "pine-cone+3PS poss." is our first proof of productivity for this suffix. It is interesting to note that three of the possessives are followed by additional agglutinated suffixes: bajuszával "moustache+poss.+instr.," tetejét "roof+poss+acc.," and sarkába "corner+poss.+illative." We are not suggesting that these complex forms are productively formed in their entirety, but they show that Zoli is beginning to confront

the agglutinating aspects of his language. Other examples of this sort are discussed in section 4.4 below. We estimate productivity at 30% for this level. In addition to the two common possessives, we also find the 1PP and the 2PS possessives. The former is represented in the forms ágyunkra "bed+1PP poss.+sublative" and utcánkba "street+1PP+allative"; the latter is represented in lapátod "shovel+2PS poss." which occurs twice. These suffixes are used without any clearly correct meaning and there is no evidence of their productivity.

Turning now to verbal inflections, we find a marked increase in the variety of roots to which a given suffix is attached. This variety is particularly marked in the first person of the indicative and the 2PS and 1PP of the imperative. Zoli appears to control both the definite and indefinite suffixes in each of these forms, and there is some evidence that the semantic basis for the contrast is no longer the presence or absence of an object (transitivity), but definiteness of the object.

We may examine the 1PS verbal suffixes in the same manner as in the previous section. First, we note Zoli's treatment of verbs of the sub-pattern marked with -ik. A great number of Zoli's 1PS verbs at this time are of this form. Of the total of sixty-five uses of the 1PS (both definite and indefinite) in seventy obligatory contexts, thirty-one uses involve verbs marked with -ik. Moreover, of the thirty different roots to which the suffix is attached, sixteen are roots marked with -ik. Zoli attaches the definite suffix to eight different

verb roots of this type for a total of twenty-nine attachments. In some of these attachments, the object is not expressed, but for all but two of them a definite object could be inferred with reasonable certainty. Zoli attaches the indefinite to five different transitive verbs for a total of eleven attachments. Whereas at Level III all such attachments appeared to be erroneous, there are only two errors at this time (section 7.12g of Part II). Particularly interesting is the fact that three transitive verb roots appear with both definite and indefinite inflections in different utterances. Some of the clearest definite-indefinite contrasts involve the verbs kér "want, ask for" and ad "give." The former is present in its definite shape kérem whenever Zoli is asking for a specific visible object. The indefinite kérek was used once when Zoli requested an unrealized object, a "cake" made of sand which was a part of a game in the sand-box, but not yet even actually patted out into its full shape in a toy sand-mold. The latter verb appeared as the definite adom in utterances of the form nem adom X "I won't give X" in which Zoli wishes to retain some definite touchable object. The indefinite adok appeared in adok homokot neked "give+1PS sand+acc to-you." As a mass object, homok "sand" is non-unique and indefinite.

One should not over-estimate the certainty with which these determinations of object-definiteness are made. When the object is expressed on the surface, there is no question about this feature. However, the majority

of Zoli's utterances are still "telegraphic" at this time an objects are quite often not expressed. When the child is reaching for a flower and says megfogom "perf.+grab+1PS" (=I grab it), there is no doubt that the object is definite. However, some determinations are more difficult. When the object of the verb, in some hypothesized deep structure, is not a specific noun, but an embedded clause, Hungarian requires the embedded clause be considered a definite object, unless it is only expressed by an infinitive. Zoli often walked around with his sand-pail murmuring alig bírom "I scarcely can." Here we must assume that he intends to say something like, "I can hardly bear carrying about this heavy sand-pail." On the other hand, we could imagine that he is really "saying" something like "I can scarcely walk." In the first case, the verb would be correctly marked as definite; in the second case it should rather be marked as indefinite. In such ambiguous cases we found that the interpretation demanded by the situation generally conformed best to what Zoli actually said.

There is evidence, therefore, for learning of the definite-indefinite contrast at this time. Acquisition, measured through percentage of appearance in obligatory contexts, is 95% for the definite 1PS and 87% for the indefinite. The error aludok (section 4.132 of Part II) attests to productivity for the indefinite. We would estimate the productivity of both suffixes at 70%.

The 2PS appeared twice as a result of discourse pressure and twice independently. Although the two independent occurrences are not the result of discourse pressure, they have the shape of discourse pressure: errors in that they are substitutions of the 2PS for the 1PS. The 3PS is simply the verb root, except for roots marked with -ik. Four 3PS indefinite forms show the -ik and there are no omissions of this marker. There is only one 3PS definite verb in the sample: fölveszi "he picks up." This verb was produced as a correction of fölvegy, its indefinite counterpart, when the unexpressed object was clearly definite (a papucsát "the slipper+3PS poss."). Although one such example cannot prove acquisition of the suffix, it does provide evidence for a possible awareness of the definite-indefinite contrast in the third person.

Turning now to the plural forms of the indicative, we find the most common form the 1PP indicative. From the viewpoint of adult grammar, the definite 1PP is -uk, -ük and the indefinite 1PP is -unk, -ünk. These forms are applicable to all tenses and moods. In the indefinite present indicative there is no flectional suffix appearing between the root and the personal suffix. However, in the definite, the element /j/ appears between the root and -uk, -ük. It also happens that both conjugations of the imperative require another, similar but not identical, /j/ element between the root and the personal suffixes. The two /j/ elements are subject to somewhat differing rules of assimilation to the final consonant

of the verb root. (See section 3.131 and 3.133 for a fuller description of the various rules involved.)

However, in many cases, the present indicative and the imperative of the definite conjugation are identical. We will discuss the implications of this fact when we review Zoli's use of imperative forms.

The model of superimposition would predict that Zoli should begin learning of the LPP present indicative by extracting the suffixes -unk, -ŭnk (together or separately, see section 2.318 of Part I) and -juk, -jŭk (again, together or separately). The latter suffix pair differs from the adult LPP definite in that it includes the /j/ element which marks the plural of the present indicative definite. The model would predict that analysis of the /j/ would occur only when the other persons of the present indicative have been isolated. A further prediction of the model is that the indefinite LPP should be acquired before the definite LPP, because the former is not involved in assimilatory patterns with the final consonant of the root. At Level III we lacked error data to attest to the productivity of either suffix, but at Level IV we have two morphological errors involving the LPP: aludunk for alszunk (section 4.132 of Part II) and fociznizunk for focizunk (see the end of the present section). It is important to note that both of these errors involve the LPP indefinite, which seems to be more productive than the LPP definite, as predicted. This evidence is particularly convincing in view of the

fact that the LPP definite is involved in many assimilatory patterns and should produce more errors than the LPP indefinite, if it were in fact productive. We assess productivity of the LPP indefinite at 40%, while the productivity of the LPP definite is assessed at only 20%. In terms of appearances in obligatory contexts, the LPP indefinite appears in twenty-nine of the thirty obligatory contexts, while the LPP definite appears in four of the five obligatory contexts. For both suffixes, the single omission involves substitution of the other LPP form. Percentage of acquisition is 97% and 80%, respectively.

The 3PP indefinite makes its first appearance at this time, occurring twelve times with three different verbs without any omissions from obligatory contexts. Moreover, most of these uses showed the verb agreeing with a plural subject. It is difficult to estimate productivity for the suffix, since there are no errors. We set the figure at 30%.

In the imperative it is not the LPS and the LPP which are the chief forms, but the LPP and the 2PS. In the imperative, the 2PS does not make use of the personal suffixes used by the other moods. Instead, the definite imperative 2PS is marked by -d without an separate marker for imperativeness, while the indefinite imperative 2PS is marked by -j, the sign of the imperative. The optional markers -dl, -él may indicate 2PS, if they do not appear the -j alone indicates 2PS. The numerous assimilations

involving the imperative -i are discussed in section 3.133 of Part II. There is no evidence that Zoli controls any of these assimilations at Level IV. Zoli uses seventy-five imperatives, involving 21 verb roots. All of the intransitive verbs are in the indefinite, and all of the transitive verbs are in the definite. The one exception to this is várij "wait!" which, although Transitive, is generally indefinite when used alone. The one 2PP form is várijátok "wait+imp.+2PP" which is used in a semantically correct context. There are no cases of omissions of either definite or indefinite 2PS imperatives from obligatory contexts. However, neither is there evidence of any productivity. On the other hand, there was an error at Level III indicating productivity for the 2PS definite imperative. We would estimate its productivity at 30%.

Zoli uses the 1PP definite imperative fourteen times with nine different roots. There is only one case of an omission of a 1PP definite imperative; kinyitunk is used for nyissuk ki. This is an acquisitional percentage of 94%. However, note that this error is not only a replacement of the definite suffix with an indefinite suffix, but also an omission of marking for imperative-ness. Remembering that the 1PP definite indicative of many verbs is similar or identical to the 1PP definite imperative, we see that many of the forms that appear as correct imperatives may actually have been indicatives. This inter-

pretation is lent support by the fact that omissions of the imperative marker are quite common in the indefinite; in a total of fifty-seven obligatory contexts, Zoli supplies the imperative marker only thirty-five times for the LPP indefinite. This is an acquisitional percentage of 61%, far less than the 94% rate with the definite. In four of these contexts, the imperative is supplied but the indefinite is replaced by the definite. For the indefinite suffix, considered by itself, the acquisitional percentage is 93%, something like that for the definite. We believe that these differences can be best understood by assuming that Zoli has begun to differentiate the -i marker of the imperative from the indefinite suffix which follows it. This analysis is promoted by the analysis of the LPP indefinite which is occurring in the present indicative. On the other hand, the LPP definite may not be clearly differentiated from the imperative marker in the LPP definite imperative. The absence of verbs with -uk, -uk attached erroneously to the root suggests that neither the LPP definite imperative nor the LPP definite indicative have undergone significant analysis. From Level IV, the acquisition of the imperative marker will be plotted separately and the uses of the LPP definite in both imperative and indicative will be considered together. Note that the acquisitional percentages for the LPP definite in the imperative and in the indicative are very close: 97% and 93%. We estimate productivity of these merging suffixes at 40%. The

imperative marker is probably not more than 10% productive at this time.

Looking at the learning of the definite-indefinite contrast in the LPP imperative, we are not troubled by the group of verbs marked with ik, since these verbs show no particular irregularity in the imperative. There are thirteen intransitive verbs occurring in the LPP imperative a total of twenty-four times. These verbs are, unsurprisingly, all indefinite. Additionally, there are nine transitive verbs occurring in the LPP imperative definite a total of fourteen times. It is the three transitive verbs occurring in the indefinite a total of seven times that provide evidence for a learning of definite-indefinite contrast in the imperative. Two of these verbs also appeared in the definite in other utterances. Looking at the details of the communicative situations of the various utterances there is some ambiguity possible in several of the interpretations. Moreover, one of the verbs, szedik "pick" was placed in the wrong conjugation three times and in the right one only four times. There seems to be a beginning awareness of the contrast at this time, but it is still highly underdeveloped in this mood.

In addition to the replacements of the imperative by the present indicative, we find four replacements of the imperative by infinitives: kivenni "to take out" for vedd ki "take it out," föltenni "to put up" for tedd föl "put it up," lefeküdni "to lie down" for feküdjünk le

let's lie down," and biciklizni "to go bicycling" for biciklizzunk "let's go bicycling." This usage is highly sub-standard, but it does form a part of the baby-talk repertoire of many speakers. The child's use of the infinitive as an imperative surely reflects such input. Apart from these four forms, there are three contexts requiring imperatives, and imperatives are correctly inserted in each of the three cases. These contexts involve embeddings and will be discussed in section 5.4 below. There is no evidence for productivity of the infinitive at this time.

All of Zoli's past tense forms are correctly formed and correctly used. There are no clear omissions of a past tense in any person from an obligatory context. On the other hand, assessment of obligatory contexts for the past tense is very difficult and the 100% figures for acquisition might well be corrected downwards. Zoli's past tenses include fifteen occurrences of the 1PS (which is the same for both definite and indefinite), involving twelve different roots; thirty-one occurrences of the 3PS indefinite, involving thirteen different verbs; three occurrences of the 3PS definite, involving two different verbs; and one occurrence of a 3PP indefinite verb. Although the shape of the past tense marker is determined by a number of contingencies, Zoli never makes an error in its formation. This suggests that there is very little productivity in the formation of the past tense. There is only one transitive verb in the 3PS indefinite, and this is part of the phrase mit csinált?

"What did he do?" There is no evidence for awareness of the definite-indefinite contrast in the past tense at this time.

The system of verbal prefixes of Level III included five locative prefixes and the perfective meg-. At Level IV, three new locative prefixes are added to the set, but this is not the main change. At Level III each prefix occurred with only from two to five verbs; at Level IV the average number of verb roots occurring with a given prefix is nearly doubled.

Prefix	Meaning	Number of Occurrences	Number of different co-occurring verbs
meg-	perfective	15	12
el-	away	37	17
ki-	out	28	8
be-	in	9	5
föl-	up	7	3
le-	down	2	2
vissza-	back	2	2
bele-	into	2	2
szét-	apart	3	2
ide	here	12	3
oda	there	11	3

The last two of this series are not verbal prefixes, but adverbs. Nonetheless, they resemble verbal prefixes in a number of ways. As we noted earlier, it is virtually impossible to assess the productivity of verbal prefixes. We have only one case on an omission of a prefix: szállunk "we alight" for leszállunk "we get off." It is not profitable to chart acquisitional percentage percentages or productivity for verbal prefixes (as in

Table IX below), but it is necessary to derive some estimate of productivity in order to properly assess M.L.U. This productivity estimate can be made by an inspection of the degree to which the verbal prefixes combine with a variety of roots which, in turn, combine with a variety of other suffixes and prefixes. For Zoli IV, we set this productivity level at 65% for all the verbal prefixes.

Zoli's system of locative case suffixes shows some development over Level III. At the time of the third sample the inessive and the illative appeared merged; this may be attributed to the fact that the illative replaces the inessive in very casual speech. However, at Level IV, the two cases appear more distinct. The illative appears with eleven different roots in a total of twenty occurrences. There is only one omission of the illative. Thus, the acquisitional percentage is 96%. However, as was true at Level III, the illative is occasionally used without any clear reference. Such unclear illatives were pillangóba "into the butterfly" and tisztába "into clean." In this sense, the illative continues to appear to be some all-purpose locative. One of the illative forms was the deictic pronoun abba "into that" which appears in the phrase búji abba "hide in that." The inessive appears only twice in udvarban "in the court-yard" and házikóban "in the housey." Since it is quite probable that Zoli has mastered the basic vowel-harmony rule by this point, we cannot expect

to find morphological errors which attest to the productivity of the inessive or the illative. We estimate this productivity at 50%.

The allative occurs with four different roots for a total of twelve occurrences. There is one omission of an allative from an obligatory context when fára "tree+sublative" replaces fához "tree+allative." The acquisitional percentage for the allative is 92% and productivity is estimated at still 50%. The sublative occurs three times in ágyunkra "bed+1PP poss.+sublative," arra "that+sublative," and fára "tree + sublative." Although there are no omissions of the sublative, the erroneous use of the common fára indicates that it is probably not analysed. Like the sublative, there are several other locative suffixes which first appear at this time, but without apparent productivity. The adessive occurs correctly one in Tünditől félek "I'm afraid of Tündi." The elative occurs four times correctly, always in the sense of making something out of something: építünk kockából "we build from block," ebből lesz vár "from this will be a castle," abból lesz vár "from that will be a castle," and csinálok ebből pogácsát "I make biscuit from that." All these suffixes must be judged as having an acquisitional percentage of 100%, although they show no productivity.

The definite article continues to show moderate gains in acquisitional percentage. It occurs in ninety of the 130 obligatory contexts, or in 69% of the contexts. Its productivity is estimated at 60%. The indefinite

article occurs chiefly in the unit még egy "still one, another"; outside of this unit it occurs only once in seventeen obligatory contexts, i.e. in 6% of the obligatory contexts. It shows no clear productivity. The diminutive occurs twenty-eight times on twelve different roots. It is not possible to assess obligatory contexts for this suffix, but we should note that each of the twelve roots is also used without the diminutive; this suggests an estimate of 75% productivity. The diminutive is -ka, -ke on ten of the forms and -cska, -cske on the other two. The comparative -bb appears in the amalgam nagyobbát "big+comp.+acc.," but there is no evidence of semantic control or morphological productivity.

The diminutive is formally classed as a formative suffix; however, from a semantic point of view, it resembles a flectional suffix in a number of ways. Use of formative suffixes to change the part-of-speech of a root is a skill one might not expect to find in a child of Zoli's age. However, there is some evidence that Zoli has acquired some beginning awareness of the meaning of the general denominative verbal formative -z. Rather than saying focizzunk "let's play football," Zoli once said fociznizzunk. In this error the root is focizni which is an infinitive for "to play football" an already includes a -z attached to the root foci "football." If Zoli simply attached the moderately productive LPP

indefinite to focizni, he would have something like focizniunk or fociznunk. Instead he inserts an additional -z. But this -z is just the verbal formative suffix and we must explain his choice of inserted material as based upon some awareness, however dim, of the meaning of this formative.

3.5 Zoli V

We will deal with various grammatical morphemes in the order in which they were presented in the previous section. Thus, the first suffix we must consider is the plural. No attempt was made at Level V to elicit plurals through Berko-type questions. Nonetheless, ten plurals were produced. Of these, one (többiekem, see section 7.1j of Part II) is based upon an error in the specification of the context of the plural morpheme. Nonetheless, this error demonstrates the morphological productivity of the plural. At this time the plural is attached to eight different roots, and there are no errors of omission. Moreover, Zoli correctly omits the plural in the utterance itt van sok játék "here are many toy," where agreement with a plural adjective requires such omission. We would estimate the productivity of the plural at 90% for these forms. Although the productivity for the plural is high, it is likely that Zoli still retains the codings of many forms as amalgams. Such forms may be produced through amalgams or productively.

Of the twenty-two contexts in which use of the dative is obligatory, it occurs as required in twenty-one. There is a decrease, since Zoli IV, in the diversity of roots combined with the dative. The roots Andi "Andi," bácsi "Uncle," bicikli "bicycle," and csecsemő "infant" occur with datives in apparently productive formations. The morphologically-opaque nekem "to me" occurs thirteen times. Productivity may be estimated at 50%. All of the uses of the dative at this time are in the sense of the dative-recipient, except for one dative-beneficiary: megveszik a bácsinak "he buys for the uncle." The dative also occurs twice in the possessive construction: a biciklinek a garázsa "the bicycle's garage" and a csecsemőnek a cumije "the infant's pacifier."

Zoli uses instrumentals in seven of the eight required contexts. The omission occurred in the utterance megyek a autó is "I go the car too." Of the six different instrumentals used, four were instrumental pronouns: ezzel "with this," azzal "with that," evvel "with this," and vele "with him." The morphological formation of these pronouns is not simple. For that reason, productivity in this sample cannot be estimated at over 40%. The statistical preponderance of pronoun amalgams tends to obscure the probable growth in productivity of this suffix.

The accusative is used correctly in a total of

101 of the 109 obligatory contexts. This is a proportion of over 93% correct usage and a slight increase over the previous sample. We would continue to estimate accusative productivity at 65% for Level V. In a number of form the accusative appears together with other suffixes. In the word husikát "meat+dim.+acc." the accusative is correctly ordered after the diminutive. The form husikát appears ten times, once together with an accusative deictic adjective: azt a husikát "that+acc. the meat+dim.+acc." (=that meaty). Another occurrence with the diminutive is in halacskámat "fish+dim.+LPS-poss.+acc." Halacskámat occurs five times, but it is likely that it is simply produced as an amalgam. In yet another form the accusative is ordered after the LPS possessive: csipeszemet "clothes-pin+LPS-poss.+acc." which appears twice with the accusative correct and once with the accusative superfluous. The superfluous appearance of the accusative on both halacskámat and csipeszemet (see section 5.211 of Part II) attests to the fact that both of these are actually amalgams. Zoli uses the morphologically-opaque LPS accusative pronoun engem, together with its free-variant engemet. The former appears twice and the latter three times. There is also one case of omission of the accusative in a frame where omission is a permissible option. When a possessive suffix appears, the accusative is not required. Thus, the form kezem "hand+LPS" is correctly used as an accusative.

The decreased use of the sign of possession which we had noted between Level III and Level IV continues to Level V. Only three nouns with -é are recorded from this period, although there are no apparent omissions. We continue to estimate productivity at 90%. The decrease seems to be a result of the increase in the availability of new means of expressing the notion of possession.

The LPS possessive occurs correctly in twenty-one required contexts with no omissions. Two of the forms were the amalgams halacskámat and csipeszemet which were discussed in the preceding paragraph. Of the other appearances, eleven involved enyém "mine" which is a morphologically-opaque pronoun. Other LPS possessives include one appearance each of kicsim "little-one+LPS poss.," apukám "father+dim.+LPS poss.," and kezem "hand+LPS poss.," The latter also occurred with the illative kezembe "hand+LPS poss.+ illative." Note that the orderings of suffixes with the LPS poss., as well as with the accusative and the other possessives, is correctly determined by rules A through C of section 4.4 below. We estimate productivity of the LPS possessive at 25% for this sample.

The 2PS possessive first begins appearing frequently at this time. It occurs six times with no omissions. In all cases it is used appropriately. The forms are táskád "satchel+2PS," csipeszed "clothes-pin+2PS," táskádba "satchel+2PS+illative," and tied "yours." Only the last form is morphologically opaque and productivity is estimated at 20%.

The 3PS possessive occurs in all five of the obligatory contexts. Two of these forms appeared in the possessive constructions mentioned in the discussion of the dative. The other forms are autója "car+3PS poss." and kezébe "hand+3PS poss.+illative." Again, the ordering of morphemes is accounted for by the rules of section 4.4. Productivity is estimated at 40%.

Moving on to consideration of the verbal inflections, we begin with the LPS present. As in the previous sections, we begin by noting Zoli's treatment of verbs of the sub-pattern marked with -ik. Of a total of eighty-five verbs marked for either the LPS definite or the LPS indefinite, fourteen are of the -ik conjugation. Five of these forms are with the definite, while nine are with the indefinite. Note that one of these roots occurs with both definite and indefinite suffixes. The ratio of indefinite to definite for this conjugation of verbs was 3:1 at Level III and 7:3 at Level IV. In the present sample it declines further to 9:5.

For roots not marked with -ik, there are twenty-six intransitive forms correctly marked with the indefinite. In this regard there are no erroneous uses of the definite, and six different intransitive verb roots receive the indefinite in this way. Zoli attaches the definite to fifteen different transitive roots for a total of thirty-two attachments. Of these thirty-two attachments, only two should have been indefinite (see section 7.12g of Part II). The indefinite is attached eighteen times to twelve different transitive roots. Of these eighteen

attachments, only two are uses of indefinite when the definite is required (see section 7.12g of Part II). Apart from the four confusions of the definite and the indefinite with each other, there are only three omissions of the 1PS verbal suffix. Since the indefinite occurs correctly in fifty-one of the required fifty-six contexts, it has an acquisitional level of 91%. Similarly, the 1PS definite occurs in thirty-four of the thirty-six obligatory contexts (the indefinite occurs in both of the omissions) and is acquired at the 94% level. For both of the suffixes, productivity is estimated at 75%. The large number of transitive forms that appear correctly with the indefinite attest to the fact that the definite-indefinite contrast must be operative by this time. Moreover, it is interesting to note that there was a time in Zoli's development when indefinite intransitive verbs were either totally absent or erroneous. Hopefully, cross-linguistic data of the type now being gathered by Slobin and associates will allow us to determine how much of this change in the type of verb utilized by the child is a result of the peculiarities of Hungarian morphology.

There are still no 2PS definite forms at this time, but five 2PS indefinites occur with only one omission. As many as three of the four forms involved may be morphologically opaque: ragy, mész, and feljössz. Only szaladsz shows regular formation with -sz; this form occurs twice. We estimate productivity at 30%. There is

no discourse pressure effect producing 2PS forms.

Because of the smallness of the sample, a number of rarer verb forms simply do not occur at all. Among these are the 3PS definite, the 1PP definite, the 3PP definite, and both definite and indefinite of the 2PP. We do have twelve uses of the 1PP indefinite with no omissions. Only two of these involved transitive verbs. We would estimate productivity of this suffix at 50%. The 3PP indefinite appears in seven of the eight obligatory contexts, used with six different roots. Only one of the roots was transitive. The omission of the 3PP was in ott van a tōbbiek "there is the others." We would estimate productivity of this suffix at 50%.

As at Level IV, the imperative is confined to the 2PS and the 1PP. However, both definite and indefinite forms exist in each of these persons. Zoli uses ten definite 2PS imperatives with five different verbs, and with no omissions. The 2PS definite imperative is not formed by agglutination of the imperative with the personal suffixes, but is simply -d. Although we have no clear evidence of productivity from error-data, we estimate productivity at 40%. Every use of the definite 2PS imperative is with a transitive verb. On the other hand, each of the twenty-four uses of indefinite 2PS imperative is with an intransitive verb. Ten different roots are involved in these usage and there are three omissions of the indefinite 2PS imperative, one being an over-generalization of the definite 2PS imperative to a transitive verb which happened to have a indefinite object: keresd

engemet "look for me" (see section 7.12g of Part II). Together this evidence suggests that the use of the two conjugations in the 2PS imperative is governed not by the definite-indefinite contrast, but by the transitive-intransitive feature inherent to each verb. It is not clear why the 2PS imperative should be behind the LPS present in acquisition of the definiteness contrast. However, it is quite possible that the object of a transitive imperative is usually definite in the input to the child. Most of the indefinite 2PS imperatives show the short form with simply the sign of the imperative -j. However, most of these have the -j assimilated to the last consonant of the base and are probably amalgams. Two forms, menjél and sírjél, have both the sign of the imperative and the long 2PS indefinite ending -él, -él. It is difficult to imagine that these suffixes of the long form are used productively here.

Zoli uses the definite LPP imperative fourteen times with no omissions. The indefinite LPP imperative is used eighteen times in twenty-one obligatory contexts, i.e. at an acquisitional level of 86%. Of the eight roots used with the indefinite, all but one are intransitive. We noted in the previous section that Zoli had begun to analyse the indefinite LPP imperative into the marker of the imperative -j and the marker of the LPP. It is difficult to chart the course of this analysis, since we are not sure to what degree Zoli has also begun to learn the assimilations required on the verb root.

However, the absence of errors suggests that many of the indefinite LPP imperatives are still amalgams. We estimate that the imperative is 30% productive here and that 30% or five of the uses of the LPP suffix are productive.

The sub-standard use of the infinitive for the imperative gains even wider ground during this period. Fifteen such forms were recorded, nearly all of them with a preposed verbal prefix. Fourteen different verbs were involved here; this suggests some productivity for the infinitive which we estimate at 40%. The error kinvissni (see section 5.215 and section 6.13 of Part II) is further evidence of this productivity. In addition to this use as an imperative, there are fourteen uses of the infinitive in embeddings and only one omission in such a context. Finally, there are two infinitives appearing alone as elliptical embeddings, i.e. pisilni "pee+infin." (= I need to pee.)

As in the previous period, all of Zoli's past tense forms are correctly formed and correctly used. There are no clear omissions of a past tense from any context. Zoli's past tenses include ten occurrences of the LPS (which is the same for the definite and the indefinite) involving eight different roots; twenty-seven occurrences of the 3PS indefinite with eighteen different verb roots; three occurrences of the 3PS definite with three different roots; and two occurrences of the LPP indefinite with two different roots. This large number of past tense

forms might indicate productivity of the past tense itself were it not for the fact that not a single error in the rather complex morphological formation is produced. It is clear that the semantics of the past tense are well under control, as is the definite-indefinite contrast in the 3PS. However, there is still no clear evidence of any morphological productivity here.

Zoli uses his first future tense at this time: Zolika fog ülni "Zolika will sit+infin." This was uttered in a not entirely appropriate situation, where a more appropriate utterance might have been én is akarok leülni (=I want to sti down too.)

No new verbal prefixes appear at Level V; in fact, the prefixes szét- "apart" and bele- "into it" do not occur at this time, although they appeared at Level IV. In view of the smaller number of utterances in this sample, the frequencies of the other verbal prefixes are stable across the two samples. Their occurrences are summarized here:

Prefix	Meaning	Number of Occurrences	Number of roots occurring with it
meg-	perfective	19	17
el-	away	24	17
ki-	out	18	9
be-	in	8	6
föl-	up	4	3
le-	down	7	5
vissza-	back	7	7

Since there is no clear development in the use of verbal prefixes, we continue to estimate productivity at 65% for all the prefixes.

Only five locative suffixes occur in this sample. The inessive, adessive, and elative which had occurred at Level IV are not present here, but the first superessive appears. There are twenty-six uses of the illative, many of which may be forms of the inessive with the final -n deleted, as in casual speech. Among the illative pronouns are ebbe "in this" and benne "in it." The twenty-six uses of the illative occur with fifteen different roots. The three uses of the allative occur with two roots. There are three cases of allative omission, one of which is an erroneous substitution of the dative for the allative. The sublative occurs in nine of the eleven obligatory contexts with five different roots. The ablative occurs twice in the form töle and the superessive -n occurs in ott a fán "there on the tree." Productivity for the illative-inessive, the allative, and the sublative is estimated at 50%. No productivity is postulated for the other locatives.

The definite article occurs 132 times in a total of 138 obligatory contexts. This is acquisition at the 97% level and productivity is estimated at the 70% level. The indefinite article occurs in four of the five obligatory contexts. The diminutive occurs seventeen times with six different roots. Its productivity is estimated at 150%. A number of other formatives also begin to enter, but it is during the next period that their number begins to

grow most rapidly. In general, grammatical morphemes undergo little development in the sample just reviewed. However, much of this apparent lack of progress can be attributed to the fact that the sample was collected in early July, when Zoli was more interested in play in the garden than in sustained verbalization.

3.6 Zoli VI

We will deal with the various grammatical morphemes in the order in which they have been presented in previous sections. The first suffix we must consider is the plural. At Level VI a major attempt was made to elicit plurals from Zoli and Moni, who played together during most of the days on which material was recorded. For that reason, the appearance of sixty-six plurals at this time should not be considered to represent a sudden increase in plurals in spontaneous speech. In section 3.3274 of Part I we discussed the morphology of Zoli's plurals at Level VI. In section 4.6 we discuss further aspects of this morphology. Here we note that thirty-nine different roots were involved in the sixty-six plural forms. There are no omissions of the plural from an obligatory context. Productivity, as attested by the continual failure to modify the base in morphologically-required ways, is estimated at 90%. The status of rules ordering suffixes cooccurring with the plural is noted in section 4.6.

The dative appears forty-six times and is never

omitted from an obligatory context. Of these forty-six uses, six involve the possessive construction, while forty involve a beneficiary or recipient related to the main verb. Although the distinction between recipient and beneficiary is not always clear, the forty datives are about evenly divided between these two uses. In general there appears to be an increase in the proportion of beneficiaries out of the total set of datives. Three of the possessive constructions show the dative before a noun to which a possessive suffix is also attached. However, two have the dative separated from its possession by the copula: annak van szája "that+dat. is mouth+3PS poss." (=that one has a mouth) and nekem van "to-me is." In the sixth possessive construction, the order of possessor-possessed is reversed and the possessive suffix incorrectly omitted from the possessed: csésze a Moncsinak "cup the Moncsi+dat." As at Level V there is a low diversity in the number of roots occurring with the dative; only six different roots occur. At Level V we considered nekem "dative+1PS" as unanalysed, since the concept of a special case root such as nek- must surely be new to Zoli. At Level VI a number of other such special roots are present and they may have some productivity. In the dative, neked "dative+2PS" and neki "dative+3PS" begin to occur with frequency and indicate further the possibility that special roots are productive. We estimate over-all dative productivity at 60%.

Zoli uses instrumentals in twenty-eight of the thirty-six obligatory contexts. This acquisition level

of 78% is a continuation of a rather puzzling drop in acquisition of the instrumental since Level III. Of the eight omissions of the instrumental, six are uses of some other suffix, while only two are actual omissions. The over-generalizations can be found in section 7.241 of Part II. We should note here that all of Zoli's instrumentals show correct vowel-lengthening A and that no error in this regard has yet been detected. The absence of errors suggests that the instrumental is not yet fully productive in such forms. We estimate productivity at 50%. Of the thirty-six correct instrumentals, only five are comitatives. Sixteen different roots occur with the instrumental.

The accusative occurs 233 times in a total of 261 obligatory contexts, or in 90% of the obligatory contexts. There are thirteen cases of accusatives following possessive suffixes, the diminutive, or the plural. Whenever the root of such words is a back-vowel root, the linking-vowel before the accusative is correctly lowered. The fact that no errors occur regarding the height of such vowels suggests that productivity is not complete in such cases. Over-all productivity for the accusative is estimated at 70%. Of the accusative personal pronouns, only engemet "me" appears.

The sign of possession occurs eleven times, but nine of these uses involved the question word kié "whose?" We estimate productivity at 100%.

The 1PS possessive occurs correctly thirty-nine times with no errors of omission. Seventeen different roots are involved. Productivity is attested by the error egérm "mouse+acc." for egerem. The suffix eight times before the accusative, eight times before the diminutive, three times before the inessive, and once before the instrumental. These orderings are correctly produced by rules A through C of section 4.4 below. Productivity for this suffix is estimated at 50%. The 1PS possessive pronoun enyém "mine" occurs thirteen times.

The 2PS possessive occurs in six obligatory contexts with no errors of omission. In one form it occurs before the inessive, in another before the accusative. Four roots are involved; one of these is of the personal pronoun tied "yours" which is morphologically opaque. Productivity is estimated at 35%.

The 3PS possessive occurs five times with four different noun roots. In one form it is ordered before an instrumental kezével "hand+3PS poss.+instrumental." Productivity is estimated at 40%.

The first possessive of a plural possessor enters at this time in the form of the 1PP possessive. It occurs only twice in the form autónkat "car+1PP+acc." which is undoubtedly an amalgam.

Moving on to a consideration of the verbal inflections, we begin with the 1PS present indicative. The 1PS definite occurs 12⁸ times in 133 obligatory contexts. Of the five

omissions, one was a substitution of the indefinite for the definite. This is acquisition at the 96% level and productivity is estimated at 80%. The LPS indefinite occurs 155 times with nine omissions of which five are overgeneralization of the definite and one an overgeneralization of the LPP indefinite. This is acquisition at the 94% level and productivity is estimated at 80%. Zoli's treatment of verbs marked with -ik seems to have become quite consistent. All intransitive verbs of the -ik type are placed in the definite. We are not entirely sure that some adult speakers have not reached a similar solution to the problem of the conjugation of these verbs in the LPS.

For roots not marked with -ik, there are fifty-two appearances of ten different intransitive verb roots correctly marked for the indefinite. There are no erroneous uses of the definite with intransitive verbs. Looking at transitive verb roots, we find 119 attachments of the definite to twenty-one different verb roots. However, five of these attachments are actually errors (see section 7.12g of Part II). The indefinite is attached eighty-eight times to eleven different transitive roots with only one error. Given the small percentage of errors, it appears that Zoli has learned the fundamentals of agreement of the verb with the definiteness of the object.

The first 2PS definite forms appear at this time, occurring fifteen times with eight different transitive roots. No errors occur and productivity is estimated at 60%. The 2PS indefinite occurs sixteen times with ten different roots, five of them intransitive. There is one over-generalization of a 1PS definite for the 2PS indefinite in the use of megmutatom "perf.+show+ 1PS-def." for megmutatsz "perf.+show+2PS-ind." Thus, acquisition is 94% and productivity is estimated at 60%.

The 3PS definite also makes its first appearance in this sample. It occurs correctly in twelve of the thirteen obligatory contexts, and its morphological shape is correct in all instances. There is no clear evidence of productivity and, given the complexity of the alterations in which this suffix is involved, we would expect errors if there were any productivity. Acquisition is at the 92% level.

The 1PP definite occurs eleven times with five different roots. No errors occur and productivity is estimated at 35%. The 1PP indefinite occurs thirty-four times with only one omission in which the definite was over-generalized. Sixteen different roots were involved and productivity is estimated at 70%. Acquisition is at the 97% level. Seven of the correct uses of the indefinite were with transitive roots. There are still no appearances of 2PP verbs at this time.

The first 3PP definite verbs also enter at this

time as a part of the general expansion of the definite verbal forms. The 3PP definite appears nine times on seven different roots with no omissions or over-generalizations. Productivity is estimated at 30%. In two of the utterances with the 3PP definite a plural subject is present on the surface. In two other utterances a definite object is present on the surface.

The 3PP indefinite occurs twelve times with five different roots. It is omitted once when the underlying subject was plural. Acquisition is thus at the 92% level and productivity is estimated at 60%. In five of the utterances the plural subject was present on the surface. We should also note that the verb was correctly retained in the singular when a quantifier was in the subject noun-phrase in the utterance sok van "many is."

As at Level IV and Level V, the imperative is basically confined to the 2PS and the 1PP. However, one 2PP plural form does occur in the phrase feküdjetek gyerekek "rest+imp.+2PP child+pl." which is surely a phrasal amalgam learned from the nurses. Looking first at the 2PS, we find forty-one appearances of the 2PS definite imperative suffix -d with ten different roots. No errors occur and productivity is estimated at 50%. The 2PS indefinite occurs seventeen times in its short form which is identical to the imperative without person and six times in its long form (with -él,-él). The productivity of the suffix of the long form is estimated at 20%. Additionally, there are seven occurrences of the

morphologically opaque form gyere "come!"

The 1PP definite imperative occurs twenty-four times with ten different roots. Since this form is often identical with the 1PP definite present, the possibility of undetected confusions always exists. The suffix integrates the imperative, as does the 2PS definite imperative; its productivity is estimated at 20%. The 1PP indefinite imperative, on the other hand, is most probably analysed by this time into personal suffix and mood suffix. There are twenty-nine occurrences of this form and we estimate that the imperative is productive in 30%.

We have already noted one case of the 2PP indefinite imperative. There are also three case of the 1PS imperative; but, similarly, all are phrasal amalgams. The two phrases involved are: hadd nézzem "let me see it" and hadd nézzek "let me see."

Forty-three infinitives occur in the imperative-like usage discussed in the previous section. Fifty-three other occurrences of the infinitive are in subordinate constructions. There are no omissions of infinitives from required contexts and forty-two roots are involved in all. The error kinvissni (section 5.215 of Part II) attests to productivity which we estimate at 50%.

As at previous levels, there are no omissions of

of past tense forms. The first error attesting productivity of past tense formation occurs at this time and it seems increasingly likely that at least some of the persons of the past tense are assuming productivity. The LPS past is the same for both definite and indefinite and might well acquire productivity first, since it appeared first in amalgams. It occurs twenty-eight times with fifteen different verbs. We estimate productivity at 20%. The nature of the error bedobt for bedobott suggests that Zoli first begins to form past tenses not by analysis of both the past tense morpheme and the personal suffix, but simply by analysis of a basic past tense suffix from the personal suffixes. Thus, in the case of bedobt, the root has been analysed from bedobtam "in+throw+past+LPS" be- dob-t-am and similar forms in the other persons. If this is true, there may be no productivity for the past tense morpheme, even though some past tense words are formed through partial productivity. Thus, we are able to estimate productivity of the special LPS past suffix -am, -em at 20%. Similarly, there are fourteen occurrences of the 3PS definite past. In the past the morphology of the 3PS definite is not complex and should be easily analysed. In fact, it is possible the the 3PS definite is first analysed in the past tense. We estimate its productivity there at 30%.

As at Level V, only one future tense appears in the sample. However, the relation of this future to the situation is more easily understood. Zoli says, fogok ebédelni "will+1PS dine+infin." when, in fact, they are about to serve lunch.

The prefixes össze- and rá- first occur at Level VI; moreover, there is a general expansion in the variety of roots to which the prefixes are attached. This expansion is a result of the productivity of the suffixes, which is estimated at 80%, as well as being a result of the over-all growth of the lexicon. The occurrences of the various prefixes is summarized below:

Prefix	Meaning	Number of words in which it appears	Number of occurrences
meg-	perfective	30	71
el-	away	15	31
ki-	out	12	29
be-	in	10	27
föl-	up	8	24
le-	down	8	12
vissza-	back	7	14
össze-	together	2	2
rá-	onto	1	1
total			217

We reported one omission of a verbal prefix in a previous sample; the only other omission of a verbal prefix occurs in this sample. Rather than saying hogy kell kivenni "How do you take it out?," Zoli said hogy kell venni? "How do you take it?"

Among the locatives, the inessive-illative remains

the most common suffix with thirty-nine occurrences with eighteen roots. In four words it is correctly ordered after the accusative. There is an omission of an illative and there is one over-generalization of the accusative for the illative. This is acquisition at the 95% level and productivity is estimated at 70%. The only pronoun of the inessive-illative is benne "in-it." There is only one occurrence of an allative, but there are no omissions and productivity is estimated at 70%. There are eight occurrences of the sublative with six roots and one over-generalization of an ablative for the sublative. Productivity is also estimated at 70%; acquisition is at 89%. The adessive occurs three times with one root and is omitted once for acquisition at the 75% level. Productivity is estimated at 25%. There are four ablatives with four different roots, two are with pronouns, ezektől "this+pl.+ablative" and tőle "ablative+it." Productivity is estimated at 25%. The superessive occurs four times with four noun roots and productivity is estimated at 25%. Additional locatives include the postposition mellett "beside" in szék mellett "beside the chair" and the adverbs lefelé "downward," fönt "above," lent "below," and hova? "whither?" The postposition fölött occurs once by itself and the postposition alatt is omitted once from the context ágy alatt "bed below."

The definite article occurs 163 times in a total of 189 obligatory contexts. This is acquisition at the 86% level and productivity is estimated at 90%. The

indefinite article occurs in eighteen of the twenty-one obligatory contexts. This is acquisition at the 86% level. It is assumed that the indefinite article is not a part of amalgams and is fully productive whenever it occurs.

Among the formatives, the diminutive occurs twenty-four times with twelve different roots which all occur in non-diminutive forms also. When co-occurring with other suffixes, it is always ordered first. Productivity is estimated at 75% and there are no omissions. The expansion of Zoli's lexicon at this time has dramatically increased the number of verbs including formative suffixes. For example, eight roots contain -z, -oz, -ez, -ŏz and seven contain -l, -ol, -ŏl. In addition to these two general denominative formatives, the frequentative, the potentative, and a transitivizer are present in a significant number of roots. It is unlikely that much analysis of these formatives has yet occurred. However, the raw material for this analysis is rapidly growing in size.

Table IX Acquisition and Productivity of the Grammatical Morphemes

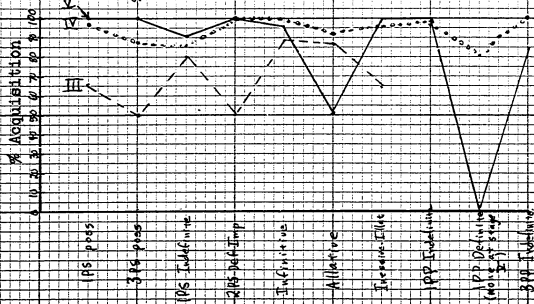
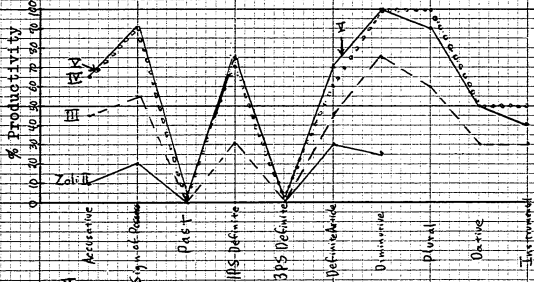
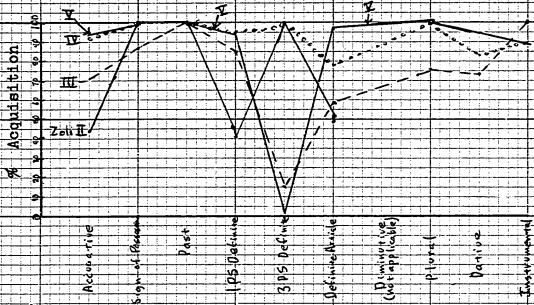


Table IX (cont.)

% Productivity

% Acquisition

% Productivity

0 10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 80 90 100

1PS pass

3PS pass

1PS Indefinite

2PS Definite

Indefinite

Attentive

Ingressive-
Illusive

1PP Indefinite

1PP Definite

3PP Indefinite

Impulsive

Indefinite
Article

2PS pass

2PS Indef

Sub error

Impulsive

Indefinite
Article

2PS pass

2PS Indef

Sub error

H: K

H: K

H: K

H: K

A

4.0 Acquisition of phonological rules

4.1 Zoli I

In section 3.1 above we concluded that the only suffix which shows any productivity at Zoli I is the diminutive -ka, -ke, which contrasts on the item bácsi "uncle" vs. bácsika "uncle+dim." Additionally, the diminutive occurs in its front-vowel form -ke on egerke "mouse+dim." It is conceivable that Zoli has superimposed the two diminutives -ka and -ke and extracted the basic fronting-harmony rule, but there is no real evidence that this extraction has occurred at this early date.

4.2 Zoli II

Zoli uses nine different amalgams in which the basic fronting-harmony rule would be required, if the amalgams were to be subjected to analysis. Six of these nine possible amalgams are verb roots with verbal suffixes. In section 3.1 we concluded that none of the verbal suffixes show clear productivity, although some beginning productivity and semantic understanding may be inferred in some cases. Another amalgam involves use of the adverbializer -en which is certainly not productive at this time. Yet another amalgam involves fronting-harmony, internal-vowel-deletion, and initial vowel-insertion in its formation: torony + -t "acc." → tornyot. It is also unlikely that this form is productive. Only in the case of the four diminutives, which are present also as non-inflected roots, do we find evidence for possible productivity of the fronting-harmony rule.

The other phonological rule which begins to assume

some importance at this time is that of vowel-lengthening in these constructions: baba + t -- babát; Zolika + é -- Zolikáé; törpe + t -- törpét. It is difficult to assess the productivity of this rule without some error or Berko-test data. An attempt was made to elicit a response to a Berko-type question, but it was difficult to get Zoli to concentrate at this early age.

An interesting aspect of Zoli's speech at this time is the high occurrence of non-deleted linking-vowels. Referring to the discussion of section 3.325 in Part I, we can view forms such as hala and tudo for hal and tud as the results of the removal of the simple plural -k from the plural halak. This would be a result of the use of Strategy A for plural formation. Alternatively, the child might be using Strategy F which seeks to isolate the root together with its linking-vowel. In the latter case, the child fails to activate the rule for deletion of the linking-vowel when no deletable vowel follows it. Balassa found such a phenomena in Laci between 1;3 and 2;1 (see section 5.1e of Part II). Zoli also produces four such errors in the small sample from Level II. A particularly revealing analysis occurred when the investigator said to Zoli csinállok egy papot "make+1PS a priest+acc." Zoli replied, with a request intonation, papo! Thus he analysed papot into papo + t, rather than the correct pap + ot. Zoli's form assumes that the accusative is nothing more than -t and that the root is the residue. Thus, it appears that he is on the first level of morphological formation, as outlined in section 3.325 of Part II.

4.3 Zoli III

The increase in suffix productivity between Zoli II and Zoli III is accompanied by the acquisition of the first phonological rules. In the previous section we suggested that the basic fronting-harmony rule and the vowel-lengthening rule might have achieved some productivity at Zoli II, but only at Zoli III is there any evidence to support this claim. Zoli uses forty-five different inflected words requiring the operation of the basic vowel-harmony rule at this time. Most of these involve suffixes which show some clear productivity at this time: the 1PS verbal suffixes, the accusative, the diminutive, etc. Moreover, three of these forty-five words could not possibly be amalgams, since they are errors; another two could not be amalgams since they are formations based upon nonsense words; and another eight are rare enough in occurrence to suggest that they were not acquired as amalgams. Two of the errors are the elicited plurals kormányak (=kormányok) "wheels" and ágyok (=ágyak) "beds" where there is no error in assignment of the feature /Ofront/, and we take this as evidence of the productivity of fronting-harmony. Two other elicited nonsense plurals were pördek and tének, both of which illustrate accurate assignment of the feature /+front/ to the inserted vowels. The third error was csével (=székkel) "chair+instr." which cannot be an amalgam, since it lacks the required assimilation of the initial /v/ of the instrumental -val, -vel to the final /k/ of szék "chair." A number of other forms

are unlikely candidates for amalgams, since their usage must be limited: szalagot "tape+acc.," zöldek "green+pl.," or törpebácsival "dwarf+uncle+instr." Together, this evidence from errors, nonsense words, and unlikely amalgams suggests that Zoli has acquired the basic fronting-harmony rule by this time and is using it productively.

There is also some evidence that Zoli has some knowledge of both the rule for final-vowel-insertion and the rule of initial-vowel-insertion. As we noted in previous section, Zoli began his analysis of forms like the accusative by simply dropping the -t from roots, leaving a residue which may often have a linking-vowel attached. Forms with linking-vowels attached also appear at Zoli III: dolgozo, másika, autózo, hozo, paputo (=papucs), eldobo, táncó (from táncol), abato (=ablak), téte (=szék) etc.. The two errors kormányak and ágyok which show linking-vowels with the wrong heights can best be explained as the results of initial-vowel-insertion, since vowels coded on the root would be correct for height.

Zoli applies final-vowel-lengthening correctly to seventeen forms, three of them nonsense items taught for the purpose of studying this rule. There are no errors in which this rule is omitted, but there are five forms in which the rule is applied unnecessarily. All of the items, including those showing over-generalization of

the rule, have final /a/ changed to /á/. The over-generalizations seem to be motivated by a number of forces: in Zoliká is "Zolika too" Zoli misinterprets is as a suffix and lengthens final /a/ to /á/; in titá-mitá (=cica-mica) "kitty-cat" and in aká-tomá (=róka-koma) "foxy-loxy" there is some ludic factor in the lengthening of the /a/'s; halacská "fish+dim." and Zolika "Zoli+dim." seem to have acquired vowel-lengthening as a feature of their lexical description. Such an error would be an attempt to build a bound-rule in an area where a free-rule is already operative. We would expect such errors to be short-lived.

At this time we find two items illustrating internal-vowel-deletion, but it is unlikely that this rule is productive. There is one error in vowel-harmony noted in section 4.21a of Part II. Another advanced form is kockákat "block+pl.+acc." which is the first word with more than one agglutinated suffix. There is no reason to believe that this item is more than an amalgam.

Assignment of stress within a word is really quite simple in Hungarian, since the first syllable of the word always receives primary stress. Even at Level I, Zoli almost always successfully placed stress on the first syllable of the word. At Level III we were able to observe four errors in stress placement: in the words cicát, rokát, adodam, and teszem stress was erroneously placed on the second syllable. In view of the large

sample size of this period, these few errors must be seen as exceptions to a general pattern of correct stress assignment. Note, however, that Meggyes (section 3.5 of Part II) reports generally erroneous stress-placement in Márta.

In terms of the discussion of section 3.5 of Part II, it is interesting to note Zoli's imitations of three- and four-syllable words: kockákat → totákat; elefánt → lapán; kalapács → lapács; and karikákat → kakakákat. It would be a mistake to base any conclusion upon only four observations, but there is a tendency here towards preservation of final syllables.

Ervin (1964:172) found that children's spontaneous imitations fail to show any grammatical complexity in excess of that evidenced in other spontaneous utterances. Zoli's imitations at Level III are rather limited, but they do support one aspect of Ervin's findings: imitated strings show no syntactic complexities beyond those already evidenced in the child's non-imitative speech. On the other hand, Zoli's imitations include a large number of morphological complexities not contained in his non-imitative utterances. For example, Zoli imitates the experimenter's question tegyem el? "put+imperative+LPS+away?" (=Should I put it away?) quite exactly. This imitation involves a number of processes not normally at Zoli's command: the concept of imperativeness in the first person, alternation of the root tesz(ik) for the

imperative and postposing of the separable prefix. Without belaboring this point, we would suggest that Ervin's observations apply most accurately to the learning of syntactic patterns. Lexical and morphological learning, on the other hand, may possibly be facilitated by the imitation of phrases with patterns in excess of the child's rules. However, only after these patterns have been stored as amalgams can their shape, acting through the processes of analysis and superimposition, affect learning. In this sense, imitation may affect the process of acquisition, but only indirectly.

4.4 Zoli IV

We have observed that, by the time of Level III, there are four productive morphophonemic rules: fronting-harmony, vowel-lengthening, initial-vowel-insertion, and final-vowel-deletion. At Level IV the productivity of these rules is not indicated so much by the occurrence of additional errors as by the fact that increasing numbers of different root-suffix combinations require the action of these rules, if they are productively formed. In this sense, evidence for morpheme productivity is often evidence for the productivity of morphophonemic rules.

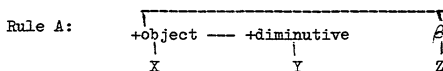
Let us consider the status of each of these four rules. The basic fronting-harmony rule is productive at this time, but errors in its application do occur. There were twelve morphologically erroneous formations which required the operation of vowel-harmony. In only two

of these twelve was the basic harmony incorrect: Katike for Katika and cserelunk for cserelünk (see section 4.21a of Part II). Moreover, vowel-lengthening is involved in twenty-eight different root-suffix combinations at this time. It is difficult to estimate the productivity of the rules of final-vowel-deletion and initial-vowel-deletion. The only errors in the height of the linking-vowel are in tornyat for tornvot and bújam for bújom. Neither of the rules would generate either of these errors. Perhaps they indicate that Zoli is applying initial-vowel-insertion unilaterally and making a few errors induced by ambiguity bias.

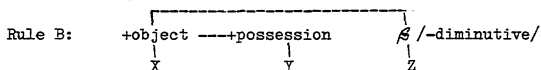
A number of other phonological rules are involved in Zoli's amalgams without yet assuming productivity. The alternations between the two forms of the definite article a and az is not yet controlled. The standard form is the form with the /z/. The various assimilations occurring in the imperative and the present indicative show no productivity. The rule of v-assimilation, which is bound to the instrumental, occurs in three amalgams without apparent productivity. Internal-vowel-deletion and vowel-shortening A also occur unproductively in amalgams.

There are a number of amalgams with two or even three suffixes agglutinated to the root: kezemmel "hand+1PS-poss.+instr.," sarkába "corner+3PS-poss.+illative," tetejét "roof+3PS-poss.+acc.," bajuszával "moustache+3PS-poss.+instr.," utcánkba "street+1PP-poss.+illative,"

ágyunkra "bed+LPP-poss.+sublative," lapátomat "shovel+LPS-poss.+acc.," halacskámat "fish+dim+LPS+acc.," nagyobbat "big+comp.+acc.," anyucikám "mother+dim.+LPS poss." Probably, most of these have not been analysed. However, if any analysis does occur, Zoli will begin to extract rules for the ordering of suffixes. From amalgams such as these and other of similar form, Zoli might note that the accusative follows other suffixes, the diminutive precedes other suffixes, and the possessives precede all suffixes except for the diminutive. In terms of syntactic rules:



This rule would be a modification of a basic rule for the diminutive of the shape of Rule G of section 5.21 below. For the possessives and the accusative, similar modifications would result in:



It may be incorrect to assume that the features of the accusative, possession, and the diminutive are somehow

a part of semological structure. In such a case, rules A through C would become morpheme-bound syntactic rules. The model of superimposition suggests that acquisition of such rules should not be particularly difficult. Moreover, more complex rules may first enter in the shape of such morpheme-specific rules. The general absence of reports of incorrect suffix orderings was noted in section 5.215 and section 6.1 of Part II.

There is a decline at this time in the number of non-deleted vowels at the end of roots. The two errors tudo for tud and lapáto for lapát are listed in section 5.1e of Part II. Such a decline in errors of deletion of final vowels indicates increased productivity of the rule of final-vowel-deletion, as well as an increased tendency to derive vowels from initial-vowel-insertion wherever their coding on the root is not required in order to derive the correct vowel height.

4.5 Zoli V

Productivity of the most basic morphophonemic rules can no longer be inferred from errors in free-speech data at this time, since the increased accuracy in the application of many rules has led to a decrease in errors. There are no errors in fronting-harmony, final-vowel-deletion, and vowel-lengthening. There is one error in the height of the vowel derived from initial-vowel-insertion (see

section 4.223 of Part II). Moreover, Zoli correctly fails to insert the linking-vowel before the -t "accusative" in forms such as kötényt "apron+acc."

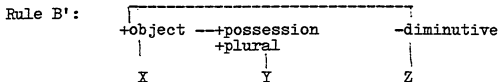
However, there appear to be no new rules at Level V. Zoli still fails to insert the /z/ on az when the definite article precedes a word beginning with a vowel. In section 4.1 of Part II we report a number of errors in the application of rules altering roots. In general, Zoli has not advanced beyond Level III, as described in section 3.325 of Part I. Zoli produces a large number of forms with several suffixes attached to a single root. Most of these forms are probably not productive, but those that are may be generated through rules A through C of the preceding section. In general, the sample at Level V indicates little change over that at Level IV. In large measure this may be explained through the fact that the sample was gathered in early July, when Zoli's attention was more focused upon active play in the garden, than upon verbalization.

4.6 Zoli VI

Numerous morphological errors from Level VI can be found in chapter 4 of Part II. The majority of these errors involve over-generalizations of the basic forms of the root to cases where an altered form is required. However, it is interesting to note that, alongside errors like kenyért "bread+acc." and egért "mouse+acc." which are apparently productive formations, we also find

kenyerek "bread+pl." and egeret "mouse+acc." which are correctly formed, but probably amalgams. In another such pair, traktorot "tractor+acc." and traktort "tractor+acc." the latter formation is correct and the former shows incorrect insertion of a linking vowel before the accusative. In other areas also, such as the use of az before nouns beginning with a vowel, and kis before nouns, there is an alternation of correct and incorrect forms. The frequency of this alternation of forms indicates both the emerging productivity of many patterns and the persistence of amalgam encodings.

The suffix ordering rules of section 4.4 above continue to be in force at this level, but there is reason to modify rule B to include plurality and plural possession in their position in second place after the diminutive. The forms requiring this modification of rule B are ezektől "this+pl.+ablative," papucsokat "slipper+pl.+acc.," ezeket "this+pl.+acc.," golyókat "ball+pl.+acc.," and ezekkel "this+pl.+instr." In its new form rule B becomes rule B'.



The rules of fronting-harmony, vowel-lengthening, initial-vowel-insertion, and final-vowel-deletion have

demonstrated their presence in earlier periods and are surely operative in this period. The latter, however, should eventually disappear, being replaced by a series of /-segment/ encodings. Many other rules appear in Zoli's words at this time, but their productivity is not clearly attested. For example, sixteen instrumentals are affected by the rule of v-assimilation, but the productivity of this rule is not clearly evidenced. Additionally, the rule of vowel-lowering in suffixes at a distance from the root is attested in a number of forms, but productivity is difficult to establish. Finally, there are a large number of verbal modifications that occur in Zoli's words. Of these, only the past tense shows productivity evidenced through errors and only one error is involved bedobt "in+throw+past" for bedobott. Yet, even here, it is unlikely that a rule has yet been completely formed.

5.0 Acquisition of syntactic rules5.1 Zoli I

Zoli's first sentences are mostly of the type locative + located: otta labda "there-the ball," otta bácsi "there-the uncle," ide bácsi "hither uncle," oda bácsika "thither uncle+dim.," and ott kint az anyuci "there-outside the-mother." The one non-locative sentence is jön az anyuci "comes the mother" which could conceivably be nothing more than a phrasal amalgam. In making this analysis, we are treating otta "there-the" (=there), ott kint "there-outside," and az anyuci "the mother" as amalgams. All six utterances show a verbal element or locative proceeding a noun. In the locative sentences the copula is erroneously emitted and the center of the comment is therefore absent. It may be that, at this early stage, the child thinks that the locative, as a stative verb, has a certain comment function.

These six utterances can be explained from a variety of theoretical perspectives. For example, all may be accounted for by the rule:

Rule A: Ground ----- Figure
 | |
 X + Y

or by a rule operating with syntactic categories such as:

Rule B: S ----> VP + NP

or by some rule of pivot structure (Braine, 1963) such as:

Rule C: $S \longrightarrow P + O$

Working with a description closer to the rules of adult Hungarian, we would say that these sentences reveal ordering based upon the rule:

Rule D: $\begin{array}{ccc} +\text{focus} & \text{---} & \beta \\ | & & | \\ X & + & Y \end{array}$

Finally, rephrasing Rule B within the context of the present model, we could attribute the ordering to the rule:

Rule E: $\begin{array}{ccc} \left\{ \begin{array}{l} + \text{ process} \\ + \text{ state} \end{array} \right\} & \text{---} & \beta \\ | & & | \\ X & + & Y \end{array}$

Both Rule D and Rule E seem to be adequate expressions of the child's limited performance at this stage. Rules A, B, and C describe no facts not treated in one of these two rules. Therefore, we shall not discuss their further implications.

In chapter 2 of Part I we noted that syntactic rules may be of four types: rules bound to specific lexical items, rules governed by inherent features of lexical items, rules governed by structural or syntactic features such as those appearing on the surface in case inflections, and rules governed by functional features. In attempting to choose between Rule D and Rule E as effective characterizations, we need to consider the basis for determination of the distribution of functional features in an utterance. Judgments regarding the distribution of inherent and syntactic features can be made with a relative degree of objectivity,

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but the presence of functional categories cannot be detected in any simple, straightforward fashion. Nonetheless, the importance of functional features for Hungarian syntax cannot be denied (Dezso, 1972), and there is every reason to believe that children learn how the control syntax on the basis of functional features, as well as inherent features.

In attempting to determine the distribution of functional features in a child utterance, we can rely upon three different forms of evidence : word-order, intonation, and the communicative context. In the present context, we are interested in observing how the presence of functional features controls the order of words. Since it would be circular to use a predicted dimension to form predictions, we must make assessments of feature distribution on the basis either of the intonation of the child's utterance or the information derivable from the communicative context.

Let us first consider the nature of the information derivable from intonation. In Hungarian a non-topic focused element is marked with intonational stress. Such stress is a combination of raised pitch and increased volume. There seem to be at least two levels of this stress: highest stress is assigned when a stressed element is also the first element in an utterance; secondary stress occurs in other positions. Of the four possible

combinations of the features topic and focus, only the combination /+focus,-topic/ receives stress. The presence of the feature /+topic/ with the feature /+focus/ results in pretopicalization, but not in stressing. Pre-topicalized elements are followed by a pause in the adult language and the presence of such pauses may provide information regarding the presence of topicalized elements. Post-topicalized elements, i.e. elements receiving /+topic, -focus/ are characterized by lowered stress, but this is a result of its position at the end of the Hungarian sentence.

If our judgments of feature distribution were based solely upon intonational cues, there would be a great deal of unreliability in the results. However, intonational information may be supplemented by information present in the communicative context. By carefully considering the nature of both the verbal and non-verbal context of an utterance, we may be able to make inferences regarding the child's assignment of functional features. For example, the child may look up at a shelf full of toys and say kérem "I want." Hearing this, the adult present takes some blocks off the shelf and give them to the child. But it so happens that it was not the blocks that the child wanted, but a rag doll also lying on the shelf. To get this doll, the child says something like babát kérem "doll+acc. want+1PS" (=I want the doll). We may infer that the child wishes to convey the contrast that exists in its mind between the blocks it received

and the doll it hoped to receive. This contrast is the semantic basis for the generation of the feature /+focus/ and it is reasonable to assume, on the basis of this independent contextual information, that the child is focusing baba "doll." In this particular sentence babát kérem, it may also have happened that stress was placed upon the first element. Here convergence of intonational and situational criteria strengthen our judgment regarding feature distribution.

5.2 Zoli II

5.2.1 Acquisition of rules based upon inherent features

It is possible to provide a reasonably complete picture of Zoli's syntax at this time through a set of rules based upon inherent features of lexical items. In the next section we will consider ways in which these rules fail to fully characterize Zoli's performance. These orderings are of several varieties.

Modifier-fronting, symbolized in Rule F below, stipulates that any lexical item containing the semantic feature /+modification/ should precede any other lexical item to which it is directly related. In this case, the semantic relation is that of modifier and modified.

Rule F:	modifier	---	β
	X	+	Y

Treatment of this ordering as dependent upon inherent features rests upon the reasonable assumption that the child understands that adjectives and articles code

properties or characteristics of objects. At this time there were thirteen occurrences of adjectives before nouns; these included five different adjectives in combination with various noun roots. The one adjective which showed the most variety in its combinations was kicsi "small." Although the adult language requires that kicsi take the form kis before a noun, Zoli always used the kicsi form. This error indicates productivity of Rule F, although it is possible that each modifier is placed by a separate morpheme-specific rule (see section 2.319 of Part I). To the extent that we believe that some of the uses of the article are productive (estimated at 30% of a total of 37 occurrences, or 10 occurrences in all), we believe that there is some learning of Rule F for the ordering of the definite article, as well as for ordering of adjectives.

Suffixing is probably handled through a set of morpheme-specific rules of the form of Rule G. Rule G is not intended to work upon some abstract non-semantic category, but upon each individual suffix as a lexical item.

Rule G: α ----- β
 | |
 X suffix (i.e. -é)

There are nine occurrences of nouns with -é (the sign of possession); perhaps three of these are productively formed. There are four nouns with the diminutive; perhaps two or three of these words are productively formed. At this time, therefore, there are only two rules of the form of Rule G.

type of Rule G.

Although the item is "also" is not a suffix, Zoli treats it as one. For example, in the expression Zoliká is "Zolika too," the final /á/ of Zoliká is incorrectly lengthened. Such lengthening is only required before suffixes. (For another, more complex, example of treatment of is as a suffix, see section 3.7 of Part II.) In any case, ordering of the item must be handled by a morpheme-specific rule such as Rule H:

Rule H: α ----- β
 | |
 X + is

Note that, syntactically, Rule H is like one of the rules of the type of Rule G. However, the child must eventually differentiate is from suffixes by placing a root boundary symbol before it.

Verb-fronting is the ordering described in Rule E above. In order to assess the importance of this rule in determining orderings in utterances containing verbs and locatives, we may first consider the following tabulation of frequencies:

Table X: Use of verb-fronting at Zoli II

Utterances with verb-fronting Utterances without verb-fronting

<u>Pattern</u>	<u>Occurrences</u>	<u>Pattern</u>	<u>Occurrences</u>
Loc. Adv.+Noun	22	Noun + Loc. Adv.	1
Intrans. Verb+Agent	18*	Agent+Intrans. Verb	4
Trans. Verb + Agent	7	Agent+ Trans. Verb	1
Trans. Verb + Patient	7	Patient + Trans Verb	4
		Locative/Temporal + Verb:	2 occurrences

* Ten of these are actually Imperative+Vocative-Agent

This table summarizes all of Zoli's two-item utterances containing a verb or locative adverb. There are two further groups of two-item utterances. The first group has been treated by Rule F, G, and H of this section. The second group, that involving topic-comment relations where no verb is present, will be treated directly below. Below we also consider the five three-item utterances; here we may mention that they all involve correctly-applied verb-fronting.

We now turn to a more detailed discussion of the utterances summarized in the table above. Utterances with verb-fronting or locative-fronting account for 79% of Zoli's two-item utterances with verbs or locatives present. However, sentences with locatives fronted account for 97% of all two-item utterances with locatives. The one exception to this general pattern appears to be a case of topic-comment ordering and that case will be discussed below.

On the second and third lines of the above table, we find that four utterances contain a subject-agent preceding an intransitive verb, while only one utterance contains a subject preceding a transitive verb. The one utterance of the latter type may well be formulaic in nature. It was observed that Zoli would ask hol az anyuci? "Where's mommy?" and receive the answer anyuci elment "Mommy left." The adult answer is based upon the structure of topic + comment, but there is no reason to believe that anyuci was a topic in Zoli's utterance. Rather, it seems that the adult form is directly copied by the child.

Two of the utterances of the order subject + intransitive verb seem to derive from a similar imitation of an adult pattern. These two utterances are two repetitions of Zolika néz "Zolika sees" which we can understand as implying something like "Zolika would like to look out the window." However, it is likely that this sentence is based upon a command often directed to the child, which is Zolika, nézz! "Zolika, look!"

On the fourth line of the above table we find that there are four utterances in which an object precedes its verb. One of these utterances tornyot építék "tower + acc. build + 1PS (= I am building a tower) is probably a formulaic expression or amalgam. This interpretation is supported by the fact that tornyot is formed through use of the rule of internal-vowel-deletion which is not productive for Zoli at this time. Moreover, the correct morphological formation of the verb and the formalized intonation suggest that this is an amalgam. Two other utterances with preposed objects appear to involve topicalization and will be discussed below. The final case of object-preposing is the single best example of the presence of a focusing rule at this time. After having said kér telefon "want telephone" with the usual verb-fronting order, and after not having succeeded in obtaining the telephone, Zoli decides to focus the object and says telefon kér "telephone want" with stress on the first item. The convergence of intonational, syntactic, and contextual facts indicates productive use of Rule

D in this context, but we will return to this question directly.

Summarizing our analysis, we find that Rule E can account for 79% of the utterances involving a verb or locative and a noun. The ten utterances which do not show verb-fronting include four formulaic utterances, five cases of topicalization to be discussed below, and one utterance clearly illustrating focusing of a non-verbal element.

5.22 Acquisition of rules based upon functional features

Although it is possible to account for much of Zoli's production through rules based upon inherent features of lexical items, there is evidence that rules based upon functional features are also of importance. We observed above that determination of the distribution of functional features rests upon the use of intonational as well as contextual information. Unfortunately, Zoli's control of systematic intonation is very poor at this time. In many utterances all words are given stress; in others no stress is assigned. Pauses after topics are not reliable since his speech is full of both hesitation pauses and concatenated monorhemes. Moreover, it is clear that many of the utterances with the clearest intonation are formulaic. On the other hand, a minority of Zoli's utterances do illustrate clear, meaningful, productive, intonational patterns.

The analysis of the previous section can be contrasted with a competing analysis which views the

various orderings in Rules E through H as cases of preposing of the focused item. We are interested in developing this line of analysis only in regard to the verb-fronting required by Rule E. If this pattern were clearly operative, we would expect to find that all fronted verbs should receive primary stress, since topicalization of verbs is quite rare. Moreover, we would expect to find clear contextual reasons for focusing of non-verbal elements which occur first with primary stress. To some degree, both of these predictions are born out, but the instability of Zoli's intonation makes conclusions difficult to substantiate. Initial verbs are always stressed, however nouns following initial verbs may also receive stress. Focusing of non-verbal elements is markedly less common. The example telefon k r with clear stress on telefon and a clear contextual motivation for focusing seems to be the single case here. There are five cases of clearly contrastive focusing of the locatives itt "here" and ott "there" in which the exact spatial location of an object is strongly emphasized. The two cases of pronoun-fronting seem to be cases of contrastive focusing.

In general, we are reluctant to conclude that Rule D is of greater importance than Rule E. It appears that the child has learned something about the intonational marking of focusing through a lexical item which assigns primary stress to focused items. On the other hand, control of word-order at this time seems to be more

nearly determined through inherent features than through functional features. Whether we base our syntactic account on Rule D or Rule E, we must account for the disproportionately large number of initial verbs in Zoli's speech. Adult Hungarian is an S-O-V language with a secondary S-V-O pattern for objects with definite articles. On the other hand, many of the sentences directed toward the child, such as questions and imperatives, show verb-fronting for the purposes of focusing. We should note that Meggyes also found verb-fronting in her subject (Part II, section 6.8). If the child uses a focusing rule, and if many of the child's sentences have fronted verbs, then he must either be using a rule of verb-fronting such as Rule E or assigning focus through a semological rule with a strong preference for the focusing of verbs.

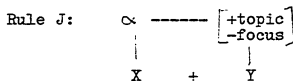
Although evidence for Rule D is rather ambiguous at this time, there is stronger evidence for a rule of topicalization, such as Rule I:

Rule I: +topic ----- β
 +focus
 |
 X + (#) + Y

Such topic-comment structure is most prevalent in utterances containing no verb: baba # Andié "doll # Andi's," én nem "I not," az # a torony "that # the tower," az csunya "that ugly," and az ott a telefon "that there the

telephone." In each of these utterances, the second element is stressed; moreover, the first, topicalized, element is generally followed by a pause. Two of the utterances with objects preceding their verbs show a structure governed by Rule I. In one case, that of a halacska # elvette "the fish # away+took," the topic was mentioned in the previous utterance. In the other case, that of telefon # elvette "telephone away+ took," the topic was clear in the context. Topic-comment ordering also accounts for the two utterances itt visszajön "here returns" and most oda "now thither" which were noted at the bottom of Table X. The convergence of contextual, intonational, and syntactic relations in the case of the utterances based upon topic-comment relations is rather clear and the rule seems to be productive.

Sentences with three and four morphemes generally show no complexities beyond those observable in two-item utterances. The one exception to this principle is the fact that sentences with more than two major constituents illustrate the operation of Rule J:



This rule postposes non-focused topics, while Rule I preposes focused topics. Rule J is of importance in utterances such as jön az anyu most "comes the mother now,"

elvette Moncsi # telefon "away+took Moncsi # telephone," and csináí nem szabad # Moncsi "does not allowed # Moncsi" (=Moncsi is doing bad things). In each of these the initial verb is placed by either Rule D or Rule E and the final noun or adverb through Rule J. Rule J may also apply to two-item utterances, but it would not serve to change the structure determined by Rule E in such utterances.

The vocative may be viewed as an external topic which is sometimes preposed and sometimes postposed, depending upon whether or not it is focused. There were ten utterances with vocative-agents following verbs. There was only one utterance in which the vocative was not the agent. In that utterance, bácsi # elvette Andi "Uncle # away-took Andi," the vocative is correctly followed by the same pause which should also follow topics.

5.23 Additional aspects of Zoli's syntax

Formulaic utterances are common in early child speech. Some of Zoli's utterances which appeared to function as amalgams were: az mi? "that's what?," ez mi? "this what?," elveszi tőle "away+takes from-her," kétszer nem "twice not," csunya vagy te "ugly are you," nem kell "not needed," tudo aludni "can sleep+infin.," nincs itt "is-not here," and ide be "hither in." Most of these utterances can be analysed through the rules already presented, but such analysis would be pointless.

Both the syntactic analysis and the calculation of M.L.U. rely upon the judgments of morpheme productivity made in Chapter 3. Although we find only four utterances with three major constituents, if we make some interpolation for suffix productivity and for modifiers and particles, we would add to this total by another 25 utterances. In addition to this, still interpolating for the percentage productivities of certain morphemes, we have seventy-five utterances with two simple major-constituents. The total morpheme count in this sample is 361, including only 228 monomorphemic utterances. Thus, the M.L.U. is 1.58. Formulaic utterances or amalgams are not included in this calculation.

Hesitation phenomena are present from the beginning of syntactic learning. The four phenomena present at this time are unfilled pausing, word repetition, repetition of phonological material (stuttering), and retracing of false starts. There are only one or two instances of each of the latter three phenomena. Pausing, on the other hand, is quite common.

In section 6.3 of Part II we noted that word-order errors are quite infrequent in the reports on Hungarian child language. Looking at the data from this and subsequent period of our own material, we can offer an explanation for this fact. First, it appears that rules such as Rule F, G, and H presented here are so easily learned as to cause the child almost no difficulty. These are

the rules based upon inherent features of lexical items. On the other hand, rules such as Rules D, E, and I which are either based upon functional features or compete with rules based upon functional features present major difficulties for assessment of correct usage. Given the instabilities of early intonational patterns and uncertainty regarding the intended distribution of topic and focus, an observer is generally unwilling to strictly categorize given child utterances as errors. In our own data from this period, we find no errors in the use of rules based upon inherent features. In regard to the use of rules based upon functional features, the lack of a stable intonational base makes it impossible to definitely confirm specific errors.

5.3 Zoli III

5.31 Acquisition of rules based upon inherent features

All of the rules of Level II (i.e. Rules E through J) continue to be of importance at Level III. At Level II there was some reason to doubt whether Rule F, the rule of modifier-fronting, was fully productive. At that time there were only thirteen occurrences of adjectives before nouns in the sample, and these included only five different adjectives, together with the definite article. At Level III we observe 165 orderings with modifier-fronting, involving twelve different adjectives, the definite and indefinite articles, and six proper names used as modifiers of titles. At Level II we noted that

the erroneous use of kicsi in modifier position attested to some productivity for the rule of modifier-fronting. At Level III this type of error continues. Since only five adjectives were involved in Rule F at Level II, it might have been possible to think of Rule F as actually composed of five morpheme-specific rules which had not yet undergone superimposition and unification of context (see section 2.318 of Part I). However, the expansion in the number of modifiers at Level III makes it highly unlikely that the child's performance can be explained solely through the operation of morpheme-specific rules. Moreover, we believe that productivity of this rule is nearly complete by Level III, since each adjective combines with quite a range of nouns.

It is interesting to note the absence of errors in modifier-fronting, even from the earliest period. Endrei (Part II, section 6.3a) had noted some errors in modifier placement, but it is not clear that these were more than hesitation phenomena. It is true that the order Mod + N predominates in the language, but the reverse ordering N + Mod does occur when the modifier is used as a predicate adjective. In such utterances, the noun would be placed in first position as a result of the operation of the focusing rule, Rule D. At the same time, the focused noun would receive primary stress.

At Level III Zoli only once voiced an utterance with such a structure, apparently with focusing intended. A large number of Zoli's utterances with modifiers followed by nouns are actually isolated noun-phrases. It would be possible to interpret such two-item utterances as csunya Moncsi "nasty Moncsi" as full sentences with the predicate adjective focused in first position. It is true that Zoli generally stresses adjectives, but this stress is usually required by the language whether the adjective is in a noun-phrase or the first focused element of the utterance. One could maintain that these two-item utterances offer no evidence for the productivity of Rule F. But we would note that, within utterances, where modifiers are clearly used in noun-phrases, there are no erroneous orderings such as N + Mod. Moreover, two-item utterances with the order Mod + N almost always omit the article on the noun, again suggesting that the construction is a noun-phrase.

In addition to the 165 occurrences of modifier-fronting, there are six utterances in which the possessor proceeds the possessed. In effect, this ordering seems to be predicted by Rule F. Three of these utterances show no inflection at all on the possessor; three others show the sign of possession incorrectly attached to the possessor (see section 7.222c of Part II). Zoli's adjectives at this time include: nagy "big," kicsi "little," kis "little,"

However, these rules seem to reflect the fact that the child initially treats these prefixes as syntactically stable. Zoli uses a few imperative forms such as gyere ki "come out!," bújj el "hide away!," and állj föl "stand up!" as amalgams with the prefixes in second position. We should note that productivity of rules of the type of Rule K for prefixes is only inferred at this time; there is no hard evidence supporting it.

Rule H must be fully productive at this time. Zoli uses is 155 different times with a large variety of roots. It is always attached after the noun.

At Level II all applications of Rule F involved lexical items that inherently coded some quality of the modified item. However, the rule may also be used to place operators such as csak "only, just" and the negative nem. For each of these items, it is possible that their positioning is first governed by a morpheme-specific rule. However, as we have seen, such morpheme-specific rules should be of only transitory importance when a general rule such as Rule F exists to accomplish the ordering. All of Zoli's forty-eight uses of the negative nem are cases of denial. Zoli expresses non-existence through the use of the negative copula nincs. These forty-eight utterances include thirty negatives with verbs, seven with locative adverbs, four with nouns, and seven with adjectives.

A problem arises in regards to the possible extension of Rule F to ordering of is by Rule H. If

other operators such as csak and nem can be ordered through Rule F, then it might be that the child would also order is "also" in this way. However, is does not proceed the item modified, but follows it. The solution to such a problem must surely reside in the fact that Rule H is morpheme-specific and is, thereby, insulated against the functioning of more general rules. It may be taken as a general principle that morpheme-specific rules operate wherever possible and can block other rules where conflict exists.

5.32 The conflict between verb-fronting and rules based upon functional features

At Level II we recorded only ten utterances which went against the pattern of verb-fronting. These ten utterances included four formulaic utterances, five cases of topicalization, and one case of focusing of a non-verbal element. However, the absence of stability in intonational patterns meant that there was no clear evidence for the presence of Rule D, the focusing rule. At Level III both of these considerations are substantially modified. The increase in intonational stability (section 5.34) means that determination of the distribution of functional features is reliable. Additionally, the variety and number of elements preceding the verb increases at Level III.

First let us consider some over-all figures. At

Level II, excluding utterances with vocative-agents and locative adverbs, there were thirty-one utterances with verbs. Of this total twenty-two, or 71%, showed verb-fronting. The decline in the percentage of utterances with verb-fronting is more significant when we consider that the percentage of formulaic utterances declines through this same period, meaning that exceptions to verb-fronting cannot be written off as easily as they were at Level II.

Of the 131 utterances in which some other element was ordered before the verb, seventy-four has initial topics and fifty-seven had initial focused elements. The detailed composition of these groups will be discussed in the next section.

It would be a mistake to imagine that the rule of verb-fronting is of no importance at Level III, or that all cases of verb-fronting can be accounted for by Rule D, the focusing rule. It is interesting to observe that twenty-one, or 12%, of the utterances with fronted verbs are violations of rules based upon functional features. In thirteen of these utterances the verb appears initially without stress and is followed by a stressed noun-phrase. This intonational pattern would indicate that the verb is being used as a topic. However, topicalization of verbs is extremely rare, requiring, among other conditions, their mention in a previous utterance. In none of these thirteen utterances are there

good reasons to interpret the verb as a topic. Moreover, the element following the verb is usually stressed for reasons apparent in the communicative context. Therefore, it appears that the verbs in these utterances have erroneously been placed before the focused element, which actually should precede it. Examples of this first error type are folyik a víz "runs the water," adjuk # magó "let's give # tape-recorder," and jön a bácsi "comes the uncle" with the primary stress upon the last word in all cases. In five other errors the initial verb receives primary stress, as required for the focused item, but there is no reason for focusing the verb. For example, Zoli says kérem baba "want doll" with a focus upon the wanting, when the objective facts of the situation would place focus upon the doll he is requesting. In three additional errors, a topic precedes the verb in an essentially correct manner. However, the verb still appears fronted before another element of the sentence, as if it were being focused. Here, again, there is no apparent reason for focusing. An example of such an error is cukor kaptok Zolikának "sugar get+2PP Zolika+dat." (=Zolika will get some sugar).

The impact of the rules of verb-fronting appears even greater when we consider that many of the utterances with initial focused verbs could conceivably have had other non-verbal elements focused. Moreover, there were

no utterances in which fronting of some non-verbal element could be judged as an error. In fact the only other error in the assignment of functional features was in the utterance piszkos a halacska "dirty the fishie" in which the last element was focused and stressed, while the first element was unstressed and topicalized. In the context of that utterance, there was no reason to take piszkos "dirty" as a topic, since it had not been mentioned and was not present in the context.

It would also be a mistake to imagine that the effects of Rule D could be explained away at Level III. The clear operation of contrastive focusing is evident in sequences such as az az Andié "that the Andi's," in which the last element receives the primary stress due a comment which follows a topic, this utterance then being followed by ez a Moncsié "this the Moncsi's," in which the first element is given primary stress as a contrasted focus. Examples of manipulation of these rules and the patterns of contrast abound at Level III, whereas they were quite absent at Level II. Facts derived from the communicative context force us to grant the productivity of Rule D at Level III. Certainly, this rule was of some importance at Level II also, although it is not possible to assess the degree of its importance.

5.33 Acquisition of rules based upon functional features

Hungarian syntax cannot be studied without recourse

to information regarding the context of the utterance. As we progress with our study of the development of syntax in Zoli and Éva, we become interested more in assignment of functional features than in the existence of syntactic rules ordering these features. We have already considered the most basic syntactic rules ordering major constituents in Hungarian. From Level III onwards there can be no doubt that the child operates with such rules. His utterances cannot be generated solely through the use of rules based upon inherent or grammatical features.* Therefore, it is not the existence of the

* In a thorough study of the earliest stages of acquisition of Finnish by children growing up in the United States, Melissa Bowerman (1973) focuses upon the extent to which the order of grammatical constituents "mirrors" the order of these constituents in the mother's speech. Bowerman suggests that Finnish has free word-order in regards to ordering of major constituents, but she fails to consider the possibility that such "free" ordering may be determined, in fact, by functional features. Our own data on Zoli, including such observations as the decrease in verb-fronting from Level I onwards, could not be brought into harmony with a model which suggests that children's speech mirrors that of the input, unless it were possible that the input showed a similar decline in verb-fronting over this time. It is true that speech directed to children shows a degree of verb-fronting higher than in Hungarian spoken between adults. However, there is no evidence that the adult is able to adapt his speech to match the child's level of verb-fronting, while still decreasing this percentage from week to week. We can imagine the existence of such a sensitive mirroring of the mother by the child and such adaptation of the

basic rules which we need to study, so much as their realization in given utterances: This is to say that we are interested in observing what kind of elements receive the features /+topic/ and /+focus/ and in what combinations with other elements they receive these features. Assignment of features is a question of semological learning: after having reviewed the occurrences of the various patterns involved, we will treat it as such.

The first question we wish to raise is: What are the conditions for placing an element at the beginning of an utterance as a topic? We will speak of this element as a pre-topicalized element in contrast with the post-topicalized element which is placed at the end of an utterance. Pre-topicalized elements differ from post-

(continued) mother to changing states of the child in the case of immigrant families, such as those studied by Bowerman. However, when the input to the child derives not only from the mother, but from siblings of varying ages, nursery-school teachers, playmates, adults in the general community, and the media, it is difficult to imagine how such a relation of probability-matching might obtain. In a variegated linguistic environment, the child will not always hear input designed to conform to the particular state of his own linguistic development.

In any case, whether we study an environment with many diverse input sources or an environment with one sensitive and adaptive input source, we believe that an explanation of syntactic acquisition in a free word-order language like Hungarian, and possibly like Finnish, requires us to study not only the changing percentages of surface syntactic patterns in the child's speech, but also the productivity of syntactic and semological rules generating these surface patterns.

topicalized elements in that the former is also positively marked for focus. The criteria for judging an item as pre-topicalized are that it should not appear as the first item in the utterance, and that it should be given either in the situation or in prior communication. For the adult, there may be several initial topics, and a pause should separate the topics from the rest of the utterance. For Zoli at Level III, we find only one utterance with two initial topics: ott a törpe # elbújt "There the dwarf # away+hid" with primary stress on the last item. The presence of the pause separating the topics from the rest of the utterance is not reliable at this time; only about half of the topics are separated in this way.

The overwhelming majority of the topics in Zoli's utterances are deictic elements. From a total of 226 pre-topicalized elements, there are sixty-five occurrences of the deictic pronouns ez "this" and az "that" and 112 occurrences of the deictic locative adverbs ott "there" and itt "here." Of the non-deictic elements, there were fourteen adverbs of time, nine pronouns, and twenty-six nouns. The pronouns included five occurrences of én "I" used as the subject of the verb; twenty-one nouns were used in this way. Of the other nouns, three were objects of the verb and two were the subjects of sentences with predicate adjectives. The twenty-one occurrences of subjects before their verbs is of particular interest

in that it represents Zoli's first major move away from the verb-fronting style of his earliest utterances and a move toward the SOV style of adult Hungarian. Simplifying a complex matter, the position of the S in the SOV pattern represents the fact that the subject of the utterance is usually chosen for topicalization, and that topicalized elements come first in neutral sentence order.

The operation of Rule I above requires the presence of both /+topic/ and /+focus/ on some item. These features must be assigned by semological rules operating upon semantic categories. In section 2.2 of Part I we noted that topicalization is a basic utilizational process. If this assumption is correct, the feature /+topic/ should be available to the child before the beginning of syntactic development. However, incorporation of this feature in a rule such as Rule I requires some time because of reasons mentioned in Prediction #20 of section 3.3 of Part I. But note that the topic which is of salience in pre-linguistic cognition is not entirely identical with the linguistic topic. As an instrument of socialization, language forces the child to assign the feature /+topic/ with regard to the presence of the given item in the speech of others, as well as in the child's own thought and speech. At both Level II and III, only a small fraction of Zoli's topics were mentioned by a previous speaker. Generally, a topic is an item given

in the situation. For this reason, the feature /+deixis/ is of some importance to the child in assigning the feature /+topic/.

The second question we wish to ask regarding functional features is: What are the conditions for focusing an element? Our criteria for judging an item to be focused are that it should have primary stress and that it should be of some importance in the utterance for reasons of contrast or emphasis. Zoli focused a total of 429 items in this sample. Of these, 193 items were verbs and fifty-seven items were adverbs, locatives, nouns, or adjectives focused before verbs. The remaining 179 focused elements were members of verb-less utterances, some of which would have required a copula in adult Hungarian. Of this total of 179 focused elements, 137 items were comments following pre-topicalized elements; the other 42 items were focused at the beginning of the utterance and were followed by post-topicalized items. Since some of the focused verbs were preceded by topics, the total of focused items occurring first in the utterance and followed by post-topicalized items was 203, while 226 focused items were preceded by pre-topicalized items.

Of particular interest are the 57 utterances in which an item is focused before the verb. Such focusings show learning of the other basic ingredient of Hungarian SOV order, which is that the focused element (which is the object in the neutral case, i.e. when it has no article) precedes the verb. By learning to make exceptions

to verb-fronting for topicalization and focusing, the child moves closer to the word-order of adult Hungarian. Future development entails not so much the acquisition of new rules, but limitation of verb-fronting by shifting the categories for focusing. At Level III, adverbs, especially locative adverbs, account for 46 of the 57 focusings of non-verbal elements. In five utterances the subject is focused before the verb. One of these utterances also shows pre-topicalization: ott a Bélu alszik "there the Bélu sleeps" with stress on Bélu. Four utterances have focused objects, and two show focused datives. In both of the last two categories, pre-topicalized items also appear.

Semantic grounds for focusing are rather well-established at this time. The clarity with which Zoli's focused items express contrast, selection, disagreement, and emphasis indicates that control of Rule D has not awaited acquisition of the component semantics of the feature /+focus/ as much as unification of these components into a superordinate category and superimposition of stored amalgams in which the feature may not be as vivid as inherent features. Of the twenty focused diectic pronouns, eight are focused for contrast, eight are focused to emphasize inclusion (i.e. ez is "this too"), and three are responses to a selection question. Of the 193 focused verbs, 112 are focused verbal prefixes, thirty focus their imperativeness, twenty-two focus progressivity (in intransitives only), two express a contrast with a

prior utterance, three focus the future tense, twelve focus emotional involvement with the action of the verb, and twelve follow pre-topicalized nouns. The greatest stereotype of feature assignment is for the verbs focusing their verbal prefixes. It may be that many of these verbs are still present as amalgams and that stress on the verbal prefix is a part of their lexical encoding. Placement of the verbal prefix is correct at a level only somewhat better than chance.

With the increase in sentence complexity, Rule D, the focusing rule, must undergo a certain modification:

$$\text{Rule D': } \begin{array}{ccc} +\text{focus} & \text{---} & \beta \left[\begin{array}{l} - \left[\begin{array}{l} +\text{topic} \\ +\text{focus} \end{array} \right] \end{array} \right] \\ | & & | \\ \text{X} & + & \text{Y} \end{array}$$

This is to say that the focused element must follow the pre-topicalized element. The appearance of a focused topic serves as an inhibition to an otherwise general fronting of the focused element.

The system of semantic features rather poorly represents the process of focus assignment. A more appropriate system of notation would assign 100 percentage points of focus to each utterance and allow these points to be distributed throughout the utterance. If a topicalized element receives less than a certain minimum number of points, it will be post-topicalized, rather than pre-topicalized. If a focused element is of great importance, all the points will be assigned to it and no element will proceed it, since there will be no focus on the topics.

Points would also be assigned to the vocative element as an extra-sentential topic. Use of semantic features is a definite simplification of a process which has its roots in language utilization. Where this simplification obscures the actual nature of the child's rules, we will speak in terms of the relative distribution of focus.

The vocative can be placed through functional rules like D', I, and J. Like the topic, the vocative is sensitive to relative distribution of focus. Unlike the topic, it is positioned not in relation to items, but in relation to the entire utterance. For this reason the rule placing the vocative would differ slightly from Rule D', I, and J. This positioning in relation to the utterance amounts to extraposition and all of Zoli's utterances at Level III show the vocative extraposed. Of the forty utterances with vocative-agents, the vocative is the last element in thirty-six. But this may be attributed to either Rule D' acting upon the focusing of the feature /+imperative/ or Rule E acting to front the verb. In another pattern, the vocative follows the words tessék "please," szia "hi!," and szervusz "hello!" in fifteen utterances. It never precedes these forms. It would be possible to account for this through a set of morpheme-specific rules, but it seems more accurate to note that Zoli has learned to assign primary focus to items with the feature /+salutation/ or, perhaps, /+phatic/. In the other thirty-four uses of the vocative with fuller propositions, the vocative is preposed nineteen times

and postposed fifteen times. The fact that vocative placement is free in cases where salutations or vocative-agents are not involved suggests that orderings may be determined through focusing relations.

5.34 Acquisition of rules assigning grammatical intonations

Zoli controlled stress within the word before he controlled stress within the sentence. In Hungarian, stress is a combination of increased loudness and heightened pitch. This intonation was clearly marked on the first syllables of words at Level II; the few exceptions to this generally correct assignment of stress within the word are noted in section 4.3. Use of stress as a grammatical device required the formation of a lexical item such as:

+focus	(semology)
-topic	

+loud	(phonology)
+high pitch	

As we have noted above, focusing may vary within more than one value. Similarly, the degree of loudness and high pitch may vary. At this time, there is no indication that Zoli has learned how to stress focused topics by increasing volume and length without raising pitch. Also, we have noted that the placement of a pause after the topic is unstable. Also there is no evidence of productivity of question intonation.

5.35 Additional aspects of Zoli's syntax

Zoli's speech continues to include a heavy component of formulaic utterances. However, many of the new formulas entering at this time are parts of songs and verses rather than expressions. Included in his speech at this time are a number of conventional exclamations, greetings, and baby-talk words: ajaj "oh," hoppá "whoops," szia "hi!," szervusz "hello," bumm "boom," tente "sleepy-bye," csüccs "sitty-down," vau-vau "bow-wow," and csicsi-ja-dadaka.

A number of Zoli's sentences show structure approaching that of coordination or two phrases, but it is not clear that we can actually talk about coordination at this time. Through the use of nézz "look!" and jó? "O.K.?", Zoli produces structures resembling coordinations. In two other utterances, there seems to be some real coordination: az ágyikó (ban), nem az autó (ban van a halacska "in the bed, not in the car (is the fishie)" and ez a csunya bácsi és még az a bácsi "this is the nasty uncle and also that's the uncle."

An attempt was made to elicit sentence imitations from Zoli. Although a number of imitations were elicited, Zoli was not particularly eager to imitate and we have some reservations about the degree to which his imitations reflect the structure of his linguistic knowledge. The stimuli were sentences with a subject, an object, and a verb; the subject and object were modified by definite articles and the verb was in the definite conjugation.

All six permutations of the three elements were tested. The two presentations of the order OVS and the two presentations of the order OSV were permuted to VSO in imitation. Moreover, one presentation of the order SVO and one presentation of the order OVS were permuted to VSO. The effect of verb-fronting is detectable here, but we would hesitate to make conclusions about a few isolated imitations.

The phenomena of discourse pressure influenced a total of seventeen errors in person in this sample. In these errors, Zoli answers a yes-no question with a 2PS verb with another 2PS verb, rather than a 1PS verb. However, in three cases, Zoli does reply with a 1PS form. On the other hand, Zoli's answer to questions with mi? "what?" mit? "what+acc.?", mik ezek? "what these?," mivel? "what+instr.?", and hol? "where?" were correctly matched in terms of discourse agreement. Hesitation phenomena include the four varieties present at Level II. In fact, it is not clear that these phenomena undergo a process of development at all, rather they seem to reflect basic capacities in language utilization. Occasionally, it is difficult to distinguish hesitations from groups of short utterances. For example, the utterance meleg # most meleg "hot # now hot" and dozens like it can be viewed either as retraced false-starts or as expansions. On the other hand, some sentence groups cannot be explained as cases of hesitations: elvitte a néni ### elvitte # kalapács "away+took the aunt ### away+

took # hammer" seems to be an analysis of elvitte a néni a kalapácsot "away+took the aunt the hammer+acc." The number of such processing groups is small in all of our samples from Zoli and their importance should not be overestimated.

Another phenomena related to hesitation is that of apposition. Zoli's use of apposition either involves expansion of a deictic locative adverb through a more specific locative noun-phrase or the apposition of one full noun-phrase to another. The latter type of apposition cannot be clearly distinguished from the retraced false-start, although it involves not so much a correction as an expansion. On the other hand, locative apposition is a common device in both English and Hungarian. In utterances such as "Here's that gadget under the table," we find the more specific locative being post-topicalized. Zoli shows learning of this structure in utterances like itt van benne "Here it-is inside." Appositives present an interesting exception to the general rule that a set of semantic features may only be realized in one lexical item in a given utterance. In apposition, a few features are realized in the first, unspecific item; as lexicalization continues, additional information surfaces and the child seeks to add new information to the prior lexicalization. The second item is produced later and is usually post-topicalized as an appositive. Languages and codes vary in their tolerance for this hesitation-related phenomena. Where tolerated, as in the case of apposition to a locative

deictic in Hungarian, the child must learn to post-topicalize the permitted item and to avoid non-permitted items. Zoli has not yet learned how to avoid non-sanctioned appositives, such as mutasd a kicsit, a egérke "show the little-one+acc., the mouse."

5.36 Calculation of M.L.U.

Calculation of the M.L.U. at Level III introduces no new principles, but it might be of interest to examine some of the steps in this calculation. The first step is to take a basic utterance count. Isolation of utterances proceeds according to criteria mentioned in 2.3 above. Excluding formulaic utterances, which do not figure in the M.L.U. calculation, Zoli made 2465 utterances in this sample. In the second step, we go through each utterance counting productive roots and add a number to the basic utterance count for each root exceeding one per utterance. The third step requires us to make an interpolation for the productivity of suffixes and other grammatical morphemes. This interpolation is made by multiplying the occurrences of the morpheme by its percentage productivity. The results, which appear in the following table, are then summed. The figure of 268.7 additional productive morphemes was then added to the morpheme count available after the second step. The final step requires us to divide the total number of morphemes by the basic utterance count. Here 3953.7 morphemes distributed in 2465 utterances indicate an M.L.U. of 1.60.

Table XICalculation of Productive Affix Attachments at Level III

<u>Morpheme</u>	<u>Productivity</u>	<u>Occurrences</u>	<u>Addition to M.L.U.</u>
Plural	60%	7	4.2
Dative	30%	8	2.4
Instrumental	30%	18	5.4
Accusative	45%	139	62.5
Sign of Possession	55%	47	25.8
1PS Possessive	10%	10	1.0
1PS Indefinite	20%	26	5.2
1PS Definite	20%	32	6.4
2PS Indef.-Indicative	30%	11	3.3
2PS Defin.-Imperative	30%	7	2.1
Definite Article	45%	213	95.8
vissza-	60%	6	3.6
ki-, be-, föl-, el-	40%	39	15.6
Inessive-Illative	30%	11	3.3
Allative	50%	7	3.5
Diminutive	75%	32	24.0
Total			265.1

5.4 Zoli IV

5.41 Acquisition of rules based upon inherent features

At this point we might briefly review the various syntactic rules Zoli has acquired during the period preceding Level IV. In the second period we observed the following rules:

- Rule D: focusing
- Rule E: verb-fronting
- Rule F: modifier-fronting
- Rule G: suffixing
- Rule H: is-attachment
- Rule I: pre-topicalization
- Rule J: post-topicalization

Rules E through H were based upon inherent features, while Rule D, I, and J were based upon functional features. Rule G was actually the form of a group of rules; and Rule F may also have been a set of rules at Level II, although it is probably a single rule by Level III. At Level III productive syntactic rules include each of the above rules and the following additional rule:

- Rule K: prefixing

Additionally, at Level III Rule D is modified into Rule D'.

At the time of Level IV, each of the Rules E through K are required to generate Zoli's utterances. We will discuss rules D', I, and J in section 5.43 and Rule E in section 5.42. In this section we consider the remaining rules. There were 122 uses of the rule of modifier-fronting, Rule F. However, fifty-six of these uses involved forms such as Barna bácsi "Barna Uncle" or Ali néni "Ali Aunt" which could conceivably be phrasal

amalgams. However, excluding these forms, there were still sixty-six occurrences of modifier-fronting. Zoli's use of suffixes continues to expand at Level IV; the increased productivity of many suffixes (see section 5.24 above) indicates increased use of the various morpheme-bound rules of suffixing, all of the form of Rule G. The numbers of such productive attachments are calculated in section 5.46 below. There are 105 attachments of is "also" after the lexical item to which it relates. There are no errors in the placement of is through Rule H. We should also note that the operation of vowel-lengthening before is which occurred at Level III no longer occurs in this sample.

In section 5.31 we suggested that Rule K for prefixing may have begun to assume some productivity at Level III, although hard evidence for such productivity was missing. At Level IV there is clearer evidence for the productivity of rules of the form of Rule K in that all the errors of prefix-placement are over-generalizations of fronting, as required by Rule K. There are no erroneous placements of a prefix after the verb-root, as is required in forms such as the imperative. In fact, most of the erroneous frontings occur when a prefix is placed before a root with an imperative suffix. These errors are reviewed in section 6.13 of Part II. It appears, at this time, that Zoli has no awareness of the fact that

verbal prefixes must be placed through rules based on functional features. For another type of error-data attesting productivity, see section 6.4a of Part II.

The negative nem occurs twelve times before a verb and sixteen times before a non-verbal element. These placements may be governed by Rule F, or by assignment of focus to the negative and use of Rule D'. There are forty-nine instances of adverbial modifiers appearing before the adjectives which they modify; of these forty-five involve the structure még egy "still one."

The one additional rule based upon inherent features which is of importance at this time is Rule L, which positions one of the three lexical items of the phonological form csak. This item is attached after an imperative verb and adds politeness to the request.

Rule L:	command	-----	politeness
	X	+	csak

If a separate morpheme-bound rule did not exist for this item, it might be positioned as a modifier by Rule F, although it is questionable whether the child would actually perceive this item as a modifier.

5.42 The conflict between verb-fronting and rules based upon functional features

In section 5.32 we observed that 71% of the utterances with verbs at Level II had the verb fronted. At Level III this figure had declined to 56%. At Level IV there are 280 utterances with verbs. Of these, 113, or

40%, show verb-fronting whereas 167 utterances have some other item placed before the verb. As in the previous period, the decline in verb-fronting is more significant when viewed against the backdrop of the general decline in formulaic utterances and unanalysed phrases. Of the 167 utterances in which some other element was ordered before the verb, 135 involve fronting of a focused element and 32 involve pre-topicalization. The detailed composition of these groups will be discussed in the next section.

Despite the continued decline in the proportion of utterances with fronted verbs, there continues to be a segment of the utterances with fronted verbs which attests to the continued productivity of Rule E and the continuing conflict between Rule E, on one hand, and Rules D' and I, on the other. At Level III 12% of Zoli's verb-initial utterances had verbs fronted where the fronting of some other element would have been more appropriate. The proportion of such errors at Level IV is 13% or fifteen utterances out of a total of 113 with fronted verbs. As at Level III, these errors are of three types. The first error-type is intonational in that the fronting of the verb is situationally interpretable, but some other element is given primary stress. Such errors include kér bogárt "want bug+acc.," csinállok neked "make+1PS for-you," építünk itt tortát "build+1PP here cake+acc.," etc. In each of these errors the last element receives primary stress. Of the fifteen over-generalizations of verb-

fronting, ten are of this sort. Since the error here is failure to front an element that apparently is important enough to be focused, we see that the major rule-conflict is between Rule E and Rule D', with Rule I of minor importance. In the second error type, stress is correctly placed on the fronted verb, but there is no apparent reason for fronting of the verb. Such utterances include adok homokot avval "give+1PS sand+acc. with-that" and öntöm bele tortába csokolát (=csokokádét) "pour+1PS into-it cake+illative chocolate+acc." There are four errors of this type. In the third error type, a topic correctly precedes the verb, but it appears from the intonation and situation that another focused element should also precede the verb, but does not. The only error of this type was: ott volt a másik motor "there was the other motor" in which primary stress falls on másik. The importance of these violations continues to be magnified by the fact that there is only one other violation of Rules D' and I. This violation is the utterance majdnem jött "almost came" in which primary stress falls on jött, although the sense of the utterance requires contrastive stress on majdnem. In a sense this violation and the violations of the first type discussed above are not so much violations of Rule D' as violations of the semological rules assigning focus to contrastive items.

5.43 The acquisition of rules based upon functional features

We explained in section 5.33 that, after the first stages of development, we are interested in answering the question: What are the conditions for assigning the feature /+topic/ and /+focus/? This is to say that the study of syntactic learning requires us to investigate semological learning.

First, we wish to observe the conditions at Level IV for considering an item as a focused topic subject to pre-topicalization. As at Level III, the overwhelming majority of pre-topicalized elements at Level IV are deictic in character. There is a decline in the proportion of utterances with pre-topicalized items from 226 utterances in a total of 2675 utterances, or 8%, to 93 utterances in a total of 1911 utterances, or 5%. This decline occurred chiefly in the area of utterances without a verb. The 93 occurrences of pre-topicalization included forty-nine pre-topicalized locatives, two pre-topicalized pronouns, fifteen pre-topicalized deictic pronouns, fifteen pre-topicalized temporal adverbs, and twelve pre-topicalized nouns. One of the deictic pronouns was in the accusative in the utterance ezt szétszedem "this+acc. apart+take+1PS." One of the topicalized temporals was a day of the week in szerda # napoztam "Wednesday # sun-bathe+past+1PS." Of the twelve utterances with pre-topicalized nouns, five simply involved a subject and its verb. The other

seven utterances were: halacska # hol van? "fishie # where is?" papucs # hol van? "slipper where is?" másik, bent van "other, inside is," Barna, halacska # hol van? "Barna, fishie # where is?," most # halacskát visszűnk "now # fishie+acc. take + LPP," nagyot add oda "big-one+acc. give here," and itt a bici megállt "here the bicycle stopped." The first five of these involve a pre-topicalized element followed by a correctly focused element and then the verb. This illustrates the SOV word-order of the neutral sentence in adult Hungarian.

The sixth utterance simply has a focused noun (zero-derivation from an adjective) as the object. The seventh utterance has two topics, a locative adverb and the subject with its definite article. We had also found an utterance with two topics at Level III. However, since we have only two such utterances in a combined sample from Level III and Level IV of over 4000 utterances, we cannot posit the existence of a rule ordering locative and temporal topics before other topics. In general, the conditions for assigning the features /+topic/ and /+focus/ to an item remain as they were at Level III. Topics are generally either 1) deictic, 2) temporal, 3) locative, or 4) objects clearly "given" in the situation. The use of pre-topicalization to refer to items mentioned in either the child's previous utterances or utterances of some other speaker has not yet begun. The role of definiteness in determining post-topicalization will be discussed below.

In section 5.33 we observed that focus is assigned in varying proportions to different elements of the utterance. Topicalized elements never receive major focus, since they constitute given, unsurprising non-contrastive information. However, a topic will naturally receive some quanta of focus, unless that focus is consumed by another element of over-riding importance. This is to say that a topic will be pre-topicalized, unless all the focus falls on the focused element. In the latter case, the topic is /-focus/ and post-topicalized. Therefore, it is not the conditions for post-topicalization which we are interested in studying, but the conditions for the assignment of all focus to one element.

Of the total of 1911 utterances at Level IV, 339 or 18% show some element as focused. In all but 42 of these, the focused element is the first element of the sentence; in these forty utterances the first element is a topic. Other types of focused elements included: thirty locative adverbs (twenty-two before verbs), fifty-eight negatives (forty-two before verbs), forty-five question words (twenty-five before verbs), seven nouns with is attached, ninety-eight verbs, and seventeen nouns and adjectives preceding non-verbal post-topics. In addition to these major categories, there are seven further categories which it is interesting to study in more detail. First, we find two cases of focused instrumentals: kockával

építünk "block+instr. build+lPP" (=We build with blocks) and autóval megyünk "car+instr. go+lPP" (=We go by car). Second, we have one utterance with a focused dative: bogárnak adok kicsi homokot "bug+dat. give+lPS little sand+acc." Third, there are two utterances with nouns used as locatives (although the suffixes are missing or incorrect): homokot ülünk "sand+acc. sit+lPP (We sit in the sand) and autó szállunk "car alight+lPP" (=We get into the car). Fourth, there are nine utterances with focused objects of the verb. Fifth, there are ten utterances with adverbs of manner including alig "scarcely," így "thusly," and nagyon "very" which are focused. Sixth, there are five utterances in which én "I" is focused as the subject. Lastly, there are fourteen utterances with the copula in which the predicate adjective or predicate noun is focused.

Focusing of verbs seems to involve a number of factors associated with definiteness of the object. We noted just above that nine utterances contain direct objects placed before the verb to achieve focusing. None of these direct objects bears a definite article; wherever an object has a definite article it follows the verb. What is true of the object of the verb is also true of the subject: only two subjects with definite articles precede verbs, whereas many follow verbs. The verbs that precede these objects and subjects with definite article are both transitive and intransitive. This pattern should be understood in light of the general distribution of focus in the utterance. First we must remember that

definiteness is closely associated with topicalization, as well a deixis. Things that are definite for the child are usually present in his actual physical environment, not merely in memory. When faced with the choice of assigning primary focus to these objects or to the usually unrealized action in which they participate, the child decides the action is of greater interest. In this way, the primitive tendency towards verb-fronting begins to be modified into a tendency to post-topicalize nouns with definite articles at Level IV. Whereas all verbs were considered interesting at Level I and Level II; verbs are considered interesting at Level IV when other items are definite, i.e. uninteresting. However, Zoli's usage continues to differ from adult usage in one important way. When the subject and/or object is definite it usually receives no focus at all and is post-topicalized. In adult usage, such elements are more often given some focus and pre-topicalized.

In general, we have seen that there are differences in the grammatical constitution of elements that receive focus vs. those which receive topicalization. Focus is assigned more or less through a hierarchy of priority. First priority is given to sentence negation and questioning. Second priority is given to any other sort of contrast. Third priority is given to information that is new or interesting or both. Topics, on the other hand, are often deictic elements, pronouns, locatives, or objects "given" in the situation.

utterances occur seven times at Level IV. Similar to these, but more clearly an embedding, is látod mi az? "see+2PS what that?" Other embeddings involve complements with infinitives: nem kell aludni "not necessary sleep+infin." (=It isn't necessary for me to sleep.), nem kell Moncsinak aludni "not necessary Moncs+dat. sleep+infin.," and elment dolgozni "away+went work+infin." Coordinate structures involving postposed dependent clauses at this time all are based upon "because" as a conjunction. In the utterance sír mert autó "cries because car" (Dorcsi is crying because they took her car away from her.) the "because" is expressed on the surface; in nem, piszkos "no, dirty" (=no I don't want to build with it, because it is dirty) the "because" is not expressed. The utterances cited in the preceding sentences constitute all the utterances subject to Rule M.

5.44 Acquisition of rules assigning grammatical intonations

Zoli continues to score advances in his control of grammatical intonations. Focusing through raised pitch and volume was already being acquired at Level III; at Level IV his control of volume and pitch seems increasingly stable, although still removed from the adult standard. Many utterances show no primary stress; in a few, too many are given heavy stress. However, the main area of advance is not marking of focus, but marking of the topic. For the first time, at Level IV, Zoli begins to separate the topic from the rest of the utterance by a clear and noticeable pause. However, there is still no control

of the device of raising of pitch on the pre-topicalized element while not raising volume.

At Level III we found no evidence for clear and productive use of question intonation. At Level IV question intonation seems to be under some limited control, but it is difficult to distinguish from focusing intonation. Since Zoli's questions are generally quite short, there is little room for a clear demonstration of this pattern. The part of question intonation which is most characteristic involves the rising and falling tones near the end of the question, and such patterns are not evidenced in the sample from Level IV.

5.45 Additional aspects of Zoli's syntax

The baby-talk component of Zoli's speech begins to disappear at Level IV. Together with this disappearance, we find a general decline in formulaic utterances. This is to say that many of the phrases which were uttered with stereotyped intonation and in a limited variety of syntactic frames have now acquired new flexibility and range. As the old formulas disappear and become analysed, new formulas enter. Some of the new formulas from this time are: mert nem jössz? "Why don't you come?," menj innen "get out of here," tessék jönni "please come," csokolom "I kiss you," ne vidd el "Don't take it away," and olyan mint a... "just like a ..."

There were no attempts made at this time to

systematically elicit imitations from Zoli. It was observed that Zoli responded intelligibly to questions containing: mivel? "with-what?," mit? "what+acc.?", hol? "where?," hova? "whither?," miért? "why?," and mit csinálsz? "What are you doing?" However, Zoli responded to the question mitől ijedtél meg? "What+ablative get-frightened+past+2PS perfective?" with a reasonable answer with an incorrect suffix: bajuszával "moustache+3PS-poss.+instr." for bajuszától "moustache+3PS-poss.+ablative." Whereas discourse pressure led to over-generalized 2PS verbs in seventeen of twenty instances at Level III, there are only three errors in seven instances at Level IV. All of the hesitation phenomena of Level III continue to be of importance at Level IV, although the proportion of apposition declines somewhat, with only ten utterances with apposition. Apposition involves locatives exclusively and appears to be somewhat more formalized at this time.

5.46 Calculation of M.L.U.

Zoli made 1911 utterances at Level IV. The total number of free morphemes used at Level IV is 3141, but this number must be corrected for productivity of bound morphemes, which is calculated below.

Table XIICalculation of Productive Affix Attachments at Zóli IV

<u>Morpheme</u>	<u>Productivity</u>	<u>Occurrences</u>	<u>Addition to M.L.U.</u>
Plural	90%	8	7.2
Dative	50%	11	5.5
Instrumental	50%	25	12.5
Accusative	65%	233	151.5
Sign of Possession	90%	8	7.2
1PS Possessive	35%	30	10.5
3PS Possessive	30%	7	2.1
1PS Indefinite	70%	35	25.5
1PS Definite	70%	39	33.3
2PS Indefin.-Indic.	30%	4	1.2
1PP Indefinite	40%	29+35=64	25.6
3PP Indefinite	30%	12	3.6
2PS Definite-Imp.	30%	42	12.6
1PP Definite	20%	4+14=18	3.6
Imperative	10%	35	3.5
Verbal Prefixes	65%	128	83.2
Illative	50%	11	5.5
Inessive	50%	2	1
Allative	50%	12	6
Definite Article	60%	90	7.2
Diminutive	75%	28	21
Total			428.5

The total number of morphemes is thus 3569.5 and M.L.U. is 1.87.

5.5 Zoli V

5.51 Acquisition of rules based upon inherent features

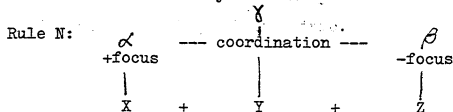
In the sample from Level V, there are twenty-nine uses of Rule F for modifier-fronting, excluding titles such as Barna bácsi "Barna Uncle." One such excluded title was hentes bácsi "butcher Uncle." Among the modifiers was the first deictic adjective in the structure azt a husikát "that+acc. the meat+acc." Although the deictic may not yet be productive, it does seem to achieve productivity at Level VI. It is interesting to note that the first form of the deictic adjective shows agreement with the noun for the accusative case. Eventually all inflections on the noun must also appear on the deictic, but the error data of section 7.12c of Part II suggest that this learning precedes suffix by suffix.

Rule G for suffix-attachment continues to be of basic importance; the numbers of such attachments are calculated in section 5.56 below. There are sixty attachments of is "also" after the lexical item to which they relate, according to Rule H. As in the previous period, there are no errors in the attachment of is. As can be

seen in section 6.13 of Part II, Zoli continues to place the verbal prefix before the verbal root, even when such a placement is an error. Such placement is governed by rules of the shape of Rule K, which are not rules of an adult grammar. There were eighty-seven uses of verbal prefixes (see section 3.5) and productivity of these placements was estimated at 65%. Placement of the verbal prefix after the verb root is generally confined to imperative forms.

In this sample there are only three occurrences of csak I placed before the noun modified by Rule F. There is only one appearance of csak II placed after the imperative to which it relates; this ordering is effected by Rule L.

In its use as an adverb, még "still, another" occurs before a noun ten times and seems to be positionable through Rule F. However, as a conjunction, még first assumes importance in this sample. It occurs seven times between two coordinated nouns. If it is true that coordination is identified in abstract semological structure, then placement can be determined by Rule N.



Here, coordination is assumed to relate both α and β to some further material γ . The features /+focus/ and /-focus/ are meant only to indicate relatively greater focus upon the α element. Note the parallel with Rule M of section 5.43.

5.52 The conflict between verb-fronting and rules based upon functional features

Of the 280 utterances with verbs in this sample, only 98 show a fronted verb. This means that only 35% of the utterances with verbs had the verb fronted. This figure may be compared with 71% at Level II, 56% at Level III, and 40% at Level IV. As with most of the other major indicators of progress in language learning, there is little change between Level IV and Level V. Of the 174 utterances in which some other element was placed before the verb, 161 involve fronting of a focused element and thirteen involve pre-topicalization.

At Level III Zoli's fronting of the verb was a demonstrable error in 12% of the utterances with initial verbs. At Level IV this figure is 13%, and at Level V it declines to only 8%. This means that only eight of the ninety-eight utterances with initial verbs were demonstrably deviant. Of these nine, six had an unstressed initial verb: szedek virágot, jó? "pluck+LPS-Ind flower+acc., O.K.?", kér kötényt "want apron+acc.," and kérem husikát "want+LPS meat+dim.+acc." The last of these three utterances occurred four times. In two other instances, the verb was given primary stress, but there was no imaginable reason why Zoli

should have chosen to focus the verb: láttam ott kis autót "see+past+1PS there little car+acc." and jött haza "came home." As at Level IV, the importance of these errors is magnified by the fact that there are only two other violations of the rules for assigning focus. These violations are oda ül "there sits" (occurring twice) and most megyünk oda "now go+1PP thither." In both of these the second or verbal element is focused, although there is no obvious cause for such focusing. The errors here seem quite strictly semological. Apparently, Zoli has not yet learned that emphatic stress on the entire proposition is not achieved by focusing the verb, but by focusing the verbal prefix (or the deictic oda).

5.53 The acquisition of rules based upon functional features

At Level V Zoli produces 112 utterances with preposed topics. These 112 utterances can be broken down into the following groups: thirty pre-topicalized locatives of which twelve precede the verb, twelve pre-topicalized pronouns, forty-three pre-topicalized deictic pronouns of which three precede the verb, seventeen temporal adverbs, five adverbs of manner, and five pre-topicalized nouns.

Although only one utterance has a double preposed topic, three have postposed topics, all with focus correctly placed upon the verbal prefix: kicsavart

a Barna vizet "out+screw+past the Barna water+acc."
 (=Barna unscrewed the spigot), megnéz a fület a bácsi
 "perf. +see the ear+acc. the uncle" (=The man saw the ear),
 and Barna bácsi, ott betette a szekrénybe a kicsi autója
 (emphasis upon first be) "Barna uncle, there in+put+
 3PS-past the cabinet+illative the little car+3PS-poss."
 (=Uncle Barna, he put his car away into the cabinet over
 there). The last utterance is the longest Zoli has
 produced to date, containing thirteen morphemes of which
 about eleven are productive. It is also interesting to
 note the utterance nem adom én "not give+1PS I?" since
 this is an exception to the general pattern of pre-topical-
 ization of pronouns.

Of a total of 377 utterances in which some item is
 focused, 161 utterances show the focused item appearing
 before the verb. Included among these focused items
 are ninety-eight focused verbs, one focused temporal,
 sixty-one locatives of which forty-eight precede verbs,
 forty-eight comments following pre-topics (four of these
 are the negative nem), sixty-three negatives of which
 forty-nine precede verbs, four negative imperative particles,
 twenty-five questions of which twenty precede the verb,
 seventeen nouns with is before verbs, nine pronouns before
 verbs of which two were accusatives and one instrumental,
 four nouns in the accusative before verbs, six nouns or
 adjectives preceding the copula, six nouns in the

nominative preceding verbs, and two adverbs of manner (így "thus") before verbs. In terms of the semological rules involved, neither focusing nor topicalization seem to have acquired any additional precision over Level IV.

In section 5.43 we already introduced Rule M which will serve to order coordinated or subordinated propositions and their conjunctions. There are five instances of coordinated propositions at this time; three are coordinated by és "and" and two by mert "because." The most significant syntactic development at Level V is the emergence of subordinated propositions in great abundance. Seventeen such utterances appear in this sample. Since all of them involve identity between the subject of the main clause and the subordinated clause, all of the verbs of the subordinated clauses are infinitives. The verbs of the main clauses, together with an English approximation of the structures involved include: tessék "let is please you to", fog "he will ...," megy "he is going to...", and gyere "come" Together with this sudden increase in embeddings, we find a rapid increase in the number and variety of infinitives.

In section 5.33 we noted that the Vocative may be ordered through rules like Rules D', I, and J, but that the exact rules must have a somewhat different shape since the vocative is ordered in relation to the entire proposition. At earlier levels we noted that vocative-agents tend to be placed after the proposition more than other elements. In this sample Zoli preposed fourteen vocative-

in surface structure by a pre-topicalized element which is ordered in relation to the verb, as in the following: csak ott elmennek (stress on el-) "just there away+go+3PS" and bizony bácsinak odamegyek (stress on oda) "surely uncle+dat. there+go+1PS."

5.54 Acquisition of rules assigning grammatical intonations

Although there is no major change in the nature of the intonational marking of topicalization and focusing at Level V, there is a clear development of question intonation. In earlier samples most of Zoli's questions were quite short. Moreover, the bulk of them were wh-questions. In the wh-question the first element is the focused question word which receives the raised pitch and loudness given to any focused element. Additionally, there is less of a decline in pitch and loudness towards the end of the utterance than in a corresponding declarative utterance. The intonational pattern of the yes-no question is quite different. It resembles its declarative counterpart through the first part of its intonational course. However, there is a very sudden rise in pitch on the next to the last syllable (or the last syllable in short utterances) and a precipitous return back down on the last syllable. This rise and return cover about a musical fourth. Zoli demonstrates his control of this

intonational pattern in the following utterances:

Barna bácsi, oda menjünk (rise on menj) "Uncle Barna, thither go+imp.+1PP?," arra megyünk? (rise on megy) "to-there go+1PP?," keressünk bogarat? (rise on gar) "seek+imp.+1PP bug+acc.?", " megettem? (rise on et) "perf.+ate+1PS?," te vagy a hentes bácsi? (rise on bá) "you are the butcher uncle?," itt a róka (rise on róka, both syllables)"here the fox?," and elrepült (rise on rep) "away+fly+past?" Apart from his control of the rise in pitch on the next-to-the-last syllable, Zoli produces base sentences that would be correct as declaratives. That is to say that the elements are ordered in terms of topicalization and focusing in a way that would be correct, even if the utterance were not a question.

5.55 Calculation of M.L.U.

Zoli produced 835 utterances at Level V. The total number of free morphemes used at Level V is 1795, but this number must be correct for productivity of bound morphemes. This added productivity is calculated below:

Table XIII

Calculation of Productive Affix Attachments at Level V

<u>Morpheme</u>	<u>Productivity</u>	<u>Occurrences</u>	<u>Addition to M.L.U.</u>
Plural	90%	10	9.0
Dative	40%	21	8.4
Instrumental	40%	7	2.8

<u>Morpheme</u>	<u>Productivity</u>	<u>Occurrences</u>	<u>Addition to M.L.U.</u>
Accusative	65%	101	65.6
Sign of Possession	90%	3	2.7
1PS Possessive	25%	21	5.2
2PS Possessive	20%	6	1.2
3PS Possessive	40%	5	2.0
1PS Indefinite	75%	51	38.2
1PS Definite	75%	34	25.5
2PS Indefinite	30%	5	1.5
1PP Indefinite	50%	12	6.0
3PP Indefinite	50%	7	3.5
2PS Definite Imp	40%	10	4.0
Imperative	30%	18	5.4
Infinitive	40%	31	12.4
Verbal Prefixes	65%	87	56.5
Illative-Inessive	50%	26	13.0
Allative	50%	3	1.5
Sublative	50%	9	4.5
Definite Article	70%	132	92.4
Diminutive	75%	17	4.2
Total			365.5

Adding 365.5 to the number of free morphemes which is 1795, we obtain a total morpheme count of 2160.5 morphemes. Dividing this number by the 835 utterances, we have an M.L.U. 2.58.

5.6 Zoli VI

This final period in our observation of Zoli's development is marked not so much by the acquisition of new patterns, but by the application of old patterns to more situations and the construction of utterances of greater length. This general pattern of consolidation and deepening control is evident not only on the syntax, but also in the phonology and the grammatical morphemes of the lexicon. In general the rules of Level V continue in force at Level VI with the addition of a rule for prefix-raising.

5.61 Acquisition of rules based upon inherent features

Excluding titles and proper names, there are fifty-nine uses of Rule F for modifier-fronting in this sample. Fourteen of these involve the deictic adjective which is nominative in seven cases, accusative in five, instrumental in one, and illative in one other. As we suggested in section 5.51, learning of agreement with the case on the noun probably proceeds suffix by suffix. At this time, only the accusative seems to have attained such marking, since the nominative requires no agreement and the other cases are only represented by one example each.

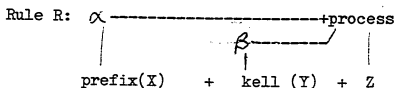
Rule G for suffix-attachment continues to be of importance; the numbers of such attachments are calculated in section 5.66 below. Additionally, the rules of 4.5 are of importance in assigning order between suffixes. There are eighty-one attachments of is "also" after the

lexical item to which they relate, according to Rule H. As can be seen in section 6.13 of Part II, Zoli continues to place the verbal prefix before the verbal root, even when such placement is an error. This placement is governed by Rule K, which is not a part of adult competence.

There are sixty-seven uses of Rule M which orders propositions by subordination, with or without a conjunction. In fourteen of these orderings a conjunction is present. The conjunctions included eight occurrences of mert "because," three of és "and," one of azután "after," and two of még "moreover." The fifty-three cases of subordination without conjunctions all involved complementation. Common verbs in the main clause include kell "is-necessary" which accounts for thirty of these complement structures, together with tud "can," megyek "go+LPS," and tessék "please," which account for smaller amounts. In no utterance is the infinitive missing from the verb of the subordinate clause. There are no uses of Rule N in this sample, but this is probably just a sampling effect.

The growth of complement constructions is now accompanied by the appearance of utterances in which the verbal prefix has been lifted from the subordinate clause and placed before the "auxiliary-like" verb of the main clause. There are only three such structures at this time: föl kell venni "up is-necessary take+infin.,"

be kell dugni "in is-necessary stuff+infin.," and
össze kell csatolni "together is-necessary couple+infin."
 All involve the verb kell "is necessary." It seems likely
 that the first rule of this shape is morpheme-bound,
 as is Rule R:



5.62 The conflict between verb-fronting and rules based upon functional features

Of the 610 utterances with verbs in this sample, only 185 have a fronted verb. This means that only 30% of the utterances with verbs have the verbs fronted. This figure may be compared with 71% at Level II, 56% at Level III, 40% at Level IV, and 35% at Level V. The continual decline of the pattern of verb-fronting which found such favor in the first stages of Zoli's development is good evidence for the probable disappearance of Rule E as an active rule. Of the 415 utterances in which some other element is fronted before the verb, ninety-eight utterances show a pretopic before the verb and 215 show a focused element before the verb, whereas 102 show both. The detailed composition of these groups will be discussed in the next section.

Of the 185 focused verbs, fifteen are erroneously fronted. This is 8% of the fronted verbs and is identical with the percentage from Level V. This residual tendency

to erroneously front verbs basically involves only the verb kér which accounted for ten of the fifteen frontings. It appears that the high emotional value of the request is enough to induce Zoli to focus it.

5.63 The acquisition of rules based upon functional features

At Level VI Zoli produces 250 utterances with preposed topics. The distribution of these topics resembles earlier levels with the bulk being locatives, temporals, pronouns, and deictics. There is also an increasingly large group of what we have called introducers, which are ordered through Rule 0. Doubling of initial topics continues to develop and twelve utterances with doubled initial topic are present in this sample.

Of a total of 397 utterances in which some item is focused, 317 utterances show the focused item before a verb. Particularly evident is the growth of complex focused noun-phrases. Non-agent vocatives occur twenty-seven times before the proposition and twenty-times after it. Six agent-vocatives appear before their proposition and two after.

5.64 The acquisition of rules assigning grammatical intonations

Despite the general accuracy of Zoli's grammatical intonation at Level VI, we may note some continuing errors in stress-placement. In two utterances the definite Article is stressed, although the definite article

never receives stress under normal conditions. In four other utterances stress is not assigned to the element preceding the verb, but to the verb itself. Of course, if the verb is to receive stress it should be placed in initial position.

Zoli seems to be in nearly complete control of the mechanics of question intonation which were entering in the previous period. However, the raising of pitch on the last syllable in yes-no questions should be confined to only the shortest utterances, while Zoli applies it to both short and medium-length utterances. Moreover, there is one case of overgeneralization of the yes-no question intonation to a wh-question. The sentence involved was: Mikor ad oda Barna bácsinak? "When give over Barna Uncle+dat.?" Rather than raising the pitch on the first syllable and then trailing off, Zoli raised the pitch on the next-to-last syllable, as in yes-no questions.

5.65 Calculation of M.L.U.

Zoli produced 1826 utterances at Level VI. The total number of free morphemes used at Level VI is 3510, but this number must be corrected for productivity of bound morphemes, which is calculated in Table XII which follows.

Table XIVCalculation of Productive Affix Attachments at Level VI

<u>Morpheme</u>	<u>Productivity</u>	<u>Occurrences</u>	<u>Addition to M.L.U.</u>
Plural	90%	66	59.5
Dative	60%	46	27.6
Instrumental	50%	28	14.0
Accusative	70%	233	163.1
Sign of Poss.	100%	11	11.0
1PS Poss.	50%	39	19.5
2PS Poss.	35%	6	2.1
3PS Poss.	40%	5	2.0
1PS Definite	80%	128	102.4
1PS Indefinite	80%	155	124.0
2PS Definite	60%	15	9.0
2PS Indefinite	60%	16	9.6
1PP Definite	35%	11	3.8
1PP Indefinite	70%	34	23.8
3PP Definite	30%	9	2.7
3PP Indefinite	60%	12	7.2
2PS Def.-Imp.	50%	41	20.5
1PP Def.-Imp.	20%	24	4.8
2PS Ind.-Imp.	20%	6	1.2
Imperative	30%	29	8.7
Infinitive	50%	96	48.0
Verbal Prefixes	80%	217	173.6

<u>Morpheme</u>	<u>Productivity</u>	<u>Occurrences</u>	<u>Addition to M.L.U.</u>
1PS Past	20%	28	5.6
3PS Definite (in the past)	30%	14	4.2
Inessive-Illat.	70%	39	33.3
Allative	70%	1	.7
Sublative	70%	8	5.6
Adessive	25%	3	.7
Ablative	25%	4	1.0
Elicative	25%	6	1.5
Superessive	25%	4	1.0
Definite Art.	90%	163	146.7
Diminutive	75%	24	18.0
Total			1056.6

Adding 1056.6 to the number of free morphemes which is 3510, we obtain a total morpheme count of 4566.6 morphemes. Dividing this number by the 1826 utterances, we have an M.L.U. of 2.50.

5.7 A Summary of the development of the syntactic rules

In the following table the various rules which have been proposed are each listed in terms of the levels at which they show possible productivity. Rules A through C are not listed, since they are simply theoretical variants of Rules D and E. At each level an "X" indicates productivity, whereas a dash indicates that a previously productive rule is no longer present.

Table XV

The Development of Syntactic Rules

Rule	Level					
	I	II	III	IV	V	VI
D: +focus --- β $\begin{array}{c} \\ X \end{array}$ + $\begin{array}{c} \\ Y \end{array}$?	?	-	-	-	-
D': +focus --- β [- [+topic]] $\begin{array}{c} \\ X \end{array}$ + $\begin{array}{c} \\ Y \end{array}$			X	X	X	X
E: +process --- β +state $\begin{array}{c} \\ X \end{array}$ + $\begin{array}{c} \\ Y \end{array}$	X	X	X	X	?	-
F: +modifier --- β $\begin{array}{c} \\ X \end{array}$ + $\begin{array}{c} \\ Y \end{array}$		X	X	X	X	X
G: α --- β $\begin{array}{c} \\ X \end{array}$ + suffix (morpheme-bound at first)		X	X	X	X	X

Rule	Level					
	I	II	III	IV	V	VI
H: α --- β X + is		X	X	X	X	X
I: [+topic]----- β X + (#) + Y		X	X	X	X	X
J: α --- [+topic] X + Y		X	X	X	X	X
K: α ---- +process prefix + Y (morpheme-bound at first)			X	X	X	X
L: α +command --- +polite X + csak II				X	X	X
M: P-secondary-----coord.----P+secondary X + (Y) + Z				X	X	X
N: α [+focus]---coord.--- β [-focus] X + Y + Z					X	?
O: α --- Proposition introducer + Y (morpheme-bound)					X	X
P: α ----->+process prefix kell X + Y + Z (morpheme-bound)						X

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