

## Do Italian factives entail their presupposition? Yes, but... \*

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**Abstract** Factive predicates are at the nexus of two challenging topics that are central for a theory of how natural language is understood in context. They syntactically embed clausal complements and semantically express attitudes towards propositional content. Importantly, the content of their complement clause is generally assumed to be presupposed. From the very beginning, it has been clear that there is an additional complication in terms of apparent variation between factive predicates. The present paper reports experimental data relating two recent approaches to variation among factives to one another. These two approaches apply a roughly parallel theoretical approach to separate empirical domains. The core theoretical notion is that the presupposition of factives may or may not simultaneously be part of the entailed content for a given factive verb. Chierchia (2016) puts this notion to use to explain variation in NPI-licensing of factives in English and Italian. Djärv, Zehr & Schwarz (2017) present experimental evidence for differences between cognitive and emotive factives in English, which they also explain based on this notion. The natural next move in an attempt to integrate these works is to extend the experimental paradigm from the latter to Italian, which is what we do in this paper. Overall, the results for Italian do not exhibit the differences from English that we would expect given the two proposals. They thus pose a challenge for maintaining a uniform theoretical approach to the two sets of empirical observations. We consider some potential avenues for understanding the full set of data theoretically, but have to leave a resolution of the theoretical conundrum for future work.

**Keywords:** factives, presuppositions, entailment, Italian, English, experimental pragmatics, cross-linguistic variation

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## 1 Introduction

Factive predicates are at the nexus of two challenging topics that are central for a theory of how natural language is understood in context. They syntactically embed clausal complements and semantically express attitudes towards propositional content. Importantly, the content of their complement clause is generally assumed to be presupposed. From the very beginning, it has been clear that there is an additional complication in terms of apparent variation between factive predicates. The present paper reports experimental data that relates two recent approaches to variation among factives to one another. These approaches apply a roughly parallel theoretical approach to separate empirical domains. The core theoretical notion is that the presupposition of factives may or may not simultaneously be part of the entailed content for a given factive verb. Chierchia (2016) puts this notion to use to explain variation in NPI-licensing of factives in English and Italian. Djärv et al. (2017) present experimental evidence for differences between cognitive and emotive factives in English, which they also explain based on this notion. The natural next move in an attempt to integrate these works is to extend the experimental paradigm from the latter to Italian, which is what we do in this paper. Overall, the results for Italian do not exhibit the differences from English that we would expect given the two proposals. They thus pose a challenge for maintaining a uniform theoretical approach to the two sets of empirical observations. We consider some potential avenues for understanding the full set of data theoretically, but have to leave a resolution of the theoretical conundrum for future work.

The paper is structured as follows: Section 2 reviews the core theoretical notion shared by both approaches, as well as its application to the respective sets of data. Section 3 presents the new experimental results on Italian. Section 4 assesses the tension between the theoretical perspective and the overall empirical situation, and presents some tentative explorations of possible new avenues for reconciling the results. Section 5 concludes.

## 2 Background

### 2.1 Entailed vs. non-entailed presuppositions

A central, and — as it turns out — extremely intricate, question in presupposition theory is whether there are lines to be drawn between different types of presupposition triggers, and if so, how to analyze these differences. This was already noted in seminal work by Karttunen (1971), but the issue didn't play an overly prominent role in the theoretical literature until more recently, with a variety of proposals, perhaps most prominently the *soft* vs. *hard* distinction, motivated by differences in the availability of suspension in *if*-clauses (Abusch 2002: also see

Abusch 2010), as well as a variety of others (see, e.g., Zeevat 1992; Simons 2001; Romoli 2012). For present purposes, we focus on another theoretical take, variations of which have been presented by various authors in slightly different contexts, most explicitly by Sudo (2012) and Klinedinst (2010), with more or less direct precursors in Glanzberg (2005), Yablo (2006), and Gajewski (2011). The core notion is that some triggers simultaneously contribute their presupposed content at the levels of entailment and presupposition, whereas others are purely presuppositional. This is illustrated schematically in (1) and (2), following the notational convention from Heim & Kratzer (1998) in representing presupposed content between the colon and the period to indicate that the proposition is only defined for worlds in which the presupposition holds true.<sup>1</sup>

- (1) a. Angelika sneezed again.  
 b. Angelika continued sneezing.
- (2) a.  $\lambda w : t' < t_p \ \& \ \text{sneeze}_w(a)(t')$ .  $\text{sneeze}_w(a)(t_p)$   
 b.  $\lambda w : t' < t_p \ \& \ \text{sneeze}_w(a)(t')$ .  $t' < t_p \ \& \ \text{sneeze}_w(a)(t')$   $\& \ \text{sneeze}_w(a)(t_p)$

Taking the presupposition triggers *again* and *continue*, which give rise to similar presuppositions with regards to there having been prior events of the same sort as described in the current sentence, the central idea is that triggers like *again* only introduce the notion of, say, there having been a relevant prior sneezing event as part of the presupposed content (between the colon and the period), whereas triggers like *continue* introduce it both there and as part of the entailed content (underlined, following the period).

At first sight, it may not be obvious what is gained by such a distinction, as the ‘doubling’ of the presupposed content as entailed content doesn’t really add anything, and in particular won’t make a difference for which worlds are mapped to true by these partial functions. However, as first noted by Sudo (2012), one context in which predictions of these two renderings come apart is that of non-monotonic quantificational environments, e.g., the scope of quantifiers like *exactly one*: in particular, assuming that the quantificational claim introduced by the quantifier only pertains to the entailed content, it matters whether or not what is presupposed is also entailed. For example, based on an analysis along the lines of (2a), (3) is predicted to be false in a situation where two students sneezed, even if only one of them sneezed before:

<sup>1</sup> We are glossing over many important details, in particular with regards to tense and aspect, for the sake of illustrating the general idea.  $t_p$  and  $t'$  represent the time indicated by the past tense and a contextually salient preceding time respectively. A quantificational analysis of tense (as well as the preceding time introduced by the presupposition triggers) gives rise to the Binding Problem, i.e., variables in the presuppositional and entailment parts would need to be bound by the same existential quantifier. See Sudo 2012 for a proposal to address this issue.

- (3) Exactly one student sneezed again.

This is because if the presupposition plays no role in the entailed content and the quantificational claim is only evaluated relative to the entailed content, then all that is counted is how many students sneezed at the time introduced by the past tense, regardless of their prior sneezing history. In contrast, extending the analysis in (2b) to (4), the students' prior sneezing history does matter for evaluating the quantificational claim introduced by *exactly one*, and correspondingly, the sentence is predicted to be true in a context where multiple students are sneezing at the time introduced by the past tense, but only one student sneezed previously.

- (4) Exactly one student continued sneezing.

Assessing the empirical adequacy of these predictions is by no means trivial, especially given the potential additional impact of local accommodation (Heim 1983), but initial experimental results reported by Zehr & Schwarz (2016) and Zehr & Schwarz (to appear) support the general notion of a contrast along these lines between triggers (though perhaps most clearly for the comparison between *also* and *stop*). For present purposes, all we aim to convey is the general notion of the distinction between what we will refer to as 'entailing' and 'non-entailing' presupposition triggers and a sense of how the relevant triggers should behave differently in certain environments.

## 2.2 Factives, entailment, and NPI-licensing

An entirely separate line of work has alluded to a parallel notion to account for NPI-licensing phenomena. In particular, Gajewski (2011) (also see Gajewski & Hsieh 2014; Gajewski 2016) models differences between singular and plural definites with respect to the availability of NPIs in their noun phrase in terms of a contrast in their entailment, namely whether or not the existential presupposition is also part of the entailed content. Chierchia (2016) extends this approach to account for differences in NPI-licensing between English and Italian factives. This section sketches the core line of reasoning of the latter with respect to both phenomena.

While plural definites readily allow NPIs in their scope, singular definites don't (second example modeled after those in Chierchia 2016, but altered in response to native speaker feedback to yield clearer intuitions):

- (5) a. The clients that had any complaints were rare.  
 b. \*The client that had any complaint was refunded. (Chierchia 2016)
- (6) a. The students in this class who have {ever} taken {any} statistics will quickly notice that the data is unreliable.

- b. \*The student in this class who has {ever} taken {any} statistics will quickly notice that the data is unreliable.

This is puzzling at first sight, especially if one wants to maintain an overall uniform analysis of the definite article for both cases. However, following Gajewski, Chierchia argues that the following denotations for the singular and plural definite article can explain this difference, crucially because they differ in whether or not the existence condition is part of the entailed content or not (while being uniformly presupposed):

- (7)  $[[THE_{PL}]] = \lambda P \lambda Q \lambda w : \exists x P_w(x) \ \& \ \forall y P_w(y) \rightarrow y \leq x. \forall x [P_w(x) \rightarrow Q_w(x)]$   
 (8)  $[[THE_{SG}]] = \lambda P \lambda Q \lambda w : \exists x P_w(x) \ \& \ \forall y P_w(y) \rightarrow y \leq x. \exists x [P_w(x) \ \& \ Q_w(x)]$

More specifically, these two meanings differ in whether or not the nominal restrictor of the respective definites constitutes a downward entailing environment or not. This is the case for the plural, but not the singular. Given an account of NPI-licensing in terms of downward entailingness (and assuming that this property is only relevant at the level of entailed content), this explains the pattern above (Chierchia spells out a specific proposal along these lines based on contradictions resulting from obligatory exhaustification; see his manuscript for details).

Turning to the phenomenon we are concerned with in this paper, Chierchia (2016) extends Gajewski's account of the contrast between singular and plural definites (which Chierchia shows to also hold in Italian) to a cross-linguistic contrast in NPI-licensing by factives, illustrated in (9) and (10):

- (9) a. She was surprised that there was any food left.  
 b. I am sorry that I ever met him.
- (10) a. \*Lei si sorprese che ci fosse alcun cibo  
 She REFL was surprised that there was-SUBJ any food  
 'She was surprised that there was any food'  
 b. \*Mi dispiace di averlo mai incontrato  
 (I) REFL am sorry to have-him ever met  
 'I am sorry I ever met him'

This intriguing cross-linguistic difference raises important questions about the nature of NPI-licensing and possible sources of cross-linguistic variation. Chierchia proposes to locate variation in a functional element, namely the complementizer *that* (and its correlates), rather than positing variation in how NPIs are licensed in different languages. The contrast between the 'weak' and 'strong' variants of a factive C-head that he posits mirrors closely that between the singular and plural definite articles, in

that they vary in whether the presupposed content is also entailed. This is illustrated for the sentence in (11) below (note that rendering of the presuppositional dimension, which is constant across the two possible analyses, is ignored here, as in Chierchia):

- (11) John regrets that he {ever} met Mary.
- a. English: ‘weak’ factive C (presupposition not entailed)  
 $\forall w' [[S_w(w') \ \& \ \neg \exists t \in D[\text{met}_{w'}(\text{mary})(\text{john})(t)]] \rightarrow \neg \text{regretful}_{w'}(\text{john})]$
  - b. Italian: ‘strong’ factive C (presupposition entailed)  
 $\exists t \in D[\text{met}_w(\text{mary})(\text{john})(t)] \ \& \ \forall w' [[S_w(w') \ \& \ \neg \exists t \in D[\text{met}_{w'}(\text{mary})(\text{john})(t)]] \rightarrow \neg \text{regretful}_{w'}(\text{john})]$
- (adapted from Chierchia 2016)

Parallel to the case of singular vs. plural definites, the two versions differ with regards to whether an existential statement, corresponding to what is presupposed by the respective expressions, is included as part of the entailed content. In the case of factives, this corresponds to the complement clause, represented here by an existential statement about there being a time  $t$  at which John met Mary. In Italian, this presupposition is posited to be entailed, and correspondingly, NPIs in the complement clause are not expected to be licensed, given that this part of the representation of the entailed content does not constitute a downward entailing environment. In contrast, in English, this statement is not part of the entailed content, but rather merely included as a presupposition (not shown here). The restrictor of the universal quantification over worlds in the other clause of the entailed content, where the embedded clause is also factored in, is of course a downward entailing context. This then accounts for the fact that in English, NPIs are possible in this environment.

For reasons of space, we have to gloss over various other details of Chierchia’s account here (among other things, he also discusses the inability of cognitive factives to license NPIs when no negation is involved, as well as intervention effects), and refer the reader to the original work. What is crucial for present purposes however, is that there is a puzzle about cross-linguistic variation in NPI-licensing by emotive factives, for which there is an account based on the notion that some presupposition triggers simultaneously introduce their presupposed content as entailed content, while others do not. The locus of variation is in the type of complementizer available in different languages, mirroring the variation in definites discussed in prior work, thereby making it possible to maintain a uniform approach to NPI-licensing across languages based on downward entailingness.

### 2.3 Results from the *Yes, but...* paradigm

As noted in the introduction, the question of whether there are classes of presupposition triggers that need to be distinguished has played a central role in the theoretical literature, and there is a growing body of experimental work on this question as well (for an overview, see Schwarz 2016). Most relatedly to the experiments reported below, Cummins, Amaral & Katsos (2013) and Amaral & Cummins (2015) investigate various triggers in questions and test the acceptability of *Yes, although* and *No, because* answers that deny the presupposed content:<sup>2</sup>

(12) Q: Did Brian lose his wallet again?

A: Yes, although he never lost it before.

A': No, because he never lost it before.

(13) Q: Did John stop smoking?

A: Yes, although he never smoked before.

A': No, because he never smoked before.

While such answers contradicting a presupposition in a question were overall degraded compared to controls, the triggers in their results seem to be grouped into two classes with regards to the extent to which *Yes*- and *No*-responses differ from one another: for expressions such as *stop* and *still*, the *Yes*-versions were significantly worse than *No*-versions, but for triggers like *again* and *too*, both answer versions yielded comparable acceptability ratings. Cummins et al. (2013) interpret their results in terms of a distinction between 'lexical' and 'resolution' triggers (Zeevat 1992), and allude to differences in the availability of local accommodation, corresponding to variation in the acceptability of *No*-responses. A further dimension to the variation that comes into play (also related to Zeevat's notion of lexical triggers), is that, as Amaral & Cummins (2015: 169) put it, in the case of certain triggers 'the responses in condition [A; *Yes*-continuation] appear self-contradictory, if we assume that the presupposition is a logical prerequisite for the at-issue content of the trigger.' In other words, the content introduced in the question cannot be affirmed independently of the presupposition. This roughly corresponds to the notion we have built on in experimental approaches to factives, though we couch it in terms of the entailment contrast introduced above.<sup>3</sup>

<sup>2</sup> Similar tasks involving the selection of the best answer from a set of options had previously been used to investigate clefts and focus (Onea & Beaver 2011; Velleman, Beaver, Destruel, Bumford, Onea & Coppock 2012; Destruel, Velleman, Onea, Bumford, Xue & Beaver 2015).

<sup>3</sup> Another closely related notion in the literature is that of 'Obligatory Local Effects' of the presuppositions of certain triggers (Tonhauser, Beaver, Roberts & Simons 2013).



The central idea is that *Yes*-responses relate differently to entailed and presupposed content. While the default is likely that in general, a *Yes*-response is understood to endorse both types of content (e.g., that a plain *Yes* answer to (12) effectively indicates both that Brian lost his wallet AND that he did so before), it is in principle possible to exclusively target the entailed content, making a *Yes*-response followed by a denial of the presupposition possible. Assuming that it holds for some triggers, such as *stop*, that their presupposition is also part of the entailed content, while for others, such as *again*, it is not, we then expect a difference in acceptability of *yes*, *although/but...* continuations of the sort above, in line with the reported findings.

In Djärv et al. (2017), we adopted this paradigm to experimentally compare cognitive and emotive factives, starting from the hypothesis that the former entail their presupposition (that the embedded clause is true), whereas the latter do not. We used an acceptability rating task to assess the acceptability of *Yes* and *No* continuations. The latter provide an important point of reference with regards to the relative availability of local accommodation (which can also be related to the entailment contrast; for discussion, see Klinedinst 2010). Sample items are provided in (14).

- (14) Q. {Is Maria **aware /happy**} that [<sub>P</sub> Mike is moving back to Chicago]?
- A1. Yes, although he isn't.
- A2. No, because he isn't.

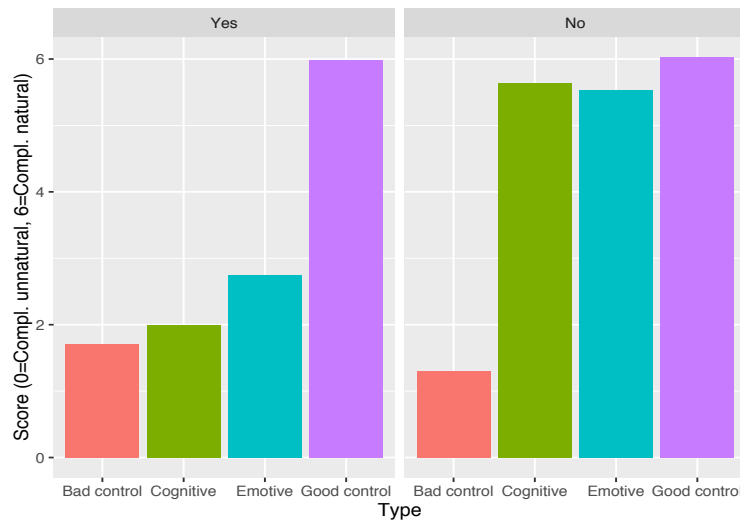
Participants had to rate how natural the answer sounds in light of the question, on a scale from 1 ('completely unnatural') to 7 ('completely natural'). In line with our hypothesis, the results from 62 participants — summarized in Figure 1 — showed this type of *Yes*-continuation to be more acceptable for emotive factives than for cognitive factives, with the latter showing no difference from unacceptable control items. In contrast, there was no difference in the acceptability of *No*-responses for cognitive and emotive factives, which in turn were close to ceiling based on a comparison to acceptable controls.

### 3 Experiment: *Yes, but...* with Italian factives

#### 3.1 Predictions for Italian

A logical next step in investigating the properties of factives, specifically with regards to the posited entailment contrast, is to put the predictions of the two empirical applications of this contrast together and test them. This is precisely the endeavor we report on here. Recall that Chierchia's explanation of the contrast between Italian and English emotive factives in NPI-licensing rested on the assumption that the former entail their presupposition whereas the latter do not. This is of course perfectly





**Figure 1** Mean ratings by answer type and predicate type.

in line with our previous finding for English emotive factives, which also suggest that English emotive factives do not entail their presupposition, and therefore allow *Yes*-responses to target their entailed content only. Assuming that in both cases, what is operative is indeed the entailment contrast, we expect Italian emotive factives to differ from the English ones, if the former do entail their presupposition. The current study addresses this issue by extending our *yes, but...* paradigm to Italian factives.

### 3.2 Design & materials

The design of the experiment was completely parallel to the English one reported in Djärv et al. (2017). The sentences were translated to Italian with some minor adjustments, yielding versions of each item with a cognitive and an emotive factive in a *yes/no* question, paired with either a *Yes*- or a *No*-answer containing a direct denial of the factive presupposition in the question. The emotive factive predicates used were *felice* ('happy') and *apprezato* ('appreciated'), and the cognitive ones *consapevole* ('aware') and *realizzato* ('realized'). An illustration is provided in (15)-(16).

- (15) a. Anna è felice che Ryan stia venendo al matrimonio?  
 Anna is happy that Ryan is.SUBJ coming to.the wedding  
 'Is Anna happy that Ryan is coming to the wedding?'  
 b. Anna è consapevole che Ryan sta venendo al matrimonio?  
 Anna is aware that Ryan is coming to.the wedding

‘Is Anna aware that Ryan is coming to the wedding?’

- (16) a. Sì, anche se lui non sta venendo.  
 Yes, although REFL he not is coming  
 ‘Yes, although he isn’t coming.’  
 b. No, perché lui non sta venendo.  
 No, because he not is coming  
 ‘No, because he isn’t coming.’

One choice point concerned the use of mood for the emotive factives. While cognitives only allow for the indicative, both subjunctive and indicative are in principle available for emotives. We decided on the subjunctive, as it is generally noted to facilitate NPI-licensing in Italian, although, according to Chierchia (2016), this does not prevent emotive factives with NPIs from being unacceptable. Since our hypothesis is that there is a link between NPI-licensing and entailment of presuppositions, using the subjunctive for emotive factives then amounts to the most conservative choice, by virtue of providing otherwise favorable conditions for NPI-licensing.

The experiment included 24 critical items in four conditions. In addition, there were 48 filler items, 24 using *pensa* (‘thinks’) and 24 using conjunctions. Half of these were respectively presented with good *Yes*- and *No*-continuations, which did not directly contradict an endorsement or denial of the proposition put forth in the question, and the other half had continuations that were contradictory based on the respective answer given.

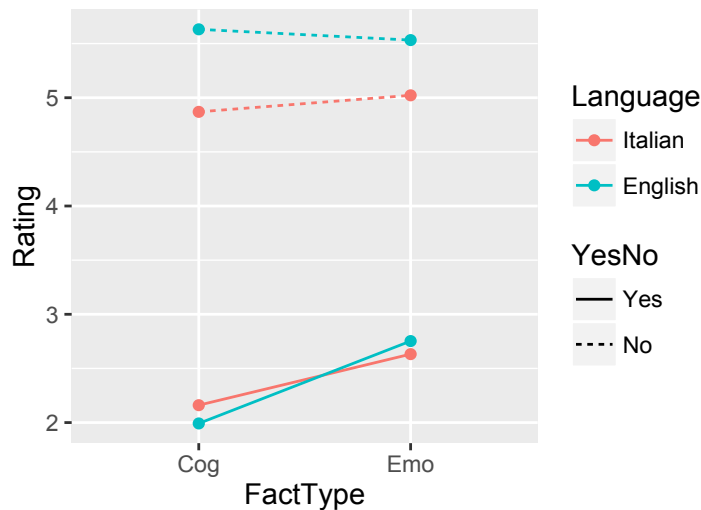
### 3.3 Participants & procedure

We recruited 59 speakers of Italian through [prolific.ac](https://prolific.ac), who completed the study online via IBEX. Critical items were counterbalanced across participant groups such that every participant only saw each item in one condition. *Yes*- and *No* continuations were separated into two blocks to simplify the task, and the order of blocks was counterbalanced across participants. Fillers were divided evenly across blocks, with *Yes*- or *No*-continuations matching the critical items in their block.

### 3.4 Results

Given that the central prediction of our hypothesis is that *Yes*-answers for Italian emotive factives should differ in acceptability from those for English emotive factives, specifically in comparison to cognitive factives and *No*-answers, we pooled the data from the two experiments for statistical analysis, adding a third factor of Language to the previously considered factors of Emotive type and *Yes*- vs. *No*-continuation,

yielding a 3-way interaction design. Recall that the proposal for accounting for the inability of Italian emotive factives to license NPIs under consideration is that in contrast to their English counterparts, they entail their presupposition. Thus, assuming with Djärv et al. (2017) that *Yes*-answers invariably commit you to the entailed content put forward by the question, Italian emotive factives should be just as incompatible with continuations denying the presupposition as cognitive factives. Correspondingly, the nature of the expected 3-way interaction would be that the 2-way interaction found for English, with *Yes*-answers for emotives being rated relatively better than for cognitives, in comparison to comparable ratings for *No*-answers, is not present in Italian, as *Yes*-answers for emotives should be on par with those for cognitives. The overall results are summarized in Figure 2, and exhibit a parallel pattern for English and Italian in the *Yes*-answers, and lower acceptability ratings for *No*-answers in Italian.



**Figure 2** Mean ratings by answer type and predicate type.

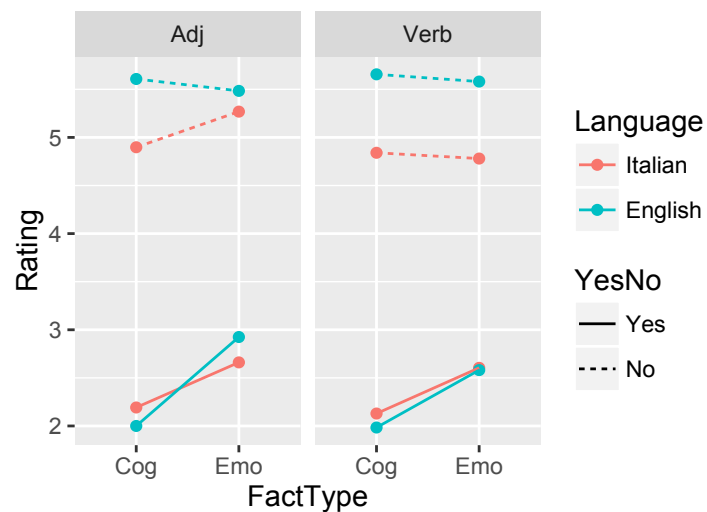
To assess the outcome patterns statistically, we ran mixed effect models in R, using the *lmer* function of the *lme4*-package. Results from maximally complex converging models are reported here (Barr, Levy, Scheepers & Tily 2013). For the initial 3-way interaction analysis, all three predictors were centered. Overall, we find a significant 3-way interaction ( $\beta = 0.54$ ,  $SE = 0.19$ ,  $t = 2.87$ ), as well as 2-way interactions between Factive type and *Yes/No*-answers ( $\beta = 0.60$ ,  $SE = 0.09$ ,  $t = 6.45$ ) and Language and *Yes/No*-answers ( $\beta = 0.65$ ,  $SE = 0.31$ ,  $t = 2.13$ ). Furthermore, there were main effects of Answer type, with *No*-answers rated much higher overall ( $\beta = 2.89$ ,  $SE = 0.15$ ,  $t = 18.89$ ), as well as Factive type, with slightly

higher overall ratings for emotives ( $\beta = 0.32$ ,  $SE = 0.07$ ,  $t = 4.71$ ), but no main effect of language.

Follow-up analyses using treatment coding with different baselines were conducted to shed further light on the nature of the observed interactions. Setting Italian emotives (with *Yes*-continuations) as the baseline revealed a contrast between factive types parallel to English, with a simple effect showing emotive *Yes*-continuations to receive higher ratings than those for cognitives ( $\beta = 0.48$ ,  $SE = 0.12$ ,  $t = 4.02$ ), as well as different patterns for *Yes* and *No*-continuations, reflected in an interaction between Answer type and Factive type ( $\beta = 0.33$ ,  $SE = 0.13$ ,  $t = 2.44$ ). The pattern for emotives across Answer types was not significantly different across languages, as reflected by the interaction term for Language and Answer type. However, a parallel analysis with Cognitives and *No*-answers as baseline did reveal an interaction of Language and Answer type for Cognitives ( $\beta = 0.92$ ,  $SE = 0.32$ ,  $t = 2.88$ ), as well as a simple effect of Language ( $\beta = 0.76$ ,  $SE = 0.28$ ,  $t = 2.76$ ), with higher ratings for English *No*-continuations than for their Italian counterparts (no such effect was found for *Yes*-answers).

Taken together, these results reveal Italian emotives to parallel English emotives in yielding greater acceptability than the respective cognitives. The main difference found between languages that is driving the 3-way interaction is in *No*-continuations for cognitives, which are significantly less acceptable in Italian than in English. Thus, while some potentially interesting differences between languages emerge, the pattern predicted by an account of differences between factives based on the entailment contrast, in line with both of the two prior approaches reviewed above, is not found in the present results.

Two additional aspects of the data should be noted here to highlight some nuances of interest. First, there are suggestive indications in the data that the differences in patterns between English and Italian are largely driven by the adjectival items, as can be seen in Figure 3. While there seem to be differences in the acceptability of *No*-answers for both adjectives and verbs, the relative pattern for the within language 2-way interactions is entirely parallel for verbs, but different for adjectives, with the key difference in the relative goodness of emotive and cognitive *No*-continuations in Italian. Including the adjective vs. verb distinction as an additional factor in an analysis using centered predictors yielded a 4-way interaction that seems to be approaching significance ( $\beta = 0.71$ ,  $SE = 0.37$ ,  $t = 1.92$ ). Since we are only looking at one lexical item in each of these categories, it remains an open question not only to what extent this effect can be substantiated and broken down statistically, but also whether it generalizes to the relevant classes of lexical items (an interesting related experimental result comes from Bacovcin & Djärv 2017 who find a difference in the ‘projection’ behavior of verbal and adjectival *non-factives*). However, we have to leave more detailed exploration of these issues for future investigation.

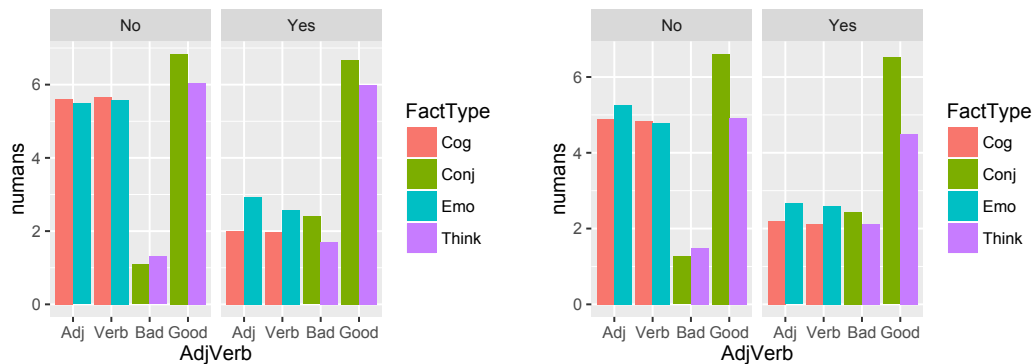


**Figure 3** Mean ratings by answer type and predicate type split by Adjectives and Verbs.

The second point to note here, again without great elaboration of detail, is that some differences emerged between the Italian and English materials with regards to the fillers as well, specifically for the case of the *think*-fillers: in particular, the ‘good’ fillers, designed to be fully acceptable, are significantly lower in both the *Yes* and *No* versions, while the other fillers, using conjunctions, seem comparable, as can be seen in Figure 4. It’s unclear what this effect should be due to. One relevant point to note is that these fillers, like the cognitive factives but unlike the emotive factives, used the indicative in the embedded clause. That alone, however, does not provide a straightforward explanation of the apparent pattern in the data, as the *No*-continuations for the two types of verbal factives seem to be equally acceptable, despite the use of subjunctive with emotives and indicative with cognitives. Further analyses and broader considerations are needed here as well, but have to be left to future work.

#### 4 Discussion: factives, entailment and (lack of?) variation

In a nutshell, the results for the Italian variant of the *yes, but...* study, in comparison to earlier results for English, do not conform to the neat prediction that we get from combining the accounts in Chierchia 2016 and Djärv et al. 2017. If both the cross-linguistic variation in NPI-licensing and the interpretation of the increase acceptability of *Yes*-continuations with denials of the presupposition introduced in a preceding *yes/no*-question were to be attributable to variation with regards to



**Figure 4** Mean ratings for fillers vs controls in English (left) vs. Italian (right).

whether the relevant factives do or do not entail their presupposition, then the Italian *Yes, but...*-data should look quite different from the English data, precisely with respect to Italian emotives. While we do find some differences, they are in no way straightforwardly relatable to the theoretically predicted contrast. To the contrary, Italian emotives look remarkably similar to English emotives in this paradigm.

So something will have to give. Maintaining the strong assumption that the cross-linguistic entailment contrast is present at a general level, due to its source in the inventory of functional elements, specifically complementizers, leaves us with little wiggle room. Either the entailment contrast is not to blame for the NPI-licensing variation between English and Italian factives, or the relative increase in acceptability of *Yes*-answers with presupposition denials is not indicative of presupposition entailment. If one weakens the cross-linguistic assumption the space of options becomes broader, but also less elegant and simple in theoretical terms. For example, one could allow different factives within each language to choose which type of complementizer they go with, and correspondingly whether or not they entail their presupposition. In this regard, it's worth noting that the particular emotive factives we looked at, *be happy* and *appreciate*, don't license NPIs in English to begin with. That shouldn't matter if the complementizer choices are general across either entire languages or classes of factives (in particular cognitive vs. emotive, as would need to be posited for English). But if there is more language-internal variation in presupposition entailment, then our results may simply indicate that the specific emotive factives we are looking at do not entail their presupposition, consistent with the *Yes, but...* result, and fail to license NPIs for other reasons. But without further motivation of what factive predicates are of what type, such a perspective of course is unsatisfying with regards to its explanatory potential.

Another possibility to consider is that the *Yes, but...* test does not provide

a diagnostic after all for whether or not a presupposition is entailed. A possible starting point for such a rethinking of this paradigm might be the observation that emotive factives are generally richer in content, specifically in terms of expressing an emotive relation between the attitude holder and the embedded proposition that is at least largely, and perhaps entirely, independent of whether or not the embedded proposition is true (see for instance Djärv 2017 for an account of factivity and the associated yes/no contrast, which does not rely on the notion of *entailment*, for either type of trigger). Thus, a presupposition denying *Yes, but...* response can be seen as endorsing one fairly independent part of the information presented in the question while denying another. In the case of cognitive factives this would seem harder, as the relevant doxastic attitude ascription is more directly linked to the speaker endorsing the truth of the complement clause. The conjunction fillers were intended as a control for this possibility, as a *Yes, but...* reply that goes on to deny one of the conjuncts also has the property of a partial endorsement of separately introduced information in the question. However, the status of the relevant pieces of information may well be different in the cases of emotive factives and conjunction, so that the different results we observe for them need not entirely debunk this possibility.

## 5 Conclusion and Outlook

We set out to test the predictions of combining two accounts of intricate empirical data from a unified theoretical perspective, based on the idea of the entailment contrast between presupposition triggers. In some ways, it might have been too good to be true to find a new empirical result for Italian that neatly confirms this perspective. What we are left with then, is a situation all too familiar in theoretically ambitious and empirically well-grounded research on natural language meaning: intricate theoretical proposals accounting for different types of empirical data, which lead to new puzzles once we attempt to unify the various accounts. Unsurprisingly, we are not in a position to resolve the new puzzle presented by the endeavor we report on here. But in line with what the first author was taught by his advisor in graduate school, learning that intriguing and interesting theoretical proposals are (at least in part) wrong is every bit as important as finding further confirming evidence for what seems to be a successful analysis, as is finding new problems and puzzles. For the time being, we therefore are happy to leave a possible resolution of the puzzle arising from the considerations above to the reader, and to the future.

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