(Non-)Exhaustivity in French *c'est*-Clefts

Abstract

This paper presents two experimental studies using an incremental information-retrieval paradigm to test the exhaustivity of French *c'est*-clefts against other exhaustive inferences and languages, namely German. Results suggest that exhaustivity in *c'est*-clefts is weak and in some cases shows a divergent pattern from exhaustivity in definite pseudoclefts, contra predictions of Percus (1997) and Büring and Križ (2013) and differing from an identical study on German. We seek a unified account of cleft exhaustivity, and propose that the broader discourse-semantics of *c'est*-clefts account for its weak effect.

1 Introduction

Similar to English *it*-clefts, the French *c'est*-cleft as in (1a) is claimed to have three standard components. It conveys a prejacent proposition that amounts to the corresponding canonical form, as in (1b). It carries an existential presupposition to the effect of (1c). Finally, it gives rise to an exhaustive inference whereby no other individual than the one denoted by the cleft pivot holds of the predicate, as illustrated in (1d).

(1) a. C'est Marc qui a préparé un cocktail.
     '*It is Marc who prepared a cocktail.*'
   b. Marc prepared a cocktail.   (*prejacent*)
   c. Someone prepared a cocktail.   (*existential*)
   d. Nobody other than M. prepared a cocktail.
                                       (*exhaustive*)

It is commonly accepted that the prejacent is part of the asserted content, while the existential is presupposed. The source of exhaustivity is, however, less clear. Within the literature on French proper, while exhaustivity in *c'est*-clefts is indeed acknowledged (Lambrecht, 1994; Lambrecht, 2001;

Katz, 1997; DeCat, 2007), few researchers have directly addressed the issue of how it is derived. Drawing upon analyses in the crosslinguistic literature, Clech-Darbon et al. (1999) are among these few in arguing for a truth-conditional account, citing É. Kiss (1998), in which exhaustivity in clefts is equated to that in exclusives. Most recently Destruel (2013) follows Horn (1981) in arguing for an alternative pragmatic view, namely an implicature-based account.

Crosslinguistically, the debate is still very much alive, with two main positions offered to explain exhaustivity in clefts, either in semantic or in pragmatic terms. Within semantic approaches, opinions differ on how exactly to model exhaustivity, however. Clefts have been treated in parallel to definite descriptions with exhaustivity being a uniqueness/homogeneity presupposition (Percus, 1997; Büring and Križ, 2013); or, more recently, as inquiry-terminating constructions with cleft exhaustivity being part of the non-at-issue content of the sentence (Velleman et al., 2012). Under pragmatic approaches, by contrast, cleft exhaustivity is treated in parallel to focus constructions, argued to be strengthened either by a manner implicature (Horn, 1981) or structural restrictions on focus projection (DeVeaugh-Geiss et al., 2015).

While the literature is split along this semantic/pragmatic divide, there is nonetheless a strong bias for semantic approaches on the theoretical side; however, the outcome from the majority of the experimental studies tend to support pragmatic approaches. Broadly speaking, results suggest that exhaustivity in clefts is not always strongly conveyed (Byram-Washburn et al., 2013; DeVeaugh-Geiss et al., 2015; DeVeaugh-Geiss et al., 2017), especially compared to that in exclusive sentences. For French specifically, recent investigations suggest that they differ quite drastically from English clefts, both with respect to their interpretative properties and their derivation, namely in the rela-

tively weak exhaustivity effects found in French (Destruel and DeVeaugh-Geiss, under revision). Thus, while under semantic approaches the exhaustive inference is argued to be conventionally-coded and non-negotiable, empirical results suggest it is much weaker and more easily defeasible than might be expected in those accounts.

The present paper seeks to address the following: How does exhaustivity in French clefts compare both (i) to other exhaustive inferences as well as (ii) the exhaustive effects of clefts in other languages, in particular German? To this end we ran two experiments identical to recent studies on German (DeVeaugh-Geiss et al., 2017) employing an incremental information-retrievel paradigm (Conroy, 2008). The task involved a mouse-driven falsification/verification task in which participants had to incrementally uncover boxes in order to make a truth-value judgment for target sentences conveying exhaustivity. These sentences, in addition to clefts, exclusives, and narrow subject-focus, include run-of-the-mill definite descriptions, which has not been tested before in comparison to French clefts. Thus, we expand on the rather small experimental literature on exhaustivity in this language.

2 Background

2.1 Theoretical landscape & predictions

Exhaustivity is not specific to clefts. Such an inference is also conveyed by other sentence forms such as EXCLUSIVES (2a), in situ narrow subject FOCUS (2b), and DEFINITE PSEUDOCLEFTS (2c).

(2) a. Seul Marc a préparé un cocktail. (EXCL.)
  ‘Only M. a prepared a cocktail.’
 b. MARC a préparé un cocktail. (FOC.)
  ‘M. prepared a cocktail.’
 c. La personne qui a préparé un cocktail est Marc. (DEF. PSE.)
  ‘The person who prepared a cocktail is M.’

However, exhaustivity is not derived the exact same way in each sentence type. With exclusives, exhaustivity is taken to be part of the at-issue, asserted content of the sentence, while with focus, it is typically obtained via pragmatic enrichment. With definite pseudoclefts, it has been argued to share the underlying syntactic structure (Percus, 1997) and semantic contribution of clefts (Percus, 1997; Büring and Križ, 2013), giving rise to a semantic not-at-issue uniqueness or homogeneity presupposition.

Opposing views are proposed for how to model exhaustivity in English *it*-clefts, although these analyses can arguably be applied to other languages as well, such as French or German. On the semantic side, with claims of parallels between clefts and definites (Percus, 1997; Büring and Križ, 2013) as well as exclusives (Velleman et al., 2012), such analyses predict that because exhaustivity is conventionally encoded, the inference is predicted to be a non-negotiable and context-independent inference that will arise systematically and robustly across experimental manipulations and across speakers. Crucially, the definite semantic approaches specifically make predictions of parallel behavior for clefts and definites.

On the pragmatic side, exhaustivity is simply added to the meaning of the sentence as a (generalized) conversational implicature (e.g., Horn, 1981; Horn, 2014 for English; Destruel, 2013 for French; DeVeaugh-Geiss et al., 2015 for German). Pragmatic approaches also make straightforward empirical predictions: given that implicatures are enriched meanings and can in principle be cancelled if not supported by the context, exhaustivity in clefts is subject to defeasibility (i.e., it is not robust) and is variable across contexts. However, assuming pragmatic principles are universal, such approaches do not predict significant crosslinguistic variation.

2.2 The case of French *c'est*-clefts

There are reasons to believe that French *c'est*-clefts may be semantically different from English *it*-clefts and German *es*-clefts. First, the *c'est*-cleft is the most common—and thus unmarked—strategy to signal subject focus (Lambrecht, 1994; Carter-Thomas, 2009; Féry, 2013), and is therefore much more frequent in French compared to English and German (see, e.g., Dufter, 2009 for a crosslinguistic perspective with corpus data on Romance languages vs. German). Second, clefts can be used to answer direct questions in French; and in addition to signaling a narrow focus, the *c'est*-cleft can be used in broad-focus contexts, e.g., as an answer to the question *What happened?*.

(3) Q: Qu' est ce qui s'   est passé?
   what is it that REFL.3.SG is happened
   ‘*What happened?*’
   (LIT.) ‘What is it that happened?’
 A: C' est le petit   qui est tombé dans
   It is the small-one who is fallen in

l' escalier.
the stairs
'The kid fell down the stairs.'
(LIT.) 'It is the kid that fell down the stairs.'

By contrast, English *it*-clefts—and, arguably, the less-frequent German *es*-clefts—generally make bad answers to direct questions and are instead preferred in limited contexts that convey meanings such as contrast (Destruel and Velleman, 2014; Destruel et al., 2017) or correction (Pollard and Yasavul, in press). In short, the French cleft appears to have a broader discourse-function than its crosslinguistic counterparts.

To date, though, there are virtually no studies that have directly compared the exhaustive effects in French clefts versus clefts in other languages. One exception is Destruel and DeVeaugh-Geiss (under revision), who addressed this deficit and tested the differences in interpretation and processing costs of exhaustivity in French vs. English clefts. Results indicate that exhaustivity in *c'est*-clefts is much weaker than in *it*-clefts; moreover, while English clefts elicited higher processing costs compared to exclusives/canonicals when exhaustivity was violated, French clefts did not—thus providing a more nuanced crosslinguistic picture of cleft exhaustivity.

Given this landscape, the main questions the present experiments seek to address are as follows: First, do the differences noted in French *c'est*-clefts influence the systematicity and robustness of the exhaustivity inference? Second, are there parallels between cleft exhaustivity and other sentence types giving rise to exhaustivity effects, namely those illustrated in (2), in particular definite pseudoclefts and focus constructions? Finally, by directly adapting a recent study on German (DeVeaugh-Geiss et al., 2017), do French *c'est*-clefts show weaker exhaustivity effects than German *es*-clefts, as reported for similar comparisons of French vs. English (Destruel and DeVeaugh-Geiss, under revision)?

3 The experiments

3.1 Participants & procedure

There were two experiments conducted on French *c'est*-clefts, with a total of 64 French monolingual participants (32 speakers in Experiment I and 32 different speakers in Experiment II), all students at the university of Albi or Pau, France (average

age: 23.5). The experiments took part in a quiet room and were run on a computer using Python scripts (GNU/Linux v.3.4.2; Windows v.3.3.5) with the PyGame module (v.1.9.2a0, LGPL, Shinners, 2011). Before the experiment started, participants first read a set of instructions introducing them to four roommates: Charles, Pierre, Marc, and Jean. They were told that these four roommates, and these alone, were involved in activities together to be described in the experiment.

At the beginning of each trial, participants saw four covered boxes on a computer screen, as in Figure 1, while hearing the target stimulus in their headphones. After the audio stimulus played, they were asked to uncover as many boxes as necessary, one at a time, in order to decide whether the sentence they heard was true or false. A 2000 ms pause was implemented between each box to discourage participants from uncovering boxes unnecessarily. Under each box was a picture of one of the four roommates and a written description of the activity he carried out. An illustration of a single trial from Experiment I is provided below. (Note the exhaustivity violation at Box 2.)

Target: **C'est MARC qui a préparé un cocktail.**
　　'It is Marc who prepared a cocktail.'
　BOX 1: Charles *'I tasted a whiskey.'*
　BOX 2: Pierre *'I prepared a cocktail.'*
　BOX 3: Marc　*'I prepared a cocktail.'*
　BOX 4: Jean　*'I served a drink.'*

3.2 Materials

We manipulated two factors. First, the *Sentence* form of the target stimuli had four levels: *c'est*-CLEFTS (1a), EXCLUSIVES (2a), canonical sentences with subject FOCUS (2b), and DEFINITE PSEUDOCLEFTS (2c) (with definite descriptions of the form *la personne* 'the person'; cf. the compound definite used in German *derjenige* 'that one
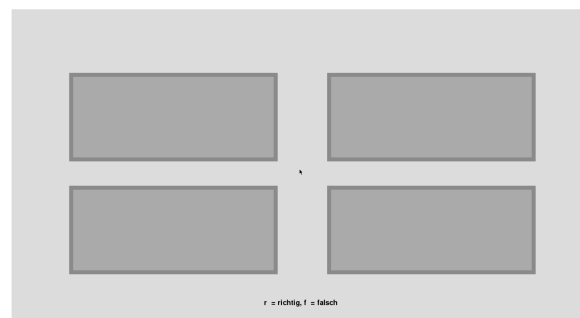

Figure 1: Onset screen with four covered boxes

there'). Second, we manipulated how Box 2—the critical box in both experiments—related to exhaustivity. In Experiment I, Box 2 always **falsified** the exhaustivity inference; that is, someone other than Marc, e.g., Pierre, claims that he prepared a cocktail, as shown above. By comparison, in Experiment II Box 2 always **verified** the prejacent; e.g., Marc in fact claims he prepared a cocktail (illustrated below). Manipulations at Box 3 and Box 4 served as controls; however, for the sake of space these will not be discussed further here.

Target: '*It is Marc who prepared a cocktail*'
  BOX 1: Jean '*I served a drink.*'
  BOX 2: Marc '*I prepared a cocktail.*'
  BOX 3: Charles '*I tasted a whiskey.*'
  BOX 4: Pierre '*I prepared a cocktail.*'

3.3 Measures and predictions

The primary measurement we are interested in for both experiments is the truth-value judgment (TVJ) at Box 2. General predictions are: Should cleft exhaustivity be semantic, in Exp. I (in which exhaustivity is violated at Box 2) exhaustivity effects will be robust and systematic, with a majority of 'false' TVJs. Note that we assume if exhaustivity is presuppositional it must be contextually entailed, and contradicting exhaustivity will result in mostly 'false' judgments.[1] Moreover, on a semantic account for Exp. II (in which the prejacent has been verified at Box 2) we predict a majority of 'continues' to confirm that exhaustivity holds. By contrast, should exhaustivity be pragmatic, we predict variable behavior across participants and experiments; but, assuming the derivation of exhaustivity follows universal pragmatic principles, we expect minimal variation across languages.

4 Results

For data preparation, responses at Box 2 were coded as 1 for judgment (Exp. I: 'false', Exp. II: 'true') and 0 for 'continue' and are graphed as proportions for all four sentence types in Figure 2. Generalized linear mixed-effects models were adopted for all analyses using the *glmer* function of the *lme4* package (Bates et al., 2015, v.1.1.13) in the R environment (R Core Team, 2016, v.3.2.5, GPL-2|GPL-3). Treatment contrasts were used for the different *Sentence* types, with

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[1]See, e.g., Abrusán and Szendrői, 2013 and Romoli and Schwarz, 2015 for a majority of 'false' judgments and rejections of presupposition violations in experimental studies.

CLEFTs as the baseline comparison for DEFINITE PSEUDOCLEFTs and FOCUS; note that exclusives were not included in the statistical models given ceiling/floor effects making meaningful comparisons difficult. For the crosslinguistic comparisons (with the dataset from the practically identical[2] experiment run on German; see DeVeaugh-Geiss et al., 2017), sum contrasts were used for the *Language* predictors (GERMAN –0.5, FRENCH 0.5). In all models reported, the maximal random-effects structures were utilized, following the recommendations made in Barr et al. (2013).

In Exp. I when encountering a violation of exhaustivity at Box 2, FRENCH participants were significantly more likely than GERMAN participants to continue despite the exhaustivity violation for CLEFTS, illustrated by the lower likelihood of making a 'false' TVJ ($\hat{\beta}$ = –1.33, SE = 0.64, z = –2.08, p = 0.03756). This is in line with results reported in Destruel and DeVeaugh-Geiss (under revision), who found that French clefts had a weaker exhaustivity effect compared to English, in particular for exhaustivity violations similar to Exp. I. A comparison in Exp. II of FRENCH and GERMAN for CLEFTS did not reach significance, though (p>0.05): no difference was found between languages in whether participants continued in order to check if exhaustivity held for Boxes 3 and 4. Moreover, when analyzing a subset of the data for DEFINITE PSEUDOCLEFTS and FOCUS in both Exps. I and II, no significant crosslinguistic differences were found (p>0.05).

Furthermore, while German participants treated clefts and definite pseudoclefts on a par, illustrated by the practically flat line in the right graph in Figure 2, French participants in Exp. II had a higher percentage of 'true' responses (i.e., participants did not check exhaustivity) for clefts compared to definite pseudoclefts—shown by the slope in the right graph in Figure 2—which, when inspecting the subset of data for French, was highly significant ($\hat{\beta}$ = –1.82, SE = 0.45, z = –4.093, p = 4.26e–05). Moreover, in a post-hoc analysis for French, participant groups did not emerge based on cleft and definite pseudocleft response patterns, which is in direct contrast to German. We posit this difference is due to the dissimilar forms of the definite tested in German and French, following claims made in DeVeaugh-Geiss et al. (2017) that the compound German definite (*derjenige* 'that

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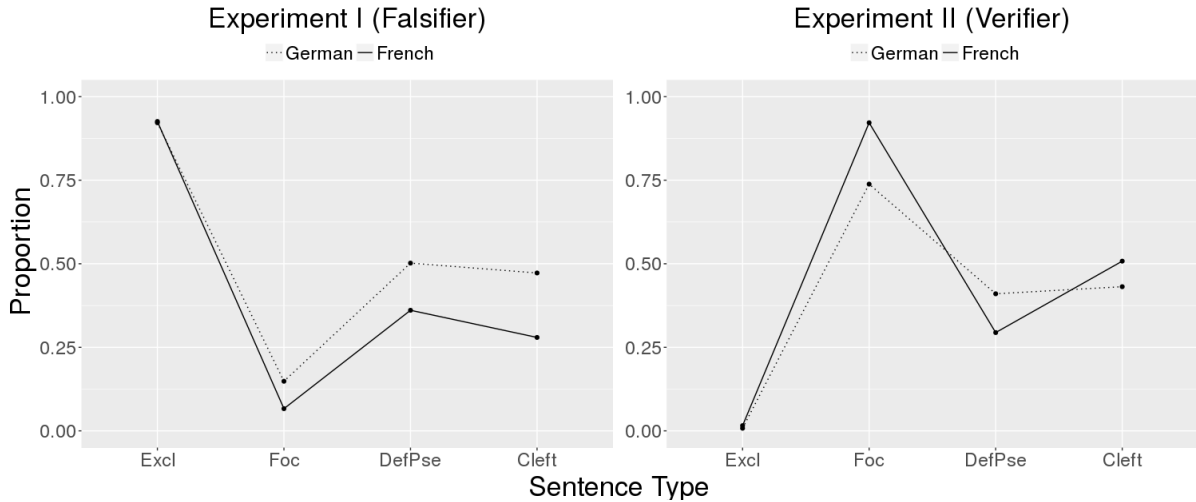[2]Many of the lexicalizations of the items differed.

Figure 2: Proportion of Early Responses (judgment = 1, continue = 0) for Exp. I (left) and Exp. II (right).

one there') is unlike a run-of-the-mill definite description as used in French (*la personne* 'the person'), a difference not yet tested in the literature.

5   Proposal & Conclusion

None of the theories can account for the data reported here. Considerable parallelism was found for clefts and definites, especially in German though less so in French, which at first blush may appear most compatible with a definite semantic account; however, in both the French and German versions of the experiment, cleft (and definite pseudocleft) exhaustivity was neither robust nor systematic across experiments and participants—in that for at least some of the population the exhaustivity inference was cancelled or ignored, especially in French—unexpected when taking exhaustivity as a conventionally-coded and context-independent inference. Moreover, when comparing the two languages directly there was significant variation in the strength of exhaustivity, which appears at odds with claims that exhaustivity arises via universal pragmatic principles.

Given the significantly weaker exhaustivity effects found for French clefts, one might be inclined to argue French clefts are different enough that they should be excluded from accounts trying to model exhaustivity. We, however, think it is preferable to seek a unified account that can embrace variation across languages and speakers. To this end, we take an approach similar to Pollard and Yasavul (in press) and DeVeaugh-Geiss et al. (2017), in which exhaustivity is neither semantic nor pragmatic, but derived indirectly via the res-olution of the existence presupposition. Abrusán (2016) claims that the existence presuppositon for English clefts is derived from the background question generated by the cleft plus the presuppositional constraint that the disjunction of the Hamblin set is true. The QUD of clefts is of the form *Who P?* (or a sub-question of this QUD), which is derivable directly from the cleft relative. Exhaustivity arises in how the antecedent of the existence presupposition is accommodated (following Pollard and Yasavul, (in press); DeVeaugh-Geiss et al., 2017). If it is accommodated to the maximal discourse referent that answers the QUD, then an exhaustive interpretation arises; by contrast, if it is accommodated to a sub-QUD for some discourse referent, such as in the case of contrast or correction, than a non-exhaustive interpretation arises.

For French, we follow Destruel and DeVeaugh-Geiss (under revision) and claim that the QUD for *c'est*-clefts can, but crucially need not, correspond to the cleft relative (e.g., broad focus). Given this less strict question-answer congruence, the existence presupposition is—absent context—ambiguous (see, e.g., the discussion on hard vs. soft existence in clefts and focus in Abrusan 2016), potentially thwarting the derivation of the exhaustive inference. An advantage of this approach is that differences observed for French do not depend on the nature of exhaustivity being pragmatic or semantic; rather, it is due to the way clefts interact with context, specifically the QUD.

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