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AUTHOR Farmer, Helen; And Others
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ABSTRACT

This user's guide provides materials on the Career Motivation and Achievement Planning (C-MAP) Inventory for use with ninth and twelfth grade students. Chapter 1 discusses the purpose and uses of this assessment of long-range career commitment, short-range motivation to achieve on a particular task, and level of education and career aspiration. The next chapter provides information on the administration and hand scoring of the C-MAP. Some suggestions for counselors/teachers for interpreting the C-MAP profiles are presented in chapter 3. Suggestions are made for interpreting students' scores on the occupations list that contribute to their aspiration scores. Student instructions for interpreting their C-MAP profiles are reprinted, and additional suggestions for counselors/teachers are given. The chapter closes with four case examples. Chapters 4, 5, 6, and 7 cover the sample and norms, computation of reliability, and the analyses for scale independence and C-MAP validity. The final chapter discusses the development of the C-MAP. The theoretical model guiding the development is described, including the factors included in each aspect of the model. Discussion follows of the development of the motivation, background, personal, and environmental scales. Appendixes include the answer sheet, scoring instructions, occupation codes, and profile sheets. (YLB)

A User's Manual for

CAREER MOTIVATION ACHIEVEMENT PLANNING

C-MAP

developed by

The Career Motivation Project Staff

Director	Helen Farmer
Research Assistants	Jeraldine Keane
	Gail Rooney
	Walter Vispoel
Consultants	
	Lenore Harmon
	Brenda Lerner
	Robert Linn
	Martin Maehr

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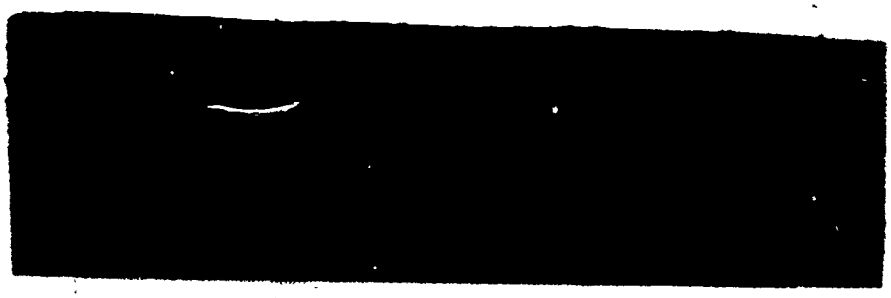
We never know how high we are
Till we are called to rise;
And then, if we are true to plan,
Our statures touch the skies.

Emily Dickinson (1830-1886)



Acknowledgements

Appreciation is expressed to the many school superintendents, principals, teachers and counselors who generously gave of their time and made their students available to us for data collection leading to the development of the C-MAP. The names of these school districts are listed in Appendix F. In order to protect the schools' confidentiality the particular schools are not named and only the school district in which the school was located is listed. It goes without saying, that without the cooperation of the students and personnel in these schools there would be no C-MAP. A special note of appreciation is expressed to Brenda Lerner, who served as consultant to the project and as liaison with the school districts.

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The authors are indepted to several persons who had previously developed measures that were found to be compatible with the theoretical orientation of the C-MAP and were adpated for use with it. Permission has been requested from them for the use of these adapted scales. Special thanks is expressed to Donald Super and Merle Culha for making the Work Salience Inventory available for us to use in the C-MAP development. The previous work of Sandra Bem, Otis Duncan, Janet Spence, Robert Helmreich, and Stanley Coopersmith is also gratefully acknowledged. The authors are well aware of the enormous amount of work that went into the development of these scales.

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Tha analysis of the data was directed as mentioned earlier by Robert Linn. The conduct of the analyses was ably handled by Lenora Wang, Elizabeth Weiss and Walter Vispoel, with Walter taking major responsibilty for the final revisions. Del Harnish provided helpful consultation on data management.

The writing of the test manual was a collaborative effort. In particular two of the case studies in Chapter 3 were written by Jeri Keane and Gail Rooney. Jeri Keane was especially involved in the writing of the administration and scoring sections; Gail Rooney in the writing of interrater reliability. Several persons participated in refining and proofing the text. LuAnn Smith and Kathy Croce assisted with the writing of the

reports sent to individual schools, along with Jeri Keane and Gail Rooney. This project is an example of what team effort (cooperative behavior) can produce. Many aspects of the C-MAP were strengthened because of the caring and creative input of the consultants and research assistants associated with it.

A very special thanks is extended to the many support persons who spent countless hours working with rough drafts, final revisions, and final-final versions. Carol Martin monitored project expenditures and the flow of work. June Chambliss coordinated the typing of the text. Barbara Cain and Steve Hauersperger handled the printing and selected the colors for the covers which add to the appearance of the text manual and booklet. Without the technical assistance provided by these persons, who anticipated production needs and possible difficulties, we would have encountered serious setbacks. The cover design and several of the figures and tables are especially indebted to Pat Butler. Others persons deserving thanks include Cathy Armetta, Shirley Burton, Teri Frerichs, Carol Machula, Terry Piazza, Nancy Schum and Tami Smith.

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Helen S. Farmer

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Chapter 1

PURPOSE AND USES OF THE C-MAP

I. Philosophy and History of Development

Roles for men and women are changing; more men are raising their children and more women are employed outside the home. The combining of work and family roles challenges young people today. Educators, counselors, and parents want to prepare young people for these changes. The C-MAP assessment procedure takes account of the opportunities presented by changing work and family roles. Career, in its broadest sense, means 'life path' and thus includes all the roles a person plays throughout life (Super, 1980a). The C-MAP can help students identify things that help or limit their career development.

Career choice is a life-long pursuit. There is no one career choice but multiple choices along the way. These choices are based on what people learn and the experiences they have had. The best choices are those which give satisfaction and pleasure to each person and at the same time make a contribution to society. Every person needs the opportunity to match their job choice with their talents and interests, consistent with economic opportunities, and to use the best that is in them. Ideally, young people will consider the importance of their work and family roles and use this information in their career planning. The C-MAP is a tool to assist counselors and teachers help high school students of both sexes to realize their full potential and make informed life role choices.

II. C-MAP Differs from Measures of Career Interests and Career Maturity

There are several measures available aimed at assisting adolescents with their educational and career planning. Prominent among these are

measures of career maturity (The Career Maturity Inventory, Crites, 1974; The Career Development Inventory, Super, 1980), career interests (The Self-Directed Search, Holland, 1978; The Kuder Occupational Interest Survey, Kuder, 1976; UNIACT-IV, American College Testing Program, 1978), work related values (Work Values Inventory, Super, 1970) and the Career, Marriage and Family Values measure (Tittle, 1980). The C-MAP does not assess career maturity, career interests or career related values, although it may be used to enhance career planning when used with some of these measures.

In contrast to measures of career maturity or career interests, the C-MAP assesses a) long-range career commitment, b) short-range mastery motivation, and c) level of career/educational aspiration. In addition, it assesses different patterns of background, personal and environmental characteristics associated with these three aspects of career and achievement motivation.

III. The Theoretical Model Guiding the Development of the C-MAP

Figure 1 presents the theoretical model which guided the development of the C-MAP. Two questions guided the development of the inventory:

1. What characteristics, that are potentially amenable to change, affect students' career and achievement motivation?
2. What is the degree of influence of each of these characteristics?

The model suggests that certain background characteristics of the person influence the young person's developing self concept. Their learned self concept or personal identity interacts with the environment in the school, home and community resulting in different levels of achievement behavior. Thus the model is multi-dimensional and considers personality dispositions as well as the environmental situation of the person.

Three types of characteristics are considered in the model: Background, Personal and Environmental. The C-Map includes the most parsimonious and, at the same time, most comprehensive set of characteristics. Figure 1 suggests both the direct and indirect relationship of the characteristics to career and achievement motivation. For example, in the figure the relationship between Background characteristics and the Motivation dimensions is depicted as both direct and indirect; that is, it is mediated through Personal characteristics and through conditions in the Environment. In this model changes in Personal or Environment characteristics are thought to moderate the effect of Background characteristics on career and achievement motivation. This is a very important point and is basic to some of the suggested practical applications for C-MAP assessment. It should be pointed out that not all possible influences are included in the model. Only a selected number were practical within reasonable time limits for testing.

Background characteristics logically precede in time their effect on a person's self concept and on their motivational patterns, therefore these characteristics are considered first. Background characteristics affect Motivation patterns directly, but they also may affect these patterns indirectly by affecting learned Personal characteristics, and the opportunities available to a person in the Environment. Thus, while Background characteristics such as social class or race are not directly open to being changed, it is possible to compensate for their influence on Personal characteristics through awareness of their limiting and facilitating effects and by changing identified attitudes and behaviors. It is also possible to change the opportunities available to a person in the Environment if the person acquires certain skills and information.

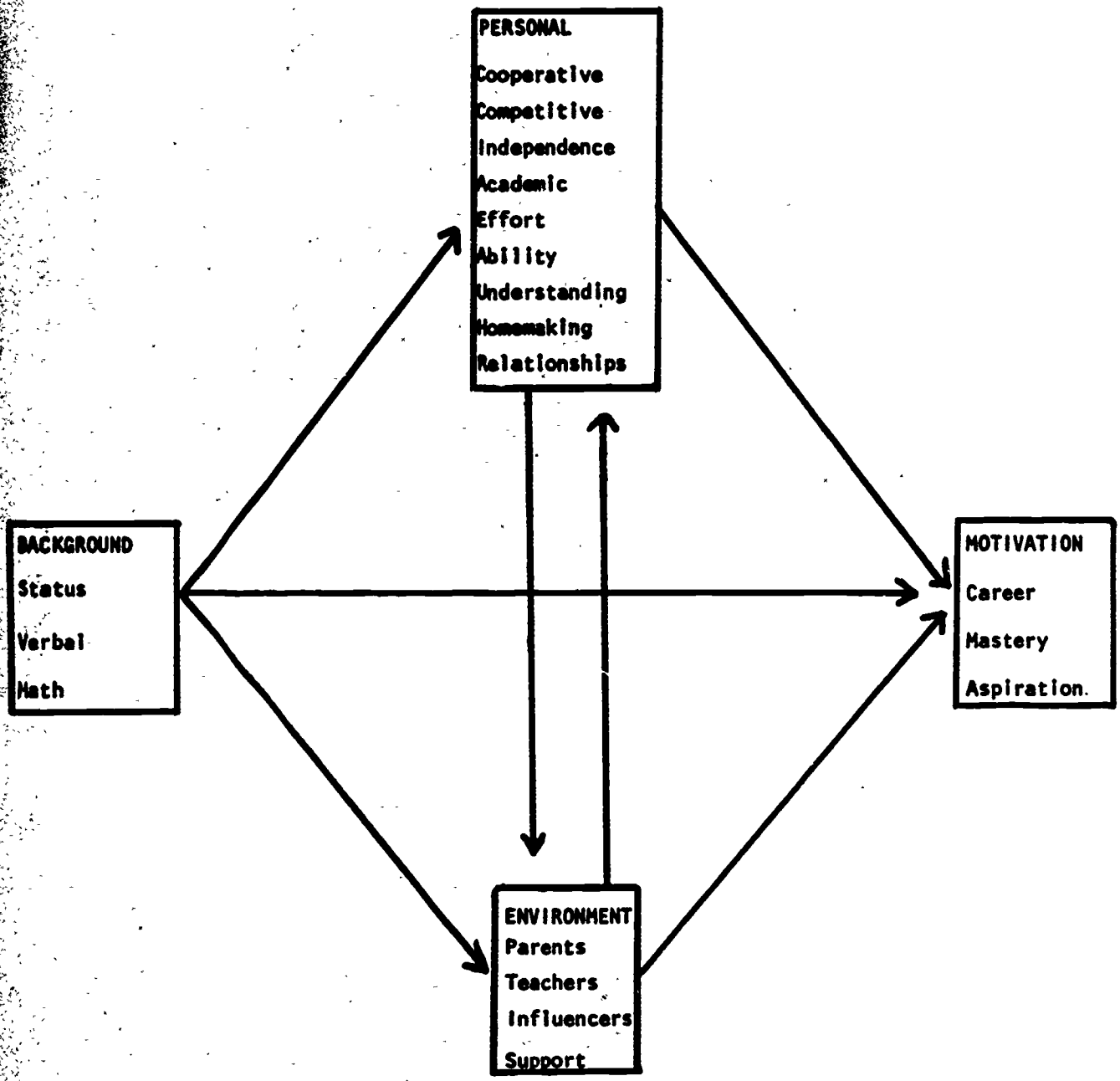


Figure 1: The Theoretical Model Underlying the C-MAP

Personal characteristics are viewed as directly affecting career and achievement motivation and related behaviors. A person who is both collaborative and competitive, independent, and attributes his or her successes to internal causes such as effort or ability is viewed as likely to have higher career and achievement motivation. Persons, however, who are strongly committed to marriage and family roles give these roles priority over career roles. Persons who are concerned about the negative effect their successes may have on their relationships with others are viewed as less likely to be strongly committed to the long-term prospects of a career. It is possible, however, to combine home and career roles and be committed to both. Personal characteristics also may be influenced by Environment characteristics. For example, the effect of teachers on a student may be moderated by the personality and attitudes of the student. Further, a teacher may change his or her behavior and attitudes as a result of experiences with students.

Environment characteristics in the model (Figure 1) are also amenable to change. However, change in this instance is more likely to come from policy makers, educational planners, from parents, teachers and employers in contrast to coming from the students themselves. The model suggests that Environment characteristics influence the career and achievement motivation of students directly, but also indirectly by influencing student attitudes and behaviors.

IV. Description of the C-MAP and its Subscales

The C-MAP is a Career Motivation and Achievement Planning inventory for use with high school students. It is a paper and pencil inventory with 109 items, most of which are responded to with a number indicating the amount of agreement or disagreement the student has with them. A

few background questions require the student to check an appropriate answer. Five questions ask students to write out their answers (for example, the names of the occupations they are interested in). All answers are entered on a separate answer sheet which is organized for scoring the 19 subscales directly on the sheet. The 19 subscale scores are then transferred to percentile profile sheets which permit the student to compare his or her scores to norms for high school students. It takes 40 to 50 minutes to complete the C-MAP.

Table 1 provides a listing of the 19 C-MAP subscales. There are three motivation scales which assess student's 1) long-term Career Commitment, 2) short term Mastery motivation, and 3) Career/Educational Aspiration level. Sixteen other subscales assess Background, Personal and Environment characteristics strongly related to these types of motivation. Definitions of the three motivation subscales and 16 related subscales are provided below.

Table 1

C-MAP scale names and abbreviations

In the order they appear on the answer and profile sheets

	Long Title	Short Title	Abbreviation
MOTIVATION	Career Commitment	Career	Car
	Mastery	Mastery	Mas
	Career/Educational Aspiration	Aspiration	Asp
BACKGROUND	Verbal Ability	Verbal	Ver
	Math Ability	Math	Mat
	Socioeconomic Status	Status	SES
PERSONAL	Competitive	Competitive	Com
	Cooperative	Cooperative	Coop
	Relationships Concerns	Relationships	Rel
	Independence	Independence	Ind
	Homemaking Commitment	Home	Hom
	Ability Attributions	Ability	Abl
	Effort Attributions	Effort	Eff
	Valuing Understanding	Understanding	Und
	Academic Self Esteem	Academic	Aca
ENVIRONMENT	Teachers Support	Teachers	Tch
	Parents Support	Parents	Par
	Support for Women Working	Support	Sup
	Personal Influencers	Influencers	Inf

A. Career and Achievement Motivation

Career Commitment (Car). The Career Commitment scale, adapted from Super and Culha (1976), determines a person's interest in long-term career prospects or advancement. A person who scores high on this scale enjoys making plans about his or her future, wants to have a job to be really proud of, and views a career as a means of self expression.

Mastery (Mas). The Mastery scale, adapted from Spence and Helmreich (1978), assesses interest in achieving specific short-term challenging tasks. A person who scores high on this scale chooses difficult, challenging tasks instead of easy tasks to work on, and he or she keeps struggling to master a task once started.

Career/Educational Aspiration (Asp). The Career/Educational Aspiration scale assesses the level of occupations that a person says he or she is interested in or expects to end up in. It also assesses the level of education a person expects to complete. Persons who score high on this scale aspire to a college degree or graduate degree and to an occupation at the technical or professional level.

B. Background

Verbal Ability (Ver). The Verbal Ability scale assesses a person's estimate of his or her grade point average for English courses during the past school term. High scorers, for example, would have earned A's.

Math Ability (Mat). The Math Ability scale assesses a person's estimate of his or her grade point average for Math courses during the past school term. High scorers would have earned A's.

Socioeconomic Status (SES). The Socioeconomic Status scale assesses a person's family background in terms of the educational and occupational level of his or her parents. When both parents are working, the score of

the parent with the highest level is used. Persons scoring in the upper quartile on this scale have parents with occupations such as doctor, lawyer, professor, accountant or scientist. Those who score in the second highest quartile have parents with occupations such as elementary school teacher, manager, technician or sales person. Persons scoring in the third highest quartile have parents with occupations such as telephone repairperson, factory supervisor, electrician and clerical worker. Persons scoring in the lowest quartile come from parents with occupations such as waiter, bus driver, factory assembler and carpenter.

C. Personal

Competitive (Com). The Competitive scale, adapted from Spence and Helmreich (1978), assesses a person's preference to win and to perform well on a task. High scorers enjoy working in situations involving competition with others, like to perform better than others on a task, and are annoyed when others perform better than they do.

Cooperative (Coop). The Cooperative scale assesses a person's satisfaction from working on a project or task with others. High scorers enjoy working in situations involving cooperation with others, and try harder when cooperating with others on a task.

Independence (Ind). The Independence scale, adapted from Bem (1977), assesses a person's perception of self as independent and self-reliant. High scorers view themselves as willing to take risks and take a stand, as having a strong personality, and as being assertive.

Homemaking Commitment (Hom). The Homemaking Commitment scale, adapted from Super and Culha (1976), assesses a person's valuing of family and home related activities. A high scorer considers marriage and

having a family as very important, at least as important as having a career. He or she would never let career concerns take priority over family concerns.

Ability Attributions (Abl). The Ability Attributions scale assesses the degree to which persons feel their successes are due to their ability. Persons who score high on this scale attribute their successes to being bright and having natural ability.

Effort Attributions (Eff). The Effort Attributions scale assesses the degree to which persons feel their successes are due to their own effort. Persons who score high on this scale attribute their successes to trying hard and persisting at a task.

Valuing Understanding (Und). The Valuing Understanding scale assesses the degree to which persons value their successes because they add to their understanding of something important to them. Persons who score high on this scale say their successes were important to them because they understood something better.

Relationships Concerns (Rel). The Relationships Concerns scale, adapted from Spence and Helmreich (1978), assesses persons' concerns about the effects of their successes on their relationships with others. High scorers do not worry that their successes may cause others to dislike them. They do not avoid discussing their accomplishments because others might be jealous, and they do not work at less than their best because others may resent them for performing well.

Academic Self Esteem (Aca). The Academic Self-Esteem scale, adapted from Coopersmith (1970), assesses a person's feelings about school work. High scorers rarely feel upset with their school work and rarely get discouraged at school. They feel confident of their ability to handle school work.

D. Environment

Teachers Support (Tch). The Teachers Support scale assesses a person's view of support from his or her teachers. High scorers view their teachers as interested in how well they do in school, quick to help them when they need it, and interested in their future career plans. They also view their teachers as making them feel competent, capable of being the leader for school projects, and interested in them as persons.

Parents Support (Par). The Parents Support scale assesses a person's perception of support from parents for her or his educational achievements. Persons who score high on this scale view both their mother and their father as persons who have encouraged them to achieve in courses such as Math, Science, English and Social Studies. Such persons view their parents as having encouraged them both in the past and in the present to do well in these courses at school.

Support for Women Working (Sup). The Support for Women Working scale assesses a person's view and attitudes about women working and competing in the job market. Persons who score high on this scale think that women should compete for jobs with men, they view women and men as having similar patterns of work behavior, absences from work, and ambitions for promotion. They also think men and women should both take responsibility for the physical and mental health of their children and should share housekeeping tasks.

Personal Influencers (Inf). The Personal Influencers scale assesses a person's perception that his or her career choices have been influenced by relatives, friends, parents, teachers, and counselors. High scorers do not view their career choices as having been strongly influenced by these persons.

V. Relationships of Background, Personal and Environment Subscales to Career and Achievement Motivation

Although sixteen subscales relating to career and achievement motivation are provided, all of the subscales do not relate to all three of the motivation types measured by the C-MAP. As might be expected, the Background, Personal and Environment characteristics measured by the subscales relate differently to the three types of career and achievement motivation. Three profile sheets, one for each type of motivation (Career Commitment, Mastery, and Career/Educational Aspiration) are provided with the C-MAP in order to reflect a student's scores on the related Background, Personal and Environment scales.

Table 2 presents a summary of the subscales that relate importantly to each of the three Motivation Scales. Table 2 is followed by a brief narrative describing these relationships for each type of motivation. BOLD type letters represent the strongest relationships, CAPITAL letters represent less strong relationships and Upper/Lower case letters represent the least strong (but moderate and significant) relationships. The interested reader may find details of the multiple regression analyses on which these relationships are based in this manual, Chapter 8.

A. Career Commitment Relationships

The Personal set of subscales is most strongly related to long-term career commitment as assessed by the Career scale. The profile sheet highlights these scales to aid in interpretation. The strongest relationships are those with the Independence and Competitive scales. Environment scales are second in importance for long-term career commitment, especially the Support for Women Working scale. Background scales are third in importance for long-term career commitment. The reader is

Table 2

C-MAP Scales[a] Related to Each of Three Types of Motivation

Motivation	Background	Personal	Environment
Aspiration (Asp)	Status (SES) Verbal (**Ver**)	Competitive (Com) Ability (ABL) Academic (Aca)	Teacher (Tch) Parent (**Par**) Support (SUP)
Career (Car)	Math (Mat)	Competitive (**Com**) Cooperative (Coop) Independence (**Ind**) Home (HOM) Effort (Eff) Understanding (UND) Relationships (Rel)	Teacher (TCH) Parent (PAR) Support (**Sup**) Influencers (Inf)
Mastery (Mas)	Status (SES) Math (MAT)	Competitive (**Com**) Independence (**Ind**) Effort (Eff) Understanding (Und)	Teacher (TCH) Parent (PAR) Support (SUP)

[a]Bold type represents the strongest relationships, capital letters represent less strong relationship and upper lower case represent the least strong (but moderate and significant) relationships.

invited to review the Career profile sheet (Appendix E) and its accompanying description for further details.

B. Mastery Relationships

The Personal set of subscales is also most strongly related to motivation to master short-term challenging and difficult tasks. Environment and Background scales contribute about equally, but less than the Personal scales. Similar to long-term career commitment, the Independence and the Competitive scales are most strongly related to Mastery motivation. No particular scales stand out among Environment and Background scales in their relationship. The reader is invited to review the Mastery profile sheet (Appendix E) and its accompanying description for further details.

C. Career/Educational Aspiration Relationships

The Background subscales, in contrast to the other motivation scales, were most strongly related to Aspiration. Verbal ability was especially important for high Career/Educational Aspiration. Environment scales are next in importance for Aspiration, with Parents Support being particularly important. Personal scales contribute least to the Aspiration scale. Again, the reader is invited to review the Aspiration profile sheet and its accompanying description for further details.

D. Comparison of Motivation Profiles

The profiles for Career and Mastery are somewhat similar to each other, but quite different from the profile for Aspiration. Level of career motivation, assessed by the Aspiration scale, is influenced by factors that differ from those influencing long and short-term career and achievement motivation.

VI. Uses

A. General

The C-MAP provides not only important information regarding students' career and achievement motivation, but also provides important clues regarding strengths students have that contribute to their motivation, and barriers or weaknesses that they may have to face.

The C-MAP asks such things as, "What do you feel is most important to you?" and many students indicate that earning the best grades in the class is not the only way to succeed. Instead young people indicate that there are many ways of being successful. A career is not just the thing a person does best, it also includes what the person likes to do. Even if a student gets the best math grade in school, he or she may feel most successful when fixing a motorcycle or making a fine piece of artwork.

How do students like taking the inventory? Many who have taken it mentioned that they enjoyed thinking about themselves in this new way; that it was a vehicle in helping them understand themselves better. Sometimes students found it uncomfortable to think about themselves. All students who worked seriously at answering the questions learned more about themselves and gained from taking the questionnaire.

C-MAP assessment takes certain Personal characteristics into account, including a persons' valuing of home and family, which will help them to think about and plan for their future career. In addition to consideration of such personal characteristics as independence and competitiveness, the C-MAP assesses concern about the effect of success on relationships with others, collabortiveness, and what they attribute successes to. The broad range of Personal characteristics assessed permit students, with the help of a counselor or teacher, to make educational and career plans that con-

sider competing interests and values related to home, family and social concerns.

C-MAP assessment also takes certain Environment conditions into account, including the effect of parents, teachers and important others on a persons' educational and career plans. In our study of high school young people, environmental influences were often found to be as important for educational and career motivation as internal personal influences. Whether or not a person views his or her world as one that is supportive of women working, as well as men, can have a powerful effect on their level of career commitment and on both long and short-range achievement motivation. Knowledge of perceptions of parents, teachers, and their world can be used by students to gain more information, think about limiting aspects of these perceptions and experiences, and actively plan to counter negative influences and enhance supportive ones. This type of information about the environment can also be useful to educators, counselors, and educational planners who might work to create a more supportive environment for the career development of young persons.

In addition C-MAP assessment takes certain Background characteristics, such as social class and ability, into account in helping young people with their career planning. Knowledge of how a person's background may have helped or hindered his or her career development can be useful. In the case of helpful factors the person may feel confirmed and fortunate. In the case of limiting factors the person can actively develop plans with the aid of the counselor or teacher to help compensate for the limiting effect.

The C-MAP may be used with all students but it may be particularly helpful for certain kinds of students. Students who get high grades but

whose goals do not match their potential would be a good candidates for the C-MAP. Students who need more assistance and support in planning their future, especially ones who have concerns related to combining work and family roles would be good candidates. A student who seems to have low motivation would be a good candidate . Another student may be strongly interested in a high level career, but low in short-term motivation to master day to day tasks in school. A student may be highly motivated to succeed but be fearful of the effect of his or her success on friendships with others and thus avoid discussing his/her successes with friends. A student with high motivation scores may be highly competitive and lack cooperative behavior. There are many other types of students that the counselor or teacher will identify as good candidates for the C-MAP.

In Chapter 3 of this manual, some actual case examples are provided of students who might benefit from this assessment device. High school students can benefit from knowing their scores on the C-MAP, provided they are helped to see the relationship of these scores to their experience and are supported in their attempts to actively deal with their feelings and long-range goals and values.

In summary, the C-MAP does not purport to address to any of the following types of assessment: a) career maturity; b) career interests; or c) the relation of career interest to career choice. The C-MAP is intended to assess a) long-range career commitment, which refers to a person's involvement and orientation toward their occupational life role, b) short-range motivation to achieve on a particular task, and c) level of educational and career aspiration. The user of the C-MAP is encouraged to use the information provided by the instrument in combination with information

provided by other measures such as Super's Career Development Inventory (1980b), Holland's Self-Directed-Search (1978), the Kuder Preference Record (1976), and Tittle's Career, Family and Marriage Values (1980) in educational and career planning endeavors.

B. A Semester Course for Teachers/Counselors to Use with Students

The C-MAP was developed for 9th and 12th graders and thus derives its present reliability and validity from these two age groups. However, cautious use with 10th and 11th grade students is also suggested.

Ninth graders have important career and educational decisions confronting them, although some of these decisions may already have been made in the 8th grade. Such decisions revolve around the type of curriculum they choose, primarily between general, college bound, and technical/business. Prior to such decision-making it would be useful for students to complete the C-MAP and discuss the results either in a special class designed for this purpose, or individually with their counselor. Ninth graders have the advantage of four years of high school ahead of them, permitting them planning time to take into account the many factors that affect choice early in their careers.

Tenth and 11th graders are a student population which will face important career choices within a year or two. In some ways it may be more desirable to invest teacher and counselor time in career planning with 10th and 11th graders than with 12th graders, since these students have a longer period before graduation in which to consider all the life plan options open to them, to gather relevant information, and to plan for overcoming potential obstacles to their goals. Providing a special class on career and life planning for tenth and eleventh graders is highly desirable. Such a class might be conducted by the high school counselor or by

an interested teacher. Teachers who are interested in helping students with their career planning have frequently taken courses on career development and these teachers would be suitable to conduct such a class.

In addition to working with individual students counselors and teachers might work with the 9th and/or 10-11th graders in a semester-long course. Such a course should include more than the C-MAP planning inventory, although this measure could profitably be used for 1 to 5 weeks or sessions. For example, students could spend one session discussing their background characteristics and how these may have affected their motivation to achieve and plan for a career. They could discuss both those characteristics which have enhanced and those that have limited their motivation. In a second session, students could discuss their personality characteristics and how these have enhanced or limited their motivation, with a third session devoted to environmental supports and barriers. A fourth discussion session could be devoted to putting it all together and developing a plan of action for overcoming some of the limitations and for ensuring benefit from the positive influences. A final discussion session could relate findings and thinking derived from this measure to findings from other career planning measures the students might take (i.e. career interests, home and career values, aptitudes, and career maturity; see Section II of this chapter).

C. Program Planning

How can educators plan programs and services to meet the changing needs of students? This question is important to teachers, counselors and administrators, yet often they do not have time to meet with students on a one-to-one basis to determine the answers. Student scores on the C-MAP

can give educators information useful in redirecting educational and curricular programs where indicated and in confirming ongoing curricula that has been shown to work well.

A possible curricular need which may be identified by C-MAP assessment might be related to the role of women working, reflected in women's changing participation in employed work. Such a need would be identified by low scores on the Support scale. Related changes in men's roles at home as well as at work might be an identified need if scores were low on the Home scale for males in the school (see Attachment A). A third scale, Cooperative, might identify a need to increase opportunities for practicing and learning to value a cooperative achievement style.

D. Educational Planners and Policy Makers

Evidence from the study supporting the development of the C-MAP indicated the strong influence of several environmental variables on the long and short-range career and achievement motivation of adolescents. The study also found a strong relationship for a cooperative as well as a competitive achievement style to these types of motivation. Policy makers and educational planners are invited to review the evidence and propose programming changes based on these findings.

Statistical analyses provided strong evidence of the effect of certain environmental characteristics on the career and achievement motivation of the high school youth studied. For example, the measure assessing Support for Women Working was a significant predictor of all three types of motivation assessed by the C-MAP. It was the strongest, among twelve predictors, for long-range career commitment. It was second to the strongest among eight predictors for short-range motivation to achieve on

a particular task. It was less important but still a significant predictor of Career/Educational Aspiration level.

Subscales measuring Parents and Teachers Support were significant predictors also for all three types of motivation assessed by the C-MAP. Teacher encouragement of students to do well in Math and Science courses as well as English and Social Studies was found to influence students' motivation. In particular, encouragement of both males and females in these types of curricula could have an important positive influence on the career and educational motivation and planning of young persons.

Our statistical analyses also provided strong evidence of the relationship of a collaborative as well as a competitive achievement style for long-term career commitment. Other research (Johnson, Maruyama, Johnson, Nelson & Skon, 1981) has provided evidence of the relationship of these achievement styles to achievement in school. Johnson and his associates found that a collaborative style was a better predictor than a competitive style of school achievement, although both were important contributers. This finding could be used by educational policy makers to encourage the development of cooperative projects in school in addition to competitive ones.

Program planners and educational policy makers interested in facilitating the educational and career planning of adolescents are invited to read the more technical presentation of findings related to the C-MAP assessment found in Chapter 8 of this manual.

E. Researchers

Researchers are encouraged to use the C-MAP in studies that would provide increased evidence for its reliability and validity. Researchers are

invited to read the technical portions of this manual carefully and to contact the senior author for additional data or information.

Seven of the sixteen subscales on the C-MAP were developed especially for the inventory and would benefit from further research. Normative and predictive information related to these scales from other groups of students would be particularly useful. The six scales are: Influencers, Parents, Teachers, Cooperative, Ability, Effort and Understanding.

Predictive validity provided for the C-MAP now relates to relationships found between the 16 predictor scales and the three motivation scales. It would be important for researchers to investigate behavioral relationships for these predictors as well. For example, which of the Personal subscales best predicts actual career involvement. Such a study would require longitudinal data in order to document long-range career commitment behavior.

It would be especially interesting for researchers to focus study on special groups of adolescents for whom the C-MAP assessment might be potentially beneficial. For example, students of high ability who have low motivation scores deserve further study. Also students from lower social class groups and minority students could be the focus of study using the C-MAP.

One of the suggested uses of the C-MAP with students is to provide information on the limiting aspects of their background, personal characteristics, and their perceptions of the environment on their career and achievement motivation. A study of the effectiveness of various methods for assisting students to use this information to enhance their motivation is a high research priority.

Further work to enhance the reliability of scales is desirable especially scales with current reliability in the .50-.70 range. Such scales include: Competitive, Understanding, Mastery, and Relationships.

While the 16 subscales used in the C-MAP had relatively strong multiple correlations (R = .48 to .55) with the three motivation scales it would still be important to consider additional predictors. Researchers are encouraged to identify additional dimensions thought to contribute importantly to the career and achievement motivation of young persons and to test out the predictive power of added dimensions in relation to the subscales already on the C-MAP. Some dimensions included in early work with the C-MAP were not found to be strongly predictive. It is possible that part of this weakness was due to lack of validity and sensitivity in the measures themselves, rather than lack of validity for the theoretical construct being measured. Dimensions such as the influence of counselors and the school environment on student motivation would be important to pursue. The personal characteristic, being sensitive to the needs of others, assessed in the present study with Bem's (1977) Expressive scale, was found to be a significant predictor of long-range career commitment for one of our cross-validation samples but not for the other. For this reason it was excluded from the present version of the C-MAP. However, further work with this measure is theoretically important to determine how this dimension (i.e. helping others) relates to long-range career commitment and to career achievement.

Chapter 2

ADMINISTRATION AND SCORING

This chapter provides information on the administration and hand scoring of the C-MAP. An answer sheet, profile sheet and detailed scoring instructions are contained in Appendices B, C, and E and are also provided as separate handouts for students.

I. Administration

The C-MAP is essentially self-administering. It is designed to be given by an administrator (e.g., teacher, counselor) to individuals and groups (e.g., classes). It may also be used on a take-home basis. The items are printed in a reusable booklet with the student recording his or her answers on an answer sheet. Answer sheets should be given prior to passing out the questionnaire. Students are requested to fill in identifying information on the answer sheet. Students are then to be instructed to write only on the answer sheet, and not to make marks in the booklets. After receiving the questionnaire, students should be instructed to read the test directions that are given in full on the title page or the examiner may read these aloud while students follow. Any questions the students have regarding the directions may be answered at this time.

If the administrator decides not to read the directions out loud, it would be useful to read aloud the following statement:

> "The questionnaire is designed to help you understand your career/future plans and the relationships of some of your experiences and attitudes to these plan."

The examiner may answer questions regarding definitions of a word or about directions preceeding sections of the questionnaire. Questions dealing with the meaning of concepts of interpretation of any items are best answered by encouraging the students to use his or her own judgement in choosing the best answer. If an item is particularly troublesome it can be left blank, although this should not be encouraged. Students should be encouraged to go back and try to answer items they have left blank.

There is no time limit for the C-MAP; administration time takes approximately 40-50 minutes.

II. Scoring

Scoring procedures are included in Appendix of this manual, as well as on a separate sheet to be given to the student. Answer sheets are divided according to subscales of the questionnaire, directions for scoring each of these subscales are provided. Scores are to be recorded on the appropriate lines on the answer sheet, and then placed on the similarly identified lines on the profile sheets.

The answer sheet has a series of squares and circles on it. The squares are for positively stated questionnaire items and the circles for negatively stated items. The procedure for transforming scores for negatively stated items into positive scores is built into the hand scoring procedure. The procedure has the scorer add up the negative item scores separately, then this total is subtracted from the number of items mulitplied by 6. For example, for the Teachers scale three items are negative and the number subtracted is 18. The number 6 represents the highest response on the response scale (i.e., 5) plus one (see Comrey, 1970).

A. Scoring: Using The Occupations List (C-MAP Items 23, 24, 25, 28, 29)

These items ask the student to write in occupational titles. The student locates these occupational titles in the Occupations List printed at the end of the C-MAP and in Appendix D in order to derive a number code to be placed on their answer sheet. Sometimes the student will have difficulty locating a particular occupation and will require help from the administrator. Although this list represents the most common occupational titles, it represents only about 2% of the possible titles currently in use, and it is reasonable to expect that students will not always be successful in locating their occupation.

You might discuss the occupation with the student and think of another possible title for it and look that up. If this doesn't work you might think of

a compromise, that is, a title that is close to the one the student has listed. For example, Court Reporter does not appear on the list but Legal Secretary does. These are not strictly the same but are a reasonable compromise. Another example might be the title Reviewer of Plays. Here a compromise might be Reporter or Writer.

In addition to assisting students locate occupational titles, you may be asked to explain differences in the number attached to each occupation. The interpretation section of this manual (Chapter 3) provides suggestions for explaining such differences. It is usually better not to discuss these with students while they are taking and scoring the questionnaire. The reason for this is that you do not want to influence their choice by the higher or lower ratings of certain occupations. The number associated with each occupation are best explained when reviewing the profiles with the student.

Chapter 3

INTERPRETATION AND SOME CASE EXAMPLES

This chapter provides some suggestions for counselors/teachers for interpreting the C-MAP profiles. First we provide a section with suggestions for interpreting students' scores on the Occupations List (Appendix D) which contribute to their Aspiration score. Next we reprint the instructions given students for interpreting their C-MAP profiles. Then we provide additional suggestions for counselors/teachers. The chapter closes with four case examples.

I. Interpretation of Number Codes in Items 23, 24, 25, 28, and 29

In addition to assisting students locate occupational titles, you may be asked to explain differences in the numbers attached to each occupation. It is usually better not to discuss these with students while they are taking and scoring the questionnaire because you do not want to influence their choice by the higher or lower ratings of certain occupations. The numbers associated with each occupation are best explained when reviewing the profiles with the student. In particular, if a student is bothered by a particularly low or high score on Aspiration (one of the three motivation measures on the C-MAP) you may want to discuss the meaning of this number.

The codes were developed by using the average income earned by persons in each of the occupations and the average educational level of persons in the occupation (Hauser & Featherman 1977). A number was derived indicating the relative socioeconomic status of the occupation. The

number combines information about average income and educational information and represents the relative level of the various occupations on a scale from 04 to 96.

Because the average income and educational level of persons in the occupations was used to derive the numbers, occupations may appear to be higher or lower on the scale than might be expected. For example, the code of 40 for the artist is a lower number than would be appropriate for some artists and a higher number than would be appropriate for others. Similarly, farmer, which has a code of 14, may be quite low for some farmers, but appropriate for other types of farmers. Such occupations may need to be discussed with students because the average used for the codes may not be representative of what an individual has in mind. Other examples include army officer and art professor at a college or university.

If a student is dissatisfied with the code assigned to a particular occupation, it might be important to discuss with the student the averaging used in deriving the number codes. In cases in which the perceptions of the student regarding the level of the occupation are higher than indicated by the number code, and realistic for that particular student, it may be appropriate to find an alternative or substitute from the occupation list that reflects the level intended by the student. In some instances it may be important to discuss with a student the realism of their perceptions regarding the level of certain occupations.

For the occupation Farmer coded 14, here are some possible alternatives:

Farmer Foreman (20)

Farm Management Advisor (80)

Agricultural Technician (62)

In all cases, the averaging used in deriving the number codes needs to be considered when interpreting results with students. In addition the perceptions of the students regarding the level of the occupations they have chosen are important considerations for interpretation.

II. Interpreting your C-MAP profiles: Students

You have three profiles to interpret. You should interpret these in three distinct but related stages. These stages are outlined below. Eventually you should discuss your profiles with a counselor or teacher. You may want to go over them on your own first. If so, follow the suggestions on this sheet. Keep in mind that your scores on all of these scales might change if you answered the C-MAP at some future time.

Stage One.

Make a list of the subscale scores that are above or below average. Do this by noting only those scores that are plotted above or below the center norm band (which represents scores ± one half standard deviation beyond the mean). Do this for each profile. Since each profile repeats some subscale scores, include each scale only once on your list.

Take a few moments to think about these scores. Do they fit your picture of yourself? Are there unique aspects of your personality that match these scores? Are there seeming contradictions in the way you perceive yourself and your scores? Often contradictions are useful in learning more about yourself. Note these and keep them in mind as you continue to Stage Two. You should refer to the definitions for each subscale found on the back of the profile sheets.

Stage Two.

In this stage your focus is on the profile of scores related to each of the three motivation scores: Career, Mastery, and Aspiration. You are

now comparing your scores on these scales to the ones research has found to be most strongly related to the Career, Mastery or Aspiration motivation scale. The subscales within each set of scales (i.e. Background, Personal and Environmental) are typed in different typeface in order to reflect their relative contribution to the Motivation scale. Subscale names in BOLD type have the strongest relationships. Subscale names in CAPITAL letters have a less strong relationship. Subscale names in Upper and Lower case letters have a moderate relationship.

You should be particularly interested in your scores for the BOLD type subscales because they have the strongest relationship to the Motivation scale. If your scores for these scales are above average this suggests that you probably have a high score on this type of motivation as well. In contrast, if your scores on these scales are below average you may have an average or low score on this type of motivation. If there are contradictions in your scores, you may want to think about these differences. It would be most helpful to discuss your motivation profiles with a counselor or teacher.

Stage Three

Now compare your three motivation scores. Are they similar or different? Similar scores would all be average or low or high. Different scores might be found if one of the motivation scores is high and the other two are average or low. Other combinations are possible. If you find differences, be sure to go back and read the definitions for each of these types of motivation. It will be helpful to discuss differences and their possible meaning for your life plans with a counselor or teacher.

III. C-MAP Profile Interpretation: Counselors and Teachers

Students are given some suggestions for a preliminary interpretation of their C-MAP profiles on a separate sheet. These are included in this chapter as well. Read these suggestions first. Your discussion of the profiles with students should be guided by the following additional suggestions.

Stage 1. Peer Group Differences

1. In preparation for discussion with the student outline similarities and differences from norm group. Scores above or below ½ standard deviation (norm bands) are considered above or below average, those within the bands are about average.
2. Focus on unique aspects and possible contradictions among scores.
3. Make a note of questions to raise with the student. Don't try to interpret before getting student's point of view.
4. To gain a better understanding of the student's scores, look at the actual scale items on the questionnaire for those scales with scores that seem unexpected or raise questions in your mind. Be prepared to discuss these with the student.
5. Try not to "blame the victim", that is, try not to focus on what's "wrong" with the student. Instead, focus on what can be changed in the environment or in the student's self-perceptions and on what new information, skills etc. could be acquired by the student. It should be useful to read over one or more of the case examples provided in this chapter.

Stage II. Score Patterns

1. Looking at each motivation profile separately, identify similarities and differences in the student's scores on the subscales that are most highly predictive of that motivation profile. The ways to distinguish the most important relationship are outlined below. Note:
   a) The area that is bordered with a heavy black line (either Background, Personal or Environment) is the area most strongly related to that motivation profile.
   b) The BOLD-typed subscales (i.e. IND) within each area denotes subscales that have STRONG RELATIONSHIPS with the motivation scale.
   c) The CAPITAL-lettered (i.e. HOM) subscales within each area denotes subscales with LESS STRONG than BOLD but still strong relationships with the motivation scale.
   d) The Upper-Lower Case Lettered (i.e. Coop) subscales within each area denotes subscales with MODERATE relationships with the motivation scale.
2. It is important to discuss and raise questions with the student regarding strengths (the above average and average scores) and weaknesses or possible barriers (the below average scores) reflected in the subscales, as these relate to their motivation. Special attention needs to be given to those scales most related to each motivation score.
3. Again, review student's answers on the questionnaire related to subscales that raise questions in your mind.

4. Raise questions particularly regarding contradictions, similarities, strengths and weaknesses.

State III. The Three Motivation Scores

1. Compare the student's three motivation scores, focusing on similarities or differences between the three scores.
2. Raise questions particularly about any major differences between the three scores. Chapter 1, Section V in the manual discusses the relationships between these three types of motivations. Read this section and use it to help explain the relationships among the three types of motivation and how high and low scores may have an influence on the student's educational, career and life plans. Again we suggest you read the case examples to help you interpret your student's profiles.

IV. Case Examples

A. MARIA

Maria is a ninth grade female of Spanish speaking descent. She attends an inner-city parochial high school. In the first stage of reviewing Maria's scores, her scores are compared to those of her peers. In the second stage her profile of scores are related to each of the three motivation scales: Career, Mastery and Aspiration. The example ends with a comparison of her motivation scores and some counseling suggestions. Maria's C-MAP profiles are provided in Figures 2, 3 and 4.

Maria's Scores Compared to her Peers

Among Background scales Maria indicates below average achievement in English courses (Verbal Ability) and about average achievement in Math courses (Math Ability). The counselor/teacher may want to discuss any

FIGURE 2: Maria's PROFILE SHEET - CAREER

RAW SCORES

% tile	Motivation	Back...	Personal							Environment				% tile
	Car	Mat	Com	Coop	Ind	HOM	Eff	UND	Rel	TCH	PAR	Sup	Inf	
100-99	73-75	4	24-25	25	66-70	34-35	20	10	14-15	28-30	30	60	50	100-99
98-97	72		23		63-65	32-33				27		58-59	48-49	98-97
96-95	71		22		61-62				13	26		57	46-47	96-95
94-90	69-70		21	23-24	58-60	30-31				25	28-29	54-56	42-45	94-90
89-85	67-68		20		56-57	29	19		12	24	27	51-53	41	89-85
84-80	65-66	3	19	22	55	28		9		23	25-26	50	39-40	84-80
79-75	64			21	54	27	18				24	48-49		79-75
74-70	63		18		53	26				22		47	38	74-70
69-65	62			20	52			8	11			46	37	69-65
64-60	61				51	25	17			21		45	35-36	64-60
59-55	60		17		50	24					23	44		59-55
54-50	59				49		16		10	20	22	43	33-34	54-50
49-45	58		16	19	48	23						42	32	49-45
44-40					47	22				19	21	41	31	44-40
39-35	57				46				9		20	40		39-35
34-30	56		15	18	45	21		7		18	19	38-39	29-30	34-30
29-25	54-55				44	20	15				18	37		29-25
24-20	53	1	14	17	43	19			8	17		36	27-28	24-20
19-15	51-52				41-42	18	14	6		16	16-17	35	25-26	19-15
14-10	49-50		12-13	16	39-40	16-17	13		7	15	14-15	32-34	24	14-10
9-5	46-48		11	15	37-38	14-15	12	5	6	13-14	12-13	29-31	21-23	9-5
4-3	44-45		10	14	34-36	12-13	10-11			12	9-11	27-28	18-20	4-3
2-1	15-43		5-9	5-13	14-33	7-11	4-9	2-3	3-5	6-11	6-8	12-26	10-17	2-1
Mean	59.1	2.4	16.8	19.6	49.0	23.5	16.5	7.9	10.2	20.1	21.5	42.9	33.2	Mean
SD	7.4	1.0	3.2	2.9	7.4	5.2	2.5	1.5	2.3	3.9	5.2	8.3	7.5	SD
	70 Car	2 Mat	17 Com	17 Coop	48 Ind	28 Hom	12 Eff	10 Und	12 Rel	20 Tch	29 Par	47 Sup	50 Inf	

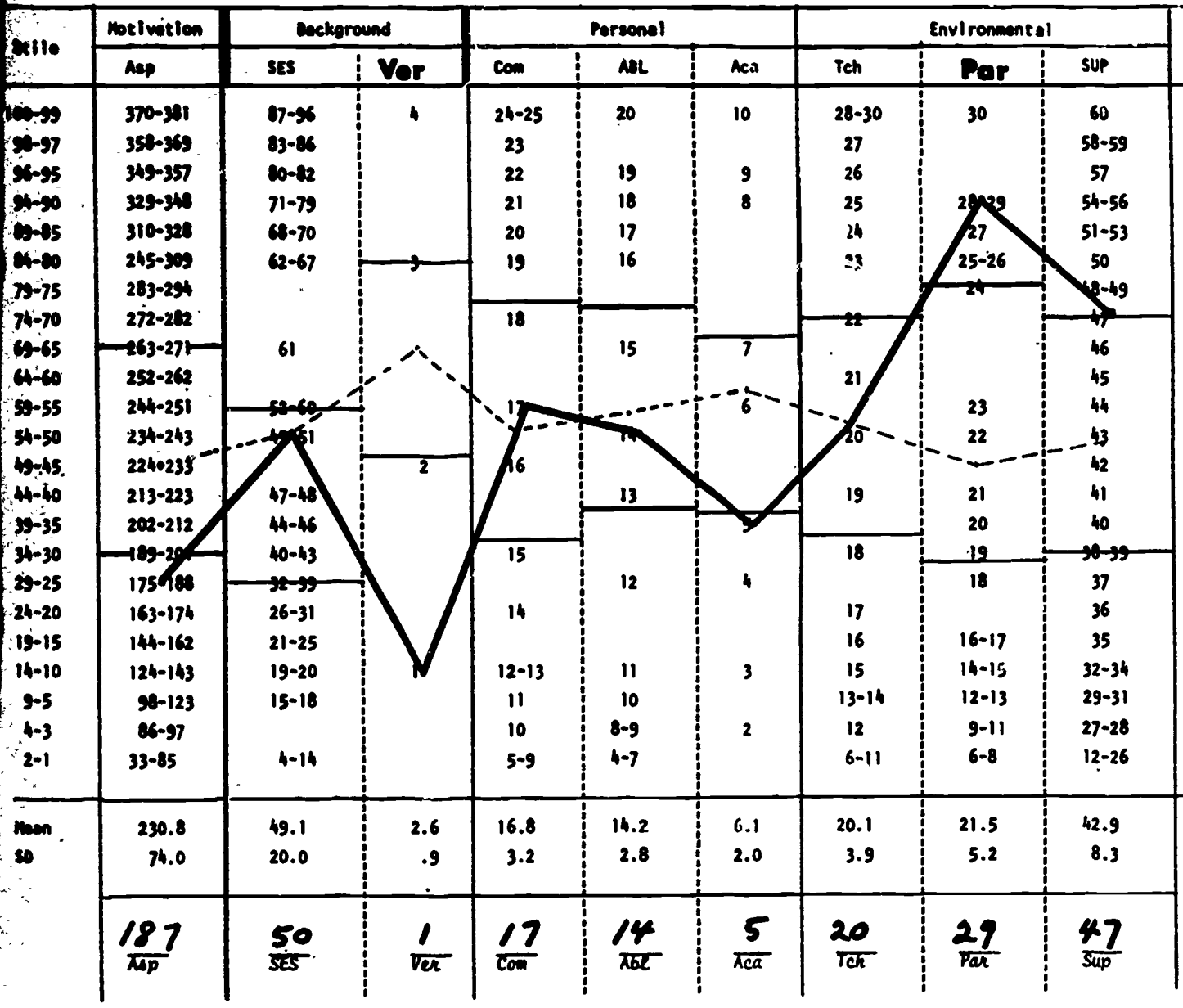
FIGURE 3: Marla's PROFILE SHEETS - MASTERY

RAW SCORES

%tile	Motivation	Background		Personal				Environment			%tile
	Mas	SES	MAT	Com	Ind	Eff	Und	TCH	PAR	SUP	
100-99	28-30	87-96	4	24-25	66-70	20	10	28-30	30	60	100-99
98-97	26-27	83-86		23	63-65			27		58-59	98-97
96-95	25	80-82		22	61-62			26		57	96-95
94-90	24	71-79		21	58-60			25	28-29	54-56	94-90
89-85	23	68-70		20	56-57	19		24	27	51-53	89-85
84-80		62-67	3	19	55		9	23	25-26	50	84-80
79-75	22				54	18			24	48-49	79-75
74-70				18	53		8	22		47	74-70
69-65	21	61			52					46	69-65
64-60					51	17		21		45	64-60
59-55	20	52-60		17	50				23	44	59-55
54-50		48-51			49	16		20	22	43	54-50
49-45				16	48					42	49-45
44-40	19	47-48			47			19	21	41	44-40
39-35		44-46			46				20	40	39-35
34-30	18	40-43		15	45		7	18	19	38-39	34-30
29-25		38-39			44	15			18	37	29-25
24-20	17	26-31	1	14	43			17		36	24-20
19-15	16	21-25			41-42	14	6	16	16-17	35	19-15
14-10		19-20		12-13	39-40	13		15	14-15	32-34	14-10
9-5	14-15	15-18		11	37-38	12	5	13-14	12-13	29-31	9-5
4-3	13			10	34-36	10-11	4	12	9-11	27-28	4-3
2-1	6-12	4-14		5-9	14-33	4 9	2-3	6-11	6-8	12-26	2-1
Mean	20.0	49.1	2.4	16.8	49.0	16.5	7.9	20.1	21.5	42.9	Mean
SD	3.4	20.0	1.0	3.2	7.4	2.5	1.5	3.9	5.2	8.3	SD
	19 Mas	50 SES	2 Mat	17 Com	48 Ind	12 Eff	10 Und	20 Tch	29 Par	47 Sup	

FIGURE 4: Marla's PROFILE SHEET - ASPIRATION

RAW SCORES



%tile	Motivation	Background		Personal			Environmental			%tile
	Asp	SES	Ver	Com	ABL	Aca	Tch	Par	SUP	
100-99	370-381	87-96	4	24-25	20	10	28-30	30	60	100-99
98-97	358-369	83-86		23			27		58-59	98-97
96-95	349-357	80-82		22	19	9	26		57	96-95
94-90	329-348	71-79		21	18	8	25	28-29	54-56	94-90
89-85	310-328	68-70		20	17		24	27	51-53	89-85
84-80	245-309	62-67	3	19	16		23	25-26	50	84-80
79-75	283-294							24	48-49	79-75
74-70	272-282			18			22		47	74-70
69-65	263-271	61			15	7			46	69-65
64-60	252-262						21		45	64-60
59-55	244-251	58-60		17		6		23	44	59-55
54-50	234-243	55-57			14		20	22	43	54-50
49-45	224-233		2	16					42	49-45
44-40	213-223	47-48			13		19	21	41	44-40
39-35	202-212	44-46				5		20	40	39-35
34-30	189-201	40-43		15			18	19	38-39	34-30
29-25	175-188	32-39			12	4		18	37	29-25
24-20	163-174	26-31		14			17		36	24-20
19-15	144-162	21-25					16	16-17	35	19-15
14-10	124-143	19-20	1	12-13	11	3	15	14-15	32-34	14-10
9-5	98-123	15-18		11	10		13-14	12-13	29-31	9-5
4-3	86-97			10	8-9	2	12	9-11	27-28	4-3
2-1	33-85	4-14		5-9	4-7		6-11	6-8	12-26	2-1
Mean	230.8	49.1	2.6	16.8	14.2	6.1	20.1	21.5	42.9	Mean
SD	74.0	20.0	.9	3.2	2.8	2.0	3.9	5.2	8.3	SD
	187 Asp	50 SES	1 Ver	17 Com	14 Abl	5 Aca	20 Tch	29 Par	47 Sup	

difficulties Maria may be having in English courses, particularly in light of Maria's Spanish speaking descent. It may be appropriate to develop a support program that assists Maria with her English skills during her next three years in high school. Maria and the counselor/teacher together could design such a program of support. The other Background scale, socioeconomic status (SES) is comparable to the average SES of her peers.

Among Personal scales, Maria's scores are higher than other high school youth on Homemaking Commitment and Valuing Understanding. These higher than average scores indicate that Maria considers marriage and family to be important and values successes which provide her with new understanding or knowledge. Because Maria is interested in the long-term prospects of a career as well as the importance of family and home, it may be important for the counselor/teacher to discuss with Maria ways that she may successfully combine these two roles. The counselor/teacher also may want to talk with Maria about the importance of learning for her and encourage her to pursue experiences that satisfy this value. In addition to these high scores, Maria scores higher than her peers on the Relationship scale, suggesting that she does not worry about whether her successes may cause others to dislike her.

Maria's scores are similar to other high school students on the Personal scales of Competitive, Independence, and Ability Attributions. After reviewing these scores, the counselor/teacher might ask Maria if her scores describe how she sees herself and how she wants to be.

Maria scores lower than her peers on Cooperative, Effort Attributions, and Academic Self-Esteem. These scores indicate that Maria gains less satisfaction from working on a project or task with others and feels that her successes are due less to her own efforts when compared to other

young people in high school. The counselor/teacher may want to discuss what these measures mean to Maria and her perceptions of the importance of cooperation and effort in attaining goals. For Maria these may be less important values and personal characteristics.

Among Environment scales, Maria scores higher than other high school youth on the Parents Support, Support for Women Working, and the Career Influencers scales. Maria perceives a great deal of support from her parents for her educational achievements. The teacher/counselor may want to discuss this perceived parental support in relation to Maria's indication of low achievement in English and average achievement in Math. The inclusion of her parents in planning with Maria might be useful in light of the parent's strong encouragement of academic coursework. Maria also has positive attitudes about women working and competing in the job market. The counselor/ teacher may want to note the importance of this attitude in relation to her career commitment score. Maria's very high score on Career Influencers means that she does not view her career choice as having been influenced by others; apparently, she has made her choice independently. This high score is consistent with Maria's high score on Relationships. Maria is similar to other high school youth in her view of support from her teachers.

Motivation Score Patterns. In the second stage of our review of Maria's profile sheets, the relationship between her various scores and the motivation measures are discussed. As indicated earlier, scales in bold type are most important, with those in capital letters next in importance.

Maria's career commitment scores are well above the average when compared to peers. Maria enjoys making plans about her future, wants to have a job she is really proud of, and views a career as a means of self-

expression. The counselor or teacher may want to stress Maria's uniqueness regarding career commitment and build upon her interest in the long-term prospects of a career. Maria's mastery motivation scores are average compared to her peers, indicating that her interest in achieving specific short-term and challenging tasks is about average for high school students. The scores on these two scales suggest that Maria is less interested in short-term achievement than in long-term achievement involving a career. The counselor/teacher may want to discuss this point with Maria.

Aspiration scores for Maria are below average in relation to her peers. The counselor/teacher might want to review the specific occupation Maria expects to end up in, the occupations about which she had daydreamed, and the educational level she expects to complete. In reviewing these items for Maria, she expects to be a fashion model and has daydreamed about being a fashion model and a secretary. She expects to complete a college bachelor's degree. Maria's specific expectations regarding a modeling career or secretarial career might be discussed with her. Maria's aspiration scores are below average partly because fashion model has a lower than average numerical code on the Occupations List, reflecting the wide range of incomes and educational levels represented by fashion models in the U.S. This information may be important to discuss with Maria. Maria may in fact be aspiring to the upper end of this range. The pursuit of a modeling career seems consistent with Maria's interest in the long-term prospects of a career (career commitment score).

For Career Commitment, Maria's score is quite high, whereas her Competitive and Independence scores, which are bold type scales, are average. The counselor/teacher might want to discuss this with Maria.

The other bold-type scale, Support for Women Working, is appropriately high for Maria's career motivation.

The next important scales (capital letters) for Career Commitment finds Maria's scores appropriately high on the Understanding and Parent Support scales. As indicated earlier, her high score on Homemaking Commitment should be discussed with Maria in relation to her Career Commitment score. It will be important for the counselor/teacher to discuss the importance of planning for the combining of her homemaking and career roles.

The independence reflected in Maria's scores on the Relationships Concerns scale and the Personal Influencers scale may facilitate Maria's career commitment. Her low scores on the Cooperative and Effort Attribution scales might be discussed with Maria in relation to her career commitment. The counselor/teacher may want to review items on this scale from the C-MAP questionnaire with Maria in order to talk about her specific responses to each item. The counselor/teacher might ask Maria what kind of cooperation and effort she thinks will be important for a successful modeling career.

Maria's profile for Aspiration indicates that she is below average in her career and educational aspiration level. We noted before that this may reflect the level of the numerical code given fashion model. Her Parents Support and Support for Women Working scores are above average, and support her Aspiration scores. The counselor/teacher may want to talk with Maria about the importance of background factors in aspiration level. The counselor/teacher will want to discuss with Maria whether her family background and experiences are limiting the range and level of the career options she is considering. Maria may be encouraged to explore other

career options with a broader range of levels, particularly in light of the fact that she plans to attain a college degree. The other Background scale which is very strongly related to Aspirations is Verbal Ability. Maria indicates that she had a D average in English. As discussed earlier, a support program for her academic work may be an important course of action for Maria in her next three years at high school. It would be important to point out to Maria that her desire to complete four years of college can be facilitated by her improvement in verbal skills. The strong support of Maria's parents for her academic endeavors is a good indicator here. The remainder of Maria's scores are about average on the scales related to Aspirations.

Maria's Mastery motivation profile shows her to be about average in comparison to other high school students. This corresponds with her average scores on the Competitive and Independence scales which are found to be the most strongly related to Mastery motivation. It would be important to talk with Maria about the relation of mastery of short-term tasks to the achievement of long-range career goals. Because Maria is interested in the long-term prospects of a career, she may be motivated to work on her mastery achievement as a means of achieving her goals. Her above average Parents Support, Support for Working Women, and Understanding scores may indicate Maria's potential for developing greater motivation to master short-term challenging tasks. Because her Effort score is low, it would be important to discuss with Maria the importance of effort in achieving short-range goals. The counselor/teacher may want to discuss the meaning for Maria of trying hard and sticking with a task.

Comparing the Three Types of Motivation. Maria has a high commitment to the long-term prospects of a career. Her career choice is fashion model, which may reflect a higher Aspiration level than the C-MAP code assigned.

On the other hand, Maria is a ninth grader and career choices of ninth graders usually become more realistic by the time they reach twelfth grade. Fashion model may be a realistic career choice for Maria or it may not! Maria's motivation to master short-term challenging tasks is low-average and would be a useful score to discuss with her in relation to her high Career Commitment. The relation of her low Effort Attribution score to her Mastery motivation might also be useful to discuss with her. Maria views her Verbal ability as quite low. Is this realistic for Maria or are there ways to increase her achievement in this area? It appears that the C-MAP profiles have provided several areas for a first counseling session with Maria.

B. DAVID

David is a white, ninth grade boy in an urban school. He comes from a fairly high socio-economic family background. The first step in reviewing David's profile sheets is to compare his scores to those of his peers. This is a preliminary step where the counselor or teacher and David together can obtain information on his high and low scores compared to other teenagers. This review will also highlight David's uniqueness and provide important clues for his career and life planning. David's C-MAP profiles are provided in Figures 5, 6 and 7.

David's Scores Compared to His Peers. David's Background scores indicate he is much above average on both Verbal and Math Ability and above average for family background. On the Personal scales David's scores are above average on Competitive suggesting he enjoys working in situations involving competition and he trys harder when working in such situations. Also, he likes to win and to perform well on tasks. David's scores are also above average on Effort and Ability Attributions suggesting that he

FIGURE 5: David's PROFILE SHEET - CAREER

RAW SCORES

% tile	Motivation	Back...	Personal							Environment				% tile
	Car	Mat	**Com**	Coop	**Ind**	HOM	Eff	UND	Rel	TCH	PAR	**Sup**	Inf	
100-99	73-75	4	24-25	25	66-70	34-35	20	10	14-15	28-30	30	60	50	100-99
98-97	72		23		63-65	32-33				27		58-59	48-49	98-97
96-95	71		22		61-62				13	26		57	46-47	96-95
94-90	69-70		21	23-24	58-60	30-31				25	28-29	54-56	42-45	94-90
89-85	67-68		20		56-57	29	19		12	24	27	51-53	41	89-85
84-80	65-66	3	19	22	55	28		9		23	25-26	50	39-40	84-80
79-75	64			21	54	27	18				24	48-49		79-75
74-70	63		18		53	26				22		47	38	74-70
69-65	62			20	52			8	11			46	37	69-65
64-60	61				51	25	17			21		45	35-36	64-60
59-55	60	2	17		50	24					23	44		59-55
54-50	59				49		16		10	20	22	43	33-34	54-50
49-45	58		16	19	48	23						42	32	49-45
44-40					47	22				19	21	41	31	44-40
39-35	57				46				9		20	40		39-35
34-30	56		15	18	45	21		7		18	19	38-39	29-30	34-30
29-25	54-55				44	20	15				18	37		29-25
24-20	53	1	14	17	43	19			8	17		36	27-28	24-20
19-15	51-52				41-42	18	14	6		16	16-17	35	25-26	19-15
14-10	49-50		12-13	16	39-40	16-17	13		7	15	14-15	32-34	24	14-10
9-5	46-48		11	15	37-38	14-15	12	5	6	13-14	12-13	29-31	21-23	9-5
4-3	44-45		10	14	34-36	12-13	10-11			12	9-11	27-28	18-20	4-3
2-1	15-43		5-9	5-13	14-33	7-11	4-9	2-3	3-5	6-11	6-8	12-26	10-17	2-1
Mean	59.1	2.4	16.8	19.6	49.0	23.5	16.5	7.9	10.2	20.1	21.5	42.9	33.2	Mean
SD	7.4	1.0	3.2	2.9	7.4	5.2	2.5	1.5	2.3	3.9	5.2	8.3	7.5	SD
	62 Car	4 Mat	20 Com	14 Coop	47 Ind	21 Hom	20 Eff	8 Und	5 Rel	30 Tch	28 Par	30 Sup	23 Inf	

FIGURE 6: David's PROFILE SHEETS - MASTERY

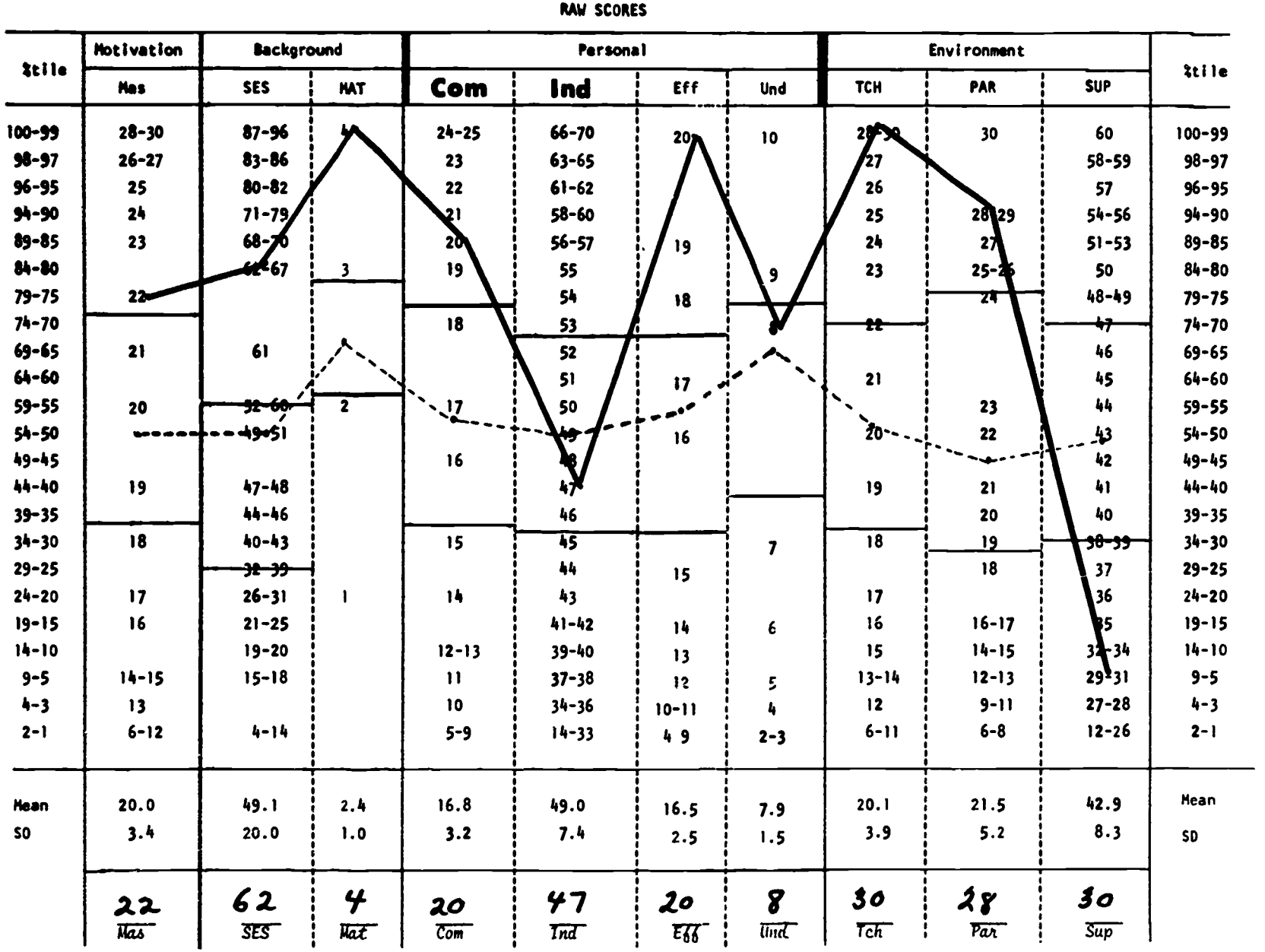


FIGURE 7: David's PROFILE SHEET - ASPIRATION

RAW SCORES

%tile	Motivation	Background		Personal			Environmental			%tile
	Asp	SES	Ver	Com	ABL	Aca	Tch	Par	SUP	
100-99	370-381	87-96	4	24-25	20	10	28-30	30	60	100-99
98-97	358-369	83-86		23			27		58-59	98-97
96-95	349-357	80-82		22	19	9	26		57	96-95
94-90	329-348	71-79		21	18	8	25	28-29	54-56	94-90
89-85	310-328	68-70		20	17		24	27	51-53	89-85
84-80	245-309	62-67	3	19	16		23	25-26	50	84-80
79-75	283-294							24	48-49	79-75
74-70	272-282			18			22		47	74-70
69-65	263-271	61			15	7			46	69-65
64-60	252-262						21		45	64-60
59-55	244-251	53-60		17		6		23	44	59-55
54-50	234-243	49-51			14		20	22	43	54-50
49-45	224-233		2	16					42	49-45
44-40	213-223	47-48			13		19	21	41	44-40
39-35	202-212	44-46				5		20	40	39-35
34-30	189-201	40-43		15			18	19	38-39	34-30
29-25	175-188	32-39			12	4		18	37	29-25
24-20	163-174	26-31		14			17		36	24-20
19-15	144-162	21-25					16	16-17	35	19-15
14-10	124-143	19-20	1	12-13	11	3	15	14-15	32-34	14-10
9-5	98-123	15-18		11	10		13-14	12-13	29-31	9-5
4-3	86-97			10	8-9	2	12	9-11	27-28	4-3
2-1	33-85	4-14		5-9	4-7		6-11	6-8	12-26	2-1
Mean	230.8	49.1	2.6	16.8	14.2	6.1	20.1	21.5	42.9	Mean
SD	74.0	20.0	.9	3.2	2.8	2.0	3.9	5.2	8.3	SD
	380 Asp	62 SES	4 Ver	20 Com	16 Abl	6 Aca	30 Tch	28 Par	30 Sup	

views his successes as due to his own effort and ability. Among the Environmental scales he scores much above his peers on scales measuring Parents and Teachers' support for his academic work and achievement. David feels strongly supported by his parents and teachers for his achievement goals. David's motivation scores for Aspiration are very high, in fact, at the highest possible level. Short-range achievement mastery was also high. However long-range Career Commitment was only average. It would be interesting to discuss with David his high Aspiration level and Mastery motivation compared to his average commitment to long-range career prospects. Discussion of these different kinds of motivation would be facilitated by returning to the actual items on these scales on the C-MAP questionnaire.

David has scores well below average on a few scales and these scales would also be useful ones to discuss with him by reviewing the actual items on the questionnaire. Among the Personal scales he was below average on Relationships Concerns and Cooperation. These scores suggest that David worries that his successes may cause others to dislike him, and further that he avoids discussing his successes because others might be jealous. These scores also suggest that David doesn't enjoy cooperating with others on a project or value working with others to achieve a goal. Among the Environmental scales two are well below average. On the Support for Women working scale David's scores express his view that women are not equal to men at work. It would be important to review David's answers with him on this scale because some of the 12 items on the scale may have been responded to very differently. David's score on the Personal Influencers scale was also very low suggesting that he views his parents, teachers, friends, counselors, and relatives as having strongly

influenced his choice of career goals. Again, this discussion might open up the opportunity to discuss other possible career goals with David. This is the kind of exploratory activity that might be stimulated by a student's C-MAP profiles.

Motivation Score Pattern. The second phase of our review of David's profile sheets is to look at the pattern of scores related to each of the three motivation measures. A review of his scores related to Career/ Educational Aspiration indicates that his scores are in general similar to the profile for high Aspirations. Recall that scales in bold type are most important in this profile; these are Verbal Ability and Parents Support, both of which are high scores for David. Next in order of importance are those scales printed in capital letters. These are Socioeconomic Status, Ability Attributions, and Support for Women Working. David is at least average on the first two but he is well below average in Support for Women Working. Again, it is suggested that David's scores for the items on this scale be reviewed with him to gain some insight into his perceptions of the environment related to women working. It might be useful to follow up this discussion with some reading material, a film, or a visit with some employed women, aimed at increasing David's understanding of womens' current work environments.

For long-range career motivation (Career Commitment scale) David is about average on the motivation scale, and above average and average on the two important Personal subscales printed in bold type (Competitive and Independence). The other important subscale is the Support for Women Working scale, on which, as we already know, David is low. Next in importance for this type of motivation are scores on the Valuing Understanding and Homemaking Commitment scales on which David's scores are

about average. Of similar importance are scores on the Parents and Teachers Support scales on which David scores above average. David's low scores on three scales, Cooperative, Relationships Concerns, and Personal Influencers might be discussed, however, the fact that the relationship of these scales to long-range career commitment is only moderate should be kept in mind.

For short-range achievement motivation (Mastery) David is high on the motivation scale and average or well above average on the three most important related scales: Competitive, Independence, and Math Ability. On the scales with less strong relationships (scales printed in Capital letters) David's scores are very high on two, Parents and Teachers, and low on Support for Women Working. He is average on two of the scales reflecting moderate relationships for Valuing Understanding and Socio-Economic Status and high on a third, Effort Attributions. In general David's profile of scores supports his short-range achievement motivation score.

The Three Motivation Scores Compared. In summary a few areas are suggested as a focus for a first discussion with David. The relationship of his high Career/Educational Aspiration level and higher short-range (Mastery) achievement motivation to his average long-range Career motivation score would be an important jumping off point. A discussion of his perception of the world related to women working might provide some insights, which could be used to suggest new experiences or information useful in increasing his knowledge of women's changed work role in todays world. Appendix A provides some information that may be helpful in this task.

A discussion of his low scores on Cooperative, Relationships Concerns and Personal Influencers would seem important in light of their relationship to long-range career commitment. In a first counseling session with David it would be important to note his strengths as well as raise questions about some of his scores. David is a high achieving student, attributes his successes to internal causes such as his own ability and effort and feels strongly supported in his achievement and career efforts by his teachers and parents.

C. LAURA

Laura is a white, twelfth grade female in an urban high school. She comes from a fairly high socioeconomic background. Laura's C-MAP profiles are provided in Figures 8, 9, and 10.

Laura's Scores Compared to Her Peers. Laura's Background scores indicate she is in the average range in both Verbal and Math ability when compared to her peers. She also comes from an above average socioeconomic background.

On the Personal scales, Laura is above average on a number of scales; her high Independence score suggests that she sees herself as independent, as having leadership ability and a strong personality. Laura also scores above average on Homemaking Commitment. She considers marriage and having a family as very important and would not let career concerns take priority over her family.

Laura scores below average on a number of the Personal Scales. Her low score on Relationships indicates she is concerned she may lose friendships if she is successful, and avoids talking about her successes with others. Her low Competitive score indicates that she does not like to be

FIGURE 8: Laura's PROFILE SHEET - CAREER

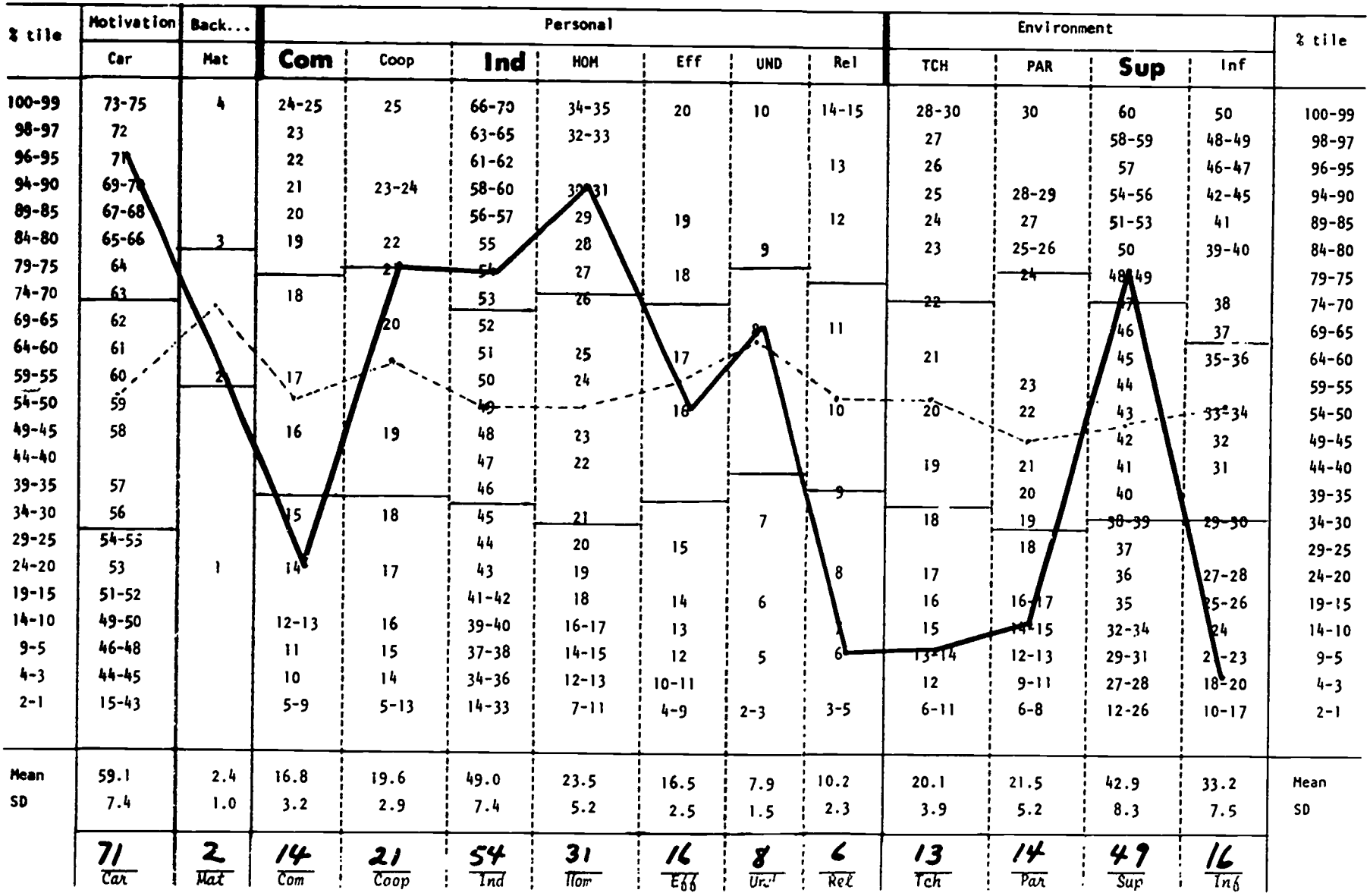


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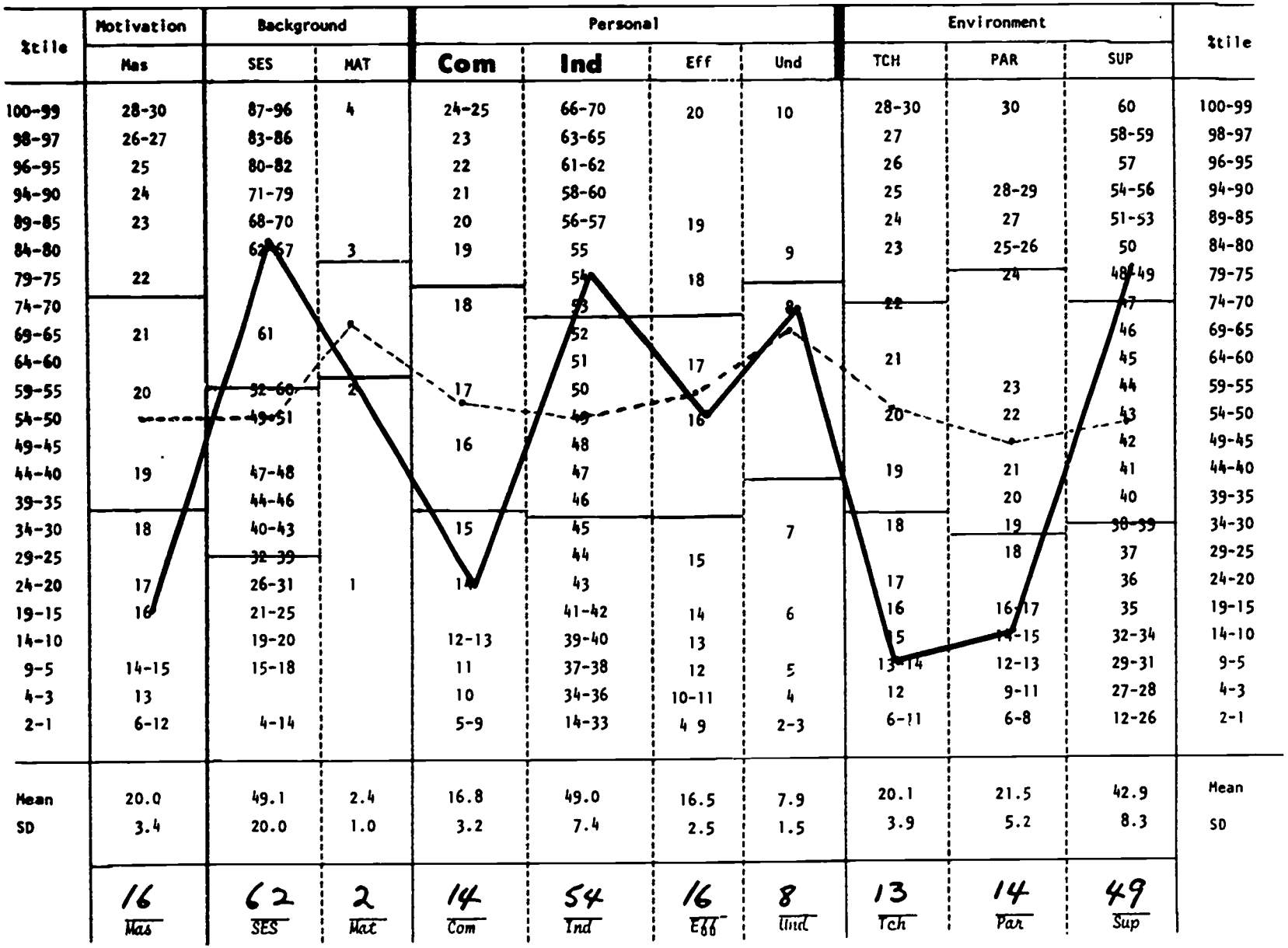
FIGURE 9: Laura's PROFILE SHEETS - MASTERY

RAW SCORES



%tile	Motivation	Background		Personal				Environment			%tile
	Mas	SES	MAT	Com	Ind	Eff	Und	TCH	PAR	SUP	
100-99	28-30	87-96	4	24-25	66-70	20	10	28-30	30	60	100-99
98-97	26-27	83-86		23	63-65			27		58-59	98-97
96-95	25	80-82		22	61-62			26		57	96-95
94-90	24	71-79		21	58-60			25	28-29	54-56	94-90
89-85	23	68-70		20	56-57	19		24	27	51-53	89-85
84-80		62-67	3	19	55		9	23	25-26	50	84-80
79-75	22				54	18			24	48-49	79-75
74-70				18	53		8	22		47	74-70
69-65	21	61			52					46	69-65
64-60					51	17		21		45	64-60
59-55	20	52-60	2	17	50				23	44	59-55
54-50		49-51			49	16		20	22	43	54-50
49-45				16	48					42	49-45
44-40	19	47-48			47			19	21	41	44-40
39-35		44-46			46				20	40	39-35
34-30	18	40-43		15	45		7	18	19	38-39	34-30
29-25		32-39			44	15			18	37	29-25
24-20	17	26-31	1	14	43			17		36	24-20
19-15	16	21-25			41-42	14	6	16	16-17	35	19-15
14-10		19-20		12-13	39-40	13		15	14-15	32-34	14-10
9-5	14-15	15-18		11	37-38	12	5	13-14	12-13	29-31	9-5
4-3	13			10	34-36	10-11	4	12	9-11	27-28	4-3
2-1	6-12	4-14		5-9	14-33	4 9	2-3	6-11	6-8	12-26	2-1
Mean	20.0	49.1	2.4	16.8	49.0	16.5	7.9	20.1	21.5	42.9	Mean
SD	3.4	20.0	1.0	3.2	7.4	2.5	1.5	3.9	5.2	8.3	SD
	16 Mas	62 SES	2 Mat	14 Com	54 Ind	16 Eff	8 Und	13 Tch	14 Par	49 Sup	

FIGURE 10: Laura's PROFILE SHEET - ASPIRATION

RAW SCORES

%tile	Motivation	Background		Personal			Environmental			%tile
	Asp	SES	Ver	Com	ABL	Aca	Tch	Par	SUP	
100-99	370-381	87-96	4	24-25	20	10	28-30	30	60	100-99
98-97	358-369	83-86		23			27		58-59	98-97
96-95	349-357	80-82		22	19	9	26		57	96-95
94-90	329-348	71-79		21	18	8	25	28-29	54-56	94-90
89-85	310-328	68-70		20	17		24	27	51-53	89-85
84-80	295-309	63-67	3	19	16		23	25-26	50	84-80
79-75	283-294							24	48-49	79-75
74-70	272-282			18			22		47	74-70
69-65	263-271	61			15	7			46	69-65
64-60	252-262						21		45	64-60
59-55	244-251	53-60		17		6		23	44	59-55
54-50	234-243	49-51			14		20	22	43	54-50
49-45	224-233		2	16					42	49-45
44-40	213-223	47-48			13		19	21	41	44-40
39-35	202-212	44-46				5		20	40	39-35
34-30	189-201	40-43		15			18	19	38-39	34-30
29-25	175-188	32-39			12	4		18	37	29-25
24-20	163-174	26-31		14			17		36	24-20
19-15	144-162	21-25					16	16-17	35	19-15
14-10	124-143	19-20	1	12-13	11	3	15	14-15	32-34	14-10
9-5	98-123	15-18		11	10		13-14	12-13	29-31	9-5
4-3	86-97			10	8-9	2	12	9-11	27-28	4-3
2-1	33-85	4-14		5-9	4-7		6-11	6-8	12-26	2-1
Mean	230.8	49.1	2.6	16.8	14.2	6.1	20.1	21.5	42.9	Mean
SD	74.0	20.0	.9	3.2	2.8	2.0	3.9	5.2	8.3	SD
	268 Asp	62 SES	2 Ver	14 Com	12 Abl	5 Aca	13 Tch	14 Par	49 Sup	

involved in competition with others and does not find it important to perform better than others on tasks. It might be helpful to review Laura's actual responses to individual items on these scales by returning to the C-MAP questionnaire. Laura also does not view her successes as being due to her ability, and she feels less confident of her academic ability than most of her school mates. Due to the fact that Laura's grades are average, discussion of these grades in light of her low ability attributions and low academic self-esteem may prove fruitful.

Among the Environment scales, Laura scores well below average on Teachers and Parents support, indicating that she believes her teachers are not terribly interested in her and her school achievements, and that her parents do not encourage her school endeavors. Laura views women working as being strongly supported in the job market, but feels she has been greatly influenced in her career choices by others in her life. This latter, in light of her concerns about relationships, would be an important topic to discuss with Laura. Is she afraid she will displease people if she doesn't follow the career path they wish her to take?

Laura's Career Commitment score is very high and well above average. Her Aspiration score is within the average range, however, her Mastery score is very low. Her motivation scores suggest that when compared to her peers, she is very comitted to long-term career pursuits and aspires to a fairly high level, however, she is not as motivated to achieve short-term, challenging tasks.

Motivation Score Patterns. For long-range career motivation (Career Commitment), Laura is well above average on one of the important Personal subscales, Independence, which is strongly related to this type of commitment. The fact that Laura sees herself as independent, assertive and

willing to take risks is a strength which will be important in achieving her long-term career goals. She scores below average, however, on the other important Personal subscale, Competitive. Laura indicates she prefers not to be in competition with others or perform better than others on tasks. It would be helpful to discuss with Laura the relevance of some competitiveness in achieving her long-range goals. The counselor/teacher might also discuss why she feels uncomfortable in competitive situations. Laura scored high on Homemaking Commitment; she considers marriage and family as very important; at least as important as a career. Talking with her about the challenges involved in trying to combine these two life roles may help her to answer questions like "How will you combine a high-paying job with having a baby" and "How can you plan to work outside the home when your children are young?"

Laura does not feel supported in her school achievements and career plans by her teachers and parents; how she might begin to feel more support would be an important area of discussion, as well as why she feels very influenced by others in her choice of career goals. The counselor/teacher may want to look at the items related to the Teachers, Parents and Personal Influencers scales on the questionnaire with Laura to get a better sense of Laura's feelings and views about being supported.

Laura's Aspiration score falls within the average range. She indicates on her C-MAP questionnaire that she expects to get a two-year college degree and to become a secretary, although she has daydreamed about being a dentist. Her Background scores, the most influential for this type of motivation, indicate that she comes from an above average socio-economic background; however, her low Verbal grades may affect her

ability to pursue certain careers where a firm base in English is important. It would be important to discuss the implications of weak verbal skills. Could she improve? It may also be helpful to discuss the relationship between a low verbal score and her low ability attribution and academic self-esteem scores. Developing a sense of competency in these areas may make it more likely she will meet her aspirations.

Laura has a very low Mastery motivation score, which suggests she is less motivated to achieve specific, short-term and challenging tasks. She prefers easy tasks and prefers not to struggle to master more difficult ones. Her scores on the Personal scales, the most influential for this motivation, indicate she is average or above average on 3 of the 4 scales. She feels independent, attributes her successes to effort and values understanding. Her low competitive score could be a topic of discussion here - does she find it difficult or uncomfortable to master tasks when in competition? Discussing the positive aspects of competition may be fruitful, as well as the relationship of mastery to achieving any goal. Low perceived parent and teacher support for her achievements may also influence her low desire to achieve short-term challenges. Does she feel her parents and teachers do not appreciate what she is doing now in her life?

Comparing the Three Type of Motivations. Laura is a young woman with high career commitment, fairly high aspirations but low mastery motivation. She is independent, views herself as a leader and is willing to take risks. In addition to discussing the differences between her scores and her peer group, and the relationship of her Background, Personal and Environment scores with each of her motivation scores, it is important to discuss the relationship among her motivation scores. For Laura, the critical issue is her lower motivation to master short-term tasks. While she prefers and

expects a long-term, fairly high level career, at this point she is not as motivated to achieve the short-term goals that may help her to achieve her long-term aspirations. Career is a long-term pursuit, with many short-term challenges and tasks to master along the way. Her low desire for competition, lack of perceived environmental support and low verbal and math grades may influence this important mastery area; their importance to career motivation in general would be appropriate issues to discuss with Laura in her career planning sessions. Finally, her high long-range career commitment and high homemaking commitment scores should be discussed with special attention to how Laura might plan to combine both these roles effectively in the future.

D. LESLIE

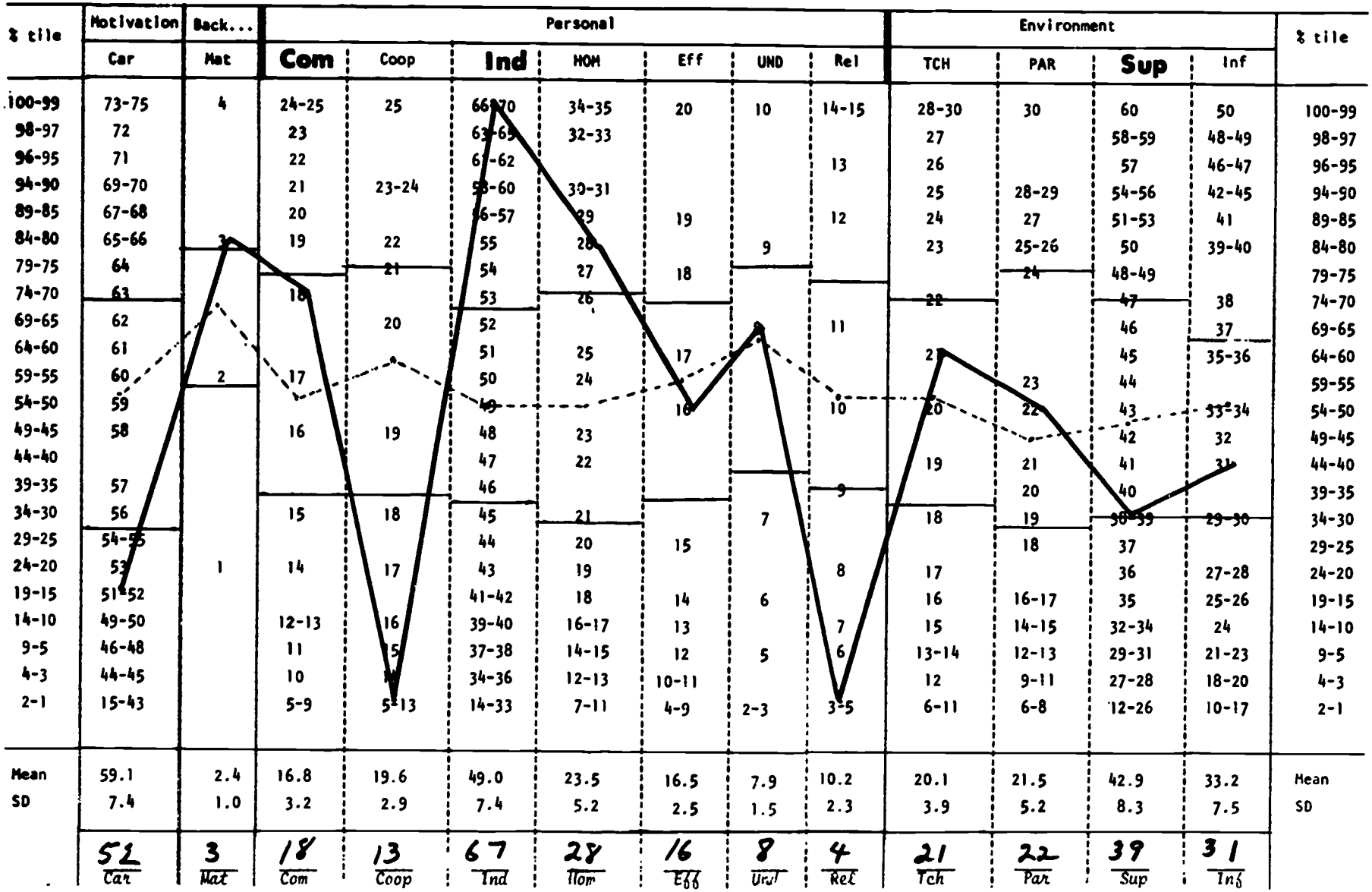
Leslie is a ninth grade boy, of mixed racial background and from a rural high school. He comes from a family of low socioeconomic status, his father is a mechanic and his mother is a housewife. Leslie's profiles are provided in Figures 11, 12 and 13.

The first step in reviewing Leslie's profiles is to compare his scores to those of his peers. This is a preliminary step in which the counselor/teacher and Leslie together can obtain information on his high and low scores compared to other teen-agers from a wide range of settings. This review will also highlight Leslie's uniqueness and provide important clues for his career and life planning.

Leslie's Scores Compared to His Peers. In reviewing Leslie's three motivation scores we see that he is low on Aspiration and Career and high on Mastery. Leslie has chosen a lower level career (Aspiration) than most

FIGURE 11: Leslie's PROFILE SHEET - CAREER

RAW SCORES



% tile	Motivation	Back...	Personal							Environment				% tile
	Car	Mat	Com	Coop	Ind	HOM	Eff	UND	Rel	TCH	PAR	Sup	Inf	
100-99	73-75	4	24-25	25	66-70	34-35	20	10	14-15	28-30	30	60	50	100-99
98-97	72		23		63-65	32-33				27		58-59	48-49	98-97
96-95	71		22		61-62				13	26		57	46-47	96-95
94-90	69-70		21	23-24	58-60	30-31				25	28-29	54-56	42-45	94-90
89-85	67-68		20		56-57	29	19		12	24	27	51-53	41	89-85
84-80	65-66	3	19	22	55	28		9		23	25-26	50	39-40	84-80
79-75	64			21	54	27	18				24	48-49		79-75
74-70	63		18		53	26				22		47	38	74-70
69-65	62			20	52				11			46	37	69-65
64-60	61				51	25	17			21		45	35-36	64-60
59-55	60	2	17		50	24					23	44		59-55
54-50	59				49		16		10	20	22	43	33-34	54-50
49-45	58		16	19	48	23						42	32	49-45
44-40					47	22				19	21	41	31	44-40
39-35	57				46				9		20	40		39-35
34-30	56		15	18	45	21		7		18	19	38-39	29-30	34-30
29-25	54-55				44	20	15				18	37		29-25
24-20	53	1	14	17	43	19			8	17		36	27-28	24-20
19-15	51-52				41-42	18	14	6		16	16-17	35	25-26	19-15
14-10	49-50		12-13	16	39-40	16-17	13		7	15	14-15	32-34	24	14-10
9-5	46-48		11	15	37-38	14-15	12	5	6	13-14	12-13	29-31	21-23	9-5
4-3	44-45		10	14	34-36	12-13	10-11			12	9-11	27-28	18-20	4-3
2-1	15-43		5-9	5-13	14-33	7-11	4-9	2-3	3-5	6-11	6-8	12-26	10-17	2-1
Mean	59.1	2.4	16.8	19.6	49.0	23.5	16.5	7.9	10.2	20.1	21.5	42.9	33.2	Mean
SD	7.4	1.0	3.2	2.9	7.4	5.2	2.5	1.5	2.3	3.9	5.2	8.3	7.5	SD
	52 Car	3 Mat	18 Com	13 Coop	67 Ind	28 Hom	16 Eff	8 Und	4 Rel	21 Tch	22 Par	39 Sup	31 Inf	

FIGURE 12: Leslie's PROFILE SHEETS - MASTERY

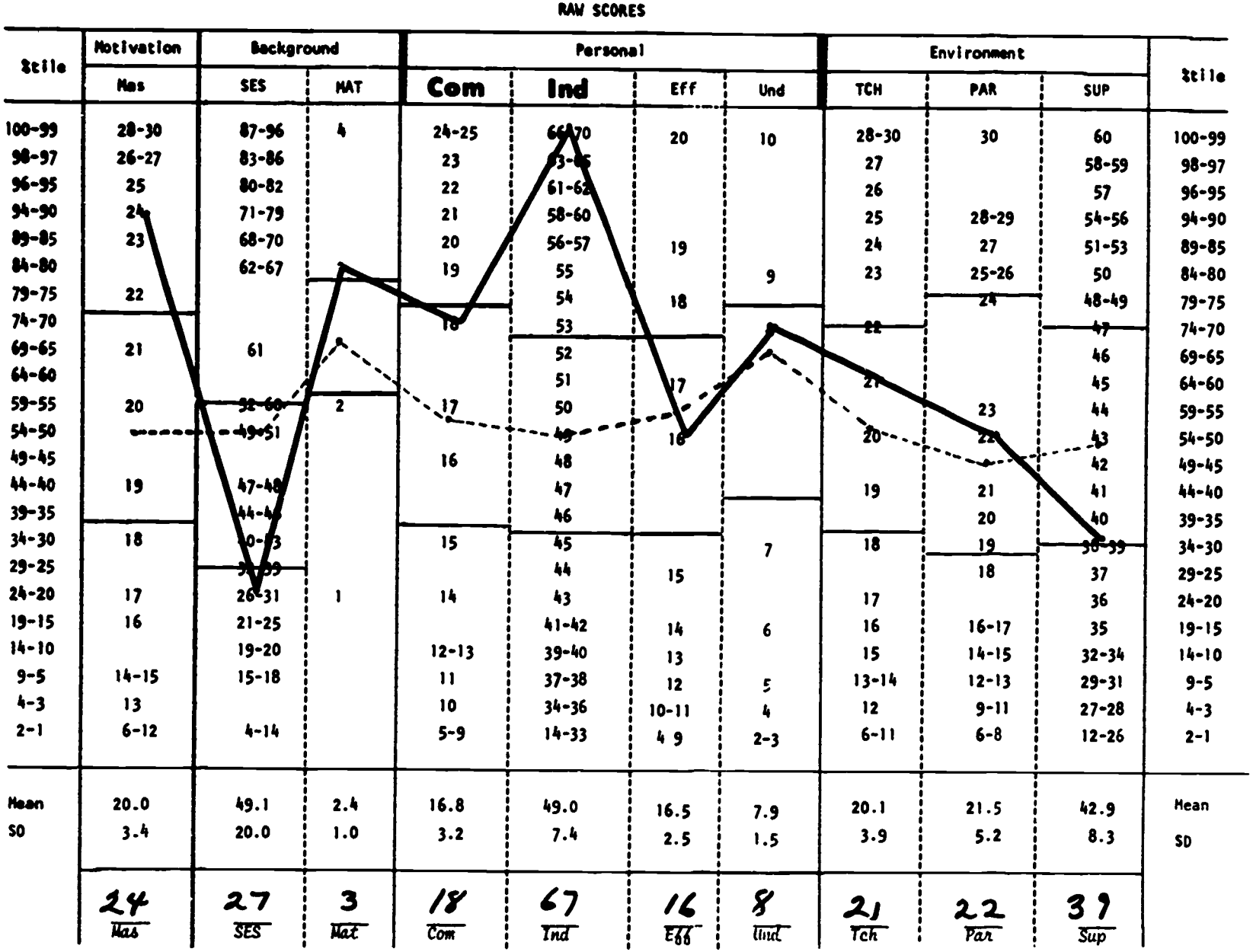
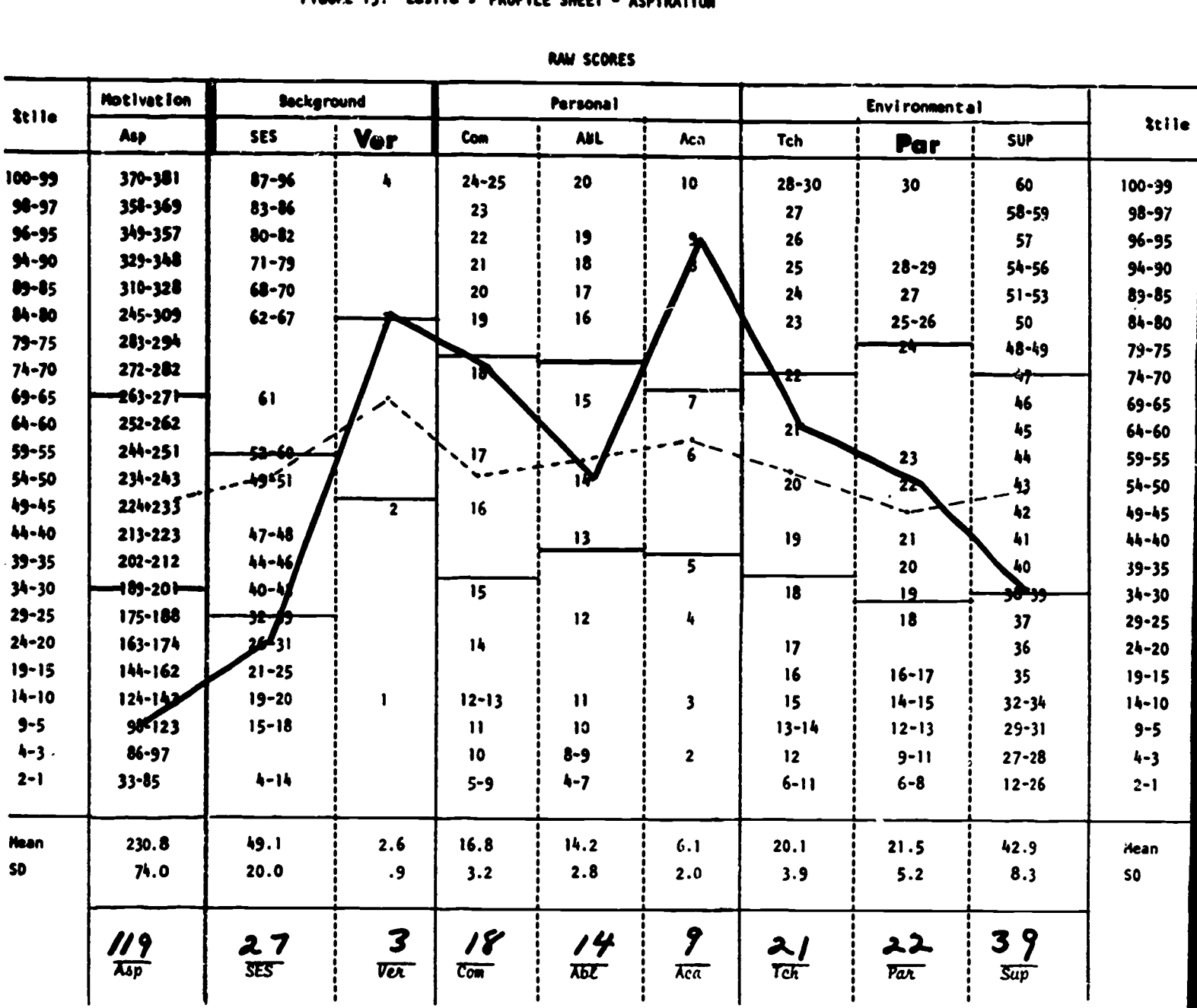


FIGURE 13: Leslie's PROFILE SHEET - ASPIRATION



teenagers, in fact he has chosen to be a mechanic like his father. In addition he has less commitment to the long-range prospects of a career (Career) than his peers. However, he is higher than average on short-term Mastery motivation, suggesting he likes challenging and difficult tasks. The contrast in scores here would be important to discuss with Leslie.

Among Personal scales Leslie is above average on Independence, Academic Self-Esteem and Homemaking Commitment. These scores suggest that Leslie views himself as independent, having leadership abilities and a strong personality. He feels good about his school work and views a family as an important part of his future life, more important in fact than a career. His low scores are on the Cooperative and Relationships Concerns scales, suggesting that he does not enjoy cooperating with others on group tasks or try harder when working with others. Also, he feels he may lose friendships if he is successful and he may avoid talking about his successes with others because of this fear. Leslie's high independence score and low cooperative score could be discussed with him by referring to his specific answers on the items for these scales on the C-MAP questionnaire. His fear of losing friends as a result of his successes would also be an interesting point to discuss with Leslie by reviewing his answers to these items on the C-MAP as well.

Among Environment scales his scores are all about average suggesting that he feels adequately supported by his teachers, parents and others in his career and achievement endeavors. He also views the world as supportive of women as well as men working.

Leslie's Background scores were also in the average range except for the Socioeconomic status level of his family, which reflected the skilled trade level for his father who was a mechanic.

Motivation Patterns. In the second phase of our review of Leslie's profiles we look at the pattern of scores related to each of the three motivation measures. Scales in bold type are most important in these profiles. Next in order of importance are scales whose names are printed in all capital letters. Third in importance, and having moderate but significant relationships with the motivation scale in question are those scales whose names are printed in upper and lower case letters.

Leslie's Mastery motivation profile was generally supportive of that type of motivation. Since his Mastery score was above average this supportive profile suggests that short-term mastery motivation is one of Leslie's strengths.

It might be helpful to discuss with Leslie his long- and short-term motivation to determine if he actually sees himself this way. Leslie's long term career commitment (Career) score is below average. The profile indicates that he is high on one of the important related scales, Independence, and average on the other two, Competitive and Support for Women Working. For less important scales such as Home, Understanding, Teacher and Parent, he is high on Home and average on the other three. For scales with moderate, but significant relationships to Career Commitment, such as Math Ability, Cooperative, Effort Attributions, Relationships Concerns and Career Influencers, Leslie is average on most and low on Cooperative and Relationships Concerns. Discussion could turn to his Relationships Concerns and Cooperative scores. The counselor/teacher might note that long-term career commitment usually requires some cooperativeness as well as competitiveness.

Leslie's Aspiration profile is generally supportive of an average level of aspiration. Leslie's low Aspiration score may be related to his family

background, in which socioeconomic status level is relatively low. It might be useful to discuss with Leslie the kinds of occupations he has considered, noting that his average academic ability scores might be supportive of a broader range of occupations than he has considered.

Comparing the Three Types of Motivation. In preparing for a first counseling session with Leslie it would seem useful to begin with a comparison of his motivation scores to determine if he is comfortable with his low Career Commitment and Aspirations levels, especially in comparison to his high Mastery motivation. Discussion of his strengths, including his independence, valuing of home and family roles, and his good feelings about his school work might be noted. Then some discussion of his low Cooperative and his Relationships Concerns scores might be helpful. Also, a discussion of how his family background may have influenced his perception of the career options open to him would be beneficial.

Chapter 4

SAMPLE AND NORMS

I. Description of the Sample

The Illinois State Board of Education Directory of Illinois Schools 1978-1979 was used to randomly select high schools which provided the sample for the development of the C-MAP norms. Two schools were randomly drawn from each of three geographic types in the state of Illinois. The types were a) Chicago area, b) Urban counties with towns/cities of 50,000 or more; and c) Rural counties with towns/cities of less than 50,000 and less than 50 percent of their population living in towns/cities. The definition of Rural and Urban counties was made according to guidelines published in the County and City Data Book (U.S. Bureau of the Census, 1977). According to one sampling authority (Sudman, 1978) the State of Illinois has been found to be representative of the Northern States in the U.S.A. and thus permits a degree of generalization coast to coast, but not necessarily to the deep South.

Although efforts were made to obtain a randomly selected sample and also a sample that was comparable proportionately for sex, race and geographic location to the rest of the U.S., the Project was only partially successful. There are 83 Rural counties in Illinois. High schools from four of these were randomly selected, and participated in the data collection. There are 11 Urban counties in the State of Illinois. Schools from five of these were randomly selected and participated in the data collection. However, based on previous experience with the public school system in Chicago, indicating that there would be long delays in gaining access to those schools, we decided to work in parochial schools. The Chicago Archdiocese graciously permitted us to randomly select these schools. These inner city schools

provided us with a largely minority population, important to the development of the C-MAP. Information on how the C-MAP norms compare to the country as a whole, and to the State of Illinois is presented in Table 3.

Information on the representativeness of the C-MAP normative sample is presented in Tables 3, 4, and 5 for Sex, Race, Grade in School, and Geographic Location, respectively. Tables 6 and 7 provide additional information about norm group students' parents and student educational and career aspirations.

Table 3

Percentage of Students in C-MAP Norms from Three Locations: Compared with Illinois and U.S. Persons in Similar Locations

Location	% of C-MAP Sample	% of Population in Illinois[b.]	% of Population in U.S.[a.]
Metropolitan	36.29	21.80	38.56
Urban	46.00	45.41	34.72
Rural	17.7	32.79	26.72

a. Based on Data from U.S. Bureau of the Census (1981)

b. Illinois State Board of Education (1980)

Table 4

Norm Characteristics: Number of 9th and 12th Grade Females and Males from Three Geographic Locations

(N = 1,863)

Location	9th Grade females	9th Grade males	12th Grade females	12th Grade males	Total
Chicago					
Mixed[a]	17	6	7	7	
Black	36	27	58	28	
Spanish	36	35	39	33	
White	89	99	72	87	
Total	178	167	176	155	676
Urban					
Mixed	10	25	2	8	
Black	1	1	0	0	
Spanish	9	6	10	5	
White	206	192	183	199	
Total	226	224	195	212	857
Rural					
Mixed	7	10	4	4	
Black	0	0	0	1	
Spanish	0	1	0	1	
White	71	80	72	79	
Total	78	91	76	85	330
Grand Total	482	482	447	452	

a. Mixed = American Indian, Asian & Others (approximately 5% of totals)

Table 5

Percent of Norms By Race

Race	U.S.[b.]	C-MAP Sample
Black	11.7	8.2
Spanish Origin	6.4	9.2
White	76.8	77.0
Other[a.]	5.1	5.6

a. Other includes Asian, Eskimo, American Indian and Others not elsewhere classified

b. Based on Data from U.S. Bureau of the Census, 1981

Table 6

Some Background Characteristics of C-MAP Norms

(N = 1863)

Characteristic	Percentage[a.]
FATHER'S EDUCATIONAL LEVEL	
Less than high school	24
H.S. Diploma	46
Jr. College Degree	12
B.A.	9
M.A.	4
Ph.D. or Professional	1
MOTHER'S EDUCATIONAL LEVEL	
Less than high	18
H.S. Diploma	56
Jr. College Degree	11
RN (Nurse)	6
B.A.	5
M.A.	2
Ph.D. or Professional	0
FATHER'S OCCUPATIONAL LEVEL	
76-100 quartile	13
51-75 quartile	23
26-50 quartile	36
0-25 quartile	28
MOTHER'S OCCUPATIONAL LEVEL	
76-100 quartile	5
51-75 quartile	27
26-50 quartile	22
0-25 quartile	16
MOTHER NOT WORKING	30

a. Percentage may not add up to 100% because of incomplete responses on some questions.

Table 7

Career/Educational Aspiration Characteristics of Norm Group

N = 1863

Characteristic	Percentage[a] of Sample
STUDENT'S EDUCATIONAL ASPIRATION	
H. S. Diploma	17
A.A.	19
Voc & Tech	11
B.A.	28
M.A.	9
Ph.D. or Professional	16
EXPECTED CAREER CHOICE TYPE[b]	
Traditional	57
Non-Traditional	18
Sex Balanced	14
No Choice	9
EXPECTED CAREER CHOICE LEVEL[c]	
76-100 quartile	28
51-75 quartile	32
26-50 quartile	21
0-25 quartile	19

a. Percentages may not add up to 100% because of incomplete responses for some items.

b. Traditional - Two-thirds or more of employed workers are same sex as respondent
Non-Traditional - Two-thirds or less of employed workers are opposite sex as respondent
Sex Balanced - Occupation includes proportions of male and female employed workers between one-third and two-thirds.

c. Based on scoring procedure used (see Aspiration Sub-Scale).

II. Group Differences and Similarities

Statistical procedures (t-tests and f-tests) were used to determine significant group differences on various Background factors for each of the sub-scales on the C-MAP. Statistically significant mean score differences are found on Table 8 for Sex, Grade, Race (white versus minority), Geographic (School) location (Rural versus Urban/Inner-City) and Ability (High, Average, and Low). Important differences are discussed below.

Sex

Not surprisingly, the largest difference was found for the Support for Women Working Scale, favoring females. Girls in general view themselves as having substantially higher verbal ability whereas boys view themselves as more competitive than girls. Other statistically significant differences noted in Table 8 for sex are less substantial. The reader is invited to review these. Similarities between the sexes are worth noting. For example, for our sample girls and boys view themselves as having similar levels of math ability and acadmic self-esteem. They also view their parents as equally supportive of their achievement and career plans and have similar educational and career aspiration levels. The Homemaking Commitment of boys and girls was similar, as was their concern about the effect of their successes on their personal relationships. Boys and girls were also similar in the degree to which they attributed their successes to their own effort.

Grade

It might be expected that development related to age would influence students' responses on the C-MAP. Significant grade differences bear out this expectation for some subscales. Not surprisingly, 9th graders indicated greater Parents Support than 12th graders, suggesting possibly a greater dependence on parents among younger students. Other statistically

TABLE 8

GROUP DIFFERENCES[b]

Sub-Scales	SEX			GRADE			RACE			GEOGRAPHIC LOCATION			ABILITY			
	Male	Female		9th	12th		White	Minority		Rural	Urban[a]		(A,B+)	(B-,C+)	(C-,D)	
	x	x		x	x		x	x		x	x		x	x	x	
MOTIVATION																
Career	3.89	4.00	*	3.39	3.39		3.92	4.03	*	3.88	3.96		4.08	3.94	3.83	*
Mastery	3.37	3.29	*	3.32	3.34		3.30	3.41	*	3.19	3.36	*	3.48	3.34	3.17	*
Aspirations	48.39	48.97		49.12	48.23		47.87	51.21	*	46.07	49.29	*	51.62	48.51	46.47	*
BACKGROUND																
Verbal	2.42	2.72	*	2.50	2.64	*	2.62	2.38	*	2.82	2.51	*	2.72	2.58	1.52	*
Math	2.34	2.42		2.34	2.41		2.43	2.22	*	2.73	2.30	*	3.67	2.36	1.23	*
Status	49.92	48.35		48.77	49.52		49.94	46.78		45.52	49.95	*	52.95	48.94	47.13	*
PERSONAL																
Competitive	3.51	3.22	*	2.50	2.64	*	2.62	2.38	*	2.82	2.51	*	3.72	2.58	1.52	*
Cooperative	3.81	4.02	*	3.91	3.91		3.91	3.94		3.86	3.93		3.96	3.92	3.87	
Independence	3.56	3.43	*	3.44	3.56	*	3.51	3.50		3.53	3.49		3.56	3.53	3.40	*
Home	3.31	3.39		3.34	3.36		3.39	3.28		3.43	3.34		3.40	3.36	3.33	
Ability	3.64	3.47	*	3.49	3.62	*	3.58	3.54		3.59	3.53		3.78	3.52	3.43	*
Effort	4.04	4.15		4.08	4.11		4.11	4.04		4.05	4.10		4.26	4.08	3.94	*
Understanding	3.87	4.06	*	3.88	4.04		3.93	4.04		3.92	3.96		3.98	3.98	3.91	
Relationships	3.33	3.45		3.30	3.51	*	3.37	3.49		3.30	3.42		3.36	3.41	3.47	*
Academic	3.04	3.06		2.96	3.15	*	3.05	3.09		3.00	3.07		3.54	3.07	2.62	*
ENVIRONMENT																
Teachers	3.28	3.42	*	3.36	3.33		3.34	3.39		3.20	3.38	*	3.59	3.36	3.14	*
Parents	3.61	3.55		3.75	3.39	*	3.55	3.69		3.48	3.60		3.71	3.55	3.55	*
Support	3.24	3.92	*	3.53	3.62		3.58	3.62		3.49	3.60		3.77	3.58	3.45	*
Influencers	3.35	3.24		3.26	3.34		3.32	3.23		3.28	3.30		3.25	3.30	3.33	

* $p < .001$

a. Urban/Inner City

b. Only subjects with complete data on each scale were used to compute means. Number ranged from 1425 to 1948.

significant differences were relatively small. There were no differences on motivation scales for 9th and 12th graders. These students also scored similarly on Personal scales such as Cooperative, Homemaking Commitment, Effort Attributions, and Valuing Understanding. Ninth and 12th graders view their teachers as similarly supportive of their career and achievement planning, view support for women working and the influence of others on their career choices in a similar way.

Race

Differences observed between minority and white students were relatively small even among those that were statistically significant. The largest difference was observed for Career/Educational Aspiration favoring minorities. The racial groups scored similarily on family Socioeconomic Status, on most of the Personal scales and all of the Environment scales.

Geographic Location

Regression analyses indicated that there were no important differences between students from Inner-City and Urban (cities with populations of 50,000 or more) locations on the C-MAP scales predictive of the motivation scales. Therefore, scores for Inner-City and Urban students were combined and compared to scores of students from Rural Schools. Students from the Rural schools indicated significantly higher Verbal and Math grades. They were also more competitive. Students from the Urban and Inner-City schools had significantly higher Aspiration scores, and overall were from higher Socioeconomic Status families. Rural and Urban/Inner-City students were similar in their long-range Career Commitment scores and on most of their Personal and Environment scores.

Ability Groups

High ability groups differed from low ability groups on most scales. As might be expected the largest difference was observed between high and low ability groups on Academic Self-Esteem, with high ability students scoring higher. The next largest difference was on the Relationships Concerns scale with high ability students evidencing more concern about losing friends as a result of their successes. Other differences indicate that high ability students have higher Career/Educational Aspiration and Mastery motivation, they attribute their successes more to their own ability and effort and they feel more supported by their teachers in their career and achievement endeavors. High, Average and Low ability students scored similarly on the Cooperative scale, Homemaking Commitment, and on Valuing Understanding. They also scored similarly on the Influencers scale.

III. Norm Tables - Total Group, Sex, and Grade

Percentile norms for the total sample are provided in Table 9. In addition percentile norms by Sex (female and male) and by Grade (9th and 12th grade) are provided in Tables 10, 11, 12 and 13. Norms are provided for Grade and Sex separately. Differences for Grade may be more the result of developmentally related differences than due to the students' experience. For example, as Table 8 illustrates 9th graders score higher on Parents Support than 12th graders. Sex differences on the other hand may be more related to differences in sex role socialization experiences. Girls, for example, score higher (see Table 8) than boys on the Support for Women Working scale, a difference which is probably not age related.

Norm tables may be used in addition to the profile sheets when students are interpreting their C-MAP profiles. By looking at the age and sex appropriate norm table a student may understand his or her scores better.

Table 9

PERCENTILE NORMS - TOTAL GROUP

RAW SCORES

%tile	Motivation			Background			Personal									Environmental				%tile
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	
100-99	73-75	28-30	370-381	4	4	87-96	24-25	25	66-70	34-35	20	20	10	14-15	10	28-30	30	60	50	100-99
98-97	72	26-27	358-369			83-86	23		63-65	32-33						27		58-59	48-49	98-97
96-95	71	25	349-357			80-82	22		61-62		19			13	9	26		57	46-47	96-95
94-90	69-70	24	329-348			71-79	21	23-24	58-60	30-31	18				8	25	28-29	54-56	42-45	94-90
89-85	67-68	23	310-328			68-70	20		56-57	29	17	19		12		24	27	51-53	41	89-85
84-80	65-66		295-309	3	3	62-67	19	22	55	28	16		9			23	25-26	50	39-40	84-80
79-75	64	22	283-294					21	54	27		18					24	48-49		79-75
74-70	63		272-282				18		53	26						22		47	38	74-70
69-65	62	21	263-271			61		20	52		15		8	11	7			46	37	69-65
64-60	61		252-262						51	25		17				21		45	35-36	64-60
59-55	60		244-251		2	52-60	17		50	24					6		23	44		59-55
54-50	59	20	234-243			49-51			49		14	16		10		20	22	43	33-34	54-50
49-45	58		224-233	2			16	19	48	23								42	32	49-45
44-40		19	213-223			47-48			47	22	13					19	21	41	31	44-40
39-35	57		202-212			44-46			46					9	5		20	40		39-35
34-30	56	18	189-201			40-43	15	18	45	21			7			18	19	38-39	29-30	34-30
29-25	54-55		175-188			32-39			44	20	12	15			4		18	37		29-25
24-20	53	17	163-174		1	26-31	14		43	19				8		17		36	27-28	24-20
19-15	51-52	16	144-162	1		21-25			41-42	18		14	6			16	16-17	35	25-26	19-15
14-10	49-50		124-143			19-20	12-13	16	39-40	16-17	11	13		7	3	15	14-15	32-34	24	14-10
9-5	46-48	14-15	98-123			15-18	11	15	37-38	14-15	10	12	5	6		13-14	12-13	29-31	21-23	9-5
4-3	44-45	13	86-97				10	14	34-36	12-13	8-9	10-11	4		2	12	9-11	27-28	18-20	4-3
2-1	15-43	6-12	33-85			4-14	5-9	5-13	14-33	7-11	4-7	4-9	2-3	3-5		6-11	6-8	12-26	10-17	2-1
Mean	59.1	20.0	230.8	2.6	2.4	49.1	16.8	19.6	49.0	23.5	14.2	16.5	7.9	10.2	6.1	20.0	21.5	42.9	33.2	Mean
SD	7.4	3.4	74.0	.9	1.0	20.0	3.2	2.9	7.4	5.2	2.8	2.5	1.5	2.3	2.0	3.9	5.2	8.3	7.5	SD
SE	.169	.078	1.80	.022	.074	.477	.074	.070	.176	.118	.080	.073	.049	.052	.046	.088	.123	.192	.178	SE
N	1891	1904	1693	1883	1824	1767	1914	1766	1764	1913	1209	1205	980	1919	1933	1904	1818	1891	1755	N
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	

Table 10

PERCENTILE NORMS MALE

RAW SCORE

%tile	Motivation			Background			Personal									Environment				%tile
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	
100-99	72-75	28-30	370-381	4	4	86-96	24-25	25	66-70	33-35	20	20	10	15	10	28-30	100	56-60	49-50	100-99
98-97	71	26-27	359-369			85	23		63-65	32				14		26-27		52-55	47-48	98-97
96-95	70	25	349-358			80-84		24	61-62	31	19			13	9			50-51	46	96-95
94-90	68-69	24	328-348			73-79	21-22	23	59-60	29-30	18				8	24-25	28-29	47-49	41-45	94-90
89-85	66-67	23	311-327	3	3	72	20	22	57-58	28	17	19	9	12		23	27	46	40	89-85
84-80	64-65		295-310			65-70		21	56	27		18					25-26	45	39	84-80
79-75	63	22	283-294			62-64			55	26	16					22	24	44	38	79-75
74-70	62		273-282				19	20	54				8	11				43		74-70
69-65	61	21	264-272			61			53	25		17			7	21		42	36-37	69-65
64-60	60		253-263				18		52	24	15							41		64-60
59-55	59		246-252	2	2	54-58			51			16		10	6	20	23	40	34-35	59-55
54-50		20	236-245			50-53		19	50	23							22	39	33	54-50
49-45	58		222-235			49	17		49		14					19		38	32	49-45
44-40	57	19	207-221					18	48	22							21	37	30-31	44-40
39-35	56		197-206			44-48	16		47				7	9	5	18	20	36		39-35
34-30	55		181-196			41-43			46	21	13								29	34-40
29-25	54	18	168-180			32-40		17	45	20		15			4	17	18-19	35	28	29-25
24-20	52-53		149-167		1	27-31	15		44	19	12	14	6	8				33-34	27	24-20
19-15	51	17	129-148	1		22-26		16	42-43	18						16	16-17	32	26	19-15
14-10	49-50	16	113-129			20-21	14	15	41	17		13		7	3	15	14-15	30-31	24-25	14-10
9-5	46-48	15	91-112			16-19	12-13	14	37-40	14-16	10-11	12	5	6		13-14	12-13	28-29	22-23	9-5
4-3	43-45	13-14	79-90			15	11	13	35-36	12-13		10-11	4		2	11-12	11	24-26	19-21	4-3
2-1	15-42	6-12	33-78			4-14	5-10	5-12	14-34	7-11	4-9	4-9	2-3	3-5		6-10	6-10	12-23	10-18	2-1
Mean	58.4	20.2	227.4	2.4	2.3	49.9	17.6	19.1	49.9	23.1	14.7	16.3	7.7	10.0	6.1	19.7	21.6	38.9	33.7	Mean
SD	7.3	3.3	78.3	.9	1.0	20.2	3.0	3.1	7.2	4.9	2.7	2.6	1.6	2.2	2.0	3.9	5.1	7.5	7.4	SD
SE	.236	.106	2.70	.030	.033	.680	.098	.104	.242	.158	.11>	.111	.068	.071	.065	.126	.169	.243	.249	SE
N	953	958	842	943	912	884	966	877	878	966	547	550	527	966	977	960	924	950	997	N
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	

Table 11

PERCENTILE NORMS FEMALES

RAW SCORES

%tile	Motivation			Background			Personal									Environmental				%tile
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	
100-99	74-75	28-30	370-381	4	4	87-96	24-25	25	65-70	34-35	20	20	10	15	10	28-30	30	60	49-50	100-99
98-97	73	26-27	357-369			83-86	22-23		63-64	33	19			14		27			48	98-97
96-95	72	25	348-356			80-82	21		61-62	32	18				9			58-59	46-47	96-95
94-90	69-71	24	329-347			71-79	20	24	58-60	31	17			13	8	25-26	28-29	56-57	42-45	94-90
89-85	68	23	308-328			65-70	19	23	56-57	29-30				12		24	27	55	40-41	89-85
84-80	66-67	22	294-307		3	62-64		22	54-55	28	16	19				23	25-26	53-54	39	84-80
79-75	65		281-293	3			18		53			18	9				24	52	38	79-75
75-70	64	21	271-280			61		21	52	27	15					22		51	37	75-70
69-65	63		262-270				17		51	26					7			50	36	69-65
64-60	62		251-261			60		20	50			17	8	11		21		49	34-35	64-60
59-55	61	20	242-250			50-58			49	25	14				6		23	48		59-55
54-50	60		234-241		2	49	16		48	24		16				20	22	47	32-33	54-50
49-45	59	19	225-233						47	23	13			10			21	46	31	49-45
44-40	58		216-224	2		46-48	15	19	46								20		30	44-40
39-35	57	18	204-215			42-45			45	22					5	19		44-45		39-35
34-30	56		193-203			39-41	14		44	21	12			9			19		29	34-30
29-25	55	17	187-192			32-38		18	43	20		15	7		4	18	18	43	28	29-25
24-20	54		172-186		1	24-31	13		42	19				8				41-42	27	24-20
19-15	52-53	16	158-171			20-23		17	40-41	18	11	14				17	16-17	40	25-26	19-15
14-10	50-51	15	136-157			19	12		39	16-17	10		6	7	3	16	14-15	38-39	24	14-10
9-5	47-49	14	107-135	1		15-18	10-11	15-16	36-38	14-15	9	12-13	5	6		13-15	12-13	34-37	21-23	9-5
4-3	45-46	13	91-106						34-35	12-13	8			5	2	12	8-11	32-33	20	4-3
2-1	15-44	6-12	33-90			4-14	5-9	5-14	14-33	7-11	4-7	4-11	2-4	3-4		6-11	6-7	12-31	10-19	2-1
Mean	59.9	19.7	234.2	2.7	2.4	48.4	16.1	20.1	48.2	23.8	13.9	16.7	8.1	10.4	6.1	20.5	21.3	47.0	32.7	Mean
SD	7.4	3.5	69.5	.9	1.0	19.8	3.3	2.7	7.5	5.4	2.8	2.5	.16	2.3	2.0	3.7	5.3	7.1	7.5	SD
SE	.240	.114	2.38	.030	.034	.667	.106	.089	.250	.176	.109	.097	.071	.076	.066	.122	.179	.231	.255	SE
N	938	946	851	940	912	883	948	889	886	947	662	655	453	953	956	944	894	941	858	N
	Car	Mas	Asp	Var	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	

Table 12

PERCENTILE NORMS 9th GRADE

RAW SCORES

%tile	Motivation			Background			Personal									Environmental				%tile
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	
100-99	73-75	28-30	370-381	4	4	87-96	24-25	25	66-70	34-35	20	20	10	15	10	28-30	30	60	49-50	100-99
98-97	72	26-27	363-369			85-86	23		63-65	32-33				14		27		58-59		98-97
96-95	71	25	356-362			80-84	22	24	61-62	31	19			13	9	26		56-57	47-48	96-95
94-90	69-70	24	332-355			71-79	21	23	58-60	29-30	18				8	25	29	53-55	43-46	94-90
89-85	67-68	23	318-331			69-70	20	22	56-57	28	17	19	9	12		24	28	51-52	40-42	89-85
84-80	65-66		304-317	3	3	62-67	19		54-55		16					23	26-27	49-50	39	84-80
79-75	64	22	290-303					21	53	27		18					25	48	38	79-75
74-70	63		280-289				18		52	26			8	11	7	22	24	47	37	74-70
69-65	62	21	269-279			61		20	51		15							46	36	69-65
64-60	61		261-268						50	25		17			6	21		45	34-35	64-60
59-55	60	20	249-260		2	51-60	17		49	24	14			10				44		59-55
54-50	59		240-249	2		49-50			48			16				20	23	43	32-33	54-50
49-45	58	19	229-239				16	19	47	23								42	31	49-45
44-40	57		216-228			46-48			46	22	13			9	5	19	22	40-41	30	44-40
39-35			203-215			42-45			45				7					39		39-35
34-30	56	18	189-202			39-31	15	18	44	21	12				4	18	20-21	38	28-29	34-30
29-25	54-55		178-188		1				43	20		15		8				37		29-25
24-20	53	17	164-177			28-38	14	17	42	19			6			17	18-19	35-36	27	24-20
19-15	52	16	144-163	1		24-27			40-41	18		14		7		16		34	25-26	19-15
14-10	49-51	15	126-143			20-23	13	16	39	16-17	10-11			6	3	15	16-17	32-33	24	14-10
9-5	46-48	14	94-125			19	11-12	14-15	35-38	14-15	9	12-13	5	5		13-14	12-15	28-31	22-23	9-5
4-3	44-45	13	85-93			15-18	10		33-34	12-13	7-8	10-11	4	4	2	12		25-27	20-21	4-3
2-1	15-43	6-12	33-84			4-14	5-9	5-13	14-32	7-11	4-6	4-9	2-3	3		6-11	6-11	12-24	10-19	2-1
Mean	59.1	19.2	234.9	2.5	2.3	48.8	16.9	19.6	48.2	23.5	14.1	16.5	7.7	9.9	5.9	20.2	22.5	42.4	32.9	Mean
SD	7.3	3.5	76.6	1.0	1.1	20.5	3.2	2.8	7.6	5.1	2.9	2.6	1.6	2.4	2.1	3.8	4.9	8.6	7.6	SD
SE	.232	.110	2.60	.030	.034	.683	.100	.093	.249	.161	.116	.103	.076	.075	.064	.120	156	.274	.250	SE
N	996	997	864	979	957	903	1004	926	931	1005	923	616	439	1007	1020	993	973	991	917	N
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	

Table 13

PERCENTILE NORMS 12th GRADE

RAW SCORES

%tile	Motivation			Background			Personal									Environmental				%tile
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	
100-99	74-75	28-30	362-381	4	4	86-96	24-25	25	65-70	34-35	20	20	10	15	10	28-30	30	60	50	100-99
98-97	72-73	27	353-361			82-85	23		63-64	33				14		27		58-59		98-9;
96-95	71	25-27	341-352			80-81	22		61-62	32	18-19				9	26	29	57	48-49	96-95
94-90	69-70	24	317-340			71-79	21	24	59-60	30-31				13	8	25	27-28	55-56	44-47	94-90
80-85	68	23	299-316		3	67-70	20	23	57-58	29	17	19		12		24	25-26	52-54	40-43	80-85
84-80	66-67		287-298			62-66	19	22	56	28			9			23	24	50-51		84-80
79-75	64-65	22	276-286	3				21	54-55	27	16	18						48-49	38-39	79-75
74-70	63		266-275						53	26						22				74-70
69-65	62	21	254-265			61	18	20	52			17					23	47	37	
64-60	61		248-253						51	25	15		8	11	7	21	22	46	36	64-60
59-55	60	20	239-247			52-60	17			24								45	35	59-55
54-50	59		231-238		2	49-51			50		14	16			6	20	20-21	44	34	54-50
49-45			220-230	2				19	49	23				10				43	33	49-45
44-40	58	19	211-219				16		48	22						19		41-42	32	44-40
39-35	56-57		202-210			46-48		18	47		13						18-19	40	30-31	39-35
34-30		18	188-201			44-45	15		46	21					5	18		39		34-30
29-25	54-55		175-187			35-43			45	20		15	7	9	4		17	38	29	29-25
24-20	53	17	160-174			27-34	14	17	44	19	12					17	16	37	28	24-20
19-15	51-52		143-159		1	21-26	13		42-43	18		14	15	8		16	14-15	35-36	26-27	19-15
14-10	49-50	16	123-142	1		19-20	12	16	40-41	16-17	11	13				15	12-13	33-34	24-25	14-10
9-5	46-48	15	100-122			15-18	11	15	38-39	14-15	10	12		7	3	13-14	11	30-32	22-23	9-5
4-3	45	14	89-99			14	10	14	37	12-13	8-9	10-11	5	6	2	11-12	8-10	27-29	20-21	4-3
2-1	14-44	6-13	33-88			4-13	5-9	5-13	14-36	7-11	4-7	4-9	2-4	3-5		6-10	6-7	12-26	10-19	2-1
Mean	59.2	20.1	226.6	2.6	2.4	49.5	16.8	19.6	49.8	23.5	14.4	16.4	8.1	10.5	6.3	20.0	20.3	43.6	33.6	Mean
SD	7.4	3.3	71.1	.9	1.0	19.5	3.3	3.0	7.0	5.3	2.6	2.5	1.5	2.1	2.0	3.9	5.4	8.0	7.4	SD
SE	.247	.110	2.47	.030	.033	.664	.109	.104	.242	.174	.109	.104	.064	.070	.066	.130	.187	.266	.254	SE
N	895	907	829	904	897	864	910	840	833	908	586	589	541	912	913	911	945	906	838	N
	Car	Mas	Asp	Ver	Mat	SES	Com	Coop	Ind	Hom	Abl	Eff	Und	Rel	Aca	Tch	Par	Sup	Inf	

The five norm tables include group means and standard deviations and the standard error of measurement for each C-MAP scale. The means may be useful in comparing a student's scores to the mean for his or her peer group. The standard error of measurement indicates the margin of error to be expected in a student's score due to the unreliability of the measure. A counselor/teacher may wish to help the student apply this information to their own scores by adding and subtracting the standard error from the student's score to establish a band width within which the student's true score is likely to be.

IV Note on Procedures Used for Selecting Subjects for Analyses

The reader will note that different numbers of subjects are reported for the various statistical analyses. This is because only complete subject data was used in each analysis, and this number varied. Larger numbers of subjects are often found for mean scores for particular scales, than those numbers reported for analyses using more than one scale, as in the factor analyses or regression analyses. Data in correlation tables are based on 'pairwise' selection which means that the number of subjects represents those with complete data for the two scales involved in the correlation. For regression analyses a listwise selection procedure was used, meaning that only data for subjects who had completed all scales in the regression analyses were included.

In order to determine if the characteristics of subjects who had incomplete questionnaires was similar to the characteristics of subjects with complete questionnaires, regression analyses were run using both 'pairwise' and 'listwise' selection procedures for creating the correlation matrix on which the analyses were based. Multiple correlations for each regression equation were compared for the two procedures. Differences were all less than 1%

for equations represented in Tables 40, 41 and 42. Based on this finding it appears that subject scores were comparable for subjects who had complete and incomplete data.

The sample used in the first phase of the development of the C-MAP was also drawn randomly from Rural and Urban counties in Illinois and from Metropolitan Chicago. There were 9 schools in this sample and the total number of subjects was approximately 2300, representing all 9th and 12th graders from these schools.

The authors wish to express their thanks to the staffs of these nine schools and to the staffs in the six additional school systems used for C-MAP norms. Without their cooperation there would not have been a C-MAP. Appendix F provides a list of these school districts.

Chapter 5

RELIABILITY

The reliability of the C-MAP scales was determined in a number of ways. Most scales had more than one item and for these an internal consistency coefficient (Alpha, Cronbach, 1970) was computed. Seventeen of the nineteen scales were included in this calculation. Two scales were scored using more than one independent rater who followed a content analysis procedure. Reliability for these scales was estimated based on percent agreement between raters. The more sophisticated formulas for calculating inter-rater reliability such as Scott's (1951), used when there is a need to identify the unit of analysis and to correct for inter-rater differences, were not considered necessary since for these C-MAP scales there was only one unit of anlaysis.

Interpretation of internal consistency reliability data is similar to that provided for reliability estimates based on the Split-half method (Carmines & Zeller, 1979). Alpha can be considered a unique estimate of the expected correlation of the test with an alternative form of the test containing the same number of items. Alpha provides a conservative estimate of a measure's reliability. Alpha increases with the number of items in the scale. Thus we expected lower alpha values for scales with only a few items compared to scales with more items.

1. Internal Consistency

An overview of the internal consistency (alpha) reliability information is provided in Table 14 using the total norm group. Six scales have alpha coefficients of .80 or better; four of .70 or better and four of .60 or better (two of these scales had only two items each). Two scales obtained

Table 14

Means, Standard Deviations and Alpha Reliability Estimates for Scales on the C-MAP

Scale		# of Items	Mean[a.]	SD	Reliability[b.]
Motivation					
I.[c.]	Career	15	3.89	.51	.83
II.	Aspiration	4	58.8	18.2	.78
III.	Mastery	6	3.33	.56	.59
Personal					
IX.	Academic	2	3.11	.93	.64
II.	Independence	14	3.49	.57	.81
III.	Home	7	3.35	.72	.81
IV.	Cooperative	5	3.91	.58	.74
V.	Ability	4	3.55	.75	.72
VI.	Competitive	5	3.36	.64	.61
VIII.	Effort	4	4.10	.73	.74
X.	Relationships	3	3.45	.77	.56
	Understanding	2	3.96	.88	.60
Environment					
I.	Support	12	3.53	.69	.88
II.	Influencers	10	3.27	.75	.84
III.	Parents	6	3.58	.87	.87
IV.	Teachers	6	3.35	.65	.68

a. With the exception of Career/Educational Aspiration means are based on a 5 point Likert response scale.
b. Reliability is Cronbach's alpha (1970), a measure of internal consistency.
c. Roman numberals indicate the factor number for that scale within its grouping (i.e., Motivation, Personal, Environment.)

alpha coefficients of .56 (Relationships with three items) and .59 (Mastery with six items). Reliabilities that are .70 or butter are considered satisfactory. Reliabilities below .70 are weak and the related scales need revision.

In Tables 15 through 30 data is presented separately for each of 16 scales and includes the correlation for each item on the scale with the total set of items for the scale. These tables also include the same statistics for several subgroups. Comparative information is provided for sex, school location, grade and GPA. Differences obtained for the different groups were for the most part not large. Three scales, Effort, Understanding and Mastery, had differences that were .10 or more. Alpha coefficients that ranged from .64 to .74 for Effort; from .52 to .66 for Understanding; and from .51 to .62 for Mastery. For the Effort scale the least reliable group was the high ability group. For the Understanding scale the least reliable groups were the rural students and low ability students. For the Mastery scale the least reliable group was the male student group. These differences are noted but were not tested for significance.

II. Inter-Rater Reliability for C-MAP Items 23, 24, 25 and 28

Four advanced doctoral level students served as raters for 1) coding the normative data for the occupations list used to respond to C-MAP questions 23, 24, 25 and 28 and 2) content analysis of the successes and failures listed by students in the normative sample. The Duncan Socio-economic Index (SEI, Hauser & Featherman, 1975) was used to provide quantatitive codes for the occupations in the list (see Appendix D). Questions 23, 24, 25, and 28 ask students to 1) list the occupations they expect to end up in, 2) list two occupations they have daydreamed about,

Table 15

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Career Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.826	.812	.837	.825	.820	.833	.818	.838	.836	.815	.825
					Item-Total Correlations						
1	.376	.357	.381	.321	.322	.457	.417	.338	.390	.325	.454
2	.393	.394	.383	.367	.399	.395	.395	.395	.366	.388	.394
3	.410	.358	.451	.434	.430	.379	.401	.423	.441	.399	.395
4	.462	.474	.440	.440	.470	.470	.414	.519	.524	.447	.453
5	.512	.515	.501	.518	.511	.519	.473	.561	.507	.486	.548
6	.449	.406	.494	.363	.464	.478	.449	.460	.464	.453	.453
7	.469	.443	.494	.553	.442	.444	.447	.494	.457	.455	.443
8	.363	.356	.423	.302	.354	.407	.357	.374	.370	.338	.440
9	.315	.306	.317	.301	.312	.307	.303	.333	.278	.317	.321
10	.461	.433	.506	.510	.434	.483	.435	.499	.435	.463	.503
11	.539	.501	.576	.533	.521	.554	.536	.555	.561	.503	.580
12	.473	.500	.430	.521	.426	.488	.440	.510	.457	.488	.404
13	.505	.509	.494	.532	.497	.511	.497	.518	.538	.495	.509
14	.489	.398	.581	.483	.489	.493	.448	.540	.562	.452	.477
15	.392	.365	.406	.411	.419	.382	.438	.348	.494	.351	.392
					Sample Size						
	1891	953	938	330	850	656	996	895	354	1027	369

[a] M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b] C-MAP items 1-15

Table 16

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Mastery Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.586	.545	.623	.510	.597	.605	.585	.592	.594	.578	.550
					Item-Total Correlations						
1	.319	.255	.378	.305	.348	.305	.287	.362	.380	.301	.280
2	.345	.334	.370	.269	.348	.372	.364	.321	.356	.333	.308
3	.272	.244	.297	.250	.251	.295	.270	.278	.280	.273	.269
4	.316	.299	.335	.216	.341	.327	.338	.294	.315	.280	.284
5	.406	.357	.449	.317	.438	.407	.408	.402	.388	.407	.326
6	.268	.231	.295	.226	.261	.304	.247	.305	.244	.293	.284
					Sample Size						
	1904	958	946	331	853	670	997	907	358	1043	368

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 16-21

Table 17

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Aspiration Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.781	.799	.758	.778	.782	.746	.783	.779	.791	.769	.782
					Item-Total Correlations						
1	.717	.727	.705	.742	.720	.670	.716	.717	.727	.702	.710
2	.602	.609	.590	.612	.598	.560	.627	.576	.628	.573	.651
3	.418	.467	.354	.380	.421	.372	.413	.420	.433	.411	.404
4	.620	.649	.592	.621	.627	.564	.613	.628	.636	.605	.599
					Sample Size						
	1385	684	701	260	623	502	706	679	310	761	256

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-Map items 22-25

Table 18

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Competitive Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.610	.579	.603	.585	.621	.607	.570	.652	.629	.625	.571
					Item-Total Correlations						
1	.321	.282	.309	.289	.355	.299	.280	.367	.263	.345	.322
2	.446	.414	.445	.403	.469	.435	.433	.466	.505	.439	.439
3	.433	.398	.428	.425	.442	.424	.386	.487	.410	.462	.390
4	.250	.235	.235	.193	.246	.276	.220	.284	.336	.260	.194
5	.376	.350	.381	.408	.237	.375	.331	.425	.403	.390	.313
					Sample Size						
	1914	966	948	330	858	678	1004	910	358	1044	378

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 30-34

Table 19

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Cooperative Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.740	.758	.686	.753	.741	.726	.715	.766	.736	.741	.744
					Item-Total Correlations						
1	.487	.516	.424	.533	.471	.484	.487	.495	.434	.511	.492
2	.553	.583	.486	.535	.571	.528	.527	.582	.353	.531	.597
3	.500	.528	.452	.548	.496	.474	.478	.530	.292	.508	.465
4	.466	.504	.388	.514	.468	.459	.422	.519	.276	.484	.455
5	.479	.532	.425	.444	.488	.462	.432	.529	.262	.460	.515
					Sample Size						
	1766	877	889	312	712	626	926	840	330	928	320

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 35-39

Table 20

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Relationships Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.564	.521	.603	.613	.564	.540	.587	.515	.615	.571	.543
					Item-Total Correlations						
1	.395	.372	.417	.426	.394	.383	.392	.380	.471	.396	.359
2	.367	.325	.405	.414	.363	.358	.401	.309	.378	.378	.364
3	.361	.309	.411	.424	.364	.318	.392	.303	.425	.368	.340
					Sample Size						
	1919	966	953	329	858	681	1007	912	358	1047	376

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 40-42

Table 21

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Independence Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.808	.804	.812	.780	.815	.808	.807	.805	.837	.797	.788
					Item-Total Correlations						
1	.349	.362	.340	.336	.292	.397	.337	.347	.328	.362	.255
2	.393	.432	.383	.381	.400	.407	.400	.374	.352	.397	.400
3	.390	.371	.409	.360	.389	.402	.382	.391	.486	.376	.338
4	.389	.367	.443	.396	.424	.339	.408	.373	.549	.345	.292
5	.495	.519	.484	.411	.482	.515	.496	.480	.483	.474	.484
6	.420	.386	.443	.366	.408	.454	.412	.438	.463	.433	.390
7	.552	.537	.554	.487	.585	.569	.568	.530	.582	.555	.529
8	.355	.374	.326	.323	.384	.329	.370	.347	.410	.360	.268
9	.319	.315	.312	.315	.335	.319	.316	.326	.377	.278	.367
10	.418	.380	.439	.333	.477	.380	.375	.463	.508	.397	.386
11	.564	.554	.569	.570	.598	.532	.578	.532	.625	.516	.616
12	.448	.435	.443	.443	.434	.438	.439	.464	.454	.446	.413
13	.534	.523	.533	.501	.557	.541	.529	.535	.593	.533	.510
14	.387	.384	.416	.289	.398	.399	.392	.360	.408	.339	.425
					Sample Size						
	1764	878	886	306	720	624	931	833	331	928	321

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 43-56

Table 22

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Home Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.813	.786	.835	.842	.820	.782	.801	.826	.824	.813	.791
					Item-Total Correlations						
1	.528	.474	.574	.553	.518	.520	.489	.570	.532	.526	.524
2	.402	.386	.418	.440	.432	.345	.390	.417	.365	.401	.373
3	.406	.332	.482	.427	.416	.370	.416	.399	.449	.408	.370
4	.694	.664	.722	.725	.710	.643	.687	.704	.742	.671	.679
5	.620	.606	.631	.712	.623	.559	.565	.683	.620	.629	.579
6	.587	.545	.621	.652	.582	.553	.571	.606	.610	.589	.541
7	.629	.592	.660	.677	.658	.573	.629	.632	.657	.640	.587
					Sample Size						
	1913	966	947	330	858	674	1005	908	355	1047	374

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 57-63

Table 23

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Ability Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.723	.709	.726	.777	.730	.719	.738	.704	.721	.757	.709
					Item-Total Correlations						
1	.514	.474	.532	.583	.505	.506	.534	.481	.504	.535	.490
2	.483	.477	.478	.535	.516	.459	.487	.474	.490	.586	.401
3	.543	.541	.532	.620	.544	.529	.564	.514	.508	.526	.535
4	.509	.489	.514	.584	.510	.534	.530	.485	.530	.570	.553
					Sample Size						
	1209	547	662	205	470	453	623	586	254	627	202

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 64, 65, 69 and 70

Table 24
Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Effort Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.740	.732	.747	.755	.719	.750	.741	.740	.641	.757	.759
					Item-Total Correlations						
1	.526	.508	.543	.549	.516	.535	.498	.557	.463	.535	.569
2	.562	.554	.572	.537	.532	.601	.565	.563	.461	.586	.563
3	.530	.508	.545	.570	.538	.504	.544	.519	.454	.526	.601
4	.511	.521	.502	.544	.436	.543	.530	.492	.303	.571	.495
					Sample Size						
	1205	550	655	203	472	451	616	589	254	627	200

[a]M. male; F. female; R. Rural; U. Urban; I/C Inner City; H. high; M. average; L. Low

[b]C-MAP items 66, 67, 71, and 72

Table 25

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Understanding Scale by Total Group, Sex, School Location, Grade and GPA[b]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.600	.608	.576	.520	.552	.666	.626	.570	.635	.596	.541
					Item-Total Correlations						
1	.428	.437	.405	.351	.382	.499	.456	.399	.466	.424	.371
2	.428	.437	.405	.351	.382	.499	.456	.399	.466	.424	.371
					Sample Size						
	980	527	453	166	402	351	439	541	191	514	172

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 68 and 73

Table 26

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Academic Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.640	.627	.655	.613	.666	.632	.617	.662	.610	.609	.628
					Item-Total Correlations						
1	.471	.457	.487	.442	.499	.462	.446	.495	.440	.438	.457
2	.471	.457	.487	.442	.499	.462	.446	.495	.440	.438	.457
					Sample Size						
	1933	977	956	330	859	689	1020	913	360	1054	379

[a]M. male; F. female; R. rural; U. urban; I/C inner City; H. high; M. average; L. low

[b]C-MAP items 74 and 75

Table 27

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Teachers Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.682	.679	.679	.664	.703	.658	.658	.709	.673	.671	.658
					Item-Total Correlations						
1	.368	.362	.362	.402	.372	.329	.363	.378	.360	.361	.306
2	.494	.498	.484	.484	.499	.479	.468	.523	.428	.490	.512
3	.482	.477	.489	.466	.530	.446	.427	.538	.578	.448	.503
4	.437	.424	.445	.358	.452	.451	.451	.424	.421	.440	.438
5	.321	.334	.306	.347	.352	.271	.274	.371	.356	.305	.261
6	.369	.361	.367	.302	.401	.354	.347	.409	.287	.359	.317
					Sample Size						
	1904	960	944	329	858	665	993	911	351	1039	375

[a] M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b] C-MAP items 76-81

Table 28

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Parents Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.869	.870	.868	.876	.884	.841	.851	.875	.875	.875	.851
					Item-Total Correlations						
1	.654	.643	.666	.690	.658	.640	.621	.659	.693	.660	.619
2	.628	.646	.611	.635	.643	.576	.596	.628	.596	.651	.616
3	.714	.714	.714	.714	.719	.677	.672	.736	.739	.723	.653
4	.675	.665	.687	.693	.690	.623	.652	.692	.677	.682	.641
5	.680	.688	.671	.695	.731	.611	.640	.700	.710	.684	.664
6	.645	.654	.640	.658	.702	.578	.628	.653	.674	.664	.618
					Sample Size						
	1818	924	894	322	821	621	973	845	345	987	357

[a]M. male; F. female; R rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 82-87

Table 29

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Support Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.880	.847	.840	.874	.879	.881	.884	.873	.854	.880	.882
					Item-Total Correlations						
1	.499	.467	.475	.474	.500	.513	.500	.500	.408	.524	.490
2	.513	.470	.515	.501	.496	.529	.515	.505	.477	.517	.506
3	.611	.568	.516	.603	.604	.618	.642	.572	.583	.611	.605
4	.552	.519	.424	.550	.549	.551	.565	.531	.483	.550	.574
5	.636	.574	.528	.599	.648	.633	.661	.599	.564	.639	.654
6	.605	.601	.488	.605	.616	.574	.627	.576	.614	.576	.629
7	.595	.513	.503	.599	.567	.619	.586	.602	.566	.598	.576
8	.545	.441	.522	.455	.551	.578	.533	.556	.475	.550	.564
9	.590	.515	.528	.605	.558	.615	.593	.587	.589	.583	.591
10	.561	.431	.494	.528	.585	.549	.560	.565	.512	.542	.615
11	.608	.524	.540	.672	.626	.551	.627	.590	.637	.607	.594
12	.564	.528	.475	.563	.561	.571	.574	.548	.479	.591	.536
					Sample Size						
	1891	950	941	324	854	666	991	900	354	1036	369

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

Table 30

Internal Consistency Reliability Coefficients (Alpha) and Item-Total Correlations for the Influencers Scale by Total Group, Sex, School Location, Grade and GPA[a]

Items[b]	Total	Sex		School Location			Grade		GPA		
		M	F	R	U	I/C	9	12	H	M	L
					Alpha						
All	.835	.850	.824	.833	.836	.836	.850	.817	.813	.846	.834
					Item-Total Correlations						
1	.499	.507	.486	.430	.525	.505	.503	.493	.444	.543	.460
2	.436	.428	.471	.332	.456	.467	.481	.385	.367	.438	.475
3	.582	.638	.533	.592	.578	.579	.607	.555	.541	.605	.565
4	.526	.561	.499	.564	.501	.537	.574	.482	.510	.535	.536
5	.601	.686	.542	.580	.618	.593	.618	.581	.510	.630	.613
6	.562	.575	.574	.638	.537	.564	.582	.539	.524	.560	.613
7	.548	.620	.500	.568	.540	.554	.553	.545	.486	.584	.527
8	.486	.487	.494	.540	.468	.497	.533	.450	.447	.510	.476
9	.538	.546	.529	.523	.537	.546	.578	.503	.541	.546	.496
10	.487	.515	.466	.480	.516	.461	.507	.464	.434	.502	.486
					Sample Size						
	1755	897	858	318	807	582	917	838	332	954	345

[a]M. male; F. female; R. rural; U. urban; I/C Inner City; H. high; M. average; L. low

[b]C-MAP items 100-109

and 3) list the occupations of their father and mother. The successes and failures listed by students were categorized according to seven contexts: school, work, family, social, personal, sports and aesthetics. While the failure items are not included in the counseling form of the C-MAP the success questions are. See Chapter 8 for a further discussion of these procedures.

Training sessions were conducted for all raters by the project director. Training for the coding of the Duncan SEI included an overview of the Duncan coding system, practice coding in pairs, discussion of questions and problems, and a second practice session with discussion. Practice sessions continued until each pair of raters achieved a 96% agreement rate between them. All coding using the Duncan SEI was completed before the training for the Success/Failure coding was conducted. Training for coding the seven success/failure contexts followed a similar format to that outlined for the Duncan SEI. Actual coding of contexts did not begin until each rater attained a 98% agreement with another rater using practice data. Questionnaires for coding were assigned to raters according to student identification number in chronological order. Each coder was assigned approximately 500 questionnaires. Ten percent of each rater's questionnaires was coded twice. This was done in an effort to avoid pattern sets between raters. Each rater recoded a ten percent sample made up of approximately equal numbers of questionnaires from each of the other three raters. The ten percent sample for recoding was selected using a table of random numbers.

Results of inter-rater agreement analyses for items from the occupations questions and the success/failure contexts are presented in Table 31. The percentage of inter-rater agreement was determined by comparing the

total number of agreements for the ten percent sample. There was a 92% agreement rate for coding occupations using the Duncan SEI and a 95% agreement rate for coding the success/failure contexts. It might be noted that the lower inter-rater agreement found for father's occupation partially reflects the inability of some students to specify their father's occupation clearly. Some subjects only provided general descriptions of their father's occupation which made coding difficult. For example, a student might say "he works at Caterpillar" with no indication of the level or type of occupation within the Caterpillar corporation that he held. In these cases the rater was instructed to use the code for factory worker unless the father's educational level was a bachelor's degree or higher. When the father had a college degree the code given the occupation matched that for a college degree (See details, Aspiration scale, Chapter 8).

Table 31

Percentage of Inter-Rater Agreement by Items for 10% Sample

Items	Inter-Rater Percentage Agreement
Duncan Socioeconomic Status Index	
23. Father's Occupation	87
24. Mother's Occupation	94
25. Student's Expected Career	93
28. Student's Fantasy Careers	93
Total for All Items Using Duncan SEI	92
Context of Successes/Failures	
Successes	93
Failures	96
Total for All Successes/Failures	95

Chapter 6

SCALE INDEPENDENCE

Scales on the C-Map with the exception of nominal scales, (i.e., measures of sex, age, race or school grades) were examined for independence using several statistical methods. Two types of factor analyses were used: a) exploratory and b) informal confirmatory. A correlation matrix of all subscales identified by factor analyses was obtained.

Results of the factor analyses and correlation analyses are presented in this first section. Data is presented next for correlations among scales within each of four sets of scales: Motivation, Background, Personal and Environment. A third section comments on intercorrelations among all C-MAP scales. This section is relevant to the regression analyses presented in Chapter 7 but is provided here to keep all the correlation data together.

I. Factor Analyses

Exploratory and confirmatory varimax factor analyses were used (Kim & Mueller, 1980, Tucker & Lewis, 1973). Exploratory factor analyses were conducted with data in both phases of data collection described previously. Exploratory analyses were intended to extract a smaller set of factors from an originally larger set of logical scales. This procedure identified redundancy among scales measuring similar dimensions of the same general construct. General constructs were assumed to be those identifed in the theoretical model underlying the development of the C-MAP (see Chapter 8); they included the Background, Personal, Environment and Motivation aspects of the model. The Background set were not amenable to factor

analytic procedures because they were nominal scales. Thus, exploratory factor analysis was conducted with the scale items within each of three sets of constructs: Personal, Environment and Motivation. Results of exploratory factor analyses were used to reduce the length of the measure developed for the second phase of data collection. Exploratory factor analysis using second phase data were also conducted to develop the final form of the C-MAP. Exploratory analyses were successful in that they provided evidence of a strong factor structure for some scales, and for others they indicated that one scale could substitute for several (i.e., this was true for the Parents scales which originally measured mother and father influence separately, both in the past and the present). Details on these exploratory factor analyses are available from the first author.

Confirmatory factor analyses were conducted with the variable items derived from the exploratory analyses in the second phase of development. Confirmatory analyses were conducted for three sets of items: Personal, Environment and Motivation. Only the results of the confirmatory analyses are presented here (see Tables 32, 33 and 34). Confirmatory factor analyses procedure used the SPSS FACTOR program with varimax rotation, permitting an oblique solution which allows a moderate amount of intercorrelation among factors. This approach was consistent with assumptions about the nature of the variables being measured. The reader may refer to Chapter 8 of this manual in order to determine which items on specific logical scales may have been dropped as a result of these factor analyses. The following discussion highlights the factors derived in the factor analysis and independence of the C-MAP scales.

Table 32 presents the factor structure of the Motivation items for Career Commitment, Career/Educational Aspiration and Mastery. Career

Table 32

Factor Analyses for Items in Motivation Scales of the C-MAP
(N=1315)

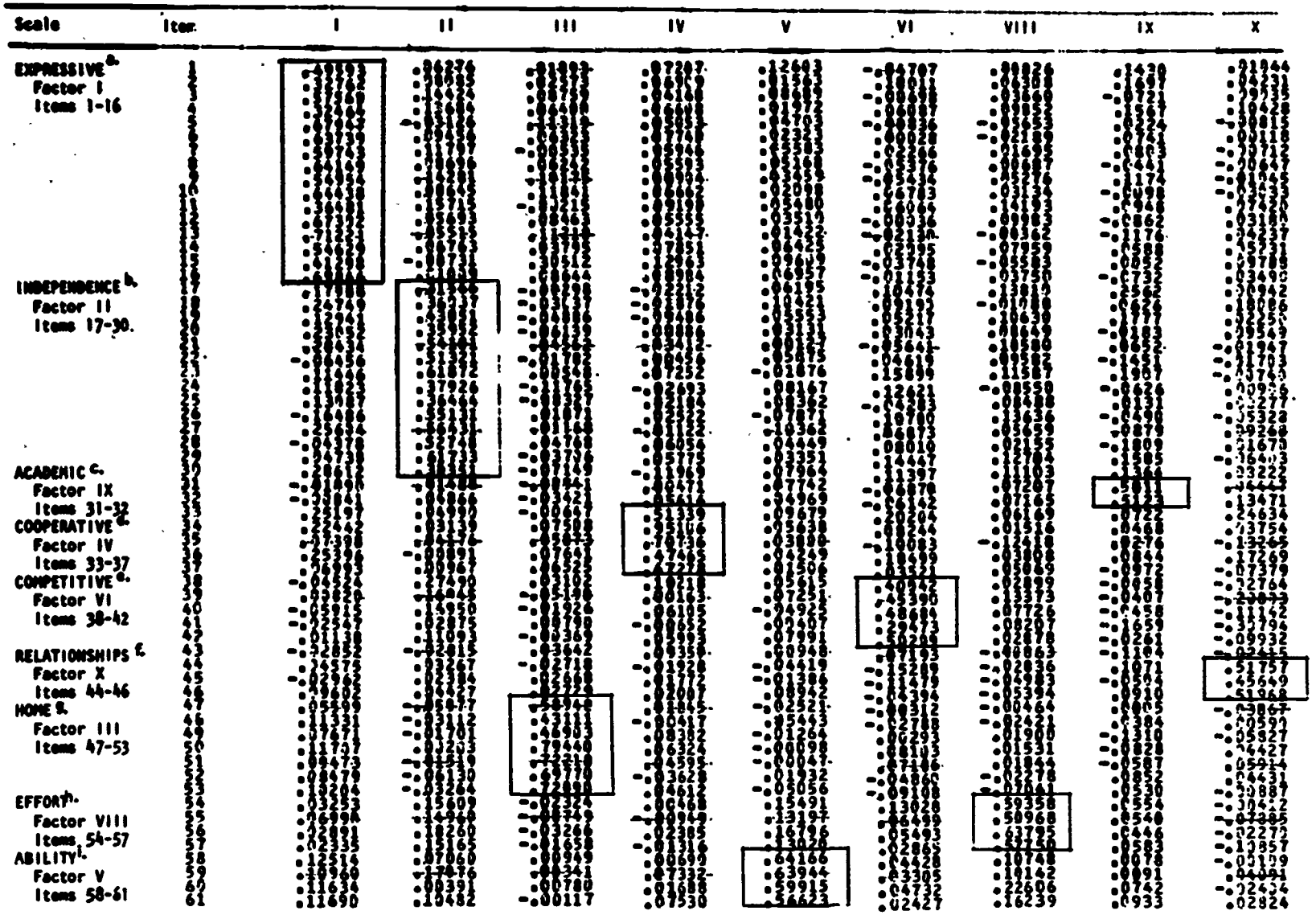
Scale	C-MAP Item #	Factor Weights I	II	III
CAREER Factor I Items 1-15	1	.415	.002	.142
	2	.396	.067	.119
	3	.449	.074	.161
	4	.537	.050	-.017
	5	.532	.067	.117
	6	.454	.098	.162
	7	.445	.111	.093
	8	.366	.040	.120
	9	.334	.010	.130
	10	.519	.093	.085
	11	.604	.054	.078
	12	.546	.038	.056
	13	.529	.136	.029
	14	.477	.174	.206
	15	.366	.089	.245
MASTERY Factor III Items 16-21	16	.135	.167	.375
	17	.210	.183	.413
	18	.067	-.014	.361
	19	.155	.049	.381
	20	.248	.213	.457
	21	-.005	-.009	.391
ASPIRATIONS Factor II Items 22-25	22	.091	.803	.094
	23	.081	.699	.029
	24	.066	.454	.059
	25	.189	.685	.215

Commitment was the first factor (items 1-15) in this three factor solution with loadings ranging from .33 to .60. The second factor was Career/ Educational aspiration (items 22-25) with loadings ranging from .45 to .80. The third factor was Mastery (items 16-21) with loadings ranging from .38 to .46. No items loaded above .30 with any factor but their own, indicating the relative independence of these scales.

Table 33 presents the results for the Personal items. The Expressive factor was factor I (items 1-16) with loadings ranging from .30 to .71. It should be noted that Factor VII had higher loadings for three of the Expressive items (2, 4, 11). These items were (2) cheerful, (4) happy and (11) likeable. Item 14, friendly, loaded .36 on Factor VII and .55 on Factor I. The Expressive scale is not used in the C-MAP, counseling form. However, researchers are encouraged to use it in order to further understand the relationship of this factor to the Career Commitment motivation scale. For details see a description of this scale in Chapter 8 of the manual. Factor II was the Independence scale (items 17-30) with loadings ranging from .30 to 62. The other Personal factors were relatively independent with none of the items loading (.30 or better) on other factors. Factor III was Homemaking (items 47-53). Loadings ranged from .43 to 79. Factor IV was Cooperative (items 33-37) with loadings ranging from .47 to 95. Factor V had high loadings for Ability Attributions (items 58-61) with loading ranging from 57 to 64. Factor VI was Competitive (items 38-42) with loadings ranging from .29 to .50. Factor VIII was Effort Attributions (items 54-57) with loadings from .51 to .64. Factor IX was Academic Self-Esteem items (31, 32) with loadings of .50 and .51. Factor X (items 43-46) was Relationships Concerns. The four items from Spence and

Table 23

Factor Analyses for Items in Personal Scales of the C-MAP
(N = 1037)
Factor Weights



[a]These items are not on the Counseling form of C-MAP [b]C-MAP items 43-56 [c]C-MAP items 74-75 [d]C-MAP items 35-39 [e]C-MAP items 30-34

[f]C-MAP items 40-42 (note item 43 was dropped, see Chapter 8 for details) [g]C-MAP items 57-63 [h]C-MAP items 66,67,71 & 72 [i]C-MAP items 64,65,69 & 70

Helmreich's (1978) Personal Unconcern scale were included, but item 43 appears to be unrelated to this or/any other Personal factor (true also in our exploratory analysis). The three items included in the C-MAP Relationships Concerns scale had loadings ranging from .46 to .52.

Table 34 presents the factor structure for the Enviroment items, Support for Women Working, Parents, Teachers, and Personal Influencers. A four factor solution confirmed the hypothesized scales. The first factor was Support for Women Working (items 1-12) with loadings ranging from .55 to .67. Factor II was Personal Influencers (items 25-34) with loadings ranging from .47 to .66. Factor III was Parents (items 19-24) with loadings ranging from .69 to .78. Factor IV was Teachers (items 13-18) with loadings ranging from .39 to .60. None of these items had loadings of .30 or better, supporting their relative independence on factors other than their own.

In general, confirmatory factor analyses confirmed the hypothesized structure of the C-MAP scales.

II. Intercorrelations Among Scales

In this section intercorrelations among 24 scales are discussed. Nineteen of these scales appear on the profile sheet of the counseling form of the C-MAP. Four scales, which do not appear on the profiles of the C-MAP, are demographic variables (Race, Geographic (School) Location, Sex and Grade in school). A fifth scale, not on the C-Map but included here, is the Expressive scale from Bem's (1977) Sex Role Inventory. As described in Chapter 8, this scale is retained because of its promise for further research.

Below, the intercorrelations among scales within each of four sets of variables: Motivation, Background, Personal and Environmental are

Table 34

Factor Analyses for Items in Environmental Scales of the C-MAP (N=1624)

Scale	Item #	Factor Weights I	II	III	IV
SUPPORT Factor I Items 1-12, C-MAP 18-99	1	.548	.026	-.020	.026
	2	.549	-.051	-.044	.049
	3	.641	-.034	-.019	.089
	4	.591	.003	.065	.112
	5	.669	-.030	.046	.136
	6	.632	-.025	.057	.125
	7	.633	-.014	.047	.130
	8	.571	.042	.026	.062
	9	.619	.027	-.046	-.010
	10	.591	.015	-.029	.054
	11	.667	.010	-.026	.028
	12	.609	.026	.006	.013
TEACHER Factor IV Items 13-18, C-MAP 76-81	13	.123	.054	.009	.433
	14	.068	.041	.022	.599
	15	.029	.102	.052	.580
	16	.052	.126	.002	.515
	17	.049	.098	.118	.392
	18	.187	-.023	.019	.446
PARENTS Factor III Items 19-24, C-MAP 82-87	19	-.046	.090	.709	.121
	20	-.004	.100	.690	.044
	21	-.011	.060	.779	.064
	22	.014	.072	.741	.084
	23	.033	.043	.765	-.005
	24	.055	.057	.731	-.010
INFLUENCERS Factor II Items 25-34, C-MAP 100-109	25	.051	.539	.220	.027
	26	-.103	.469	.273	.092
	27	.032	.638	-.017	.120
	28	-.011	.575	.004	.162
	29	.111	.664	.076	.007
	30	-.064	.620	.106	.025
	31	.123	.616	-.000	-.026
	32	-.046	.537	.025	.030
	33	-.024	.599	-.029	.098
	34	-.060	.541	.015	.064

described. Tables 35, 36, 37 and 38 provide these data. A final paragraph reviews correlations between scales across sets.

Motivation. Table 35 presents the intercorrelations among Career Commitment, Mastery, and Career/Educational Aspiration. The highest correlation is between Career Commitment and Mastery (r = .42). The correlation between Career Commitment and Aspiration is .32, and between Mastery and Aspiration .28. All of these correlations are positive and moderate, suggesting that the motivation scales are measuring somewhat overlapping attributes.

Background. Table 36 presents the intercorrelations among seven background scales: Socioeconomic Status, Math Ability, Verbal Ability, Race (Minority vs White), Geographic (School) Location (Rural vs. Urban/Innercity) Sex (Girls vs. Boys), and Grade (12th vs. 9th). For the first three variables positive correlations indicate high scores. For the four remaining variables positive correlations are descriptive of the first named group in the contrast. The highest intercorrelation in Table 36 is between Math and Verbal Ability (r = .42). The next highest correlation is .21 between Verbal Ability and Sex indicating that girls score higher than boys on Verbal Ability. There are other statistically significant correlations ranging from .18 to .11. The reader is invited to review these, mindful that these are very modest relationships.

Personal. Table 37 presents the intercorrelations among ten Personal scales: Competitive, Cooperative, Independence, Expressive, Academic Self-Esteem, Relationship Concerns, Ability Attributions, Effort Attributions, Valuing Understanding and Homemaking Commitment. Four correlations are .30 or higher. The highest correlation is between Cooperative

Table 35
Intercorrelation Matrix for Motivation Scales
of the C-MAP
(N=1049)[a]

Scale	Career	Mastery	Aspirations
1. Career			
2. Mastery	.43		
3. Aspirations	.32	.28	

Table 36
Intercorrelation Matrix for Background Scales
of the C-MAP
(N=1049)[a]

	SES	Mat	Ver	Race	Sch.Loc.	Sex	Grade
1. Status							
2. Math	.05						
3. Verbal	.08	.42					
4. Race	-.07	-.11	-.12				
5. School Location	.12	-.17	-.12	.18			
6. Sex	-.05	.10	.21	.04	.02		
7. Grade	-.00	-.02	.03	-.01	.02	-.00	

a. Total sample with complete data for all C-MAP scales

Table- 37
Intercorrelation Matrix for Personal Scales
of the C-MAP
(N=1049)[a]

Scale	Com	Coop	Ind	Exp	Aca	Rel	Abl	Eff	Und	Hom
1. Competitive										
2. Cooperative	.10									
3. Independence	.30	.11								
4. Expressive	.01	.38	.28							
5. Academic	-.09	.02	.07	.02						
6. Relationships	.19	-.02	-.03	-.07	-.12					
7. Ability	.22	.06	.26	.12	.12	.05				
8. Effort	.12	.17	.23	.23	.08	-.03	.32			
9. Understanding	.11	.11	.13	.20	.02	-.01	.18	.31		
10. Home	-.02	.13	-.07	.25	-.08	.01	-.05	-.01	.08	

Table- 38
Intercorrelation Matrix for Environment Scales
of the C-MAP
(N=1049)[a]

	Parent	Teacher	Support	Influencers
1. Parent				
2. Teacher	.12			
3. Support	.01	.17		
4. Influencers	.20	.15	.04	

a. Total sample with complete data for all C-MAP scales

and Expressive (r = .38). Effort correlates with Ability .32.

Effort Attributions also correlate .31 with Valuing Understanding. A fourth correlation (r = .30) is that between Competitive and Independence.

Environment. Table 38 presents the intercorrelations for the four Environment scales. None of the correlations between these scales exceeded .20. Parents and Personal Influencers were correlated .20; Personal Influencers was also correlated with Teachers, (r = .15).

Correlations Between Scales Across Sets. Correlations above .30 between predictors across all sets of variables are noted (Table 39). There were only three of these, all of which relate in some way to sex differences. The Support for Women Working scale correlates with Sex (r = .52). Sex was also correlated with the Expressive scale (r = .39). The third correlation above .30 was that between the Expressive and the Support for Women Working scale (r = .32). These correlations are further commented on in the next section.

III Intercorrelations Among Predictors: Effect on Regression Analyses

Table 39 presents intercorrelations among all scales on the C-MAP. Among Background predictors, Sex was correlated above .30 with two variables from other predictor sets, Support for Women Working and Expressive. Neither the Sex variable, nor the Expressive variable were significant predictors in regression analyses though, despite significant correlations with the motivation criteria. However, Support for Women Working was a significant predictor for all three motivation measures. When only Background predictors were considered in the regression analyses, Sex was a significant predictor (favoring males) for Mastery motivation, but not for the other two types of motivation. Sex was also

Table 39
Intercorrelation Matrix for all Scales
of the C-MAP
(N=1049)[a]

Scales	Car	Mas	Asp	SES	Mat	Ver	Race	ScLo	Sex	Gra	Com	Coop	Ind	Exp	Aca	Rel	Abl	Eff	Und	Hom	Par	Tch	Sup	Inf
1. Car																								
2. Mas	.43																							
3. Asp	.32	.28																						
4. SES	.11	.17	.19																					
5. Mat	.10	.14	.12	.05																				
6. Ver	.14	.15	.25	.08	.42																			
7. Race	.11	.08	.16	-.07	-.11	-.12																		
8. ScLo	.09	.15	.16	.12	-.17	-.12	.18																	
9. Sex	.09	-.05	.05	-.05	.10	.21	.04	.02																
10. Gra	-.05	-.02	-.08	-.00	-.02	.03	-.01	.02	-.00															
11. Com	.23	.26	.15	.14	.02	.03	-.05	.04	-.20	-.05														
12. Coop	.18	.10	.02	.06	.00	.07	.02	.01	.16	-.02	.10													
13. Ind	.29	.36	.15	.15	.01	.09	-.03	.01	-.13	.05	.30	.11												
14. Exp	.20	.12	.07	.03	.06	.17	.00	.03	.39	.06	.01	.38	.28											
15. Aca	.07	.14	.18	.08	.23	.28	-.01	.04	.04	.08	-.09	.02	.07	.02										
16. Rel	-.10	-.01	-.00	.02	.07	-.00	-.06	-.06	-.07	-.14	.19	-.02	-.03	-.07	-.12									
17. Abl	.18	.20	.21	.12	.12	.14	-.01	.01	-.12	.04	.22	.06	.26	.12	.12	.05								
18. Eff	.20	.22	.09	.05	.12	.12	-.02	.05	.10	.02	.17	.17	.23	.23	.08	-.03	.31							
19. Und	.20	.16	.04	.02	-.02	.03	.03	.03	.08	.06	.11	.11	.13	.20	.02	-.01	.18	.31						
20. Home	-.11	-.04	-.07	-.03	.03	.03	-.03	-.04	.09	.06	-.02	.13	-.07	.25	-.08	.01	-.05	-.01	.08					
21. Par	.17	.22	.28	.12	.07	.09	.09	.04	-.05	-.19	.13	.02	.10	.06	.04	-.00	.10	.08	.06	.03				
22. Tch	.22	.24	.20	.02	.14	.23	.03	.13	.10	.06	.03	.13	.08	.14	.24	-.05	.07	.11	.07	.07	.12			
23. Sup	.25	.15	.17	.05	.10	.22	.01	.10	.52	.04	-.19	.11	.03	.32	.14	-.18	-.07	.06	.05	.03	.01	.17		
24. Inf	-.00	.03	.06	-.04	.02	.01	.05	-.01	.09	-.03	.07	.11	-.02	.10	-.03	.10	.05	.08	.11	.09	.20	.15	.04	

[a] Total sample with complete data for all C-MAP scales

significant in the regression analyses for both the Mastery and Career Commitment motivation scales, when Background and Environment scales were included and Personal scales were excluded. However, when all scales (i.e. Background, Personal and Environment) were considered together in the regression analyses, Sex was not a significant predictor. These findings suggest that sex differences were accounted for by other measures in the Personal and Environment sets of scales.

Within the Personal set of scales the Expressive scale correlates moderately with four scales (Cooperative, Home, Independence, and Effort Attributions). Expressive appears to be somewhat redundant with these dimensions. The Expressive scale was a signficant predictor for the Career Commitment motivation scale when only the Personal scales were entered in the regression analyses. However, it was not a significant predictor in the regression analyses when all variables (Background, Personal, and Environment) were considered.

Within the Environment set of scales the Parents, Teachers and Personal Influencers scales were moderately correlated. These very modest correlations appeared to produce a classical supressor effect (see Cohen & Cohen, 1975) in the regression analyses. The Parents and Teachers scales had smaller beta weights (although significant) than the Influencers scale in the regression analyses with Career Commitment as criterion. The zero order correlations of these scales to the criterion were .17, .21 and .00, respectively. Thus unique aspect of the Influencers scale emerged in the regression analyses when its redundancy with Parents and Teachers was removed. Such a supressor effect was viewed positively for student assessment and counseling.

In summary, it appears that moderate intercorrelations among predictors did not preclude a predictor from being significant in regression analyses. Cohen and Cohen (1975) suggest that when two predictors are correlated .80 or better, one of the predictors should be removed from regression analyses. In our data set there were no correlations at this level between predictors.

Chapter 7

C-MAP VALIDITY

The primary type of validity evidence obtained for the C-MAP is construct validity. The rationale for obtaining this type of validity for the C-MAP was to validate the relationships among the subscales to the three motivation measures. Recently Carmines and Zeller (1979) noted that construct validity may be more useful in the social sciences than content or criterion-related types of validity. Content validity is limited to behavioral constructs and is less well suited to attitudinal or other more abstract concepts. In contrast construct validity has greater generalizability in the social sciences. The primary requirement is that the measure be placed in a theoretical context. Construct validity focuses on the extent to which a measure behaves consistent with theoretical expectations. The theoretical model for the C-MAP's development, described in Chapters 1 and 8 provided the basis for testing the construct validity of the C-MAP subscales.

The procedure used to establish construct validity for the C-MAP scales involved a crossvalidation procedure to determine which sub-scales were significant predictors of the motivation scales when two samples were used. Following crossvalidation, predictive equations were computed for each motivation scale using only those scales that obtained good crossvalidities.

The predictive equations are presented first in this chapter, followed by a description of the crossvalidation procedure and findings supporting the derived predictive equations.

I. Regression Analyses

The original research question guiding the study on which the C-MAP was based was: What factors inhibit the career and achievement motivation of adolescents? A partial answer to this question is provided in the study through regression analyses. A wide range of predictors from a variety of dimensions (i.e. Background, Environment, and Personal characteristics) were included. Findings from the regression analyses would suggest that researchers consider regression results as a viable alternative to simple zero order correlational findings. The multivariate research approach used in the development of the C-MAP indicated that several significant zero order correlations between predictors and motivation scales were non-significant in the regression analyses when all the scales were considered together. Such findings indicate redundancy among scales. Examples of redundancy include the Expressive scale from the Personal set ($r = .20$, $p < .001$ with the Career motivation scale) and Sex from the Background set, ($r = .09$, $p < .001$ with the Career motivation scale). Neither of these predictors were significant in the regression analyses with the Career motivation scale as criterion.

A. Regression Analyses Procedure

Regression analyses used to test the research question was a form of hierarchical set analyses (Cohen & Cohen, 1975) in which sets of variables (Background, Personal and Environment) are entered in a predetermined order. The sets of variables are entered based on theoretical considerations, rather than based on the strength of their semipartial correlations with the criteria (the procedure followed in stepwise regression).

The ordering of the sets of variables always entered Background scales first because they were considered theoretically to have preceded the other set in their effect on the motivation measures. The other two sets (Personal and Environment) were viewed as affecting motivation in the present as well as the past and therefore neither one logically came first. Based on the crossvalidation analyses Personal scales were found to contribute most to the Mastery and Career Commitment scales and therefore they were entered after Background for these types of motivation. For Aspiration motivation Environment contributed more than Personal scales and for that reason it was entered before the Personal set in this analysis (see Tables in Appendix G).

B. Predictive Equations for the C-MAP Scales

Regression analyses were conducted only with those predictors that were significant in the cross validation analyses described later in this chapter. The regression analyses, using the significant set of predictors, were run in order to obtain final estimates of the multiple correlations (R) and beta weights for the scales. The regression findings and related narrative descriptions are presented for each of the three motivation scales (Career, Mastery, and Aspiration). Tables 40, 41 and 42 contain related data. The simple correlations of subscales with the motivation scales are included in the tables to permit the reader a comparison between beta and r. When supression occurs (See Chapter 6 for a discussion of the suppression process in regression analyses) the nature of the suppression may be clarified by comparing the beta weight with the simple correlation given in the tables. These sections are followed by brief discussions of the contribution of the three sets of predictors (Background, Personal, Environment) to the three motivation scales.

Predictors of Career Commitment. The regression analyses for Career Commitment was unique among the motivation measures in that Background scales were the least important predictors compared to Personal and Environment scale predictors. Also, the multiple correlation (R) was the highest for the regression equation predicting Career Commitment when compared to the other two motivation scales. Data are presented in Table 40.

Personal scales accounted for most of the variance. Competitive and Independence were the strongest predictors within the Personal set. Homemaking Commitment, Cooperative and Valuing Understanding were next in importance with Homemaking related in a negative direction. Homemaking has a slightly higher beta weight than its simple correlation with Career Commitment (i.e. 13 vs. 11) which may be the result of a suppressor effect. See Chapter 6 for a more detailed discussion. The Home scale was correlated (r = .13) with the Cooperative scale which may have permitted more of the unique variance in the Home scale, related to Career Commitment, to emerge. Two more scales were significant but less so in this analyses, Effort Attributions and Relationships Concerns.

Environment scales also contributed importantly to Career (Table 40). The strongest relationship was found for the Support scale, with Teachers and Parents also contributing importantly. Personal Influencers contributed significantly but was less so than other scales in this set. As described in Chapter 6, a suppressor effect was operating for this scale because of its correlations with the Parents and Teachers scales. Suppression of these latter scales relationship to Career Commitment by the Influencers scale permitted its unique contribution to the motivation scale to emerge.

Table 40

Regression Analyses Results for Career Commitment

(N = 1123)

Subscale	a. β	Cumulative b. R2	R^2 Change	Simple r
Background		.0689		
Race	.11***			.12
Math Ability	.08*			.12
Personal		.2203	.1514	
Cooperative	.09***			.17
Competitive	.18***			.22
Independence	.16***			.30
Relationships	.06*			.09
Home	-.13***			-.11
Understanding	.13***			.22
Effort	.06*			.21
Environment		.2977	.0774	
Parents	.12***			.19
Teachers	.14***			.23
Support	.22***			.25
Influencers	.08**			.00

Multiple Correlation: R = .546
Overall F = 36.17 (13,1109) p < .001
* p < .05
** p < .01
*** p < .001
a. Standardized beta weights when all predictor variables are considered together in the regression analysis
b. Cumulative R^2 represents the variance accounted for by that set of subscales, and all subscales in the preceding set(s).

Among Background scales Race (Minority vs White), with a positive weight for Minority students, was a significant predictor when all three sets of predictor scales were considered. Less important but significant was Math Ability.

Predictors of Mastery. The regression analyses for Mastery indicated, similar to Career Commitment, that the Personal scales were the most important predictors. Background and Environment scales predicted less strongly (Table 41). Personal scales contributed most, followed by Background and then Environment, in that order (Table 41).

Within the Personal scales, Independence was the most important predictor. A second strong predictor was Competitive. Less important but significant were Valuing Understanding and Effort Attributions.

Within the Background scales, Math Ability and School Location (favoring Urban/Inner City) were the strongest predictors. Socioeconomic Status was also a significant predictor in this analysis.

Within the Environment scales, Teachers, Parents and Support for Women Working were about equal in their relationship with this type of motivation.

Table 41

Regression Analyses Results for Mastery

(N = 1170)

Subscale	a. β	Cumulative b. R^2	R^2 Change	Simple r
Background		.0957		
Social Class	.07**			.18
Math Ability	.11***			.16
School Location	.11***			.14
Personal		.2321	.1364	
Independence	.25***			.36
Competitive	.16***			.26
Understanding	.06*			.16
Effort	.06*			.22
Environment		.276	.0439	
Teachers	.13***			.23
Parents	.12***			.22
Support for Women Working	.11***			.14

Multiple Correlation: R = .525

Overall F = 44.24(10,1160), p < .001

* p < .05

** p < .01

*** p < .001

a. Standardized beta weights when all predictor variables are considered together in regression analysis.

b. Cumulative R^2 represents the variance accounted for by that set of subscales and all subscales in the preceding set(s).

Predictors of Career/Education Aspiration. A unique aspect of regression analyses with Aspiration as the criterion was that Background scales were the strongest predictors (R = .40, Table 42). Environment scales were second in importance. The Personal set of scales were significant but less important in predicting this type of motivation.

Background scales that contributed most significantly were Verbal Ability, Race (favoring Minority adolescents), School Location (favoring Urban/Inner City) and Socioeconomic Status. The Age variable (favoring 9th graders compared to 12th graders) was also significant, but contributed less.

Within the Environment scales Parents was the strongest predictor, with Support for women working second and Teachers third.

The most important Personal scales were Ability Attributions, followed by Competitive and Academic Self Esteem.

Table 42

Regression Analyses Results for Career/Education Aspiration

(N = 1181)

Subscale	a. β	Cumulative R^2 b.	R^2 Change	Simple r
Background		.1534		
Social Class	.12***			.18
Verbal Ability	.17***			.24
Age	-.06*			-.09
Race	.16***			.17
School Location	.14***			.16
Environment		.2025	.0501	
Parents	.16***			.27
Teachers	.07**			.20
Support for Women Working	.10***			.16
Personal		.2300	.0275	
Academic Self Esteem	.07**			.17
Ability Attributions	.10***			.18
Competitive	.09**			.13

Multiple Correlation: R = .479

Overall F = 31.71 (11,1170) p < .001.

* p < .05
** p < .01
*** p < .001

a. Standardized beta weight, when all predictors were considered together in the regression analysis

b. Cumulative R^2 represents the variance accounted for by that set of subscales and all subscales in the preceding set(s)

C. Background Characteristics as Predictors of the Three Motivation Scales

Background scales were the most significant predictors for Career/Educational Aspiration level, whereas these scales were less important predictors for Mastery (short-range achievement motivation) and Career Commitment (long-range commitment to a career). The finding that Background scales were less important predictors for two of the Motivation scales is interesting, since Background factors are generally not amenable to change. While these variables are not themselves modifiable, the fact that a person knows that her or his social class background or school grades may influence their level of career and educational aspiration negatively might be used by that person to counteract the influence.

D. Personal Characteristics as Predictors of the Three Motivation Scales

Personal scales contributed significantly to all three motivation measures. However, they accounted for nearly twice as much of the variance for the Career Commitment and Mastery scales, compared to the variance accounted for in Career/Educational Aspiration.

Academic self-esteem was a significant predictor of Career/Educational Aspiration level. It was not a significant predictor of (long-term) Career Commitment. The Independence scale was a significant predictor for two of the three Motivation scales: Career Commitment and Mastery. A Competitive achievement style was predictive of all three types of motivation assessed by the C-MAP.

A Cooperative achievement style was related to one motivation scale, Career Commitment. However, in the cross-validation study this predictor was significant only in one of the samples. Thus, its

relation to Career Commitment is less stable than is the case for other predictors included on the C-MAP. However, theoretical interest in the construct led us to retain the Cooperative scale, but suggest caution in interpretation.

Effort Attributions were predictive of Mastery motivation (i.e. achievement on short-term tasks) and Career Commitment but not of Career/Educational Aspiration. On the other hand Ability Attributions were predictive for level of Career/Educational Aspiration but not of Career Commitment or Mastery motivation.

Relationships Concerns contributed significantly to the prediction of Career Commitment but not to Mastery or Career/Educational Aspiration. Homemaking was a contributor to the prediction of one of the motivation measures, Career Commitment. The beta weight was negative, suggesting that persons low on Homemaking Commitment are more likely to have high Career Commitment scores. It also suggests that persons who give priority to homemaking roles over career roles will likely have lower Career Commitment scores.

E. Environment Characteristics as Predictors of the Three Motivation Scales

There were four significant Environment predictors, Parents Support, Teachers Support, Support for Women Working and Personal Influencers.

The Parents Support scale was a significant predictor for all three motivation measures. It contributed more to the prediction of level of Career/ Educational Aspiration than to Mastery and Career Commitment.

The Teachers Support scale was also a significant predictor for all three types of motivation. It contributed more in predicting Career Commitment than the other two motivation measures.

In addition the Support for Women Working scale was also predictive for all three criteria. It was a stronger predictor for Mastery and Career Commitment than for Career/Educational Aspiration level.

The fourth scale in the Environment set, Personal Influencers, was a contributor to the prediction of long-range Career Commitment when other predictors are considered, but does not contribute to short-range Mastery motivation or to Aspiration level. The reader is referred to a description of relationships among C-MAP scales in Chapter 6 for a discussion of how interrelationships among predictor scales produced a suppressor effect enabling the unique contribution of Personal Influencers to emerge.

II. Double Crossvalidation

Because the predictive equation derived from regression analyses with one sample of subjects is likely to change when applied to a new sample of subjects, it is important to estimate the degree of change so that greater confidence may be placed in the stability or lack of stability of the predictive findings. The reason for the change, referred to as shrinkage, is that there is error in the zero-order correlations on which the calculation of the regression equation weights is based and these correlations are treated as if they were error-free (Tatsuoka, 1971).

Cross-validation is a procedure for verifying the predictive equation derived from one sample with another independent sample of subjects. In the development of the C-MAP the procedure for double cross-validation described in Tatsuoka (1971) and Kerlinger and Pedahazur (1973) was

followed. These authors suggest that the total sample be randomly split into two samples.

In order to determine if there were interaction effects between Background variables and scales in the other two sets in relation to the criteria, second order interaction terms for Race, Sex, Status, School Location, and Ability were entered with all scales in the Personal and Environmental sets. These analyses were run separately. Their purpose was to identify or rule out possible interactive effects. Seven significant interactions were identified (See Table 43), and included in the cross-validation analyses.

The total sample* was divided randomly into two samples and the following procedure used. Sample one was used as the screening sample. Regression equations were derived for this sample and then these were used to predict the predictive equations for the second sample (i.e. the cross-validation sample). A Pearson product-moment correlation was calculated between the observed scores for the cross-validation sample and their predicted scores and is represented by R in Table 44. This correlation is analogous to a multiple correlation. Then this correlation is compared to the original R for sample one. The difference between the multiple correlations provides an estimate of the amount of shrinkage occurring. Kerlinger and Pedahazur (1973) have recommended a double-cross-validation procedure in which sample one is used as the cross-validation sample and sample two used as the screening sample. This recommendation was followed for the C-MAP cross-validation. Table 44 presents data for the two (double) cross-validations for each motivation scale.

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*This procedure was followed for all subjects who had filled out questionnaires rather than on the smaller number of subjects who had completed all items on the questionnaires. This was done in order to not bias the random selection procedure by removing incomplete data first.

Table 43

Original List of Scales Used in the Development of the C-MAP Showing Those Retained for the C-MAP

Original Sub Scales	Significant for Career[a.]	Significant for Mastery[a.]	Significant for Aspirations[a.]
Background			
Sex			—
Math	Math	Math	
Verbal			Ver
Grade (in School)	—	SES	SES
Status	—		
Race (Spanish vs White)	Race	—	Race
Race (Black vs White)		—	
Race (Mixed vs White)			
School Location (Rural vs Inner city)	—	Loc	Loc
School Location (Urban vs Inner city)			
Personal			
Competitive	Com	Com	Com
Cooperative	Coop		—
Independence	Ind	Ind.	—
Expressive	—	—	
Academic		—	Aca
Relationships	Rel	—	—
Home	Home	—	
Ability (Success)	—	—	Ability
Luck (Success)			—
Effort (Success)	Eff	Eff	—
Ability (Failure)	—	—	—
Luck (Failure)	—	—	—
Effort (Failure)	—	—	—
Social Approval Values	—	—	—
Altruism Values			—
Understanding	Und	Und	—
Environment			
Community Role Models			
Parents	Par	Par	Par
Teachers	Tch	Tch	Tch
Support	Supp	Supp	Supp
Influencers	Inf	—	—
Interactions			
Sex x Support			
Sex x Academic			
Sex x Independence			
Sex x Competitive			
Sex x Home			
Grade x Academic			
Race (Black vs White) x Academic			

a. Significant when all three sets of scales were considered simultaneously: Background, Personal, Environment

Table 44

Cross-validation Multiple Correlations (R) for Screening Sample and Cross-validation Sample

Sets of Predictors	Career				Motivation Criteria: Mastery				Aspiration			
	S_1	CV	S_2	CV	S_1	CV	S_2	CV	S_1	CV	S_2	CV
Background	.33	.31	.24	.21	.38	.29	.32	.25	.45	.44	.47	.46
Background and Personal	.52	.44	.50	.43	.50	.42	.53	.44	.48	.45	.56	.51
Background, Environment and Personal	.59	.52	.55	.49	.54	.46	.57	.48	.52	.48	.59	.53
Background and Environment	.62	.52	.57	.49	.56	.46	.58	.48	.54	.48	.61	.52
Background, Environment, Personal and Interactions	.47	.41	.39	.34	.44	.36	.43	.35	.49	.47	.53	.50
Environment	.42	.37	.35	.31	.32	.28	.35	.31	.35	.33	.38	.36
Personal and Environment	.57	.50	.53	.49	.50	.45	.53	.48	.44	.40	.48	.43
Personal	.45	.39	.46	.42	.43	.39	.47	.42	.33	.29	.37	.32

S_1 S_2 = screening samples

CV = cross-validation samples

In the cross-validation regression analyses the number of subscales was larger than the final set of scales used for each motivation scale on the C-MAP. The final sets represent only those scales that were significant predictors for that type of motivation and were also found to have good cross-validities. The larger set of subscales is listed in Table 43 in order to illustrate which ones were retained and which ones were dropped.

When observed differences in the multiple correlations are small justification exists for combining the samples and calculating the regression equations for the total group. Observed shrinkage appears to be small, in some cases as little as .01 and in others as much as .08. A multiple R of .08 represents less than one percent of the variance accounted for in the equation.

With one exception, only those predictors that were significant in regression analyses with both cross-validation samples and the total sample were retained for regression analyses on the total group. The exception was the Cooperative scale, which was significant in the total sample but only one of the cross-validation samples. This scale was retained largely because of its theoretical interest, and the user of the C-MAP is cautioned about its possible instability as a predictor. None of the interaction effects were significant across all samples in the cross-validation procedure. They were therefore dropped from further consideration.

For the development of the C-MAP we were not content to conduct the cross-validation regression analyses in only one way. We wished to calculate the relationships of predictor scales from the Background set separately as well as in combination with the other sets. For example, it seemed useful to know how well Background scales predicted each type of

motivation when the other predictors were not considered. It is conceivable that a counselor/teacher might want to use information on a student's Background without taking time to collect information on the Personal and Environment scales. In order to determine if such a shortcut was supported by empirical data we tested these relationships. In fact, regression analyses were conducted with eight different combinations of sets for each of the three motivation measures. These eight combinations represented all possible combinations of sets. Background scales were entered separately with each motivation scale. Then Background and Personal scales were entered, and so on. The equations for all combinations of scales are provided in Appendix G of this manual. It should be noted that the equations presented in this Appendix include only significant predictors.

III. Suggestions for Further Research

Researchers are encouraged to continue to test the model underlying the C-MAP's development. Refinement of the multiple regression analyses procedure used would be important in continuing to test the model. While the C-MAP was developed following a hierarchical 'set' analyses consistent with Cohen and Cohen (1975), these authors also suggest that within the sets, variables may be ordered a priori, based on theoretical considerations of causal priority. Table 45 presents a refined model outlining a possible ordering of predictor variables for future regression analyses. Background variables might continue to be entered first simultaneously, but the Background set could be purged of Math and Verbal Ability. These two variables could be treated as a separate set of variables and entered as a second set based on the fact that these are not pure ability measures, but rather represent a type of learned achievement.

Within the Personal set two subsets of variables might be used as indicated in Table 45. The logic for this separation is that values such as Independence, Understanding, Homemaking Commitment and Relationships Concerns are thought to mature somewhat later than achievement style (i.e. Cooperative and Competitive), attributions and self-esteem.

For the Environment set the effect of Parents logically precedes that of Teachers, and the effect of Teachers logically precedes that of the perception of support for women working in the community (i.e. the world at large). This set might therefore be entered fourth in the order indicated in Table 45 (i.e. hierarchically within the set).

Table 45

Proposed Ordering of C-MAP Subscales for Future Regression Analyses

Sets of Variables	Order Within Set
Background	simultaneous
Status	
Race	
Sex	
Age	
Ability	simultaneous
Math	
Verbal	
Personal (a)	simultaneous
Independence	
Competitive	
Cooperative	
Effort	
Academic	
Personal (b)	simultaneous
Understanding	
Homemaking	
Relationships	
Environment	hierarchical
Parents	
Teachers	
Support	
Influencers	

Chapter 8

DEVELOPMENT OF THE CAREER MOTIVATION AND ACHIEVEMENT PLANNING INVENTORY (C-MAP)

I. Philosophy and Purpose of the C-MAP

Human beings strive and have striven not only for survival but for evolution and change toward a better, more satisfying life. At its base survival strivings include the procreation cycle and related family and work roles for women and men in society. These roles have varied with economic, political and religious conditions. Hunting and gathering societies developed clearly specified roles for each sex at a time when productivity was not relegated to men, but to both sexes (Tiger, 1979). Later, industrial society introduced new sex role expectancies assigning most women to the home and most men to the factory or work sites away from the home. Since women bore the children, it was reasoned, women were most able to raise them. More recently, women have re-entered the world of employment in increasng numbers. Reasons for this return are not always clear. However, such events as longer life expectancy, automated kitchens, and birth control have made it realistic for women to spend more time out of the home in employed work.

Within the general perspective outlined above a measure was developed to assess some of the antecedents to career and achievement strivings of adolescents of both sexes. The measure assesses short-term achievement. strivings to master challenging tasks as well a long-term achievement strivings over time such as those in a career, in which persons invest themselves in their career role and seek both self-expression and advancement through their career.

II. Theoretical Model Guiding the Development of the C-MAP

Three general types of predictors have been found to be related to career and achievement motivation by previous researchers. These are 1) Background characteristics such as social class, race, and sex, 2) Personal characteristics such as independence, high academic achievement, intrinsic motivation, and persistence, and 3) Environment characteristics such as reinforcement and support for achievement from parents, teachers and community agents. These three areas are depicted in Figure 1.

Figure 1 provided earlier in this manual and provided again here suggests both the direct and indirect relationship of these characteristics to career and achievement motivation. In this figure the relationship between Background characteristics and the Motivation dimensions is depicted as both direct and indirect, that is, mediated through personality characteristics and through environmental conditions. In this model changes in Personal or Environment characteristics are thought to moderate the effect of Background characteristics on career and achievement motivation. This is a very important point and is basic to some of the suggested practical applications for C-MAP assessment. Personal characteristics of the person affect the career and achievement motivation of the person as well as their environmental context. In addition, the model suggests that Personal characteristics and those of the Environment interact so that each indirectly affects Motivation through the other. Other researchers, recently, have been testing portions of this model with different groups of women (Harmon, 1980) and men and women (Rooney, 1981). Researchers using somewhat similar frameworks to explore the achievement motivation of women are Kaufman and Richardson (1981).

In the next sections of this chapter each aspect of the model is discussed in regard to the factors included and the relevant literature related to these factors. It should be pointed out that other influences affecting these kinds of motivation exist which are not presently depicted in the model.

III. Motivation Factors

Three types of career and achievement motivation are assessed by the C-MAP. Two of these are long and short-term motivation. The third is the level of achievement aspired to. The first two types of motivation are different in certain respects from each other and from the third type as well. Some of these differences are discussed next.

In their book, Atkinson and Raynor (1978) devote their two final chapters to a discussion of career motivation and its relation to achievement motivation. They view achievement motivation as the drive behind particular accomplishments whereas the cumulative accomplishments of an individual result, in their view, from career motivation. These authors point out that students who score high on one type of individual achievement such as the Scholastic Aptitude Test (SAT) may or may not score high on their cumulative grade-point-average. The difference in scores depends in part on motivational factors affecting future orientation, persistence, fear of success, anxiety level, opportunities and number of activities competing for the attention of the person. Important in this model is the view that persons who achieve well on particular achievement tasks may or may not achieve at a high level in a career (i.e., their cumulative achievements). Atkinson describes student whose test anxiety level is moderate as achieving optimally on particular achievement tasks, whereas the same type of student may not achieve optimally over time (i.e., GPA

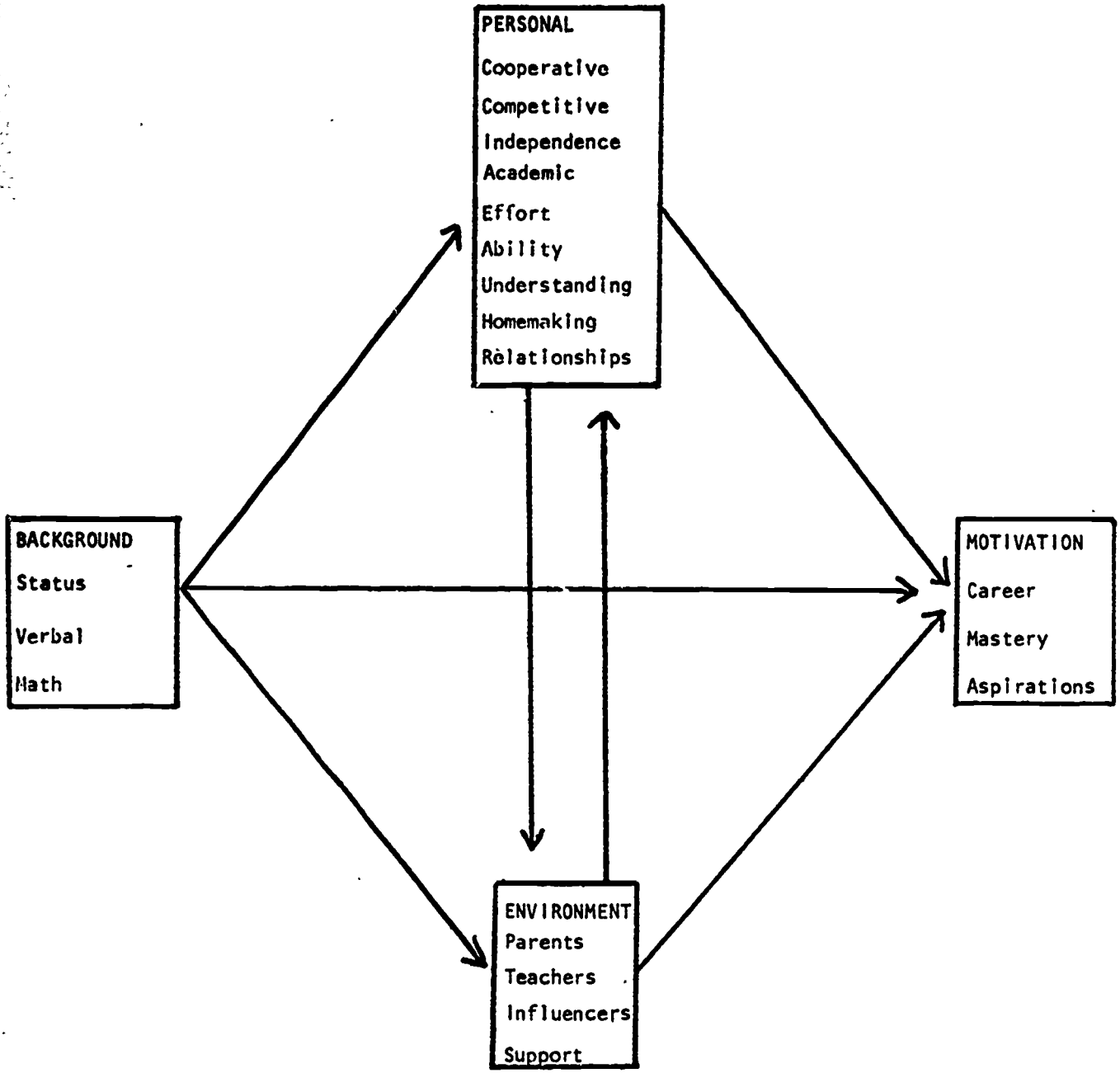

Figure 1: The Theoretical Model Underlying the C-MAP

or career), especially if other activities distract or compete for his or her time. This view, that a number of activities compete for an individual's attention, seems particularly appropriate for an achievement theory relevant to both sexes because achievement expectations in the domains of family and marriage often compete with those in paid work roles.

The level of occupation a person aspires to is an aspect of career and achievement motivation that is related to long and short-term achievement strivings but appears to be more extrinsically satisfied and motivated than the other two types of motivation. Long-term career commitment involves expressing the self in a career and finding satisfaction in a career (Super & Culha, 1976) as well as earning a living and gaining recognition through a career. Short-term mastery achievement is influenced positively by the intrinsic motivation to master challenging and difficult tasks (Atkinson & Raynor, 1978) as well as by extrinsic motivation such as winning a prize. The status attainment literature (Sewell & Hauser, 1975) suggests that the level of occupation aspired to and attained is motivated by the external rewards such as salary and recognition/status and appears to be less affected by the internal rewards motivating long and short-range achievement.

Each of these types of motivation: long-term, short-term, and level are assessed by the C-MAP and are described next. This section is followed by a description of variables included in each of the three predictor sets: Background, Personal and Environment.

A. Career Commitment

Career commitment is a particularly important aspect of career motivation (Super, 1980a). Career commitment refers to the extent to which a person sees involvement in a career as central to his or her adult role.

This construct provides a means of assessing the priorities a person places on career role at a particular point in time and places this priority in relation to priorities given other life roles such as those related to family. A person's priorities may shift at different ages as they deal with other aspects of role development over time.

Super defined as career committed those persons who were motivated to pursue over a long span of time their own development either in one occupation or in a series of occupations as their interests and opportunities changed. In contrast, Super defined occupation as "a group of similar jobs found in various organizations. Occupations are task, economy and society-oriented..." rather than personal development oriented. Career commitment involves a future orientation and concern with long range planning. Raynor (1978) has pointed out that when short-term achievement tasks are seen to affect long-term achievement goals (i.e. acceptance into a particular job or school) they are viewed as contingent for future success and have a future orientation. Raynor's conceptualizations provide some insight into the relationship between long and short-term achievement motivation.

B. Career/Educational Aspiration

The status attainment model developed by Sewell and Hauser (1975) contributes importantly to our understanding of career and achievement motivation through its emphasis on the effect of background characteristics and social influences on aspirations and attainment. The level of education and occupation an adolescent aspires to has been found to be significantly related to the level of occupation they finally end up in according to this model.

In their longitudinal study Sewell and Hauser found school grades to be most predictive of the level of occupation a student finally entered. Next in importance was encouragement from parents and teachers for the student's educational and career plans. The social class of the family was also important in their model for predicting level of occupation entered, but less important than grades and parent and teacher support and encouragement. Ethnicity contributed less to aspiration level than other factors. Also, whether a school was located in a city, a suburb or in a rural area seemed not to matter very much.

Career development theorists such as Super (1980a) have observed changes in persons' level of career choice during adolescence and between adolescence and adulthood. Ninth grade students are found to be less realistic regarding their career choices when compared to 12th grade students and are more likely to choose popular occupations such as airplane pilot, athlete, actress/actor, doctor than to consider their ability, interests and opportunities realistically in making their choices. Twelfth graders are found to be more realistic in choosing a career. The result of these age related changes is sometimes to increase the level of career aspired to in the twelth grade compared to ninth grade, and sometimes to decrease the level. As a consequence, a person assessing this type of motivation should be careful to interpret scores in light of possible age related changes.

C. Mastery Achievement

Mastery motivation refers to the tendency of persons to choose difficult challenging tasks rather than easy tasks and to keep struggling to master the task once they have started. The seminal work on the achievement motive has been done by McClelland (1958, 1971) and Atkinson (1958).

The Atkinson and McClelland view of achievement motivation is rooted in expectancy theory and approach-avoidance theory. Expectancy theory suggests that the strength of the motive is enhanced when a person's experiences have reinforced him or her for mastering difficult and challenging tasks. Approach-avoidance theory adds the dimension of fear of failure to task approach behavior. Thus persons whose experiences have been unpleasant in relation to mastering difficult tasks will be more likely to avoid such tasks. For achievement motivation to be aroused, according to Atkinson, the person must consider themselves responsible for the outcome, there must be feedback on how well or poorly they have performed and there must be an element of risk or challenge.

Raynor (1978) added the concept of contingent and noncontingent tasks to Atkinson's definition. A contingent achievement task is one in which success affects a person's future. An example would be a student's scores on the Scholastic Achievement Test (SAT) since these scores are used to determine college entrance. A non-contingent achievement task is one in which success is valued for its own sake. Success in solving anagram puzzles would be more noncontingent than contingent in nature. As stated earlier in this section, Raynor's notion is useful in thinking about the relationship of long and short-term motivation.

IV. Background Factors Related to Motivation

Several background factors have been found by previous researchers to relate to and influence career and achievement motivation. Seven of these have been selected for inclusion for C-MAP assessment: Socioeconomic Status, Math and Verbal Ability, Sex, Age, Race, and Geographic Location. Each of these seven background variables is briefly described in an attempt to review current knowledge about the relation of each factor to the motivational measures.

A. Socioeconomic Status

Status attainment theorists such as Sewell and Hauser (1975) have found social class to be one of the most influential factors in predicting the level of occupational attainment (Aspiration) a person will achieve. Social class was less predictive, in their longitudinal study of high school seniors, than ability and encouragement from parents and teachers of occupational aspiration. However, the social class variable made a significant contribution to aspiration level for these subjects both when they were high school seniors and seven years later.

Social class differences have been found to affect short-term achievement motivation (Mastery) by Rosen (1966) and others. Social class differences in achievement motivation are thought by these authors to be related to different child-rearing practices and are assumed to stem from the greater emphasis in middle class families, compared to lower class families, on achievement and mastery both in school and out of school.

The effect of Social Class on long-term Career Commitment is not well researched.

B. Math and Verbal Ability

Sewell and Hauser (1975) found that IQ scores were about as predictive of career aspiration (Aspiration) level as social class. However, they found that actual school grades were better predictors than either social class or IQ scores.

Atkinson (1978) argued, based on his many years of research on the correlates of short-term achievement motivation (Mastery), that ability contributes positively to such motivation. However, he cautions that ability measures themselves are confounded by the motive to achieve making it difficult to study their true contribution. It would appear that

persons who perform well on academic tasks would be more motivated to continue to perform well on new and challenging tasks.

The effect of ability on long-range Career Commitment is also not well researched.

C. Sex

Sex differences have been found for level of educational and career aspiration (Aspiration). Some researchers have found that males in high school score higher (Fortner, 1970), others found females scoring higher (Farmer, 1980b) and still others found no sex differences (Flanagan, Shaycroft, Richards & Cloudy, 1970).

Sex differences for short-term achievement motivation (Mastery) have been found by some researchers and not by others. Alper (1974) called this phenomena "now you see it now you don't." Adolescent girls have, however, been found rather consistently to earn higher academic grades (i.e. short-mastery task) in high school than boys of similar ability. Spence and Helmreich (1978) found that males scored higher than females on their Mastery scale, measuring short-range motivation to achieve on challenging tasks.

Sex differences related to long-range Career Commitment were not found in the literature. Farmer (1980b) found high school males and females score similarly on this type of motivation.

D. Age

The age of a person influences their level of career aspiration (Aspiration). Developmental researchers such as Super (1980) found that 9th grade students typically are not ready to make a realistic career choice whereas 12th grade students are more realistic about their career choice.

Increasing realism may heighten or decrease the level of career aspiration of a person. For example, a 9th grader may be attracted to the popular occupation such as doctor with a high status level, but when he or she reaches the 12th grade and is faced with decisions about continuing in school or looking for a job he or she may settle on a lower level occupation such as computer technician. Farmer (1980b) found that ninth graders scored similarly to twelth graders on the Career/Education Aspiration measure.

Short term achievement motivation (Mastery) is viewed as a relatively stable characteristic by Atkinson (1978), changing little with age. Crandall and Battle (1970) have argued that changing experiences can influence such motivation positively or negatively, but such changes are not age linked.

Little is known about the effect of age on long-range Career Commitment. There were no age differences on this scale in the Farmer (1980b) study.

E. Race

Gump and Rivers (1974) reviewed the literature on racial differences in achievement and career motivation. They found many contradictory and inconclusive findings. These authors concluded tentatively that social class was as strong an influence on motivation as race. Gottfredson (1980) has studied level of career and educational aspiration in black and minority students and proposed the concept of social space to help describe the factors affecting the career choices of persons from minority races, as well as those from lower social class groups. Gottfredson's model suggests that persons' views of themselves and of the career options open to them is limited by their view of their life space. Persons circumscribe the kinds

of occupations they consider based on their early experiences and social group memberships. Black persons, according to Gottfredson, from lower social class backgrounds have more limiting factors in their social space than white persons from lower social class backgrounds.

No studies were found comparing racial groups on long-range Career Commitment.

F. Geographic Location

Sewell and Hauser (1975) report that the larger the community the students come from, the higher their educational and occupational aspirations. Alternatively they report lower educational and career aspirations for rural youth, compared to youth from urban locations. These authors report that the effect of location is largely mediated by the effect of social class, sex and ability. Effects found for the influence of neighborhoods on career aspiration level accounted for less then 2% of the variance in their analyses. However, some groups, for example, rural males of high ability who come from upper class families have lower career aspirations than comparable youths from urban locations. The authors conclude that factors in the student's family background are probably of greater importance in determining aspiration levels than are the characteristics of the school they attend or the neighborhood in which they reside.

No studies were found comparing students from different geographic locations on measures of long and short-range career and achievement motivation.

V. Personal Characteristics Related to Motivation

Several Personal characteristics have been found to be related to both short-term achievement motivation and long-term achievement motivation.

Although a wide range of Personal factors have been found to influence career and achievement motivation, only nine of these were included on the C-MAP: 1) Competitive Achievement Style, 2) Cooperative Achievement Style, 3) Independence, 4) Homemaking Commitment, 5) Ability Attributions for Successes, 6) Effort Attributions for Successes, 7) Academic Self-esteem, 8) Relationships Concerns, and 9) Valuing Understanding related to successes. In earlier work (Farmer, 1980b) other factors were included (See also Chapter 7, Table 43 of this manual) but dropped for the C-MAP because they lacked validity. Theory and research related to C-MAP Personal factors are described next.

A. Cooperativeness and Competiveness

A recent review of 122 studies conducted since the 1920's compared findings relating a cooperative achievement style and a competitive achievement style to achievement behavior (Johnson, Maruyama, Johnson, Nelson & Skon 1981). These authors found that a cooperative style was superior to a competitive style for academic achievement for students in elementary, high school and college. However, these authors reported that within-group cooperation combined with inter-group competition was about as effective as cooperation alone.

Although studies were not found directly relating cooperative behavior to short-term achievement motivation (Mastery), the research of Atkinson (1978) and others has found that competitive situations increase this type of motivation for boys. There is, however, a sex difference. Males have been found to score higher on measures of achievement motivation in competitive situations (Atkinson, 1978), whereas females have lower scores on this measure under competitive conditions.

The literature revealed little on the relationship of cooperative and competitive achievement style to long-term career motivation (Career) or to level of occupational aspiration (Aspiration). The work of Lipman-Blumen and Leavitt (1976) has found that both a competitive and cooperative achievement style contribute to achievement for adults and that each may be appropriate in different settings. For example, a manager in a business firm may be competitive with peers when it comes to overall performance and output, but he or she may be highly cooperative when working on common business goals.

B. Independence and Expressiveness

Marshall and Wyjing (1980) found that a masculine sex-role identity characterized by independence and individualism was related to career commitment for women, while a feminine sex role identity characterized by warmth and concern for others (i.e. expressiveness) was negatively related to career commitment for women. Spence and Helmreich (1978) indicated that masculinity was strongly related to short-term mastery achievement (Mastery) for both females and males, while femininity had a weak relationship with mastery achievement for both sexes.

The perspective that women differ from men on important achievement values which affect their career and achievement motivation is a view espoused by Bernard (1971), Bakan (1966) and Stein and Bailey (1973). Bernard has suggested that women are basically creative altruists whereas men are primarily interested in political power. In a related vein Bakan has suggested that women value communion, openness, contractural cooperation and the sense of being at one with others whereas men value agency, isolation, self-assertion, the urge to master and self-expansion. Stein and Bailey have argued that women's communal valuing may well affect their

achievement and career motivation. The views of Bernard, Bakan, and Stein and Bailey contrast with those of Horner (1978) who viewed women's need for relationship (i.e. affiliation) as inhibiting their achievement needs. However, it is possible to separate affiliative needs from altruistic (i.e. helping others) values and study their respective influence on motivation. It is not known if altruistic values contribute positively or negatively to the achievement behavior of females. Lipman-Blumen and Leavitt (1976) as well as Bernard and Bakan (cited above) have suggested that men be taught to be more communal and caring and that women be taught to be more individualistic and self-assertive. Only when research efforts on this question have been made and evidence collected will it be possible to determine the full impact of "helping" values as well as individualistic value on motivation. In the interim it is possible to document the existence of both types of valuing in both sexes and to describe related achievement strivings.

The literature did not reveal any studies on the effect of Independence and Expressiveness on level of career aspiration (Aspiration).

C. Homemaking Commitment

Richardson (1979) has proposed an expanded conception of career motivation that would consider homemaking roles and their impact on occupational roles. Several writers have suggested the interaction of occupational and family roles (Super, 1980a; Richardson, 1979; Super & Hall, 1978). Richardson (1974) and Angrist (1972) have found that primacy for various life roles changes over time, especially for females, but also for males. Homemaking commitment is defined as interest in having a home and family, including the satisfaction of homemaking activities (Super & Culha, 1976).

Atkinson and Raynor (1978) have noted the negative effect of competing activities stemming from family and home interests on long-range career commitment (Career). The effect of Homemaking Commitment on level of Career/ Educational Aspirations is not known. Homemaking commitment is not expected to strongly affect short-term achievement motivation (Mastery) in a negative way.

D. Attributions to Ability and Effort

Weiner (1974) has added the dimension of causal attributions to achievement motivation theory. Causal attributions are the reasons persons give for their successes and failures. Attributions which enhance self-esteem in Weiner's model are those which are internal in origin, that is, persons attribute their achievements to themselves, typically to their ability or effort, rather than to external sources such as luck or other people. Internal attributions for success tend to enhance self-esteem. Studies have found females attribute success more to external sources such as luck than males (Weiner, 1974; Dweck, Davidson, Nelson & Enna, 1978; Maehr & Nicholls, 1981). This more typical female attribution to luck evokes feelings of happiness but rarely leads to increases in feelings of competence or achievement behavior. Failure attributions to lack of effort stimulate persons to feel shame; thus, Weiner suggested, these failure attributions may lead the person toward taking more responsibility for their own improvement. Failure attributions directed toward lack of ability lead a person to feel incompetent and lacking in self-esteem, which, in the extreme, lead to feelings of depression and helplessness (Dweck et al., 1978). Females have been found to attribute their failures more to ability than males by Dweck et al. and by Maehr and Nicholls (1981) among other. Attribution theory and assessment of success and failure attributions seems

critical to a model of achievement motivation which is sex fair. The effect of type of attributions on level of career aspiration (Aspiration) has not been studied.

Internal attributions to effort or ability have been found to be age related (Nicholls, 1980). In young children these attributions are not distinguished, instead they appear to be interchangeable. In adolescence, Nicholls found these concepts are generally distinguished; yet it is possible that some adolescents who do not attain formal thinking processes do not distinguish these two concepts.

E. Academic Self-Esteem

Self-esteem has been associated with achievement by Coopersmith (1970) and Stake (1978). Academic self-esteem, in particular, is related to motivation to achieve in both long-term and short-term achievements by Atkinson and Raynor (1978). High expectations for success influence such motivations positively. Persons who have low estimates of their ability to handle academic tasks are less likely to have high educational and career aspirations as well.

F. Relationships Concerns

Spence and Helmreich (1978) found that college women with the lowest educational aspiration scores had the highest scores on a measure of Personal Unconcern (high scores indicate lack of concern). On the other hand, college women in scientific majors also had high scores on their Personal Unconcern scale, indicating that they too lacked such concern. Spence and Helmreich argue that women in a challenging college major such as natural science may have already been faced with the negative effect of their academic success on their personal relationships and have come to

terms with this fact. It appears from these findings that experience with the negative effects of success may first sensitize a person and then desensitize them, provided they remain committed to the pursuit of success in a career. Findings with the construct, personal unconcern, relevant to high school subjects were not found in the literature.

Fear-of-success, a construct similar to Spence and Helmreich's Personal Unconcern was found previously by Horner (1978) to be present more in college women than college men. For Horner fear-of-success represented a fear that success in academic or career related endeavors would lead to loss of friendships, particularly of the opposite sex. Researchers such as Monahan, Kuhn and Shaver (1974) and Feather (1974) have studied fear-of-success in adolescent males and females and found inconsistent results. Tresemer (1976) reviewed hundreds of studies on this variable and concluded that problems with the measurement of fear-of-success may account for inconsistencies found. The objective measure of Personal Unconcern developed by Spence and Helmreich contrasts with the projective measure designed by Horner. Research findings with Horner's measure of fear-of-success (FOS) are inconsistent (Tresemer, 1976). Some researchers have found high levels of FOS related to low short-term achievement motivation, other studies have found no relationship. Research is needed with measures such as Spence and Helmreich's Personal Unconcern measure to further investigate these relationships.

G. Valuing Understanding

Little has been done to assess achievement related values by achievement motivation researchers (Atkinson, 1978, McClelland, 1971). However, career development theorists have given considerable attention to work

related values, particularly the relation of different work values to different occupational fields (Super, 1970, Katz, 1966). The relation of these values to career commitment (Career) and level of career aspiration (Aspiration) has not been studied systematically. The relation of achievement related values to short-term achievement motivation is not known.

Values related to long and short-term achievement motivation have been classified broadly as those that are internal and those that are external (Atkinson & Raynor, 1978; Super, 1970). Valuing understanding is an internal value that would be expected to be related to long-range career commitment (Career), when that commitment is related to self-fulfillment through a career. Valuing understanding is also expected to be related to short-term mastery (Mastery) of a challenging task. It is less likely that it would be related to level of occupational aspiration (Aspiration). Previous regression analyses using external values scales measuring social approval, recognition and status (see discussion of Valuing Understanding later in this chapter) were not found to strongly predict the motivation measures on the C-MAP (Farmer, 1980b). The C-MAP assesses the internal value, understanding, and does not assess external values.

VI. Environment Factors Related to Motivation

The effect of important others in a person's environment on his or her career and achievement motivation has been found in several previous studies. In particular the effect of parents and teachers has been noted. The effect of the school environment and the students' perception of their world has also been found to influence their career and achievement motivation.

A. Parents Support

Sewell and Hauser's (1975) findings from their longitudinal study of high school seniors indicated that parents encouragement was the strongest predictor of occupational aspiration (Aspiration), stronger than friends' plans, teachers' encouragement, ability and social class. Their measure of parent encouragement assessed students' perception that their parents' had encouraged them to continue their education after high school.

Crandall and Battle (1970) and Rubowitz (1974) reported on the influence of parents on the short-term achievement motivation (Mastery) of students. Crandall and Battle studied a group of children (N=74) from preschool through adulthood. Using interview, observation, and paper and pencil inventories they collected data on these subjects' achievement motivation and behavior. Crandall and Battle found that parents of high achievement motivated subjects valued achievement themselves when they were adults.

No research studies were found relating parental support to long-term Career Commitment.

B. Teachers Support

Sewell and Hauser (1975) reported that teacher support was a significant predictor of occupational aspiration (Aspiration) for high school seniors (N=4,000+). It should be noted, however, that it contributed two or three times less than parent support or friends' plans to this type of motivation. Teachers support of the achievement of the student makes some contribution to the student's aspiration level.

Guttentag and Bray (1976) found that teacher classroom behaviors influenced the short term achievement motivation (Mastery) of junior high

school students. Supportive behaviors influenced such motivation positively. Dweck, Davidson, Nelson and Enna (1978) also observed the effect of teacher behavior in the classroom on the short-term achievement motivation of students. They found a positive effect on student short-term motivation when teachers gave students helpful feedback on how they were progressing in their school work and when teachers assisted students to learn skills and concepts on which they failed in their first attempts.

C. Support for Women Working

Using an inventory based on a series of statements published by the U.S. Women's Bureau (1972), Birk and Tanney (1973) found a relationship between adolescent perception of support or lack of support for women working and the range of careers considered. Increases in perceived support for women working produced increases in the number of career options females considered. Farmer (1980a) found this measure to be the best predictor of career aspiration level, among 12 predictors studied, for high school females. A later Farmer study (1980b) found this measure also predictive of males for both long-term and short-term motivation and of Career/Educational Aspiration level.

D. Personal Career Influencers

In addition to support and encouragement from important others, such as teachers and parents, students sometimes feel influenced in their career choices by these persons. Support and encouragement are viewed positively by adolescent boys and girls, whereas undue influencing of their choices by others is viewed more negatively by them (Farmer, 1980b). It appears that students prefer to make independent choices about which occupation to prepare for and enter rather than be pressured to choose a

particular goal. This is true when the influence is felt from friends and relatives as well as from parents, counselors, and teachers.

VII. Development of the C-MAP Scales

The approach to the development of the C-MAP was similar to that used to develop predictive equations for achievement scales. The goal was to obtain a set of scales that predicted the motivation measures of interest. In order to do this a set of scales were sought that were relatively independent, theoretically related to the motivation scales, and also empirically related to the motivation scales . Through a process of elimination of both items and scales the C-MAP was developed to its present form. The scales included on the C-MAP are relatively independent (see Chapter 6 in the Manual for detail) and are all significant predictors of at least one of the motivation scales. Recommended guidelines for developing tests (APA, 1974) were followed wherever possible in developing this test manual.

A. Procedures: General

Procedures used in the development of the C-MAP are described in this section. These include review of study of questionnaire data for completeness, review of item distribution to identify items with good discriminating ability, and review of item-item correlations as well as item-scale correlations to identify items that correlate significantly with other items on the scale and items that do not.

The development of specific items for scales on the C-MAP is described separately for each of the 19 scales. More than 300 items were used in the development phase of the C-MAP and were refined to include the present set of 109 items. Data collection and analyses were conducted in two phases in the development of the C-MAP. Briefly, the longer set

of items was administered to 2396 high school students in the first phase of the development. Revisions following analyses of these data led to a second administration with a revised set of items (about 200) to 2084 high school students. Data from the second phase were used to prepare the C-MAP in its present form. The reader is referred to the Chapter 4 on norms and sampling for details on the students who participated in the development of the C-MAP.

Review for Completeness. Data for subjects who had completed at least 75% of the items on scales that had four or more items were retained. A subject's mean score on a scale was substituted for missing item scores when they met the "rule of thumb." For scales of three items or less, subject's data had to be complete to be included in the analyses.

Item Distribution. Summary statistics, means and standard deviations, were obtained for all items and revewed for distribution (i.e. skewedness). Items which were highly endorsed or highly rejected by most students were considered poor items to include in a measure intended to discriminate students who score high or low on motivation. If an item was skewed a determination was made on whether to drop or retain it for further analyses partly on theoretical and partly on empirical grounds. If an item was important theoretically or working well empirically (i.e. correlated well with the rest of the items on its logical scale) it was retained for further analyses. If, however, an item was redundant with another item theoretically, and the other item was not skewed, the skewed item was dropped.

Item-Item Correlations. Item-item correlations were obtained for all items within scales. A conservative probability level of (.005) was used because of the large sample size, for determining if an item correlated

Table 14

Means, Standard Deviations and Alpha Reliability Estimates

for Scales on the C-MAP

Scale		# of items	M[a.]	SD	Reliability[b.]
Motivation					
I.[c.]	Career	15	3.89	.51	.83
II.	Aspiration	4	58.8	18.2	.78
III.	Mastery	6	3.33	.56	.59
Personal					
IX.	Academic	2	3.11	.93	.64
II.	Independence	14	3.49	.57	.81
III.	Home	7	3.35	.72	.81
IV.	Cooperative	5	3.91	.58	.74
V.	Ability	4	3.55	.75	.72
VI.	mpetitive	5	3.36	.64	.61
VIII.	ffort	4	4.10	.73	.74
X.	Relationships	3	3.45	.77	.56
	Understanding	2	3.96	.88	.60
Environment					
I.	Support	12	3.53	.69	.88
II.	Influencers	10	3.27	.75	.84
III.	Parents	6	3.58	.87	.87
IV.	Teachers	6	3.35	.65	.68

a. With the exception of Career/Educational Aspiration means are based on a 5 point Likert response scale.
b. Reliability is Cronbach's alpha (1970), a measure of internal consistency.
c. Roman numerals indicate the factor number for that scale within its grouping (i.e., Motivation, Personal, Environment).

significantly with other scale items. Items that did not correlate significantly with a majority of items on a given scale were dropped.

Other procedures such as reliability estimates and factor analyses are reported on in detail in Chapters 5 and 6 respectively in the manual. Reliability estimates are repeated here for scales in Table 14. Factor analyses were conducted in several stages. First exploratory factor analyses were conducted with sets of items thought to be related to each other. Later factor analyses were conducted with sets of items in each of three C-MAP groupings: Motivation, Personal and Environment. These exploratory factor analyses were followed by confirmatory factor analyses of items within the three sets. The order of a factor's appearance in a set from this last analysis is indicated in Table 14 as well. The narrative describing each scale provides information on the range of factor weights for items on that scale. As noted earlier details on these factor analyses are provided elsewhere in the manual.

VIII. Motivation Scales

As noted earlier there are three motivation measures in the C-MAP assessment procedure. The development of these is described next. First, the Career Commitment scale measuring long-range commitment to a career goal is described. Second, the Mastery achievement scale measuring short-range achievement motivation is describved. Third, the Career/Education Aspiration scale measuring the level of a person's aspiration is described.

Career Commitment

The Career Commitment scale used in the C-MAP was based on an instrument developed by Super and Culha (1976) called the Work Salience

Inventory (WSI). This measure was normed and validated on high school, college and working adult samples by Super and Culha. Included below is a description of the instrument adapted from Super and Culha.

The Work Salience Inventory (WSI) was developed in order to assess several aspects of career orientation and job involvement which appeared to be logically discrete, had generally been confounded in previous research, and which in some studies had begun to appear empirically distinguishable. A review of previous instruments and related studies led to the hypothesizing of eight dimensions of the importance of work (work salience). These were:

1. Task Commitment (doing a "job" well);
2. Job Commitment (commitment to a position, a specific job);
3. Occupational Commitment (commitment to a type of work, e.g., engineering);
4. Work for Meaning (intrinsic interest in the work);
5. Work for Support (economic or livelihood, including social or friendships);
6. Work for Leisure (life-style facilitator, ability to use leisure in certain ways);
7. Career Commitment (interest in long-term prospects or advancement);
8. Homemaking Commitment (interest in having a home and participating in homemaking).

Items written for these hypothesized variables or a priori scales were scored based on these dimensions. The written items were administered to 69 ninth and 65 twelfth graders by Super and Culna and then item-analyzed. The 84 items which yielded significant correlations ($p < .025$) with their respective scales were retained.

Items from six of these dimensions were used in the first phase of the C-MAP's development. It was necessary to limit the number of dimensions

for feasibility purposes. Analyses in that phase determined that only two of the dimensions were working well for this group of high school students: Career Commitment and Homemaking Commitment. The other dimensions, Work for Leisure, Work for Support, Job Commitment and Work for Meaning were diffused across several factors in our early exploratory factor analyses of the WSI items. The Homemaking Commitment scale was used in the second phase as a personal characteristic (i.e. a predictor of the motivation measures).

There were seventeen items on Super and Culha's original Career Commitment scale. These are presented in Table 46. The final version of this scale developed for the C-MAP contains 13 of these items. The four items dropped are *'d in Table 46. The reasons for their elimination are described below.

The 17 item Career Commitment scale was administered to 9th and 12th grade students in both phases of development. Fourteen items were found to correlate significantly ($p < .005$) with a majority of the other items on the scale. Items 4, 6, and 8 correlated poorly and were dropped. Item 5 (Table 46) which was skewed was also dropped at this point in the analyses. The reasons were more theoretical than empirical for dropping item 5. All other items on this scale asked the student to respond from a personal (i.e., "I," "my") perspective. This item asked students to respond from a normative perspective (i.e., all young persons). Dropping this item increased the theoretical homogeniety of the scale. Five other items were skewed (1, 2, 7, 13, 16) on this scale but were retained because they correlated highly with other items. Also, they were edorsed more ($p < .001$) by females than by males, and sex differences were of theoretical interest for C-MAP assessment.

Table 46

Career Commitment Scale (adapted from Super & Culha, 1976)

1. I enjoy making plans about my future.
2. I often think about what type of job I'll be in ten years from now.
3. To me, a career is a means of expressing myself.
*4. I would not go in for sports if they interfered with school work.
*5. Deciding on a career is just about the most important decision a young person makes.
*6. Unless I achieved success in my career I would never feel fulfilled.
7. I would like to have a job which I am really proud of.
*8. I started thinking about different careers when I was real young.
9. I like to have a career goal towards which I can work.
10. I really don't think too much about whether or not I'll get ahead in my job.
11. Planning for and succeeding in a career is not my main concern.
12. I could be happy without having a career.
13. I would want to move ahead in my occupation, not stand still.
14. My career will give meaning to my life.
15. The occupation that interests me most will give me a chance to really be myself.
16. Planning for a specific career is worth the effort.
17. I do not consider myself "career minded."
18. You have one empty class period and you choose to take an extra course that would help prepare you for entry into a field career of your choice at a later time.
19. If I hit the jackpot or made it in the lottery I would quit my job.

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* 4 dropped items

Factor analyses of the items on this scale (with the Mastery items and the Career Education Aspiration items) obtained a clear factor structure for the 13 remaining items. It was Factor I in a three factor solution. All items loaded highly on the factor. In addition two additional items also loaded highly on this Factor I. One of these had been developed for the study and asked students about their career commitment within a school setting. (See item 18, Table 46.) The other was an item from Super and Culha's (1976) Job scale of their Work Salience Inventory (See item 19, Table 46). The two items were added to form the 15 item Career Commitment scale used in the C-MAP. Alpha reliability for the 15 items was .83.

Mastery Achievement

Spence and Helmreich (1978) urged that short-term achievement motivation be measured as a set of related dimensions rather than as an independent construct. These authors pointed to the low correlation between objective (Jackson, 1974) and projective measures (Atkinson, 1957, 1978) of achievement motivation and suggested that, while this independence could result from unreliability of measurement, another plausible explanation was that achievement motivation was not a unitary construct. Achievement motivation was viewed by Spence and Helmreich as consisting of a number of dimensions which may be present in varying degrees in an individual.

Based on this assumption Helmreich and Spence developed The Work and Family Orientation Questionnaire (WOFO-3), a twenty-three item measure of achievement motivation and attitudes toward others and career. Factor analyses by Spence and Helmreich for the twenty-three items yielded four factors. The factors were similar for each sex. The four

factors were named Work, Competitiveness, Personal Unconcern and Mastery. The fourth factor, Mastery, consisted of 8 items (Table 47) and was used as the measure of short-term motivation for the C-MAP. Mastery measured persistence in performing a task and a tendency to choose challenging tasks. Two of the other three factor scales from the WOFO-3 were used in the C-MAP as predictors, consistent with Spence and Helmreich's views. These were Personal Unconcern (C-MAP Relationships) and Competitiveness.

Table 47

Mastery Scale (Spence and Helmreich, 1978)

1. I would rather do something at which I feel confident and relaxed than something which is challenging and difficult.

*2. When a group I belong to plans an activity, I would rather direct it myself than just help out and have someone else organize it.

3. I would rather learn easy fun games than difficult thought games.

4. If I am not good at something I would rather keep struggling to master it than move on to something I may be good at.

5. Once I undertake a task, I persist.

6. I prefer to work in situations that require a high level of skill.

7. I more often attempt tasks that I am not sure I can do than tasks that I believe I can do.

*8. I like to be busy all the time.

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* items dropped

After administration to 9th and 12th grade high school students in the second phase of the C-MAP development, all Mastery items were found to have good distributions. Two items (Items 2 and 8, Table 47) were found to be poorly correlated with other items on the scale and were dropped. One of these items (2) suggested that the person preferred a leadership role in group activities, while the other (8) indicated a person's desire to be busy all the time. The remaining six items referred to challenge, persistence, and mastery in performing tasks. Alpha reliability for the remaining six items was .59 for C-MAP data, similar to that found by Spence and Helmreich who reported an alpha of .61 for the eight items.

Factor analysis of items from the three Motivation measures derived a clear factor structure for the six Mastery items. It was Factor III in a three factor solution. Item loadings in the factor analysis ranged from .38 to .46.

Career/Education Aspiration

This measure has four items. Three items ask the student to list their career aspirations and one asks them to check the highest level of education they expect to complete (Table 48).

Career aspirations were elicited from students by asking them first what career they expected to end up in (realistic career)and then asking them to list two careers they had considered or daydreamed about (fantasy career). This latter item was adapted from Holland's Self-Directed Search (1978). The occupations listed by students were coded for level using Duncan's Socioeconomic Index (SEI) based on 1970 census data (Hauser & Featherman, 1977). This scale assigns numbers from 04-96 to occupational titles based on their relative educational requirements and potential earning power. Interrater reliability for three independent raters was 93% for

these items. The reliability procedures are described in Chapter 5 in the manual.

Educational aspiration level was measured by one item in which six choices were provided (see Table 48). A standardization procedure was used to combine scores on the educational aspiration item with those from the career aspiration items. Standardization followed inspection of the means and variances on all four items to determine if the means and distribution of scores was similar on each. This review indicated that they were (Table 49). For handscoring of the C-MAP an approximation procedure was used to assign scores to the six educational aspiraton levels. The mean and standard deviation for the modal career item was used and a formula applied to convert the Educational Aspiration scores to the same scale used for the Career Aspiration scores. These four items were entered in the Motivation item factor analyses in order to determine if they formed a separate factor. They were Factor II in a three factor solution with loadings ranging from .45 to .80.

Table 48

Career/Education Aspiration Scale

1. What is the highest level of education you expect to complete?

High school diploma	1( )
Vocational or technical program (less than two years) . .	2( )
Two-year college degree.	3( )
Bachelor's (four-year) college degree	4( )
One or two years of graduate study beyond Bachelor's .	5( )
Professional level degre (Ph.D., M.D., LLB, or JD) . .	6( )

2. What career do you expect to end up in? _____ ( )
my career

List below the occupations you have considered in thinking about your future. List the occupations you have DAYDREAMED about as well as those you have discussed with others. Put your most recent

occupational daydream on Line 24 an work backwards to earlier occupations you have considered.

3. _____( )

4. _____( )

Table 49

Means and Standard Deviations

For Three Items on Career/Education Aspiration Scale

Item	M	SD
Realistic Career	59.49	23.59
Fantasy Career 1	57.39	23.53
Fantasy Career 2	56.09	23.74

IX. Background Scales

Background measures included in the C-MAP are: Race, Sex, Age, Geographic (School) Location, Socioeconomic Status, and Verbal and Math Ability. Assessment of these variables was relatively straight forward. For purposes of analyses dummy variables (Kerlinger & Pedhazur, 1973) were created for Sex and Age. In the case of Sex, males were coded 0, females 1. For Age, school grade was used, 9th grade was coded 1 and 12th grade 2. For School Location and Race planned contrasts (Kerlinger & Pedhazur) were designed for analyses. Three locations were coded for school: Rural, Urban, and Inner City. Details on how schools were assigned to these locations are provided in Chapter 4 of this manual. Two planned contrasts were used. Rural and Urban students were both contrasted with Inner City students. A review of the regression analyses findings and the intercorrelations of these planned contrasts with the

criteria indicated that the Rural vs. Urban contrast related similarly to the Rural vs. Inner City contrast with the criteria. Therefore a single contrast was formed contrasting Rural with Urban and Inner City students combined. Rural was coded 0 and Urban/Inner City 1.

For Race three planned contrasts were used with Black, Hispanic and Mixed racial students each contrasted with White students. Details on proportions of each race in the sample are also provided in Chapter 4 in this manual. A review of the regression analyses findings and the intercorrelations of these planned contrasts with the criteria indicated that the three contrasts were related similarly to the criteria. Therefore a single contrast was formed contrasting Minority students with White students. Minority was coded 1 and White 0.

Socioeconomic status was assessed using the students' reported occupation for either their father or mother, whichever was higher. These occupations were coded using Duncan's Socioeconomic Index (Hauser & Featherman, 1977). Two independent raters obtained a 91% agreement rate in coding these occupations. The Duncan index assigns numbers from 04-96 to occupations based on their educational requirements and average income; 1970 census data provided the basis for the Duncan codes. These scores were treated as continuous variables for purposes of analyses.

Ability was assessed based on student reported grade-point average (GPA) for English and Math courses. Although there was an attempt to obtain actual GPA from confidential school records, the data provided were incomplete and not comparable across schools since some schools gave class rank, others achievement test scores, and still others actual GPA. In addition 9th grade students had not accumulated a GPA in their first semester in high school. The American College Testing Program (Sawyer &

Maxey, 1979) staff have reported a 96% agreement rate between achievement score and student's reported GPA. On the basis of this finding the procedure used in this study was adopted. This variable was coded A=4, B=3, C=2, and D=1. It was treated as a continuous variable for purposes of analyses.

X. Personal Scales

In this section ten Personal measures are described. One of the measures described is not included in the Counseling form of the C-MAP as currently designed. This is the Expressive scale from Bem (1977). It is described here because of its possible interest to researchers, and because of its theoretical interest for this assessment procedure. The measures described are 1) Academic Self-Esteem, 2) Competitive, 3) Cooperative, 4) Independence, 5) Expressive, 6) Homemaking, 7) Effort Attributions, 8) Ability attributions, 9) Valuing Understanding, and 10) Relationships Concerns.

Academic Self Esteem

Coopersmith (1970) developed a multidimensional self-esteem scale for adolescents which included eight academic self-esteem items (Table 50). The Coopersmith scale is reviewed favorably in Shaver and Robinson (1973) and Wylie (1974) as a scale suited to assessments of normal adolescents, in contrast to many self-esteem scales which are more suited to adolescent pathology. All eight items were administered to subjects in the first phase of the C-MAP development. Only two of these items correlated well with each other and formed an independent factor in the Personal item factor analysis. Factor loadings for these items were .49 and .54. The alpha reliability for these two items was .64. One item that did not work

well on the Academic Self-Esteem scale (Item 3, Table 50) assessed students' feelings about teachers' support for their academic efforts. This item was entered in the Environment item factor analysis (described later) and loaded highly on the factor measuring Teachers Support. It was included there.

Table 50

Academic Self-Esteem Scale (Coopersmith, 1970)

a. 1. I often feel upset with my school work

a. 2. I often get discouraged at school

*3. My teachers make me feel I'm not good enough

4. I'm doing the best work I can in school

5. I find it easy to talk in front of the class

6. I'm doing as well in school as I can expect

7. I like to have the teacher ask for my suggestions

8. I'm proud of my school work

---

* This item was included with the Environment items for factor analyses and loaded strongly on the Teachers Support scale

a. These two items were retained for the C-MAP and are reversed for scoring.

Competitive

As mentioned previously (see Motivation Measures), one of the factor scales on The Work and Family Orientation Questionnaire (WOFO-3) assessed a competitive achievement style (Helmreich & Spence, 1978). The competitive scale measured a desire to succeed in competitive, interpersonal situations. This scale is included among the Personal scales on the C-MAP.

The competitive scale of the WOFO-3 consisted of five items (Table 51). Helmreich and Spence (1978) reported alpha reliabilities of .76 and .72 for adolescent males and females, respectively, on this scale. In the present study none of the five items were skewed and intercorrelations among the items were all positive and significant. Factor analyses of Personal items obtained a clear factor for these five items. It was factor six in a ten factor solution. Alpha reliability for the five-item Competitive scale was lower than Spence and Helmreich's. It was .61 for C-MAP data.

Table 51

Competitive Scale (Spence and Helmreich, 1978)

1. I enjoy working in situations involving competition with others.
2. It is important to me to perform better than others on a task.
3. I feel that winning is important in both work and games.
4. It annoys me when other people perform better than I do.
5. I try harder when I'm in competition with other people.

Cooperative

This scale was developed by project staff to assess student valuing of cooperation in achievement tasks. Five items were written for the scale, modelled after the competitive achievement items (Table 52). Three items refer to cooperation on a project and two to cooperation on a successful project. These five items all correlated significantly with other items on the scale. Alpha reliability was .74. Two of the items were highly endorsed (1, 4) but contributed importantly to reliability and thus were

retained. The five items formed a clear factor structure in the Personal item factor analysis and were the fourth factor in a ten factor solution. Factor loadings ranged from .54 to .60. This scale correlated with the Competitive scale ($r = .09$, $p < .01$), and with the Expressive scale ($r = .36$ $p < .001$).

Table 52

Cooperative Scale

1. I'm pleased when I work with others on a successful project.
2. I enjoy working in situations involving cooperation with others.
3. It's important to me to work with others in achieving something.
4. I feel that cooperating is important in both work and games.
5. I try harder when I'm cooperating with others on a task.

Independence and Expressiveness

These Personal characteristics are presented together because items for these scales are derived from a single measure, Bem's Sex-Role Inventory (1977).

The Bem Sex-Role Inventory (BSRI) was designed to empirically measure psychological androgyny; that is, both masculinity and feminity as independent dimensions. The BSRI contains 60 items, 20 of which are stereotypically feminine, and 20 of which are stereotypically masculine. The BSRI also contains 20 characteristics that are sex neutral (Table 53).

Table 53

Independence & Expressive Scales (Bem, 1977)

	Masculine items		Feminine items		Neutral items*
I	49. Acts as a leader	E	11. Affectionate		51. Adaptable
I	46. Aggressive	E	5. Cheerful		-36. Conceited
I	58. Ambitious		50. Childlike		9. Conscientious
	22. Analytical	E	32. Compassionate		-60. Conventional
I	13. Assertive		53. Does not use	E	45. Friendly
	10. Athletic		language	E	15. Happy
I	55. Competitive		35. Eager to	E	3. Helpful
I	4. Defends own beliefs		soothe hurt		-48. Inefficient
I	37. Dominant		feelings		-24. Jealous
I	19. Forceful		20. Feminine		39. Likable
I	25. Has leadership abilities		11. Flatterable	E	-6. Moody
I	7. Independent	E	59. Gentle		-21. Reliable
I	52. Individualistic		47. Gullible		-30. Secretive
I	31. Makes decisions	E	56. Loves children	E	33. Sincere
	easily		17. Loyal		-42. Solemn
	40. Masculine	E	26. Sensitive to the		57. Tactful
	1. Self-reliant		needs of others		-12. Theatrical
I	34. Self-sufficient		8. Shy		27. Truthful
I	16. Strong personality	E	38. Soft spoken		-18. Unpredictable
I	43. Willing to take a	E	23. Sympathetic		-54. Unsystematic
	stand	E	44. Tender		
I	28. Willing to take	E	29. Understanding		
	risks	E	41. Warm		
			2. Yielding		

I = Instrumental items (Moreland et al, 1978; and C-MAP Independence scale; items 55 and 58 dropped)

E = Expressive items (Moreland et al, 1978)

*Reverse rating for scoring those items marked -

Gaudreau (1975) factor analyzed the responses to the BSRI for a non-college sample of 325 adults. She defined four factors: masculinity, femininity, sex of subject factor, and a "maturity" factor. The masculine factors included 17 of the original 20 masculine adjectives. The feminine factor included 13 of the 20 feminine items plus 6 items from the neutral item set. The sex of subject factor included the subject's sex and three

adjectives: feminine, masculine, and athletic. The last factor was composed of several items from each of the three adjective groups and was labeled a "maturity" factor.

Moreland, Gulanick, Montague, and Harren (1978) also factor analyzed responses to the 60 BSRI items from a group of 580 college students and found virtually identical factors to those reported by Gaudreau, suggesting stability for this factor structure. Moreland et. al. (1978) used the label "instrumentality" for the masculine derived factor and "emotional expressiveness" for the feminine derived factor. These authors argued that instrumentality and emotional expressiveness referred to relatively unambiguous behavioral referents, whereas the terms masculine and feminine referred to classes of behavioral referrents that depended on social subcultural norms. Table 53 indicates the items comprising the instrumental and expressive factors derived by Moreland et. al. (1978) by footnotes.

For the C-MAP, the 60 item Bem Sex Role Inventory was administered to 9th and 12th grade high school students in both phases of test development. The BSRI previously had been used primarily with older subjects. Because some of the items were difficult for high school students to understand, a definition sheet was developed that defined each of the 60 characteristics (See C-MAP). Children's dictionaries designed for grade school children were used as references in defining the 60 items. The definition sheet also aided in providing a common understanding of the item characteristics for all subjects.

Factor analysis of the BSRI items for C-MAP high school students produced similar results to those found by Moreland et. al. and Gaudreau. The Expressive factor for high school subjects was identical to the factor derived by Moreland et. al. (1978, See Table 53). This factor was the

first factor in a ten-factor solution for the Personal items. Item loadings ranged from .34 to .68. The Instrumental factor contained 14 of the 16 items found by Moreland et. al. (Table 53). Loadings ranged from .35 to .61. Two items were dropped because they also loaded on other scales in the factor analysis. These were: 1) Competitive, which loaded on the instrumental factor, but also loaded equally high with the Competitive scale items used in the study, and 2) Ambitious, which loaded higher on the Expressive factor than the Instrumental factor for these high school students. Because "Ambitious" loaded on both the Expressive and Instrumental factors, it was dropped to increase scale independence. Alpha reliability for the 16-item Expressive scale was .89, and for the 14-item Instrumental scale, .81. The intercorrelation between the instrumental and expressive scales was .27.

Three items on the Expressive scale formed a separate factor in the C-MAP analysis (Factor VII in a ten factor solution for Personal items). These items were, Cheerful, Friendly, and Happy. Factor loadings ranged from .38 to .60, Compared to .29 to .51 for the same items on the Expressive scale. This factor was labeled the Happiness scale. It did not relate to the motivation measures on the C-MAP and therefore it was not used for the C-MAP. However, future research studies might remove these items from the Expressive scale to determine if this step improves its predictive power. It would also be possible to form a scale that is more characterized by "Helpful" than "Friendly." Five items, Compassionate, Sensitive to the Needs of Others, Sympathetic, Helpful, and Understanding, might form this scale. See discussion earlier in this Chapter on this point.

Homemaking

A second scale from Super and Culha's (1976) Work Salience Inventory (see section on Motivation Measures) was used in this study to assess the Homemaking Commitment of subjects, consistent with Richardson's (1979) argument for an expanded conception of career motivation that would consider homemaking roles and their impact on occupational roles.

Super and Culha's Homemaking scale has eight items (Table 54). Unlike the Career Commitment scale, Homemaking items often ask respondents to choose homemaking roles over career activities (5 items, Table 54). Personal items factor analysis obtained a clear factor structure for this scale with seven of the original eight items loading highly (loadings ranged from .42 to .71). The omitted item was "People should be able to devote full-time to their children when the children are young." Unlike other items on this scale this item asked students to respond to a normative statement (i.e., people should) rather than a personal statement (i.e., I would). Alpha reliability for the seven item Homemaking scale was .81.

Table 54

Homemaking Scale (Super & Culha, 1976)

1) I feel that marriage and family are more important than having a career

2) I would never let my career take priority over my family

3) I would be very satisfied, if possible, to devote full time to home and family

4) I consider marriage and having a family very important

5) To me, marriage and family are as important and satisfying as pursuing a career

a. 6) I prefer to pursue my career without the distractions of marriage, children, and/or a household

a. 7) I would rather have a career than a family

*8) People should be able to devote full time to their children when the children are young

a. these items were reversed for scoring

* this item was dropped

Measuring Attributions

Researchers have relied on three types of measures to assess success and failure attributions. These types are reviewed in Elig and Frieze (1980). Typically an achievement task is described or given to subjects and a success/failure condition assigned. Often achievement tasks given are angle matching and anagram puzzles. In response to such stimuli subjects are asked to give their reasons for success or failure using one of three methods: 1) placing a check mark beside the most likely reason; 2) rank ordering a set of possible reasons; or 3) writing out their reasons for success or failure in their own words. The third approach is useful in the early stages of research in order to identify the universe of reasons

given by students. The second approach is not particularly helpful when the assessment is used to predict other scores, because ranked scores do not form an interval scale. The first approach was used for the C-MAP. However, the C-MAP requested students to provide their own list of success and failure experiences rather than providing the achievement task for the student. Further, students were encouraged to consider and list experiences from all aspects of life and not limit them to school related experiences. This procedure was used in order to increase the likelihood that the considered successes and failures were important to the student and valid experiences for them to consider in thinking about their attributions.

Students were asked to list three successes and three failures in both development phases of the C-MAP. Student responses were coded by independent raters and classified as belonging to one of seven contexts: school, work, social, family, sports, aesthetics, and personal. Interrater agreement was 94% for these categories (See Chapter 5 for details).

Students were then asked to rate on a five point Likert-response format statements about why they were successful or unsuccessful (i.e. their attributions). Two items were provided for each of three types of attributions: effort, ability, and luck. These items were factor analyzed separately for each of the seven contexts (Vispoel, 1981) in order to rule out possible differences due to context. Results from the factor analyses were used to exclude attributions from contexts which lacked a clear factor structure. We found that the contexts of family and sports lacked a clear factor structure. For these contexts Effort and Ability items loaded together and were not independent scales.

Exploratory correlational analyses (Vispoel, 1981) of the Motivation scales with the Attribution items indicated that success attributions for Effort and Ability scales were significantly related to some of the Motivation measures but Luck items were not. Failure attrbutions were not related to the Motivation scales used in the study; therefore luck (success) attributions and all failure attribution items were dropped from the C-MAP.

On the basis of these findings instructions in the C-MAP suggest that students consider successes they have had in school, work, extracurricular activities such as band or drama, and social activities. They are asked to exclude successes achieved in sports, and those related to their family life. Then they are asked to respond to the Effort and Ability attribution items.

Effort Attributions. When success is attributed to hard work, sticking with it, or trying hard the attribution is to an internal cause rather than an external one (i.e. luck) and the related affect is pride in one's success (Weiner, 1974, Dweck et al, 1978). Two items assessed effort attributions: "I try hard" and "I stick with it." These items were highly intercorrelated ($r = .62$. $p < .001$). Factor analyses included repeated measures for these items (i.e. student response for two successes). A clear factor structure was obtained in the Personal item factor analyses for these items with factor loadings from .61 to .51. Alpha reliability for these four items was .74.

Ability Attributions. When success is attributed to being bright or to natural ability the attribution is to an internal cause, similar to Effort attributions, rather than an external one such as good luck or knowing the right person, and the related affect is an increased sense of self-

confidence and competence (Weiner, 1974, Dweck et al, 1978). Two items assessed ability attributions: "I'm bright" and "I have a natural ability." These items were highly intercorrelated ($r = .61$, $p < .001$). Factor analysis included repeated measures for these items (i.e. student responses for two successes). Alpha reliability for these four items was .72.

Valuing Understanding

In the first and second phase of the C-MAP development a set of nine value items were included in the assessment following the elicitation of success experiences from the students. Students were asked to rate these nine values (Table 55) on the extent to which each one was satisfied by a particular success. For example, a student whose success was "making a prize winning end table" might rate the value "I was admired by others" high, whereas they might rate the value "I understood something important to me" low. Three sets of values were included: Competence, Social Approval, and Altruistic, with three items for each value. Separate factor analyses of value items for each of the seven success contexts indicated that only the "helping others" factor held up across contexts (Vispoel, 1981). However, this value set was not correlated with any of the Motivation measures and was therefore dropped from the C-MAP.

One value item was found to be significantly related to the Mastery and the Career Commitment scales. This item asked students to rate the value "I understood something important to me." The other five value items were not significantly related to any of the Motivation scales and they were also dropped from the C-MAP.

Table 55

Valuing Understanding Scale

MY SUCCESS WAS IMPORTANT TO ME BECAUSE

1. I felt I did it entirely on my own.
2. I pleased people important to me.
3. I provided a service for people.
4. I was admired by others.
*5. I understood something important to me.
6. I helped others.
7. I completed something difficult.
8. I was sensitive to others' needs.
9. I made other people happy.

Items 1, 5, 7 were the Competence items
Items 2, 4, 9 were the Social Approval items
Items 3, 6, 8 were the Altruistic items
*This item is used on the C-MAP

Relationships Concern

Spence and Helmreich (1978) included four items (Table 56) on their Work and Family Orientation-3 (WOFO-3) measure to assess student feelings about relationships with others and success (Personal Unconcern). This scale measures student attitudes about the belief that success may cause others to dislike them. Persons who score high on this scale may avoid discussing their successes with others because they think others would be jealous and sometimes they work at less than their best because they think others may resent them for performing too well.

For C-MAP development Spence and Helmreich's 4 item measure was used. This measure had three items that intercorrelated well with each other and obtained an alpha realibility of .56 for C-MAP data. A clear factor structure was obtained in the Personal item factor analysis for these items, with loadings ranging from .51 to .56. It was factor ten in a ten factor solution. The scale also correlated significantly with the Career Commitment motivation scale ($r = .12$, $p < .001$).

Table 56

Relationships Concerns Scale (Spence & Helmreich, 1978)

[a] 1. I sometimes work at less than my best because I feel that others may resent me for performing well.

[a] 2. I worry because my success may cause others to dislike me.

[a] 3. I avoid discussing my accomplishments because others might be jealous.

* 4. I feel that good relations with my fellow workers are more important than performance on a task.

* This item correlated poorly with the other three items on the scale and was dropped for the C-MAP

a. Items 1, 2 and 3 are reversed for scoring.

XI. Environment Scales

Four Environment measures were developed for the C-MAP. These are described next and are: 1) support from parents for achievement in school (Parents Support); 2) support from teachers for students' career plans, achievements and general development (Teachers Support); 3) perceived support in the community for women working as well as men (Support for Women Working); and 4) personal career influencers (Personal Influencers).

A fifth scale assessing counselor support for student's career development was also used, and is described here. Because most 9th graders in our sample had not met with a counselor, our data for this scale was incomplete, and therefore it is not included on the Counseling Form of the C-MAP.

Parents Support

The Parents Support Scale has 6 items developed by project staff which assess students' perception of support from their parents for achievement in academic courses. The items were originally on 4 separate scales which were developed to measure past and present support from mothers and fathers (Table 57) for a variety of achievement and career related activities. Item/scale correlations were high and all items were retained for factor analysis. Exploratory factor analysis with the items from the four scales in the second phase of the C-MAP's development yielded only one clear, independent, factor. This factor included 6 Parental Support items marked with an * in Table 57. It was the third factor in the four factor solution for Environment items. Factor loadings ranged from .52 to .82. The reliability for this factor scale was .87.

Table 57

Parents Support Scale

MY FATHER

*1. encouraged me to do well in science or math courses.
*2. encouraged me to do well in English or Social Studies courses.
3. encouraged me to do well in sports.
4. encouraged me to do well in music or art courses.
5. asked about my school activities.
6. showed an interest in my career, marriage, and other future plans.

MY MOTHER

*7. encouraged me to do well in science or in math courses.
*8. encouraged me to do well in English or Social Studies courses.
9. encouraged me to do well in sports.
10. encouraged me to do well in music or art courses.
11. asked about my school activities.
12. showed an interest in my career, marriage, and other future plans.

MY FATHER

*13. encourages me to take math and science courses.
14. spend a lot of time with me.
a15. finds it hard to talk to me about my future career plans.
a16. doesn't care if I am successful in a career.
17. approves of my occupational (career) goals.
18. likes his work (paid employment).
19. isn't interested in how I do in school.

MY MOTHER

*20. encourages me to take math and science courses.
21. spends a lot of time with me.
a22. finds it hard to talk to me about my future career plans.
a23. doesn't care if I am successful in a career.
24. approves of my occupational (career) goals.
25. likes her work (paid employment).
26. isn't interested in how I do in school.

* These items were retained for C-MAP
a. These items were reversed for scoring

Teachers Support

The Teachers Support scale developed for the C-MAP assesses students' perception of their teachers as interested in them as people, as well as teacher support for their achievement and future plans. Items for this scale were written by project staff.

Five of the six original items correlated well with other scale items; the one item which did not correlate well (Table 58) was dropped. Scale reliability increased without this item also. One academic self-esteem (Coopersmith, 1970) item ("My teachers make me feel I'm not good enough") was included for the Environment item factor analysis because it fit theoretically here.

The Environment item factor analysis yielded a clear, independent factor structure for all of the Teacher Support items, including the Coopersmith item. Factor loadings ranged from .41 to .60. It was the fourth factor in a four factor solution. The alpha reliability for the six item factor scale was .68.

Table 58

Teachers Support Scale

TEACHERS IN MY SCHOOL

1. are usually not interested in how well I do in the courses they teach.
2. are quick to help me when I need it.
3. are interested in me, not just in how I do in school.
4. don't care about my future career plans.

*5. consider it more important to try hard than to succeed.

6. think that I can be a good leader for group projects.

a. 7. My teachers make me feel I'm not good enough.

* dropped item did not correlate well with other items
a. added Academic Self-Esteem item (Coopersmith, 1970)

Support for Women Working

The Support for Women Working scale is comprised of statements of attitudes which may inhibit women's career aspirations and options. These normative (attitudes about women in general) rather than personal items assess students' attitudes towards women's place in the work world.

The items used on the measure are adapted from Birk & Tanney's (1973) 13 item Opinionaire which expanded upon nine myths and related facts about women working, published by the U.S. Department of Labor, Women's Bureau (1972). Birk and Tanney present some construct validity for these items.

The 12 items used on the C-MAP scale are presented in Table 59. Most items were adapted from the U.S. Women's Bureau (1972). One item was taken from Birk and Tanney (1973). All 12 of the items correlated significantly ($p < .05$) with a majority of other scale items. One item was skewed for females, but not for males. It was kept because sex differences were of interest in this assessment and because it contributed positively to scale reliability. All of the items formed a clear, independent factor structure in the Environment item factor analysis. It was factor one in a four factor solution. Item loadings ranged from .56 to .68. The reliability of the factor scale was .88.

Personal Influencers

The role that significant others have played in influencing students' choice of career goals is assessed wth the Personal Influencers Scale. (See Table 60). Items were written by project staff and were reversed for scoring because this scale correlated negatively with the Motivation scales. It appears that students were less positive about others influencing their choices than they were about others supporting their choices and their

achievement plans. Male and female counterparts are listed for 5 different types of persons who may have exerted an influence over students' choice of career goals. All 10 items on this scale correlated well with each other, and had good distributions. Environment item factor analysis yielded a clear, independent factor for these items. It was factor two in a four factor solution. Factor loadings ranged from .47 to .65. Reliability for this scale was .84. This scale assessed something different from the Parents and Teachers support scales. The Personal Influencers scale assessed students' perception of important others' influence on their career choices.

Table 59

Support for Women Working Scale[b.]

1. Women, rather than men, should have most responsibility for the physical health of their children.

2. Women, rather than men, should have most responsibility for the mental health of their children.

3. Women are absent from work more than men because of illness; therefore, they cost the company more.

4. Since women don't work as many years or as regularly as men, their education is largely wasted.

[a.]5. When women work, they take jobs away from men; therefore women should quit those jobs they now have.

6. Women should not compete for men's jobs.

7. Women would prefer not to have promotions or job changes which add to their work load.

8. Children of working mothers are more likely to become juvenile delinquents than children of non-working mothers.

9. Women, rather than men, should have most responsibility for housekeeping.

10. A woman doesn't have to support herself; her husband or family will support her.

11. Women are absent from work more.

*12. Women get married, then quit work.

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* Birk & Tanney (1973)
a. skewed item for females but not for males
b. adapted from U.S. Women's Bureau (1972)

Table 60

Personal Influencers Scale

I was influenced to choose my career goal by

1. My mother.
2. My father.
3. A female teacher.
4. A male teacher.
5. A female relative.
6. A male relative.
7. A female friend.
8. A male friend.
9. A female counselor.
10. A male counselor.

Counselor Support

This six item scale (Table 61) was developed by project staff and assesses the students' perception of their counselor. High scorers view their counselors as having helped them plan for their future career and as having encouraged them to choose a challenging career and to consider

non-traditional as well as traditional career choices. They also view their counselors as caring about their career concerns, encouraging them to consider careers they (the students) express interest in, and encouraging them to take math and science courses.

As indicated earlier, this scale was not useful for most of our 9th grade subjects, many of whom (N = 522) had not met with a counselor. Mean score for all students completing the items was 3.07, with a standard deviation of .85 (N = 1562).

The first four items correlated significantly with each other. The last two items were dropped for the additional analyses because they correlated poorly with other scale items. Alpha reliability was .74 for the four items remaining. Researchers are encouraged to use this scale, when subjects are appropriate, because counselor influence on the career and achievement motivation of young persons is an important influence to assess.

Table 61

Counselors Support

MY GUIDANCE COUNSELOR

1. has helped me plan for my career
2. doesn't care about my career concerns
3. encourages me to choose challenging careers
4. makes a point of encouraging me to take math and science courses

*5. discourages me from considering some careers that I'm interested in

*6. encourages me to consider non-traditional/unusual careers

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* These items were dropped because of their low correlation with the other 4 items.

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Appendix A

Myth and Reality

The Myth	The Reality
A woman's place is in the home.	Today more than half of all women between 18 and 64 years of age are in the labor force, where they are making a substantial contribution to the Nation's economy. Studies show that 9 out of 10 girls will work outside the home at some time in their lives.
Women aren't seriously attached to the labor force; they work only for extra pocket money.	Of the nearly 34 million women in the labor force in March 1973, nearly half were working because of pressing economic need. They were either single, widowed, divorced, or separated or had husbands whose incomes were less than $3,000 a year. Another 4.7 million had husbands with incomes between $3,000 and $7,000.[1]
Women are out ill more than male workers; they cost the company more.	A recent Public Health Service study shows little difference in the absentee rate due to illness or injury: 5.6 days a year for women compared with 5.2 for men.
Women don't work as long or as regularly as their male coworkers; their training is costly--and largely wasted.	A declining number of women leave work for marriage and children. But even among those who do leave, a majority return when their children are in school. Even with a break in employment, the average woman worker has a worklife expectancy of 25 years as compared with 43 years for the average male worker. The single woman averages 45 years in the labor force. Studies on labor turnover indicate that net differences for men and women are generally small. In manufacturing industries the 1968 rates of accessions per 100 employees were 4.4 for men and 5.3 for women; the respective separation rates were 4.4 and 5.2.

[1] The Bureau of Labor Statistics estimate for a low standard of living for an urban family of four was $7,386 in autumn 1971. This estimate is for a family consisting of an employed husband aged 38, a wife not employed outside the home, an 8-year-old girl, and a 13-year-old boy.

U.S. Women's Bureau(1972)

The Myth	The Reality
Married women take jobs away from men; in fact, they ought to quit those jobs they now hold.	There were 19.8 million married women (husbands present) in the labor force in March 1973; the number of unemployed men was 2.5 million. If all the married women stayed home and unemployed men were placed in their jobs, there would be 17.3 million unfilled jobs. Moreover, most unemployed men do not have the education or the skill to qualify for many of the jobs held by women, such as secretaries, teachers, and nurses.
Women should stick to "women's jobs" and shouldn't compete for "men's jobs."	Jobs, with extremely rare exceptions, are sexless. Tradition rather than job content has led to labeling certain jobs as women's and others as men's. In measuring 22 inherent aptitudes and knowledge areas, a research laboratory found that there is no sex difference in 14, women excel in 6, and men excel in 2.
Women don't want responsibility on the job; they don't want promotions or job changes which add to their load.	Relatively few women have been offered positions of responsibility. But when given these opportunities, women, like men, do cope with job responsibilities in addition to personal or family responsibilities. In 1973, 4.7 million women held professional and technical jobs, another 1.6 million worked as nonfarm managers and administrators. Many others held supervisory jobs at all levels in offices and factories.
The employment of mothers leads to juvenile delinquency.	Studies show that many factors must be considered when seeking the causes of juvenile delinquency. Whether or not a mother is employed does not appear to be a determining factor. These studies indicate that it is the quality of a mother's care rather than the time consumed in such care which is of major significance.
Men don't like to work for women supervisors.	Most men who complain about women supervisors have never worked for a woman.

The Myth

The Reality

In one study where at least three-fourths of both the male and female respondents (all executives) had worked with women managers, their evaluation of women in management was favorable. On the other hand, the study showed a traditional/cultural bias among those who reacted unfavorably to women as managers.

In another survey in which 41 percent of the reporting firms indicated that they hired women executives, none rated their performance as unsatisfactory; 50 percent rated them adequate; 42 percent rated them the same as their predecessors; and 8 percent rated them better than their predecessors.

Appendix B

C-MAP Answer Sheet

ANSWER SHEET

Name _____

M F
Sex (please circle)

9 10 11 12
Grade (please circle)

I.
1. ☐
2. ☐
3. ☐
4. ☐
5. ☐
6. ○
7. ○
8. ○
9. ○
10. ☐
11. ☐
12. ☐
13. ○
14. ○
15. ☐
Total ____ Car

II.
16. ○
17. ○
18. ☐
19. ☐
20. ☐
21. ☐
Total ____ Mas

III.
22. ☐
23. _____ ☐
24. _____ ☐
25. _____ ☐
Total ____ Asp

IV.
26. ☐
____ Ver

27. ☐
____ Mat

V.
28. _____ ☐
29. _____ ☐
____ SES

VI.
30. ☐
31. ☐
32. ☐
33. ☐
34. ☐
____ Com

35. ☐
36. ☐
37. ☐
38. ☐
39. ☐
Total ____ Coop

40. ○
41. ○
42. ○
Total ____ Rel

VII.
43. ☐
44. ☐
45. ☐
46. ☐
47. ☐
48. ☐
49. ☐
50. ☐
51. ☐
52. ☐
53. ☐
54. ☐
55. ☐
56. ☐
Total ____ Ind

VIII.
57. ☐
58. ☐
59. ☐
60. ☐
61. ☐
62. ○
63. ○
Total ____ Hom

IX. Fill in squares on left hand side first (for Success A) and then squares on right hand side (for Success B)

A. _____

B. _____

A		B	
64. ☐		69. ☐	
65. ☐		70. ☐	

Total ____ Abl

A		B	
66. ☐		71. ☐	
67. ☐		72. ☐	

Total ____ Eff

A		B	
68. ☐		73. ☐	

Total ____ Und

X.
74. ○
75. ○
Total ____ Aca

XI.
76. ○
77. ☐
78. ☐
79. ○
80. ☐
81. ○
Total ____ Tch

XII.
82. ☐
83. ☐
84. ☐
85. ☐
86. ☐
87. ☐
Total ____ Par

XIII.
88. ○
89. ○
90. ○
91. ○
92. ○
93. ○
94. ○
95. ○
96. ○
97. ○
98. ○
99. ○
Total 202 Sup

XIV.
100. ○
101. ○
102. ○
103. ○
104. ○
105. ○
106. ○
107. ○
108. ○
109. ○
____ Inf

Appendix C

C-MAP Scoring Instructions

SCORING

Your answer sheet is divided into 19 sections, separated by bold lines; one section for each of the scales to be scored. The procedures for scoring each of the scale sections are outlined below. You only will need to do simple addition and subtraction. After you have scored each section and put that score on your answer sheet, you will receive instructions on how to transfer these scores to your profile sheets.

Scoring

The scales are divided by the bold lines. The directions for scoring each section follow the order of the scales on your answer sheet. The scoring directions for each section (each scale) are outlined below:

Car (CAREER COMMITMENT)

1) Add up the numbers in each of the squares ( ).
   Put answer on line (1) . . . . . (1) _____

2) Add up the numbers in the circles ( ).
   Insert answer here . . . . . ____
   Subtract that answer from 36
   36 - ____ = ____
   Put that answer on line (2) . . . . . (2) _____

3) Add lines (1) and (2) for your Car score . . _____ Car

4) Put your score on the Car line on your answer sheet.

Mas (MASTERY)

1) Add up the numbers in each square ( ) and
   put your answer on line (1) . . . . . (1) _____

2) Add up the numbers in the circles ( )
   Insert answer here . . . . . _____
   Subtract that number from 12
   12 - ____ = ____
   Put that answer on line (2) . . . . . (2) _____

3) Add lines (1) and (2) for your Mas score . . _____

4) Put your score on the Mas line on your answer sheet.

Asp (CAREER/EDUCATIONAL ASPIRATION)

1) Put the number in the square for answer #22 on the following line . . . . . (1) _____

2) At the end of your C-MAP booklet you will find a list of careers with numbers after each of them. For questions 23, 24, and 25, find the career on the list that is closest to the one you have written down for each of these questions. Please read the directions on how to use the Occupation list carefully. Put the occupation number in the appropriate squares on your answer sheet, and on the following lines

Question 23 . . . (2) _____

Question 24 . . . (3) _____

Question 25 . . . (4) _____

3) Add up lines (1), (2), (3) and (4) for your Asp score . . . . . _____ Asp

4) Put your score on the Asp line on your answer sheet.

Ver (VERBAL ABILITY)

1) For question 26, put the number in the square on the Ver line on your answer sheet.

Mat (MATH ABILITY)

1) For question 27, put the number in the square on the Mat line on your answer sheet.

SES (SOCIOECONOMIC STATUS)

1) For items 28 and 29, again turn to the list at the end of the C-MAP and find the career closest to the one you have written down, for both your father (item 28) and your mother (item 29). Put the closest occupation number for each question in the appropriate box.

2) To determine your SES score, put the larger of these scores on the SES line on your answer sheet. (Your score will be the higher of the two occupational numbers.)

Com (COMPETITIVE)

1) Add up all the numbers in the squares ( ).
This is your Com score. Put your score on
the following line. . . . . _____ Com

2) Put your score on the Com line on your answer sheet.

Coop (COOPERATIVE)

1) Add up all the number in the squares ( ).
This is your Coop score. Put your score on
the following line. . . . . _____ Coop

2) Put your score on the Coop line on your answer sheet.

Rel (RELATIONSHIPS CONCERNS)

1) Add up the numbers in the circles ( ).
Insert answer here. . . . . ____
Subtract this number from 18
18 - ____ = ____
This is your Rel score. Put your score on the
following line. . . . . _____ Rel

3) Put your score on the Rel line on your answer sheet.

Ind (INDEPENDENCE)

1) Add up all the numbers in the squares ( ).
This is your Ind score. Put your score on
the following line. . . . . _____ Ind

3) Put your score on the Ind line on your answer sheet.

Hom (HOMEMAKING COMMITMENT)

1) Add up the numbers in each of the squares ( ).
Put your answer on line (1) . . . . . (1) _____

2) Add up the numbers in each circle ( ).
Insert answer here . . . . . _____
Subtract that answer from 12
12 - ____ = ____
Put your answer on line (2) . . . . . (2) _____

3) Add lines (1) and (2) for your Hom score . . _____ Hom

4) Put your score on the Hom line on your answer sheet.

Abl (ABILITY ATTRIBUTIONS)

1) Add up the numbers in each of the squares ( ) for questions 65, 66, 69 and 70. This is your Abl score. Put your score on the following line . . . . . _____

2) Put your score on the Abl line on your answer sheet.

Eff (EFFORT ATTRIBUTIONS)

1) Add up the numbers in each of the squares ( ) for questions 66, 67, 71 and 72. This is your Eff score. Put your score on the following line . . . . . _____ Eff

2) Put your score on the Eff line on your answer sheet.

Und (VALUING UNDERSTANDING)

1) Add up the numbers in each of the squares ( ) for questions 68 and 73. This is your Und score. Put your score on the following lines . . . . . _____ Und

2) Put your score on the Und line on your answer sheet.

Aca (ACADEMIC SELF-ESTEEM)

1) Add up the numbers in the circles ( ).
Insert aswer here . . . . . ____
Subtract that number from 12
12 - ____ = ____
This is your Aca score. Put your score on
the following line. . . . . ____
Aca

3) Put your score on the Aca line on your answer sheet.

Tch (TEACHERS SUPPORT)

1) Add up the numbers in each of the squares ( ).
Put your answer on line (1) . . . . . (1) ____

2) Add up the numbers in each of the circles ( ).
Insert your answer here . . . . . ____
Subtract that number from 18
18 - ____ = ____
Put your answer on line (2) . . . . . (2) ____

3) Add lines (1) and (2) for your Tch score . . ____
Tch

4) Put your score on the Tch line on your answer sheet.

Par (PARENTS SUPPORT)

1) Add up the numbers in the squares ( ).
This is your Par score. Put your score on
the following line. . . . . ____
Par

2) Put your score on the Par line on your answer sheet.

Sup (SUPPORT FOR WOMEN WORKING)

1) Add up the numbers in the circles ( ).
Insert your answer here . . . . . ____
Subtract your number from 72
72 - ____ = ____
This is your Sup score. Put your score on
the following line. . . . . ____
Sup

2) Put your score on the Sup line on your answer sheet.

Inf (PERSONAL INFLUENCERS)

1) Add up each of the numbers in the circles ( ).
Insert your answer here . . . . . _____
Subtract that answer from 60
60 - _____ = _____
This is your Inf score. Put your score on the following line. . . . . _____ Inf

2) Put your score on the Inf line on your answer sheet.

Transfering Scores to Profile Sheets

Now look at the 3 separate profile sheets you received. You will see that these have three different headings: Career, Mastery, and Aspirations. Taking each sheet one at a time, find the scale score on your answer sheet that corresponds with each of the scales at the bottom of the profile sheet.

For example, for the Career Commitment profile sheet, you will first find your Car score on your answer sheet and put this on the Car line. Then you will find your Mat score and put this on the Mat line and so on until you have filled in all of the lines on your Career Commitment profile sheet.

Now take your Mastery profile sheet, and follow the same procedures. Find your Mas score and put it on the Mas line on your Mastery profile sheet. Continue until all of the lines on your Mastery Profile sheet are filled in.

Lastly, follow the same procedure for your Aspirations profile sheet, starting with your Asp score.

Now that you have filled in all the scores on your 3 profile sheets, you are ready to draw in your profiles. Above each score is a column of numbers. Find the number in each scale column that corresponds with your scale score, and mark that number with a darkened circle (●). Find your scale scores in each of the corresponding scale columns and mark them with a darkened circle (●). Do this on all three profile sheets.

After you have marked your score in each of the scale columns, use a ruler or other straight edge and connect each of the dots, moving from left to right. You should end up with a somewhat zig-zagged line across the page of each of your profile sheets. When you have finished drawing in your profile, turn this sheet over for instructions on how to interpret your C-MAP profiles. In addition you will want to show your finished profiles to the counselor or teacher who will discuss your profiles with you.

Appendix D

Occupations Codes

OCCUPATION LIST

The next few pages contain a list of occupations with a number next to each occupation. Use this list of occupations to find the number to be placed on your answer sheet for C-Map items 23, 24, 25, 28, and 29.

Occupations are listed alphabetically. Though these occupations represent the most common ones they represent about 28 of the possible occupational titles. For this reason, some of the occupations you have listed for items 23, 24, 25, 28, and 29 may not be on the occupation's list. This means you may have to substitute an occupational title similar to the one you have listed.

(INSTRUCTIONS:)

Step 1. Try to find the occupation you have listed on the alphabetical occupation list. If you find the occupation, enter the number to the right of the occupation on your answer sheet for the appropriate item. If you do not find the occupation, go to Step 2.

Step 2. Think of other possible names for your occupation and look these up on the list.

For example, race car driver = ATHLETE (59)
body man = AUTOMOBILE BODY REPAIRER (19)
court reporter = LEGAL SECRETARY (61)

If you still have not found your occupation, think of the more general name for the occupation and locate that on the occupation list.

For example: government teacher = TEACHER (general) (70)
astronautical engineer = ENGINEER (general) (87)
driver for United Parcel = DELIVERY PERSON (41)
gunsmith = CRAFTSPERSON (general) (26)
Avon salesperson = SALESPERSON (general) (49)

Step 3. If you still have not found the occupation, or if you have questions about the one you found or feel it does not fit, ask your teacher or counselor for assistance.

Alphabetical List of Occupations with Number Codes

Accountant	77
Accounting Machine Operator	45
Actor-Actress	60
Actuary	81
Administrative Assistant	67
Adverstising Agent and Salesperson	66
Advertising Manager	75
Aeronautical Engineer	87
Aerospace Engineering Technician	62
Agronomist	80
Air Conditioning Mechanic	27
Air Traffic Controller	69
Aircraft Mechanic	48
Airline Stewardess/Steward	31
Airplane Navigator	48
Airplane Pilot	79
Animal Scientist	77
Anthropologist	81
Apartment House Manager	32
Appliance Installer, Mechanic & Repairperson	27
Architect	85
Archivist	75
Architectural Draftsperson	67
Armed Forces Member	18
Art Goods Dealer	49
Art Teacher (secondary and elementary)	70
Artist	40
Assembler	17
Astronaut	62
Astronomer	80
Athlete	59
Athletic Coach	64
Auctioneer	40

Business Manager	71
Business (commercial) Teacher (secondary)	70
Business and Commerce Teacher (college)	84
Butcher	16
Buyer (Purchasing Agent)	75
Cab Driver	10
Cabinetmaker	22
Calculating Machine Operator	45
Carpenter	19
Carpet Installer	12
Cashier	44
Caterer	39
Cattle Rancher	14
Cement Mason	19
Certified Public Accountant (C.P.A.)	77
Chamber of Commerce Executive	67
Chauffeur	10
Chemical Engineer	90
Chemical Laboratory Technician	62
Chemist	79
Child Care Worker (general)	28
Chiropractor	75
Civil Engineer	84
Claim Adjuster	62
Cleaner	08
Clerical Supervisor (general)	44
Clerical Worker (general)	44
Clerk (general)	44
Clerk-Stenographer	61
Clothing Ironer and Pressor	18
Coal Equipment Operator	17
College Professor	84
Commercial Artist	71
Community Recreation Administrator	67
Composer	52

Director, Social Service	75
Dishwasher	11
Dispatcher, Motor Vehicle	40
Doctor	92
Dorm Director	30
Draftsperson	67
Drama Coach	53
Drama Teacher (college)	53
Drama Teacher (high school)	70
Dramatist	60
Dressmaker	23
Drill Press Operator	22
Driller	22
Dry Cleaner	15
Dry Wall Installer	25
Duplicating Machine Operator	45
Dyer	12
Economist	74
Editor	82
Educational Administrator	72
Electrical Engineer	84
Electrician	44
Electronic Technician	62
Electrotyper	55
Elementary School Teacher	71
Elevator Mechanic	27
Elevator Operator	10
Employer	61
Employment Interviewer	44
Encyclopedia Salesperson	39
Engineer (general)	87
Engineering Technician (general)	62
English Teacher (college)	84
English Teacher (elementary and secondary)	70
Engraver, Machine	47

Entertainer (Dancer, Singer)	40
Environmental Health Engineer	87
Equipment Repairer	27
Executive Housekeeper	31
Extension Agent	83
Factory Supervisor	50
Factory Worker (general)	19
Farm Foreman	20
Farm Laborer	06
Farm Manager	36
Farmer (Rancher)	14
Fashion Designer	40
Fashion Model	40
File Clerk	44
Filling Station Attendant	18
Filmmaker	62
Finance Expert	79
Fire Fighter	37
Fireperson, Locomotive	45
Fish and Game Warden	21
Fisher (Commercial)	11
Flight Attendant	31
Flight Engineer	48
Floor Layer	17
Florist	40
Food and Drug Inspector	67
Food Service Manager	39
Foreign Language Interpreter	70
Foreign Language Teacher (college)	84
Foreign Language Teacher (secondary)	70
Foreign Service Officer	67
Foreign Trade Clerk	44
Foreman	50
Forester	48
Forge Person/Hammer Person	23
Fork Lift Operator	17

Fountain Man/Woman	17
Freight Handler	09
Funeral Director	59
Furnace Person	18
Furniture Store Manager	75
Furniture Finisher	18
Furniture Designer	71
Furniture Salesperson	39
Furrier	40
Game Warden	21
Garage Supervisor	50
Garbage Collector	06
Gardener	11
Gas Station Manager	62
Geographer	77
Geologist	80
Gift Shop Manager	62
Glazier	25
Government Official	67
Grader	17
Grain Buyer	51
Grinder	22
Grocer (Food Store Manager)	62
Grounds Keeper	11
Guard/Watchman	18
Guide (Travel)	67
Hair Stylist	17
Health Aide	25
Health Administrator	74
Health Records Technician (general)	60
Health & Welfare Coordinator	67
Health Technologist/Technician (general)	52

Interviewer	44
Investigator	68
Janitor	13
Jeweler	36
Jewelry Designer	73
Job Analyst	66
Job and Die Setter (metal)	34
Journalist/Reporter	82
Judge	93
Keypunch Operator	45
Kitchen Helper	11
Knitter	21
Labor Arbitrator	84
Laboratory Technician	48
Laborer	08
Lathe Operator	22
Laundry Person	12
Lawyer	92
Legal Secretary	61
Librarian	60
Library Assistant	44
Licensed Practical Nurse (LPN)	22
Life Insurance Salesperson	66
Lineperson (telephone & telegraph)	49
Liquor Store Manager	62
Load Checker	19
Locksmith	26
Logger	04
Longshore person	11
Loom Fixer	10
Lumberjack	04

Machine Operator (general)	19
Machine Repairer	27
Machinist	33
Mail Carrier	53
Mail Clerk	44
Maintenance Worker	19
Manager/Administrator (general)	62
Manager, Restaurant/Bar	38
Maenicurist	17
Manpower Adviser	67
Marine Scientist	80
Market Analyst	66
Marshal/Constable	21
Mass Transit Driver	33
Mathematician	80
Mathematics Teacher (college)	84
Mathematics Teacher (elementary & secondary)	70
Meat Cutter	16
Mechanic (general)	21
Mechanic, Radio	36
Mechanical Engineer	80
Mechanical Engineer Technician	62
Medical Laboratory Assistant	48
Medical Secretary	61
Medical Technologist	52
Merchandiser	71
Metal Plater	20
Metallurgical Engineer	83
Metallurgist, Assistant	62
Meterologist	77
Meter Reader	44
Miller	19
Milliner (Hat Maker)	46
Milwright	31
Milner	17
Mining Engineer	85

Minister (Priest)	52
Model	40
Model Maker	43
Molder (Foundry)	12
Motion Picture Projectionist	43
Music Teacher (college)	53
Music Teacher (Elementary and Secondary)	70
Musician	52
Nuclear Reactor Technician	62
Nurse, Registered (RN)	44
Nurse, Licensed Practical (LPN)	22
Nurses Aid	14
Nurseryperson	11
Occupational Therapist	67
Oceanographer	80
Office Machine Operator	45
Office Manager	75
Office Worker (general)	44
Officials of Unions, Lodges, and Societies	60
Offset Press Operator	46
Operations Manager	62
Optician	39
Optometrist	79
Orchestra Leader	52
Osteopath	92
Owns Own Business (general)	62
Painter (Artist)	67
Painter (House, Building, Equipment)	16
Paperhanger	14
Parking Lot Attendant	19
Parole Officer	41
Pathologist	92
Payroll Clerk	44
Peddler (Huckster)	09
Personnel Clerk	44

Personnel Director	84
Personnel Manager	84
Personnel Recruiter	65
Personnel Secretary	62
Pharmacist	81
Philosopher	81
Photograph Process Worker	42
Photographer	50
Photolithographer	63
Physical Education Teacher (college)	64
Physical Education Teacher (elementary and secondary)	70
Physical Therapist	60
Physician (general)	92
Physicist	80
Physiologist	77
Piano Tuner	38
Pipe Fitter	34
Plasterer	25
Plumber	34
Podiatrist (Foot Doctor)	71
Police Officer	41
Polisher/Sander/Buffer	19
Political Scientist	81
Politician	67
Postmaster/Postmistress	61
Power Plant Operator	50
Powerhouse Repairer	27
Precision Machine Operator (general)	21
Press Person/Plate Printer	45
President of a Company	79
Priest	52
Printer	46
Production Expeditor	44
Production Manager	62
Practical Nurse (LPN)	22
Proofreader	44

Psychiatrist	92
Psychologist	81
Public Health Service Officer	74
Public Relations Person	82
Punch Press Operator	19
Purchasing Agent	75
Quality Control Technician (Inspector)	41
Railroad Conductor	58
Radio Operator	69
Radio Program Writer	40
Radio/TV Announcer	65
Radio/Television Engineer	62
Railroad Brakeperson	42
Railroad Conductor	58
Railroad Engineer	58
Real Estate Appraiser	68
Real Estate Salesperson	62
Receptionist	44
Recreation Director	67
Rehabilitation Counselor	65
Registered Nurse (RN)	44
Religious Worker	57
Repairer, TV	36
Repairperson (general)	27
Reporter	82
Research Analyst	66
Research Assistant	65
Reservations Agent	52
Restaurant/Bar Manager	38
Retail Merchant	71
Riveter/Fastener	20
Rodperson	25
Roller	22
Roofer	1?
Route Salesperson	49

Sailor	16
Salary & Wage Administrator	62
Sales Clerk	39
Sales Correspondent	44
Sales Manager	71
Salesperson (general)	49
Salesperson, Manufacturing Industries	65
Salesperson, Retail Trade	39
Salesperson, Wholesale	61
School Monitor	26
School Superintendent	72
Science Teacher (college)	84
Science Teacher (elementary & secondary)	70
Scientist	77
Sculptor/Sculptress	67
Seamstress	23
Secretary (general)	62
Securities Salesperson	72
Sewer	18
Sewing Machine Operator	18
Sheet Metal Worker	33
Sheriff	34
Ship's Pilot	50
Shipfitter	34
Shipping/Receiving Clerk	24
Shoe Repairer	12
Shoe Store Manager	71
Shoemaker Machine Operator	09
Sign Painter	16
Singer	40
Skilled Tradesperson (general)	26
Slater (Roofer)	15
Social Science Teacher (elementary and secondary)	70
Social Scientist (general)	81
Social Worker	64

Sociologist	81
Special Education Teacher (elementary and secondary)	70
Speech and Hearing Clinician (therapist)	60
Speech Teacher (elementary and secondary)	70
Spinner	04
Stamp Press Operator	19
Stationary Engineer	45
Stationary Fireperson	17
Statistician	81
Steward/Stewardess	31
Stock Clerk	44
Stock Handler	17
Stone Cutter	25
Stonemason	27
Streetcar Operator	33
Structural Steel Worker	34
Supervisor, Clerical	44
Supervisor, Factory	50
Surgeon	92
Surveyor	48
Switchperson (telephone & telegraph)	44
Systems Analyst	66
Tabulating Machine Operator	45
Tailor	22
Taxicab Driver	10
Teacher (general)	70
Teacher Aide	63
Teamster	08
Technician (general)	62
Telegraph Operator	47
Telephone Installer/Repairperson	49
Telephone Lineperson/Splicer	49
Telephone Operator	45
Teller	52
Test Engineer, Aircraft	48
Tester, Electronic Systems	62
Textile Worker	06

Theatre Manager	62
Therapist (general)	60
Ticket Agent	60
Tile Setter	28
Time Study Analyst	66
Timekeeper	44
Tinsmith	33
Tool and Die Maker	49
Tool Crib Attendant	19
Tool Designer	62
Tool Maker	49
Trackperson (trains)	42
Tractor Operator	23
Traffic Checker	18
Training Director	84
Travel Agent	52
Tree Surgeon	62
Truck Driver	15
TV Announcer	65
Typewriter Repairer	36
Typist	61
Upholsterer	21
Urban and Regional Planner	65
Usher (recreation and amusement)	25
Veterinarian	78
Vice-President of a Company	75
Vocational Agriculture Teacher (college)	84
Vocational Agriculture Techer (elementary and secondary)	70
Waitress/Waiter	16
Ward Attendant	14
Warehouse Manager	32
Warehouse Worker	08
Watch Maker	36

Watch Repairer	36
Weather Observer	62
Weaver	06
Weigher	42
Welder	24
Welfare Service Aide	11
Wood Finisher	18
Writer	40
X-Ray Technician	48
YWCA/YMCA Program Director	67
YWCA/YMCA Secretary (Director)	62
Zoologist	77

Appendix E

C-MAP PROFILE Sheets

PROFILE SHEET - CAREER

RAW SCORES

% tile	Motivation	Back...	Personal							Environment				% tile
	Car	Mat	**Com**	Coop	**Ind**	HOM	Eff	UND	Rel	TCH	PAR	**Sup**	Inf	
100-99	73-75	4	24-25	25	66-70	34-35	20	10	14-15	28-30	30	60	50	100-99
98-97	72		23		63-65	32-33				27		58-59	48-49	98-97
96-95	71		22		61-62				13	26		57	46-47	96-95
94-90	69-70		21	23-24	58-60	30-31				25	28-29	54-56	42-45	94-90
89-85	67-68		20		56-57	29	19		12	24	27	51-53	41	89-85
84-80	65-66	3	19	22	55	28		9		23	25-26	50	39-40	84-80
79-75	64			21	54	27	18				24	48-49		79-75
74-70	63		18		53	26				22		47	38	74-70
69-65	62			20	52			8	11			46	37	69-65
64-60	61				51	25	17			21		45	35-36	64-60
59-55	60	2	17		50	24					23	44		59-55
54-50	59				49		16		10	20	22	43	33-34	54-50
49-45	58		16	19	48	23						42	32	49-45
44-40					47	22				19	21	41	31	44-40
39-35	57				46				9		20	40		39-35
34-30	56		15	18	45	21		7		18	19	38-39	29-30	34-30
29-25	54-55				44	20	15				18	37		29-25
24-20	53	1	14	17	43	19			8	17		36	27-28	24-20
19-15	51-52				41-42	18	14	6		16	16-17	35	25-26	19-15
14-10	49-50		12-13	16	39-40	16-17	13		7	15	14-15	32-34	24	14-10
9-5	46-48		11	15	37-38	14-15	12	5	6	13-14	12-13	29-31	21-23	9-5
4-3	44-45		10	14	34-36	12-13	10-11			12	9-11	27-28	18-20	4-3
2-1	15-43		5-9	5-13	14-33	7-11	4-9	2-3	3-5	6-11	6-8	12-26	10-17	2-1
Mean	59.1	2.4	16.8	19.6	49.0	23.5	16.5	7.9	10.2	20.1	21.5	42.9	33.2	Mean
SD	7.4	1.0	3.2	2.9	7.4	5.2	2.5	1.5	2.3	3.9	5.2	8.3	7.5	SD
	Car	Mat	Com	Coop	Ind	Hom	Eff	Und	Rel	Tch	Par	Sup	Inf	

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PROFILE SHEETS - MASTERY

RAW SCORES

%tile	Motivation	Background		Personal				Environment			%tile
	Mas	SES	MAT	Com	Ind	Eff	Und	TCH	PAR	SUP	
100-99	28-30	87-96	4	24-25	66-70	20	10	28-30	30	60	100-99
98-97	26-27	83-86		23	63-65			27		58-59	98-97
96-95	25	80-82		22	61-62			26		57	96-95
94-90	24	71-79		21	58-60			25	28-29	54-56	94-90
89-85	23	68-70		20	56-57	19		24	27	51-53	89-85
84-80		62-67	3	19	55		9	23	25-26	50	84-80
79-75	22				54	18			24	48-49	79-75
74-70				18	53		8	22		47	74-70
69-65	21	61			52					46	69-65
64-60					51	17		21		45	64-60
59-55	20	52-60	2	17	50				23	44	59-55
54-50		49-51			49	16		20	22	43	54-50
49-45				16	48					42	49-45
44-40	19	47-48			47			19	21	41	44-40
39-35		44-46			46				20	40	39-35
34-30	18	40-43		15	45		7	18	19	38-39	34-30
29-25		32-39			44	15			18	37	29-25
24-20	17	26-31	1	14	43			17		36	24-20
19-15	16	21-25			41-42	14	6	16	16-17	35	19-15
14-10		19-20		12-13	39-40	13		15	14-15	32-34	14-10
9-5	14-15	15-18		11	37-38	12	5	13-14	12-13	29-31	9-5
4-3	13			10	34-36	10-11	4	12	9-11	27-28	4-3
2-1	6-12	4-14		5-9	14-33	4 9	2-3	6-11	6-8	12-26	2-1
Mean	20.0	49.1	2.4	16.8	49.0	16.5	7.9	20.1	21.5	42.9	Mean
SD	3.4	20.0	1.0	3.2	7.4	2.5	1.5	3.9	5.2	8.3	SD
	Mas	SES	Mat	Com	Ind	Eff	Und	Tch	Par	Sup	

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PROFILE SHEET - ASPIRATION

RAW SCORES

%tile	Motivation	Background		Personal			Environmental			%tile
	Asp	SES	Ver	Com	ABL	Aca	Tch	Par	SUP	
100-99	370-381	87-96	4	24-25	20	10	28-30	30	60	100-99
98-97	358-369	83-86		23			27		58-59	98-97
96-95	349-357	80-82		22	19	9	26		57	96-95
94-90	329-348	71-79		21	18	8	25	28-29	54-56	94-90
89-85	310-328	68-70		20	17		24	27	51-53	89-85
84-80	295-309	62-67	3	19	16		23	25-26	50	84-80
79-75	283-294							24	48-49	79-75
74-70	272-282			18			22		47	74-70
69-65	263-271	61			15	7			46	69-65
64-60	252-262						21		45	64-60
59-55	244-251	52-60		17		6		23	44	59-55
54-50	234-243	49-51			14		20	22	43	54-50
49-45	224-233		2	16					42	49-45
44-40	213-223	47-48			13		19	21	41	44-40
39-35	202-212	44-46				5		20	40	39-35
34-30	189-201	40-43		15			18	19	38-39	34-30
29-25	175-188	32-39			12	4		18	37	29-25
24-20	163-174	26-31		14			17		36	24-20
19-15	144-162	21-25					16	16-17	35	19-15
14-10	124-143	19-20	1	12-13	11	3	15	14-15	32-34	14-10
9-5	98-123	15-18		11	10		13-14	12-13	29-31	9-5
4-3	86-97			10	8-9	2	12	9-11	27-28	4-3
2-1	33-85	4-14		5-9	4-7		6-11	6-8	12-26	2-1
Mean	230.8	49.1	2.6	16.8	14.2	6.1	20.1	21.5	42.9	Mean
SD	74.0	20.0	.9	3.2	2.8	2.0	3.9	5.2	8.3	SD
	$\overline{Asp}$	$\overline{SES}$	$\overline{Ver}$	$\overline{Com}$	$\overline{Abl}$	$\overline{Aca}$	$\overline{Tch}$	$\overline{Par}$	$\overline{Sup}$	

Appendix F

C-MAP Development School Districts

Appendix F

Participating School Districts

1) Ball Chatham Community Unit School District #5
Chatham, IL

2) Valley View Community Unit 365 U.
Romeoville, IL

3) Chicago Archdiocese
Chicago, IL

4) Farina LaGrove Community Unit School District #206
Farina, IL

5) Vandalia Community Unit School District #203
Vandalia, IL

6) Brookport Unit School District #38
Brookport, IL

7) Metropolis Community High School District #20
Metropolis, IL

8) Mt. Zion Community Unit School District #3
Mt. Zion, IL

9) Gibson City Community Unit School District #1
Gibson City, IL

10) Argenta Community Unit School District #1
Argenta, IL

11) Grayslake Community High School District #127
Graylake, IL

12) Fenton Community High School District #100
Bensonville, IL

Appendix G

C-MAP Predictive Equations

Appendix G

Tables A, B, and C provide the prediction equations for seven combinations of predictor variables. These equations are presented using the unstandardized B weights (instead of standardized s) along with the Constant in order that interested researchers might test these relationships further by comparing their findings with ours. In Tables A, B, and C, equations are presented with the Constant term first followed by the unstandardized B weight associated with each of the C-MAP scales that were significant contributers.

Table A

Regression Equations for Mastery

R	F	df[b]	Scales in Equation	Equation
.31	24.67***	5,1165	Background	Y = 2.63 + .073Math + .044SES + (-) .108Sex + .239 Location[a.] + .081Verbal
.44	54.80***	5,1165	Personal	Y = .109 + .149Competitive + .065Academic + .044 Understanding + .196Indepdence + .084 Effort
.32	45.14***	3,1167	Environment	Y = 1.98 + .130Parent + .089Support + .172Teacher
.48	43.90***	8,1162	Background and Personal	Y = .867 + .002SES + .047 Understanding + .071Math + .124 Competitive + .217 Location + .298 Independence + .060Effort + .045Verbal
.40	32.35***	7,1163	Background and Environment	Y = 1.61 + .003SES + .146Teacher +(-) .183Sex + 157 Location + .105Parents + .073Math + .140Support
.48	49.39***	8,1162	Personal and Environment	Y = .867 + .001SES + .47Understanding + .071Math + .124Competitive + .217 Location + .063 Independence + .060Effort + .045Verbal
.53	44.23***	10,1160	Background Personal and Environment	Y = .143 + .002SES + .063Math + .156Location + .280Independence + .138Competitive + .040Understanding + .048 Effort + .117Teacher + .081 Parent + .093Support

a. Location: Rural = 0 Urban/Inner City = 1
b. Only complete data for all scales was used

Table B

Regression Equations for Career Commitment

R	F	df[d]	Scales in Equation	Equation
.26	16.45***	5,1117	Background	Y = 3.44 + .03SES + .037Math + .159Race[b] + .090 Location[a] + .074Verbal
.42	33.43***	7,1115	Personal	Y = 2.144 + .113Competitive + .060Expressive[c] + .066 Relationships + .065 Understanding + .058Effort + .072Cooperative + .178Independence
.36	42.56***	4,1118	Environment	Y = 2.70 + .099 Parents + .158 Support + .050Influencers + .39Teacher
.47	31.42***	10,1112	Background and Personal	Y = 2.26 + .040Math + .074 Understanding + .064Relationships +(-) .080Home + .155Race + .181Independence + .100 Cooperative .107Competitive + .047Effort + .051Verbal
40	25.97***	8,1114	Background and Environment	Y = 2.59 + .002SES + .129 Teacher + .136Race + .048Influencers + .034Math + .084Parents + .152Support
.53	39.73***	11,111	Personal and Environment	Y = 1.54 + .126 Competitive + .113Teacher +(-) .086Home + .075Understanding + .072 Parents + .037Relationships + .081Cooperative + .043Ability + .051Influencers + .167Support + .145Independence
.55	36.17***	13,1109	Background, Personal and Environment	Y = 1.48 + .036Math + .071 Understanding + .035Relationship +(-) .84Home + .065 Parents + 132Race + .077 Cooperative + .156Independence + .060Support + .053Influencers .103Teacher + .133Competitive + .037Effort

a. Location: Rural = 0 Urban/Inner City = 1
b. Race: White = 0 Minority = 1
c. Expressive scaled used only for this analysis
d. Only complete data for all scales was used

Table C

Regression Equations for Aspiration

R	F	df[d.]	Scales in Equation	Equation
.41	39.092	6,1175	Background	Y = -1.161 + .047Math - .138Grade[a.] + .007SES + .351Race[b.] + .360 Location[c.] + .202Verbal
.24	24.76	3,1178	Personal	Y = 112.183 + 12.99Competitive + 10.96Academic + 12.21Ability
.33	27.22	3,1178	Environment	Y = -1.990 + .221Parents + .150 Support + .187Teachers
.44	34.62	8,1173	Background and Personal	Y = -1.862 + .006SES +(-) .154 Grade + .350Race + .064Academic + .105Ability + .329 Location + .110Competitive + .191Verbal
.45	43.35	7,1174	Background and Environment	Y = 12.354 + .535 SES + 11.190 Teacher + 27.908Race + 7.869 Support + 16.211Parents + 26.919Location + 15.776Verbal
.39	34.24	6,1175	Environment and Personal	Y = -2.931 + .132Competitive + .146Teachers + .197Parents + .115Ability + .172Support + .073Academic
.48	31.71	11,1170	Background Environment and Personal	Y = -38.652 + .459SES + (-) 9.053 Grade + 8.682Teachers + 29.053Race + 10.215Competitive + 9.148Ability + 25.855 Location + 10.875 Support + 13.697Parents + 4.323Academic + 13.813 Verbal

a. Grade: 9th = 0; 12th = 1
b. Race: White = 0; Minority = 1
c. Location: Rural = 0; Urban/Inner City = 1
d. Only complete data for all scales was used