

# A Cross-Linguistic Study of the Non-at-issueness of Exhaustive Inferences

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**Abstract** Several constructions have been noted to associate with an exhaustive inference, notably the English *it*-cleft, the French *c'est*-cleft, the preverbal focus in Hungarian and the German *es*-cleft. This inference has long been recognized to differ from exhaustiveness associated with exclusives like English *only*. While previous literature has attempted to capture this difference by debating whether the exhaustiveness of clefts is semantic or a pragmatic phenomenon, recent studies such as (Velleman et al. 2012, Proceedings of Semantics and Linguistics Theory (SALT) 22, pages 441–460) supplement the debate by proposing that the notion of *at-issueness* is the culprit of those differences. In light of this notion, this paper reconsiders the results from previous experimental data on Hungarian and German (Onea and Beaver 2011, Proceedings of Semantics and Linguistic Theory (SALT) 19, pages 342–359; Xue and Onea 2011, Proceedings of the ESSLLI 2011 Workshop on Projective Meaning, Ljubljana, Slovenia) and presents new data on English and French, showing that the “Yes, but” test used in these four languages to diagnose the source

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of the exhaustive inference (semantics vs. pragmatics), in fact diagnoses its status (at-issue vs. non-at-issue). We conclude that the exhaustiveness associated with clefts and cleft-like constructions is not at-issue, or in other words, exhaustiveness is not the main point of the utterance.

**Keywords** Exhaustivity · Cleft structure · Focus · (Non)-at-issueness · Information Structure

## 1 Introduction

One of the most important jobs of natural language utterances is to provide information, or, put slightly differently, to provide answers to questions. Questions may be overt, as in dialogue situations, or implicit.

Answers, depending on the circumstances, may be *maximal* or not, as the speaker may or may not have the possibility or desire to give a complete answer to a question. We take an answer *p* to be *maximal* if no true answer to the question under discussion (hereafter QUD) is strictly stronger than *p*. In other words, maximal answers are exhaustive. Cooperative speakers will often try to give answers that they believe to be maximal. But then, sometimes a speaker will fall short of this. There are several reasons why a speaker might do so. Perhaps she has limited information—and so give what she knows to be a partial answer, or give an answer without being certain whether it is maximal or not. Perhaps she is not being fully cooperative. Perhaps, given the interlocutor's goals, a partial answer is just as useful as a maximal one.

Given this, one very natural thing that a speaker may want to do is to *indicate* when he believes that his utterance represents a maximal answer to the QUD. In doing so, he signals that the line of inquiry represented by the QUD has been fully explored and can now be closed.

To give a concrete example, consider the question in (1). It may be answered as in (1-a), which may or may not be a maximal answer. Depending on the context, a continuation as in (2) may be justified. This shows that, at least in principle, an answer like (1-a) does not mark the termination of the inquiry started by the question in (1). By contrast, if the speaker chooses to answer (1), a continuation with (2) is completely nonsensical, because the exclusive *only* marks that the answer is maximal, exhaustive; cf. Beaver and Clark (2008). By giving an exhaustive answer, the speaker of (1-b) settles the question for his part, and thereby terminates the line of inquiry and gives rise to the inference in (3).

- (1) Who smiled?
  - a. MARY smiled.
  - b. Only MARY smiled.
- (2) Who else smiled?
- (3) *Noone else than Mary smiled.*

Clefts seem to be very similar to exclusives in this respect, as illustrated in the examples below for the English *it*-cleft (4-b), the French *c'est*-cleft (5-b), the preverbal focus in Hungarian (6-b) and the German *es*-cleft (7-b). Although the continuation questions in (c) are not as infelicitous as after (1), they are odd precisely because the hearer deliberately ignores the exhaustiveness inference triggered by the construction in the (b) sentences, implying that the speaker of the (b) sentences is not being truthful/cooperative.

- (4) a. Who smiled?  
 b. It is Mary that smiled.  
 c. # Who else smiled?
- (5) a. Qui a ri?  
 b. C'est Marie qui a ri.  
 c. # Qui d'autre a ri?
- (6) a. Ki mosolygott?  
 b. MARI mosolygott.  
 c. # És ki más mosolygott?
- (7) a. Wer hat gelächelt?  
 b. Es war Maria, die gelächelt hat.  
 c. # Und wer hat noch gelächelt?

Velleman et al. (2012) term constructions that mark utterances as maximally answering the QUD, such as exclusives, *Inquiry-Terminating* constructions (IT-constructions). According to Velleman et al. (2012), there are two kinds of IT-constructions: those which mark the maximality of the answer as maximal as part of their at-issue meaning contribution and those which mark the maximality of the answer as part of their not-at-issue meaning contribution. The notion of at-issueness is further explained in Roberts et al. (2009), Simons et al. (2011) and Tonhauser (2012). Velleman et al. (2012) argue that exclusives are at-issue IT-constructions while *it*-clefts are not-at-issue IT-constructions.

One important difference between clefts and exclusives regarding exhaustiveness is then the status of the exhaustiveness inference being at-issue in the case of exclusives and not-at-issue in the case of clefts. Crucially, in both cases, the inferences are conventional, i.e. semantic. More precisely the essential component leading to exhaustiveness is part of the assertion for *only* and part of the presupposition for clefts. Yet, while in the recent theoretical literature there is a tendency to analyze these inferences as semantic (cf. Percus (1997) or Büring and Križ (2013) contra Horn (1981)), experimental evidence has mostly been taken to suggest that exhaustiveness is pragmatic, cf. Onea and Beaver (2011); Drenhaus et al. (2011) and Byram Washburn et al. (2013).

The main goal of this paper is to support an analysis of exhaustiveness inferences of clefts in terms of not-at-issueness Velleman et al. (2012) by giving additional experimental evidence by re-interpreting existing data on Hungarian from Onea and Beaver (2011) using insights from data partly reported in Xue and Onea (2011),

and by providing new data on English and French. In essence, we will claim that the “Yes, but” test used in Onea and Beaver (2011) only shows a lack of at-issue exhaustiveness and cannot be taken as evidence for a pragmatic exhaustification.

The paper is structured as follows: The first section reviews the debate on the source of exhaustiveness—semantics vs. pragmatics—and discusses existing experimental data from the “Yes, but” test applied to Hungarian (Onea and Beaver 2011). Section 3 examines the shift in perspective from the *source* to the *status* of exhaustiveness by (i) re-interpreting the results in Onea and Beaver (2011) and (ii) discussing existing data from the “Yes, but” test for German from Xue and Onea (2011). Section 4 discusses previous related work on implicatures and their cancellation. Section 5 presents new data collected for English and French and shows that these two languages pattern similarly to Hungarian and German. Finally, Sect. 6 concludes that across these four different languages, and maybe more generally, the exhaustiveness in clefts and related constructions must be understood as being not-at-issue.

## 2 Semantic vs. Pragmatic Exhaustiveness

### 2.1 Theoretical Discussion

In the literature, it is a well-known fact that there is an exhaustiveness inference associated with *it*-clefts, hence (8-a) licenses the inference (8-b). But at the same time, it is a hotly disputed question as to whether this inference is a semantic one, i.e. a necessary one, or a pragmatic one, in particular an implicature.

- (8) a. It is Michael who defeated Jackson.  
 b. Nobody other than Michael had defeated Jackson.

The semantic position has been advocated by a large number of scholars, though, there have been significant differences regarding the status of the exhaustiveness inference. Essentially, there are three types of prominent approaches. According to the first one, exhaustiveness of clefts is semantic in the narrowest possible sense, i.e. it is part of the proffered content, of the truth conditional contribution of the sentence. For instance, Bolinger (1972) argues that clefts express an equality between two predicates, as suggested in (9-a) for the cleft in (8-a). Atlas and Levinson (1981) take a similar line of attack suggesting an analysis like (9-b). Finally, Szabolcsi (1981) and Kiss (1998) argue that pre-verbal focus in Hungarian, which shares most decisive properties with English *it*-clefts<sup>1</sup>, should be exhaustified using an operator like the one in (9-c), which would take Michael as the first argument and the property of having defeated Jackson as the second argument.

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<sup>1</sup> Hungarian pre-verbal focus is generally translated as a cleft as observed in Kiss (1998). Eg.

- (i) MIHÁLY győzte le Jánost.  
 Michael defeated PRT Jackson  
 ‘It is Michael who defeated Jackson’.

- (9) a.  $\lambda x.x = \text{Michael} = \lambda x.\text{defeat}(x, \text{Jackson})$   
 b. The group of individuals that have defeated Jackson is identical to Michael.  
 c.  $\lambda x.\lambda P.P(x) \wedge \forall y.P(y) \rightarrow y = x$

The second type of semantic approach takes a more indirect path. The claim here is that exhaustiveness of clefts is due to the interaction of a presupposition and the asserted meaning. The most prominent proponent of this theory is Percus (1997) for *it*-clefts and Szabolcsi (1994) for pre-verbal Hungarian focus, but, we find this position also in Delin (1990), Delin and Oberlander (1995), Hedberg (2000), Reeve (2010) and some other papers. The essential element of this kind of analysis is a maximality presupposition and an identificational semantic contribution. For (8-a), this boils down to (10). While this time the effect is less direct than in the previous type of approaches, the exhaustiveness inference is not predicted to be by any means weaker or less general (except, of course, in cases in which presuppositions are blocked or filtered).

- (10) a. (8-a) presupposes: There is a maximal sum individual X such that X defeated Jackson.  
 b. (8-a) asserts: X is Michael.

Finally, the third semantic approach is another version of the presupposition analysis, recently advocated in Buring and Križ (2013).<sup>2</sup> The reason why we mention it as a separate type of approach is that it is much more direct than the above. In (10), there is only a general maximality presupposition which does not in itself entail anything about the exhaustiveness inference (8-b), i.e. the maximal sum individual in (10-a) could consist of Michael, John and Brian. The exhaustiveness effect only comes about once the maximal sum-individual is equated to the pivot, in this case, Michael. Buring and Križ (2013) propose a more direct variant in which the presupposition is the exhaustiveness inference itself, as shown in (11).

- (11) a. (8-a) presupposes: Michael is not a proper part of the maximal sum-individual who defeated Jackson.  
 b. (8-a) asserts: Michael has defeated Jackson.

As opposed to this, the pragmatic position assumes that the exhaustiveness inference is a conversational implicature. In particular Horn (1981, 2013) argues that the exhaustiveness inference is not part of the semantic content. Instead it arises as a generalized conversational implicature as a result of the following principle: Whenever a speaker employs an expression which presupposes  $\exists x.P(x)$  and asserts  $P(a)$ , he implicates  $\forall y.y \neq a \rightarrow \neg P(y)$ . In Horn (1981), one of the main argument is to show differences between sentences with the exclusive *only* and *it*-clefts, as suggested in (12).<sup>3</sup>

<sup>2</sup> Technically, Velleman et al. (2012) propose a very similar analysis essentially involving the same presupposition. The conceptual gist of their argument and some predictions, however, are different.

<sup>3</sup> Buring and Križ (2013) argue that this is no counter-example against their analysis, since the attitude verb *realise* will only allow the exhaustiveness presupposition of clefts to project, not interfering with the attitude verb.

- (12) a. I knew that he ate a pizza, but I just realised that he only ate a pizza.  
 b. # I knew that he ate a pizza, but I just realised that it is a pizza he ate.

One of the interesting problems of a pragmatic approach is that exhaustiveness of clefts does not seem to be easily cancellable, as readily admitted even by Horn (1981), whence the oddity of (13). Crucially, however, Horn argues that the non-cancellability of the exhaustiveness inference may be related to the fact that the speaker has ‘gone out of her way’ to use an expression with an existential presupposition.<sup>4</sup> As opposed to this, in other cases of generalized implicatures, the speaker rather seems to use standard, economical expressions. Hence, there seems to be a manner component involved as well in the interpretation of clefts.<sup>5</sup>

- (13) # It was a pizza, John ate, indeed, it was a pizza and a calzone.

The main dichotomy in the discussion sketched above is whether clefts are semantically or pragmatically exhaustive. A second line of discussion concerns the question how to model exhaustiveness if clefts are semantically exhaustive, a question which naturally fails to arise if Horn is right.

## 2.2 *Experimental Discussion*

A puzzling fact mainly ignored in the theoretical literature is that the exhaustiveness of clefts does not seem to be so strong as suggested. Both for Hungarian focus (Wedgwood et al. 2006) and for clefts (Horn 1981, 2013) a number of examples have been found which seem incompatible with an exhaustive interpretation. See for example the poem in (14), from (Horn 2013):

- (14) As we go marching, marching unnumbered women dead,  
 Go crying though our singing their ancient call for bread.  
 Small art and love and beauty their drudging spirits knew.  
 Yes, **it is bread we fight for, but we fight for roses too!**

One natural consideration arising is then the following: if clefts are semantically exhaustive (regardless of the way in which this derivation is performed), one should expect that exhaustiveness effects are strong and consistent. As opposed to this, if clefts are pragmatically exhaustive, one would expect exhaustiveness effects to be significantly weaker.

Onea and Beaver (2011) have conducted a first experimental study to this extent. In particular, they have studied the way participants chose to react in situations in which the exhaustiveness inference of pre-verbal focus in Hungarian was violated given some pictorial stimuli. Given a Hungarian stimulus with pre-verbal focus

<sup>4</sup> Horn calls this a conventional implicature, to be precise.

<sup>5</sup> This argument does not seem to hold for Hungarian focus, however, since Hungarian focus seems to be a fairly economical, unmarked, standard construction.

constructed as (15) and a picture which contradicts the exhaustiveness inference, the possible answers were the ones in (16):

- (15) It is John who has a hat.  
Hungarian: JNOSNAK van egy kalapja.
- (16) a. Yes, and Mary also has a hat.  
b. Yes, but Mary also has a hat.  
c. No, Mary also has a hat.

Onea and Beaver (2011) assumed that if there is a strong exhaustiveness effect associated with Hungarian focus, in particular a semantic effect, participants would consistently choose the c. answer, to mark that there is a serious violation. As opposed to this, if the exhaustiveness effect was weak or pragmatic, speakers would rather choose the a. or b. answers. The results of the experiment clearly showed that for *only*-sentences as (17), participants consistently picked the most confrontative, c. answer. As opposed to this for Hungarian focus, the number of c. answers was much lower.

- (17) Only John has a hat.

From this, Onea and Beaver (2011) concluded that the exhaustiveness of Hungarian focus must be pragmatic. In particular, they proposed an analysis in which pre-verbal focus in Hungarian leads to exhaustification as a pragmatic implicature arising from the fact that the pre-verbal focus in Hungarian marks that the corresponding sentence is to be interpreted as an answer to a *wh*-question, associated with an additional pragmatic principle that answers to a question are interpreted as complete (which mostly means exhaustive). Notice that under the assumption that *wh*-questions have an existential presupposition, this analysis is very similar to the one proposed in Horn (1981).<sup>6</sup>

In a more recent experimental study, Washburn et al. (2013) argue that the fact that Onea and Beaver (2011) compare the exhaustiveness of Hungarian focus, which they also take to be equivalent to English clefts, with the exhaustiveness of *only* leads to a problem, since any difference found may not only be related to the fact that clefts/pre-verbal focus in Hungarian are not exhaustive but also to standard differences between presupposition and assertion. Therefore, they propose a different setup in which they compare the acceptability of the exhaustiveness violation of clefts with the violation of some other presupposition of clefts. In particular, they claim that English *it*-clefts come with a contrastiveness presupposition. This contrast is exemplified in (18).

- (18) Contrastive: Jane and Tom painted furniture. Tom painted a chair. Later, Kevin remarks: 'I bet Tom painted only lamps again, didn't he?' Jane responds: 'He doesn't always paint lamps. Yesterday, it was a chair that he painted'.

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<sup>6</sup> A similar conclusion is reached by Drenhaus et al. (2011) using an ERP experiment we do not discuss here in detail.

- (19) Non-contrastive: Jane and Tom painted furniture. Tom painted a chair. Later, Kevin remarks: ‘I bet Tom painted only a chair again, didn’t he?’ Jane responds: ‘Yes. Yesterday, it was a chair that he painted.’

Byram Washburn et al. (2013) observe that the exhaustiveness violation for English *it*-clefts is hardly significant whereas the violation of the contrastiveness presupposition leads to a serious decay in acceptability. They conclude that exhaustiveness must be a Hornian implicature. Notice, however, that while the conclusion seems to support the results in Onea and Beaver (2011), the design is problematic for two reasons. It is a well-known fact that exhaustiveness is always relative to some domain. The comparison with *only* is used as a proof that domain restriction is not interfering, since for all we know, the domain restriction for *only* and for the exhaustiveness of a cleft in the same context should be exactly the same. Moreover, in the design used by Byram Washburn et al. (2013), exhaustiveness was never simply crossed with contrastiveness, hence, the lack of exhaustiveness effects can be due to any other interfering factor.

While we contend that the conclusion drawn by Byram Washburn et al. (2013) is too strong given their design, we accept their critique of Onea and Beaver (2011) that the observed difference between the Hungarian preverbal focus and the *only*-condition is not enough to support a radical pragmatic approach. Instead we will use the German data from Xue and Onea (2011) to propose a shift in perspective in the interpretation of their result at the same time using additional cross linguistic data showing that the pattern found there seems generally persistent for any cleft-construction.

### 3 A Shift in Perspective: At-Issue Versus Not-at-issue

The discussion so far has focused on the *source* of the exhaustive inference. The question has been whether this inference forms part of the conventional meaning of the *it*-cleft construction. Onea and Beaver’s data was taken to support a negative answer to that question—that is, it was taken as evidence that the exhaustive inference arises instead out of some sort of pragmatic process.

But in fact, we now believe that this is a misinterpretation of the data. In this section, we will argue that the “Yes, but” task—which Onea and Beaver took to diagnose the *source* of the exhaustive inference—actually diagnoses a different property entirely: its *status* as at-issue or not-at-issue. We will make this argument on two grounds. First, we will present new experimental evidence showing that the “Yes, but” task should be reinterpreted as diagnosing status. And second, we will cite recent formal and experimental work by others which supports this reinterpretation of the task.

This reinterpretation has consequences that go beyond the language-specific results reported in Onea and Beaver (2011). First of all, similar diagnostics to the “Yes, but” task have been used in a number of other languages to address the question of whether or not a particular construction has exhaustive semantics. (For instance,



Dyakonova (2009) has argued that Russian “left-edge focus” is not semantically exhaustive, based on the fact that exhaustivity can be denied by a second speaker without using negation.) And more generally, it has consequences for our understanding of confirmation and rejection, and for our use of semantic methodologies involving confirmation and rejection as diagnostics.

Finally, we will clarify the difference between the “Yes, but” test discussed here and Grice’s classic cancellation test (Grice 1967)—which has long been used as a diagnostic for the source of an inference. The arguments which we give her for reinterpreting the “Yes, but” test do not apply to the cancellation test; and in many cases, the two tests give different results. Thus, it is consistent to use the “Yes, but” test as a diagnostic for status while continuing to use the cancellation test as a diagnostic for source.

### 3.1 Reinterpreting the “Yes, But” Test: Evidence From German

In this experiment, the “Yes, but” task was applied to a wider range of triggers, including *es*-clefts as before—but also a number of others. The experiment was designed to distinguish between two hypotheses.

- (20) *The source hypothesis*: The “Yes, but” test diagnoses the *source* of the inference being contradicted: “yes” answers indicate that it arises through pragmatic inference.
- (21) *The status hypothesis*: The “Yes, but” test diagnoses the *status* of the inference being contradicted: “yes” answers indicate that it is not at issue.

In order to do this, we added a number of items for which there is widespread consensus among linguists concerning the source and status of the inference being contradicted—summarized in the table below.

	Pragmatic?	Not at issue?
Relevance implicature	Y	Y
(22) Scalar implicature	Y	N
Appositive	N	Y
Nonrestrictive relative clause	N	Y

If the source hypothesis is correct, we predict “Yes, but” answers for the implicatures and “No” answers for the appositive and NRRCs. If the status hypothesis is correct, we predict a different pattern of replies: “Yes, but” answers for the relevance implicatures, the appositives and the NRRCs, and “No” answers for the scalar implicatures.

### 3.1.1 Methods

In this study, as in Onea and Beaver (2011), German-speaking participants completed a forced-choice task in which they were asked to choose the most natural of three possible conversational responses. A total of 29 German speakers, between the ages of 19 and 61, participated in our web-based experiment. As before, the speakers were presented with a sentence in German which triggered some inference  $p$ , and were asked to choose between three possible responses which denied that  $p$ —one beginning *Ja, und* “Yes, and,” one beginning *Ja, aber* “Yes, but,” and one beginning *Nein* “No.”

Unlike the experiment in Onea and Beaver (2011), this study covered a wide range of triggers—not only clefts, but a number of other constructions which have been argued to trigger presuppositions, implicatures, or other non-entailment inferences. (Also included were filler items in which the inference to be denied was a simple entailment.) This paper only discusses results on a subset of these triggers; the remainder were presented in Xue and Onea (2011).

We are concerned here with two sets of items in particular. First, there was a set of items in which the inference to be contradicted is a conversational implicature—either a relevance implicature, as in (23), or a scalar implicature, as in (24). These implicatures are not part of the conventional truth conditions of their triggers. The sentence in (23) clearly does not conventionally entail that the bank in question is open, or that it has a working ATM, or anything else of this sort. These inferences arise based on pragmatic reasoning in certain contexts. And the sentence in (24) is standardly taken not to conventionally entail that the soup is not hot—this too is taken to be a pragmatic inference only.

#### (23) Relevance implicature

- a. Ein paar Schritte weiter ist gleich eine Sparkasse.  
a few steps further is just a bank  
“There’s a bank just a few steps further.”
- b. Inference to be contradicted: The bank will let you carry out whatever sort of business you need.
- c. Ja, und/Ja, aber/Nein, der Geldautomat ist kaputt.  
Yes, and/Yes, but/No, the ATM is broken  
“Yes, and/Yes, but/No, the ATM is broken.”

#### (24) Scalar implicature

- a. Die Suppe ist warm.  
the soup is warm  
“The soup is warm”
- b. Inference to be contradicted: The soup is not hot.
- c. Ja, und/Ja, aber/Nein, die Suppe ist heiß.  
yes and/yes but/no the soup is hot  
“Yes, and/Yes, but/No, the soup is hot.”

But conversational implicatures *can* be at issue. In fact, the details appear to depend on the type of the implicature. It has been argued that scalar implicatures are *always* at issue: van Kuppevelt (1996) holds that scalar implicatures only arise when the scalar term is the answer to the QUD, and Zondervan (2010) gives experimental evidence that partly supports this claim. Relevance implicatures, on the other hand, may or may not be at issue. For our example (23), the QUD addressed by the (a) utterance may be where a bank is, however, the implicature addresses another question (also relevant in the discourse), namely whether one can withdraw money there (or do some other relevant business). Crucially, at the discourse state at which the (a) inference is interpreted, the latter question is not necessarily the QUD. This suffices to show that relevance implicatures need not always be at issue.

Second, there was a set of items involving appositives and nonrestrictive relative clauses. The properties of this second set of items are exactly opposite to those of the first. On the one hand, the meaning contributed by an appositive or NRRC is clearly part of the *conventional* meaning of the utterance, and not the result of a merely pragmatic process. On the other hand, the meanings of appositives and NRRCs are consistently not at issue.

(25) Appositive

- a. Paula, Peters Schwester, hat ein Kind bekommen.  
Paula Peter's sister has a child gotten  
"Paula, Peter's sister, had a baby"
- b. Inference: Paula is Peter's sister.
- c. Ja, und/Ja, aber/Nein, Paula ist gar nicht Peters Schwester.  
yes and/yes but/no Paula is really not Peter's sister  
"Yes, and/Yes, but/No, Paula is not really

(26) Nonrestrictive relative clause

- a. Paul, der sehr fleißig ist, sitzt den ganzen Tag am Schreibtisch.  
Paul that very diligent is sits the whole day at.the desk  
"Paul, who is very diligent, sits at his desk all day long."
- b. Inference: Paul is very diligent.
- c. Ja, und/Ja, aber/Nein, Paul ist gar nicht fleißig.  
yes and/yes but/no Paul is really not fleißig.  
"Yes, and/Yes, but/No, Paul is not all that

Finally, there were a number of other triggers which we will not discuss closely here—including items containing factive verbs, items containing "strong" presupposition triggers such as *auch* 'also,' and filler items in which the inference to be contradicted was a simple at-issue entailment. (Results from some of these items are discussed in Xue and Onea 2011.)

The total number of items, including fillers, was 39. As in previous experiments, participants were asked to choose which of the three variant replies was "most natural"—the variant beginning *ja, und* 'yes, and,' the one beginning *ja, aber* 'yes, but,' or the one beginning *nein* 'no.'

### 3.1.2 Results

As discussed above, there are two hypotheses of interest here. The first hypothesis is that the “Yes, but” test diagnoses the *source* of an inference: semantic or pragmatic. If this is true, it predicts that semantic inferences (consisting here of appositives and NRRCs) will be contradicted with “No” replies, and that pragmatic ones (here, conversational implicatures) will be contradicted with “Yes” replies. The second hypothesis is that the “Yes, but” test diagnoses the *status* of an inference: at-issue or not-at-issue. If this is true, it predicts an outcome which is almost (but not quite) the reverse of this: appositives and nonrestrictive relatives will consistently receive “Yes” replies, while at least some conversational implicatures will receive “No” replies.

Our results were inconsistent with the source hypothesis, and consistent with the status hypothesis. Across the items involving appositives and NRRCs, “Yes, but” consistently receives an overwhelming majority of the votes. The same is true for the items involving relevance implicatures; while in the items involving scalar implicatures, the majority response is “No.”

	Relevance (%)	Scalar (%)	NRRC (%)	Appositive (%)
Yes, and	1	2	0	0
Yes, but	97	6	89	90
No	1	92	11	10

This is plainly incompatible with the predictions of the source hypothesis. It is compatible with the predictions of the status hypothesis, so long as we assume that the relevance implicatures in this experiment were interpreted by participants as being not at issue. As we discussed above, conversational implicatures may be either at issue or not at issue, depending on the context.

## 4 Related Work

One important antecedent for this interpretation is found in work on “attachability”—a concept most recently used by Jayez but originating in work by Ducrot. Ducrot (1972) noted that in general, subsequent discourse moves cannot be “attached” to a presupposition. Jayez (2005, 2010) and Jayez and Tovena (2008) note that conventional implicatures are subject to the same restriction, and cannot serve as attachment sites either.

In this line of work, “attachment” is taken to include many different discourse relations—including, for instance, *Cause*. Consider the biclausal sentence in (27).

- (27) a. Unfortunately, Paul has failed his exam . . .  
 b. . . because he cannot register for next term.

The clause in (27-a) has two implications—one of which is standardly analyzed as an entailment, and the other of which is standardly analyzed as a CI.

- (28) Paul has failed his exam.  
(entailment)
- (29) The fact that Paul has failed his exam is unfortunate.  
(conventional implicature)

But the “because” clause in (27-b) can only attach to the entailment, even though attaching it to the CI would result in an intuitively more plausible meaning.

- (30) Paul has failed his exam because he cannot register for next term.
- (31) The fact that Paul has failed his exam is unfortunate because [as a result] he cannot register for next term.

In Jayez (2010), experimental evidence is given that French clauses subordinated by *donc* ‘so,’ *alors* ‘so,’ *parce que* ‘because’ or *puisque* ‘since’ can felicitously attach to at-issue implications, but cannot felicitously attach to not-at-issue implications. Jayez ultimately rejects the idea that at-issueness is the crucial factor, based on objections to the QUD approach as a whole, and to the usefulness of the concept of at-issueness in particular. We believe that his objections can be overcome;<sup>7</sup> but this is not the place to address them and so for now, let us simply note that Jayez’s data is consistent on the face of things with our conclusions in this section (and for that matter, that our data here are consistent with his conclusions).

As Jayez himself points out, rejection and confirmation—that is, “yes” and “no” answers—count as a kind of discourse relation. If discourse moves in general attach to at-issue content, then rejection and confirmation in particular should be expected to do so. Our results in this section confirm that that is the case.

(So if Jayez’s “Because” test and our “Yes, but” test diagnose the same property, is there any reason to prefer one to the other? Our experience in pilot experiments has been that the “Yes, but” test is less difficult for participants—possibly because it uses syntactically simpler sentences, while the “Because” test requires an additional subordinate clause to be added to every item. Jayez’s particular implementation of the “Because” test also depends on speakers having consistent assumptions about what sorts of cause-and-effect relations are plausible. This introduces another possible source of noise which is not present in the “Yes, but” test, though it is possible that this problem can be overcome. For these reasons, we have continued using the methodology from Onea and Beaver rather than adopting the one from Jayez (2010). Still, setting aside practical issues—such as the participants’ attention spans and their assumptions about plausibility—we predict that the two methodologies will be interchangeable.)

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<sup>7</sup> See Onea (2013) for one framework in which these objections are addressed.

Another point of conceptual support for this interpretation of the “Yes, but” test comes from the connection between at-issueness and projection. It has been observed that in general, not-at-issue inferences project (Simons et al. 2011). Xue and Onea (2011) have shown that responses to the “Yes, but” test are correlated with responses to a standard test of projection. Inferences which are more likely to receive a “Yes” response are also more likely to be treated as projecting, and vice versa. This lends additional plausibility to the idea that these “Yes” responses are indicative of not-at-issue status.

#### 4.1 Comparing the Cancellability Test

So we have seen that the “Yes, but” test does not diagnose the source of an inference, but should be reinterpreted as a diagnostic of status. At this point, one might wonder whether the *cancellability test*—with a much longer history of use as a diagnostic for source—should be reinterpreted as a diagnostic of status as well. Here we argue that it should not be. If a careful methodological distinction is maintained between the two tests, then there is a corresponding difference in their results. This shows that the two tests diagnose different properties. If we take the “Yes, but” test as a diagnostic of status, the cancellability test must be diagnosing something else—plausibly source, as has long been believed.<sup>8</sup>

When Grice drew a distinction between “what is said” and “what is implicated” (Grice 1967) he argued that all conversational implicatures are *cancellable*. This has become a standard test for the source of an inference: inferences are taken to be cancellable if they arise through pragmatic reasoning, and to be uncancellable if they are part of the conventional semantics of an utterance.<sup>9</sup> The classic example here is the conversational implicature in (32), which can be explicitly cancelled by the speaker as in (33).

- (32) [In a letter of recommendation] He has excellent penmanship.  
→ He has no qualifications beyond his penmanship.
- (33) He has excellent penmanship—though of course he has many further qualifications.

It is important to distinguish genuine cancellation, in which the speaker makes it clear that he never intended the inference to arise, from *self-correction*, in which the speaker mistakenly says something that would license the inference and then takes it back.

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<sup>8</sup> We should mention, though, that this interpretation of the test is not entirely uncontroversial. In particular, Horn (1981) argues that there are pragmatic implicatures which are nevertheless uncancellable.

<sup>9</sup> Some researchers have argued that there are types of pragmatic inference other than implicatures. In general, these researchers have maintained that *all* pragmatic inferences are cancellable: see for instance Carston (1988) and Recanati (1989).

- (34) He has excellent penmanship. (Wait a minute! I'm thinking of the wrong guy!) No, actually, he has a lot of qualifications.
- (35) He has excellent penmanship. (Wait a minute! I'm looking at the wrong writing sample!) No, actually, his penmanship is terrible.

Here is one way to distinguish cancellation from self-correction: cancellation can be done *in advance*, by issuing a disclaimer against the unwanted interpretation. Self-correction cannot be done in advance.

- (36) Please don't take this to imply that he has no other qualifications. But you have to admit, he really does have excellent penmanship.
- (37) Please don't take this to imply that his penmanship isn't terrible. But you have to admit, he really does have excellent penmanship.

And for that matter, it is important to distinguish cancellation from correction by *another* speaker—which is what we find in the “Yes, but” test.

- (38) A: He has excellent penmanship.  
B: Yes, and/Yes, but/?? No, he has a lot of other qualifications.

In this particular example, the cancellation test and the “Yes, but” test give parallel results. That is, the relevant inference can be cancelled by the speaker who uttered it *and* denied without negation by another speaker. But in general they often give different results. For instance, scalar implicatures are cancellable—but, as the results above showed, they cannot generally be denied without negation. And the meaning contributed by appositives and NRRCs, while not cancellable, can be denied without negation.

There are two conclusions we can draw from this. The first is a general point: not all ways of denying an inference are the same. Genuine cancellation, self-correction and other-correction all have a superficially similar structure—first *p* is asserted, then *q* is denied, where *p* can be taken to imply *q*. But they are not all permitted under the same conditions. Cancellation is assumed to be sensitive to the source of an inference, and we see no reason to contradict that assumption; but, as we have shown in this paper, the form of a self-correction or an other-correction is determined by the inference's status.

The second point is more narrowly methodological: it is important, in applying the cancellation and “Yes, but” tests, to maintain a clear distinction between them. It is worth being especially careful with ambiguous examples like the following:

- (39) It's John who laughed. Oh, and other people laughed too.

Here it may not be immediately clear whether the second sentence represents a clarification of the first (in which case it counts as a case of genuine cancellation), or whether it should be taken as a self-correction. As a result, it may not be clear what the felicity of (39) is telling us. To make it clear, we need to use an unambiguous test. On the one hand, if we are interested in the status of the inference, we can use the “Yes, but” test—an unambiguous case of other-correction.

- (40) A: It's John who laughed.  
B: Yes, and other people laughed too.

Or on the other hand, if we are interested in the source of the inference, we might use an example which unambiguously involves genuine cancellation.

- (41) # Please don't take this as implying that nobody else laughed. But it's John who laughed.

In hindsight, these unambiguous examples show that (39) has to be interpreted as self-correction, for genuine cancellation here is not possible. But until we have considered the unambiguous examples, the mere fact that (39) is felicitous does not tell us anything.

#### **4.2 Onea and Beaver Revisited: Cleft Exhaustivity is Not at Issue**

Everything we have seen in this section suggests a reinterpretation of the data in Onea and Beaver (2011). They concluded that neither Hungarian preverbal focus nor German *es*-clefting has exhaustivity as part of its conventional meaning. This conclusion was based on the assumption—shared with other researchers—that the “Yes, but” test could be used to diagnose the source of an inference. We have now seen that the “Yes, but” test has nothing to do with source; rather, it diagnoses the status of the inference, whether at-issue or not-at-issue. The correct interpretation of Onea and Beaver's data, then, is that these constructions do not have exhaustivity as part of their *at-issue* meaning.

On the other hand, we've argued that the classic cancellation test can still consistently be used as a diagnostic for source. Now, it is not completely uncontroversial that this is the correct interpretation. In particular, Horn (1981) has argued that some pragmatic inferences are nevertheless uncancellable. We disagree; but we will not settle that question in this paper. All we are saying for now is that the standard interpretation of the cancellation test, on which it does diagnose source, is *consistent* with the evidence presented in this section.

### **5 New Evidence From Two Other Languages: English and French**

We now turn to presenting experimental data for two other languages—English and French—that support an analysis of exhaustiveness in cleft constructions as being not-at-issue.

The basic idea behind the design of the experiment, which follows the methodology in Onea and Beaver (2011), is to assume that the most natural way for a speaker to contradict an at-issue inference triggered by some utterance is to use the explicit contradiction marker “No”. On the other hand, if an inference is not at-issue, we



assume that it will be most naturally contradicted in some other, weaker way, such as using sequences like “Yes, but” or even the much politer “Yes, and”. Of course, depending on circumstances “Yes, but” can be a more polite version of “No”, “No” can even be used to contradict inferences that are not even suggested by the utterance, and there may be other strategies of contradicting inferences that we did not consider. However, for now, we assume that in most cases, “No” is predominantly used to contradict at-issue inferences and “Yes, but” and “Yes, and” are used to contradict inferences that are not at-issue. For illustration, consider (42). We assume that the most natural contradiction for (42-a) is (43-a), for (42-b) the most natural contradiction is (44-c), and for (42-c) the most natural contradiction is (45-c).

- (42) Mary smiled again.
- At-issue meaning: Mary smiled.
  - Not at-issue meaning: Mary had smiled before.
  - Not necessarily triggered: Mary is happy.
- (43) Mary smiled again.
- No, Mary didn’ t smile.
  - Yes, and Mary didn’ t smile.
  - Yes, but Mary didn’ t smile.
- (44) Mary smiled again.
- No, Mary didn’ t smile before.
  - Yes, and Mary didn’ t smile before.
  - Yes, but Mary didn’ t smile before.
- (45) No, Mary isn’ t happy.
- No, Mary didn’ t smile before.
  - Yes, and Mary isn’ t happy.
  - Yes, but Mary isn’ t happy.

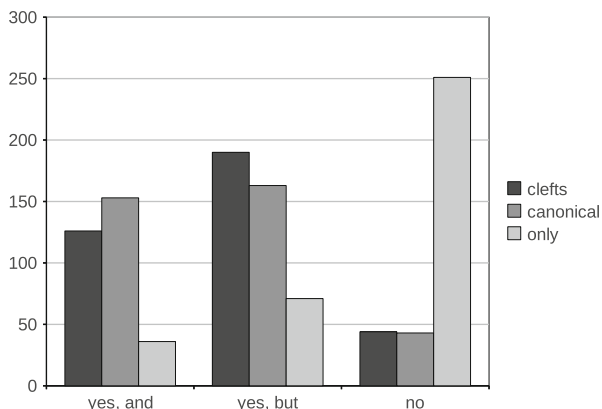
Building on the intuitive appeal of the assumption and the results from (Onea and Beaver 2011; Xue and Onea 2011), we can now experimentally test the idea that, as opposed to exclusives, clefts contribute non-at-issue exhaustiveness. In other words, whatever clefts do, conveying exhaustiveness is not the main point for their usage. In the experimental design, if our hypothesis is correct, the exhaustiveness triggered by *only* will be contradicted using “No” type of answers and the exhaustiveness triggered by clefts will rather be contradicted with “Yes, but” or even “Yes, and” kinds of answers.

## 5.1 English It-Clefts

Forty five native English speakers participated in the experimental task, a forced-choice task presented on-line using WebExp.<sup>10</sup> Participants were instructed that on

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<sup>10</sup> <http://www.webexp.info/>.

**Fig. 1** English results

each slide they would hear a short discourse between two friends Jason and Sarah, and then would be asked to continue or otherwise update the conversation by selecting one of three possible continuation sentences.

Specifically, on each slide, participants clicked a button to hear an audio clip of Sarah posing a question to Jason, such as the one in (46). The question appeared in two conditions: i) question about the grammatical subject of the sentence and ii) question about the grammatical object. Then, participants clicked a second button to hear Jason's response, which appeared in one of the three forms: i) a cleft as in (46-b), ii) an exclusive as in (46-c), or iii) a canonical answer as in (46-a). The task was then for them to choose which of the following continuations in (46-c-i)-(46-c-iii) they considered the most natural way to indicate that Jason had only given a partial (or incorrect) answer to Sarah's question:

- (46) What did Phillip buy his sister?
- a. Phillip bought his sister A NECKLACE.
  - b. It was a necklace that Phillip bought his sister.
  - c. Phillip only bought his sister a necklace.
    - (i) Yes, and Phillip also bought his sister a bracelet.
    - (ii) Yes, but Phillip also bought his sister a bracelet.
    - (iii) No, Phillip also bought his sister a bracelet.

For the experimental stimuli, discourses were built around 8 transitive verbs and 6 experimental conditions (2 question types  $\times$  3 answer types), along with 8 filler question-answer pairs. Following the hypothesis presented earlier, we predicted that participants will opt for the (46-c-i) answer upon hearing a canonical sentence, the (46-c-ii) when hearing a cleft sentence and (46-c-iii) when hearing an exclusive sentence. The results are presented in Fig. 1 in absolute numbers, collapsed for grammatical function of the focused element.

Our predictions are confirmed by the results: participants were far more likely to overtly contradict Jason's answer (by updating the conversation with a *No*-continuation) if it was in the exclusive form. The distribution of continuation

sentences chosen after exclusive answers was significantly different from the distribution of continuations chosen after it-cleft answers ( $\chi^2(2) = 249.5, p < .0001$ ), with far more *No*-continuations selected after exclusive sentences than after it-cleft sentences. In addition, it turns out that canonical answers receive a similar answer distribution as it-clefts. In fact there is only a very slight difference between canonical sentences and it-clefts, which turns out to be statistically relevant only at a 10 % error rate, even though the data sample is fairly large ( $\chi^2(2) = 4.68, p < .1$ ).

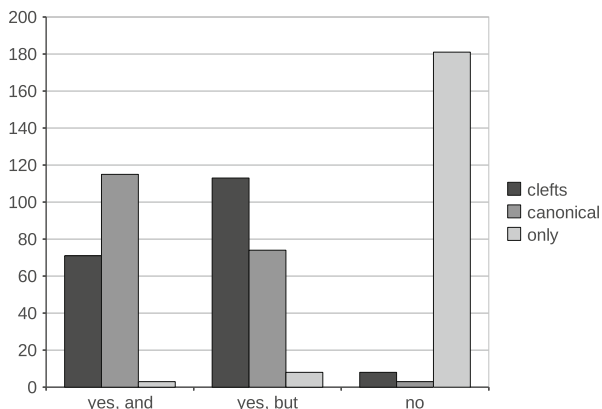
We take these results to be further evidence that the exhaustiveness is triggered by the not at-issue content of clefts.

## 5.2 French Clefts

Twenty four undergraduates from the Université Toulouse Le Mirail in France participated in the forced-choice task. All participants were native monolingual speakers of French. The experiment was also conducted remotely over the internet via WebExp. On each trial, participants were presented with written stimuli containing a question-answer pair in the upper half of the screen and three continuation sentences in the bottom half of the screen. The instructions emphasized that participants needed to understand each item as being uttered by three different people, thus reading a conversation between three French speakers: Anne asking the question, Paul answering and Nicolas supplementing. The question asked by Anne was included to ensure that subjects correctly identified the focus element. The answer given by Paul appeared in either one of three forms: exclusive (47-a), canonical (47-b) and cleft (47-c). The continuation supplemented by Nicolas was introduced either by *Non* (No), *Oui, mais* (Yes, but) or *Oui, et* (Yes, and), in (47-c-i)-(47-c-iii). The instructions then presented the same task to participants: select the most appropriate continuation to the preceding question-answer pair. Instructions emphasized that there was no correct answer and that participants should base their judgments on their first impressions.

- (46) Qui est-ce-que le directeur a grondé?  
Who is-it-that the director has scolded?  
'Who did the director scold?'
- a. Le directeur n' a grondé que la secrétaire.  
The director not has scolded only the secretary.  
'The director scolded only the secretary.'
  - b. Le directeur a grondé la secrétaire.  
The director has scolded the secretary.  
'The director scolded the secretary.'
  - c. C' est la secrétaire que le directeur a grondé.  
It-is the secretary that the director has scolded.  
'It's the secretary that the director scolded.'
- (i) Non, le directeur a aussi grondé le cadre.  
No, the director has also scolded the executive.  
'No, the director also scolded the executive.'

Fig. 2 French results



- (ii) Oui, mais le directeur a aussi grondé le cadre.  
Yes, but the director has also scolded the executive.  
'Yes, but the director also scolded the executive.'
- (iii) Oui, et le directeur a aussi grondé le cadre.  
Yes, and the director has also scolded the executive.  
'Yes, and the director also scolded the executive.'

Two variables were controlled for in the experimental stimuli: the form of the answer (exclusive, canonical or cleft-sentence), and the grammatical function of the focused element (subject or object), which yielded a total of six conditions. Within the experiment, each participant judged exactly four items per condition. So, each participant judged a total of twenty four experimental items, as well as twelve fillers which were pseudo-randomized with the experimental items.

Our predictions for French were exactly the same as for English: we will see an effect of the form of the stimuli on the continuation chosen by participants, so that *Non* is selected after exclusive sentences, *Oui, mais* after clefts, and *Oui, et* after canonicals. Results are given in absolute numbers in Fig. 2.

Here again, as predicted, participants did not choose a continuation randomly, the form of the answer did affect their choice. We observe the following: (i) in the cleft and canonical something weaker than *No* is much preferred, (ii) in the canonical *Yes, but* is a bit too strong, (iii) in the cleft something stronger than *Yes, and* is preferred, (iv) in the exclusive, something stronger than *Yes, and* and *Yes, but* is preferred.

A goodness-of-fit chi-square statistic was applied to the data and showed that the difference in distribution of responses across the three answer forms was highly significant ( $\chi^2(4) = 100, p < 0.001$ ). The distribution of sentences chosen after exclusives was statistically different from the distribution of continuations chosen after clefts ( $\chi^2(2) = 311.9, p < 0.001$ ). The difference in the distribution of continuation between canonical and cleft sentences was also found to be statistically significant, although obviously much smaller ( $\chi^2(2) = 20.81, p < 0.001$ ).

We conclude that the predictions we made are confirmed by the experiment for French, and, together with the assumption that the exhaustiveness inference exists, we conclude that the inference is not-at-issue in *c'est*-clefts.

## 6 Conclusion

In this paper, we were concerned with the analysis of the exhaustiveness inference in clefts and related constructions such as the Hungarian pre-verbal focus construction. While the past literature has concentrated on the *source* of the inference, debating whether it must be considered a semantic or a pragmatic phenomenon, we followed Velleman et al. (2012) in shifting the focus to the *status* of the inference, arguing that the notion of at-issueness is key. Under this view, the differences observed between clefts and exclusives arise from the status of exhaustivity: exclusives make it at-issue whereas clefts make it non-at-issue.

For us, this shift of perspective is crucial and can better explain the results from previously collected data using the “Yes, but” test in Hungarian and German, and applies to newly collected data on English and French. Indeed, we argue that the “Yes, but” test itself should not be understood as a diagnosis for the source of the inference but in fact as a diagnosis for its status.

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