Complementizer Deletion in Embedded Gapping in Spanish

Max Bonke, Sophie Repp*

Gapping in embedded environments may occur in two configurations: (i) the whole coordination containing both conjuncts is embedded (= embedded gapping, EG), (ii) the second (i.e., elliptical) clause is embedded within its own conjunct (= single conjunct embedded gapping, SCEG). Languages seem to differ in their restrictions on on these two structures: EG in some languages does not allow for a complementizer in the elliptical conjunct, while it does in other languages. SCEG is outright unacceptable in some languages but acceptable in other languages. Overall, languages seem to fall into two groups such that one group allows a complementizer in the elliptical conjunct of EG and generally allows SCEG, whereas the other group allows neither. We present four experiments in Spanish on the acceptability of the complementizer *que* 'that' in the elliptical conjunct in EG. Our results suggest that *que* in Spanish EG is overall subject to similar restrictions as SCEG gapping: There are different degrees of degradation depending on the (type of) embedding verb without outright unacceptability. While the relevant property has been argued to be factivity for SCEG, we argue that it is not the factivity of the embedding verb as such that drives acceptability, but assertion embedding. We outline a theoretical proposal building on existing accounts of structural ambiguity in gapping, the truncation of complement CPs under some verbs including factives, and the general flexibility of the semantic/pragmatic categories factivity and assertion.
Keywords: gapping, clause embedding, factivity, assertion, Spanish

1 Introduction

Gapping is the omission of the finite verb (and, potentially, more constituents) in the second of two coordinated clauses. This is illustrated in (1), where the finite verb *drinks* is omitted in the second conjunct under identity with the finite verb in the first conjunct. The underscore indicates the position where the omitted verb would be expected.

(1) *John drinks coffee and Mary _ tea.*

The majority of descriptive and theoretic work on gapping has been carried out exclusively on matrix clauses. Gapping in embedded clauses has received relatively little attention in the literature. Nevertheless, two particular ways in which gapping and clausal subordination interact have been identified. First, if both conjuncts are jointly

*We would like to thank Julio Manero Gonzalez and Marta Cabezuelo Pinedo for help with the experimental materials and speaker judgements. We would also like to thank the audiences at ECBAE 2020 (online), and LAK and KoRoLi at the University of Cologne, as well as three anonymous reviewers for their comments and discussion.

embedded by a predicate taking a finite complement clause, the second conjunct may not host a complementizer (Fiengo 1974, Hartmann 2000, Repp 2009, Wilder 1996, Wilder 1997), see (2a). This is clearly an effect of gapping since full clause equivalents do allow for complementizers in the second conjunct, see (2b). Wilder (1996, 1997) subsumes this fact under a generalisation he terms the *Head Condition* (3). This condition captures the behaviour of complementizers alongside a number of other phenomena in English and German. For us, only the complementizers will be relevant. We will refer to the structure in sentences like (2a) as EMBEDDED GAPPING in order to distinguish it from the similar structure discussed next.

(2) a. *Sue thinks that John drinks coffee and (*that) Mary tea.*
b. *Sue thinks that John drinks coffee and (that) Mary drinks tea.*

(3) *Head Condition on Gapping*
An ellipsis site may not be c-commanded by an overt (nondeleted) head in its domain (= conjunct).
(Wilder 1997: 74)

Second, the clause containing the gapped verb may not be embedded under a predicate within its own conjunct (Hankamer 1979). The sentence in (4a) contains a standard gapping structure in the sense that the finite verb *drinks* in the second conjunct of a coordination is omitted under identity with the finite verb in the first conjunct. The reason why (4a) is unacceptable is that the clause containing the gapped verb is embedded within the second conjunct by the verb *thinks*. This phenomenon has been captured by the *No Embedding Constraint* (Johnson 2014: 7), see (5). In order to distinguish this type of embedded gapping from the one in (2a), we will refer to it as SINGLE CONJUNCT EMBEDDED GAPPING (SCEG). Just like for embedded gapping, the unacceptability of SCEG must be an effect of ellipsis itself, since the full clause equivalents are acceptable, see (4b).

(4) a. * *John drinks coffee and Sue thinks that Mary tea.*
b. *John drinks coffee and Sue thinks that Mary drinks tea.*

(5) *No Embedding Constraint*
Let A and B be conjoined or disjoined phrases, and β be the string elided in B whose antecedent is α in A. Then α and β must contain the highest verb in A and B.[1]
(Johnson 2014: 7)

Just as the *Head Condition*, the *No Embedding Constraint* is operational in other languages, e.g. German. However, cross-linguistic comparisons have shown that not all

[1]Notice that the way it is worded, the *Head Condition* effectively entails the *No Embedding Constraint* because any verb (= overt head) embedding a gapping clause will c-command the ellipsis site contained within that clause. However, since Wilder (1996, 1997) makes no mention of SCEG in his discussion of the *Head Condition*, we take it that this overlap is an unintentional consequence of the way it is formulated. We will therefore treat the two constraints as though they only target one structure each (SCEG or embedded gapping) for the remainder of this paper.

languages adhere to the constraint. For example, SCEG is allowed in Farsi (Farudi 2013, Bîlbîie and Faghiri, this issue), and Erschler (2018) discusses a number of other, typologically diverse languages that allow SCEG. In Spanish, the focus of this paper, SCEG is grammatical as well: In (6), the elliptical clause *ella a él* 'she, him' is embedded under a matrix clause *dicen que* 'they say that'.

(6) Spanish

El chico la ama y dicen que ella a él.
the boy her loves and say-3PL that she DOM him
'The boy loves her and they say that she (loves) him.'
(Garcia-Marchena 2018: 177)

Recently, SCEG in Spanish has received close attention in quantitative studies. These studies found that the use of SCEG is restricted by properties of the embedding predicate. Acceptability rating data from Bîlbîie and de la Fuente (2019) show a degradation of SCEG with factive embedding predicates, which was rated notably lower than SCEG with non-factives. See also the similar findings of a corpus study by Garcia-Marchena (2018).

Against this background, it is notable that Spanish also allows for overt complementizers in embedded gapping, see the corpus example in (7), where the complementizer *que* 'that' surfaces in the elliptical conjunct. According to our informants' judgments, this *que* is optional.

(7) *El cree que el mundo es su empresa y* ***que*** *los mexicanos sus lacayos.*
he thinks that the world is his company and **that** the Mexicans his lackeys
'He thinks that the world is his company and that the Mexicans (are) his lackeys.'
(`http://www.afntijuana.info/editoriales/67101_trump_no_te_necesitamos`, accessed Nov. 14, 2019.)

Thus, in the small sample of languages surveyed so far, the applicability of the *No Embedding Constraint* correlates with that of the *Head Condition*: Either both constraints apply (English/German), or neither constraint applies (Spanish). This observation suggests that these constraints might not be restrictions on gapping that work independently of each other, but that they are the joint effect of one underlying grammatical property. Of course, the data from only three languages is not enough to justify any far-reaching cross-linguistic speculations about the universal co-occurrence of the two constraints. We leave this question for future research. However, if the *Head Condition* and the *No Embedding Constraint* are indeed effects of the same underlying constraint, it is to be expected that specific effects of these constraints *within* a given language are the same. In the case of Spanish, this means that *que* in embedded gapping should display the same sensitivity to the factivity of the embedding predicate as does SCEG. In this paper, we ask whether this is indeed the case.

We present four acceptability judgment experiments on complementizers in embedded gapping. Our main focus lies on the question whether factivity plays a role in the

acceptability of *que*. The paper is structured as follows. Section 2 gives some background on the role of factivity in Spanish SCEG. Section 3 presents the experiments. Section 4 sketches a preliminary analysis. Section 5 concludes.

2 SCEG and factivity

Bîlbîie and de la Fuente's (2019) acceptability study found a notable degradation in ratings under factive predicates compared to non-factive predicates for SCEG. Thus, SCEG under non-factive verbs such as *sospecho* 'suspect' in (8) received higher ratings than SCEG under factive verbs such as *veo* 'see' in (9) or *gusta* 'like' in (10). Notably, the degradation in ratings for factives was not so substantial as to cause categorical unacceptability. Participants still differentiated between SCEG under factives and unacceptable controls. Also, ratings displayed a sensitivity to different subclasses of factives. As has long been observed, not all factive predicates behave uniformly w.r.t. their projecting a presupposition out of different entailment cancelling environments (Hooper 1975, Hooper and Thompson 1973, Karttunen 1971, Tonhauser et al. 2018). A common partition of the set of factive verbs is into 'true' factives (≈ emotive predicates like *bother*, *regret*) and semi-factives (≈ knowledge and perception verbs such as *know*, *see*). Bîlbîie and de la Fuente's (2019) experimental results reflect that partition: Under 'true' factives, SCEG shows a stronger degradation (indicated by "??") than under semi-factives (indicated by "?").

(8) Non-Factive

Pablo pidió una cerveza y ***sospecho*** *que Juan un whisky.*
Pablo ordered a beer and suspect.1SG that Juan a whisky
'Pablo ordered a beer and I suspect that Juan (ordered) a whisky.'
(Bîlbîie and de la Fuente 2019: 7)

(9) Semi-Factive

? *La mujer recibió 35.000€ y* ***veo*** *que el marido 200.000€.*
the woman received 35.000€ and see.1SG that the husband 200.000€
'The woman received 35.000€ and I see that her husband (received) 200.000€.'
(Bîlbîie and de la Fuente 2019: 8)

(10) 'True' Factive

?? *La madre encargó un collar grabado y me* ***gusta*** *que el padre un*
the mother ordered a necklace engraved and me like.3SG that the father a
reloj de marca.
watch of brand
'The mother ordered an engraved necklace and I like that the father (ordered) a big-brand watch.'
(Bîlbîie and de la Fuente 2019: 8)

Bîlbîie and de la Fuente model the degradation of SCEG with factives by appealing to the notion of Question Under Discussion (QUD, Roberts 2012 [1996]). In earlier

research on gapping it was proposed that there is a QUD-sensitive pragmatic constraint on gapping, according to which gapping may occur when the first (i.e. non-elliptical) conjunct and the second (i.e. elliptical) conjunct provide answers to the same QUD. Johnson (2019) offers the formal description in (11), Repp (2009) the one in (12), which expresses the same thought without explicitly appealing to the concept of QUD.

(11) *QUD constraint on gapping*
XP can gap or strip if it is proffered as a partial answer to the Question Under Discussion, Q, and XP's meaning can be recovered from Q.
(Johnson 2019: 601)

(12) *Principle of Balanced Contrast, Conjunction 'and'*
In gapping, both conjuncts must make the same kind of contribution to a common discourse topic.
(Repp 2009: 83)

Bîlbîie and de la Fuente (2019) attribute the degradation of SCEG under factives to the observation that the (root) antecedent clausal conjunct and the conjunct containing the embedded gapping clause cannot provide (partial) answers to the same QUD. Under factives, the content of the complement clause is backgrounded in discourse (Anand and Hacquard 2014) and can thus not serve to answer a QUD. The same backgrounding does not happen in non-factives, whose complement clauses in turn can provide such an answer. To illustrate, imagine that English (like Spanish) did not adhere to the *No Embedding Constraint*. The matrix gapping example in (13b) and SCEG under a non-factive like *think* in (13c) would be appropriate utterances, because both conjuncts provide (partial) answers to the QUD in (13a). SCEG under a factive such as *regret* in (13d) would not be an appropriate utterance, because only the first conjunct answers the QUD in (13a). In the second conjunct, the main point lies with the content of the matrix clause (i.e. the attitude of the matrix subject), and not the content of the embedded clause.

(13) a. QUD:
Who drinks what for breakfast?
b. Matrix Gapping:
John drinks coffee and Mary tea.
c. SCEG under a non-factive verb (Pseudo-English):
John drinks coffee and I ***think*** *that Mary tea.*
d. SCEG under a factive verb (Pseudo-English):
#John drinks coffee and I ***regret*** *that Mary tea.*

The advantages of this analysis are that, first, it is intuitively appealing and parallels restrictions on embedded fragments (see de Cuba and MacDonald 2013). In Spanish, a fragment that functions as an answer to a question (e.g., *Who is at the door? - The neighbour.*) can be embedded only under non-factives, and not under factives (*I think/*regret the neighbour*). Thus, similarly to SCEG, the answer to a question cannot

felicitously be backgrounded under a factive verb. Second, the gradience in acceptability between factive and non-factive verbs can be explained by the degree to which the SCEG structure is an appropriate answer to the QUD. This gradience would be a problem for an analysis arguing on the grounds of syntactic well-formedness that would predict categorical rather than gradual judgment data (Bîlbîie and de la Fuente 2019: 18).

However, this explanation is not easily transferable to the case of complementizers in embedded gapping. This is a problem if, as we speculated above, the availability of SCEG and complementizers in embedded gapping are effected by the same underlying rule. In embedded gapping, both conjuncts can serve as partial answers to the same QUD, irrespective of the presence or absence of the complementizer in the second conjunct, and irrespective of the factivity of the embedding verb. The complementizer does not have a comparable potential to change the contribution of the content of the embedded clause to the discourse topic as an embedding verb does. In other words, any QUD that can be accommodated for an embedded gapping structure with *que* will also be one that can be accommodated for the same structure without *que*. On hearing the sentence in (15), an interlocutor can plausibly accommodate the QUD in (14), regardless of the presence of *que* in the second conjunct. The sensitivity to factivity is unexpected under a QUD approach because the predicate itself stands outside the conjunction and therefore should have no influence on properties of interpretation specific to gapping, such as QUD accommodation.

(14) *What does congressman Hernández claim as to what shop closes when?*

(15) *El diputado Hernández afirma que la panadería cierra a las cinco y*
The congressman Hernández claims that the bakery closes at the five and
***que/Ø** la carnicería, a las seis.*
that/Ø the butcher's shop at the six.
'Congressman Hernández claims that the bakery closes at five o'clock and the butcher's at six o'clock.'

If there is indeed a grammatical property governing both the *No Embedding Constraint* and the *Head Condition*, it is reasonable to expect that SCEG and embedded gapping with an overt complementizer display the same sensitivity to factivity. We investigated this assumption by means of a series of acceptability judgment experiments.

3 Acceptability judgment experiments

As laid out in the previous section, we conducted acceptability judgment experiments in order to find out whether the availability of the Spanish complementizer *que* 'that' in an embedded gapping clause is dependent on whether the embedding verb is factive, semi-factive, or non-factive. If, as we suspect, this availability and SCEG are indeed connected, the results of our experiments should parallel those of Bîlbîie and de la Fuente (2019), in that embedded gapping with a complementizer should be degraded with factive embedding verbs compared to non-factive verbs. We also expect to see a

gradual degradation across sub-groups of factive verbs: Semi-factives should be degraded compared to non-factives, but they should still be more acceptable than 'true' factives.

We also contrasted embedded gapping with another type of ellipsis that is similar to, but slightly different from gapping: In (16), one of the remnant constituents is a polarity particle (in this case *no* 'not'), rather than a major constituent of the clause. It has been observed that in such structures, *que* is generally acceptable (Villa-García 2016). We will refer to this type of ellipsis as TP-Ellipsis (TPE).[2] This is in keeping with Villa-García's (2016) analysis, which involves the deletion of TP. Due to the similarity between the two types of ellipsis and the general acceptability of *que* in embedded TPE (which seems to be without question), we decided to include TPE as a baseline for the gapping data.

(16) *María dice que a Pedro lo traen, pero que a Joaquín no.*
Mary says that DOM Peter cl. bring but that DOM Joaquín not
'Mary says that they will bring Peter, but not Joaquín.'
(Villa-García 2016: 141)

We conducted four acceptability judgment experiments, see (17) for an overview. Experiments 1 and 2 tested gapping and TPE under non-factives and 'true' factives, respectively. The non-factives in Experiment 1 were verbs of saying and thinking, which in Spanish select for indicative mood on the embedded verb. This contrasted with the 'true' factives of Experiment 2. These were emotive predicates, which select for subjunctive mood on the embedded verb. See the appendix for a list of all the verbs we investigated. The results indicate a differential sensitivity of gapping vs. TPE with respect to the presence of the complementizer in structures with factive verbs (Exp. 2), but not with non-factive verbs (Exp. 1). In Experiment 2, gapping with *que* is less acceptable with than without *que*, whereas for TPE the presence or absence of *que* does not reduce acceptability. In Experiment 1, there is no difference in acceptability between the various structures. To replicate the results for gapping and compare the two verb types directly, we tested them again in a joint experiment (Exp. 3).

(17) **Overview over the Experiments**
1. Gapping vs. TPE under indicative non-factives
2. Gapping vs. TPE under subjunctive 'true' factives
3. Indicative non-factives vs. subjunctive 'true' factives in gapping
4. Indicative semi-factives vs. subjunctive non-factives in gapping

In order to facilitate comparison to Bîlbîie and de la Fuente's (2019) data on SCEG, it was necessary to also test the third verb type in their data set, semi-factives, which we tested in Experiment 4. We will follow Bîlbîie and de la Fuente in the assumption

[2]We will use the term TPE as a shorthand for Tense Phrase Ellipsis *with a polarity particle*. This excludes other types of ellipsis that have been analysed as involving the deletion of TP such as sluicing (Merchant 2001). Despite its resemblance to stripping, this structure constitutes its own kind of ellipsis because it differs from stripping in some respects (Depiante 2004).

that semi-factives are knowledge (and perception) verbs,[3] which select for the indicative. The introduction of this verb type provided a new testing ground for the hypothesis that the acceptability of *que* is constrained by factivity. We therefore chose to contrast semi-factives once more with non-factives. Since Experiments 1 and 3 sufficiently illuminate the pattern of indicative-taking non-factives, we chose to include another set of non-factives in this experiment instead. These were verbs with implicit negation, dubitatives, and desideratives, which also covered the last possible combination of factivity and mood selection: subjunctive-taking non-factives.[4] The subjunctive-taking non-factives deserve special attention because Bîlbîie and de la Fuente (2019) did not test them.

All experiments had a 2×2 factorial design, with one fixed factor being the presence/absence of the complementizer *que* in the second conjunct of the embedded elliptical structure. The other factor was either the type of elliptical structure (gapping vs. TPE, Exps. 1 and 2) or factivity (non-factive vs. factive, Exps. 3 and 4). Thus, target sentences came in four experimental conditions in each experiment. (18) shows an item of Experiment 1 in all four conditions. See also (15) above for another item of this experiment in the gapping conditions. The polarity item serving as a remnant in the TPE conditions was invariably *también* 'too'. The structure of the target items in Experiment 2 was equivalent to those in Experiment 1, the only difference being the embedding verb type and the grammatical mood of the embedded verb. (19) shows a sample item from Experiment 3, which only tested gapping, but manipulated the embedding verbs. In (19), the non-factive verb *relata* 'relates' appears in the non-factive conditions, and the factive verb *critica* 'criticizes' in the factive conditions. Experiment 4 had the same design, but tested different verb types (semi-factives and subjunctive-taking non-factives).

(18) Target Sentence Exp. 1 (same design as Exp. 2, *modulo* embedding verb type)
Isabel relata que el tenista se dopa desde 1998 y ***{que/Ø}*** *el*
Isabel relates that the tennis player REFL dopes since 1998 and {that|Ø} the
golfista, ***{desde 2001/también}****.*
golfer {since 2001|too}.
'Isabel relates that the tennis player dopes since 1998 and the golfer since 2001/too.'

[3]This is a simplification. Karttunen (1971) first coined the term to describe a class of factives that do not retain their presupposition triggering properties in all entailment-cancelling environments (questions, conditionals). These include (some) knowledge and perception verbs. The subsequent literature has shown that the categorization of verbs into sub-classes of factives, including the category 'semi-factive', may not be particularly insightful (see, e.g., Beaver 2010, or Degen and Tonhauser accepted, among many others). However, since this paper mainly focusses on the syntax of gapping in embedded clauses rather than the semantics, and since we are aiming for a comparison with Bîlbîie and de la Fuente's (2019) SCEG data, we will for ease of exposition continue to assume the category semi-factive.

[4]For at least some predicates, mood selection is variable. We chose the mood that according to our Spanish informants is the default or less marked option. Since a detailed discussion of the indicative-subjunctive divide and selectional variability is well beyond the scope of this paper, we will treat mood selection and factivity (or any other relevant semantic properties) as independent of each other. We admit however, that this view is grossly simplifying. See e.g. Lleó (1979), Majías-Bikandi (1994), Quer (2010), Terrell and Hooper (1974), among many others for the interplay of mood selection and interpretational properties.

(19) Target Sentence Exp. 3 (same design as Exp. 4, *modulo* embedding verb types)
Isabel ***{relata/critica}*** *que el tenista se dopa/-e desde*
Isabel {relates|criticizes} that the tennis player REFL dopes-IND/-SUBJ since
1998 y ***{que/Ø}*** *el golfista, desde 2001.*
1998 and {that|Ø} the golfer since 2001.
'Isabel relates/criticizes that the tennis player dopes since 1998 and the golfer since 2001.'

The complete experimental materials consisted of 24 embedded clauses and 12 embedding verbs of each of the four categories, so that each verb occurred twice, but with different embedded clauses. This resulted in a total of 96 items. In each experiment, a subset of these items was distributed across four lists, containing each embedded clause once in one of the four experimental conditions. There were 36 filler items on each list, resulting in 60 sentences to be judged by the participants. The target sentences were introduced by a context consisting of one or two sentences, which presented a situation in which the content of the embedded clause was made plausible, and the desired (non-)factive interpretation of the embedded clause was prepared so that the embedded content was presented as a matter of discussion for non-factive verbs, and as a fact for factive verbs.

In the conditions without *que*, the position of the remnant subject was potentially ambiguous between the main clause and the embedded clause. To ensure that participants got the intended embedded-clause interpretation, we constructed the items such that the necessary semantic parallelism more plausibly obtained between the remnant subject and the embedded subject rather than the matrix subject. Furthermore, the context made this interpretation more prominent. Finally, each target sentence was followed by a verification question on the following page of the questionnaire, so as to guarantee that participants had understood the target sentence as intended.[5]

The experiments were web-based questionnaires hosted on SoSciSurvey.de. Experimental items and fillers were presented one-by-one on separate pages. Each sentence was preceded by its context, and followed by a continuous horizontal scale on which participants gave their judgements. The right extreme was marked *totalmente natural* 'totally natural', and the left extreme was marked *totalmente forzado* 'totally forced'. Participants dragged a slider between the extremes, corresponding to their judgement of naturalness. These judgements were then coded with integers from 1 (totally unnatural) to 100 (totally natural).

The variety of Spanish investigated in our study was European Spanish.[6] We used the online platforms Prolific.com and Amazon Mechanical Turk (mturk.com) for recruiting

[5] Only a low percentage of questions received incorrect answers: For TPE, this was the case for 3% and 6% in Experiment 1 and 2, respectively; for gapping, this was the case for 7% and 4% in Experiment 1 and 2, respectively (all numbers after participant exclusion, see below). We take these low numbers to indicate that structural ambiguity was no major issue.

[6] Although we have no immediate reason to believe that varieties differ w.r.t. the acceptability of embedded gapping with *que*, related structures do behave differently across varieties. For instance, Martínez Vera (2020) discusses differences between European and Latin American Spanish w.r.t. recomplementation, a structure which we touch upon in Section 4. We decided not to explore

participants. A pre-survey questionnaire was used to identify the variety of Spanish that participants spoke as well as their use of other languages. Data from speakers of Latin American Spanish (up to 33% per experiment) and from (active, habitual) bilingual speakers were excluded. This applied largely to data from bilingual speakers of other Iberian languages such as Catalan, Galician, and Basque (up to 37% of participants per experiment).

Participants who did not differentiate between acceptable and unacceptable fillers (as determined by the non-significant result of a one-sided t-test for each participant), or who answered more than 20% of the verification questions for the filler items incorrectly were also excluded from data analysis (on average 6% and 7% of participants per experiment, respectively).

For the statistical analysis we used `R` (R Core Team 2021) with the packages `afex` (Singmann et al. 2021) and `lme4` (Bates et al. 2015) to fit linear mixed models for the data of each experiment as well as for cross-experiment comparisons. Since all experiments had similar 2×2 factorial designs, the fixed effects structure was the same for all experiments: The first fixed factor was the presence/absence of the complementizer, and the second factor differed between the experiments (ellipsis type for Exps. 1 and 2, factivity for Exps. 3 and 4). All models included the interaction of both fixed factors. Factors were sum-to-zero contrast coded. Models were fitted with a random structure that included participants and the contents of the embedded clauses (≈ items). In line with Barr et al. (2013), the model with the maximal random effects structure that converged (and was not a singular fit) formed the basis for statistical evaluation.

3.1 Experiments 1 & 2

Experiment 1 investigated gapping and TPE clauses under non-factive verbs that select for indicative mood. Each participant saw each embedded clause once and each embedding verb twice (in different experimental conditions). For a sample item, see (18) above. 58 participants completed the survey. The data of 27 of them (16 female, 11 male, ages 20-60, median age 33) entered the analysis. Table 1 and Figure 1 show the results for each of the four conditions in the form of mean ratings.[7]

Descriptively, gapping sentences without *que* received slightly higher ratings than gapping sentences without *que*. Within the TPE-sentences, there is hardly a difference between mean ratings. However, neither the effect of type of ellipsis ($b = 2.29, SE = 1.57, t = 1.46, p = 0.16$), nor the presence of a complementizer ($b = 1.22, SE = 1.03, t = 1.19, p = 0.25$), nor the interaction between these two fixed factors ($b = 1.23, SE = 0.73, t = 1.68, p = 0.09$) was significant.

Since the interaction effect approached significance at $p = 0.09$, the experimental

potential differences between different varieties in our study to keep the experimental design simple. (Potential) variation is an issue that needs to be explored in future research. Note, however, that the corpus token presented in (7) stems from a Latin American source, which suggests that embedded gapping with *que* is not unacceptable in this variety.

[7] These numbers are based on the `summarySEwithin()`-function of the package `Rmisc` for `R` (Hope 2013), which removes inter-subject variability.

Table 1: Experiment 1 (indicative non-factives): Mean ratings per experimental condition

Ellipsis Type	Complementizer	Mean Rating	SD
Gapping	Ø	80.06	22.88
Gapping	que	75.00	25.38
TPE	Ø	73.25	21.32
TPE	que	73.56	22.04

data were split by ellipsis type into a gapping set and a TPE set. For the gapping sentences, the effect of the presence of *que* was not significant ($b = 2.43, SE = 1.31, t = 1.85, p = 0.08$). The effect of *que* in the TPE data set was clearly not significant either ($b = -0.01, SE = 0.96, t = -0.01, p = 0.99$).

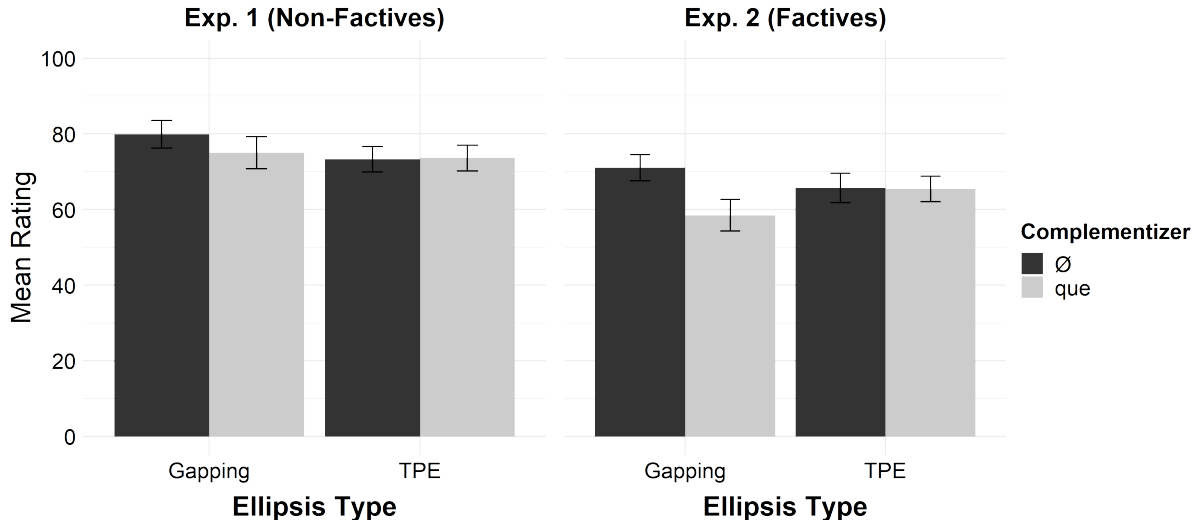

Figure 1: Results for Exps. 1 (indicative non-factives, left) & 2 (subjunctive 'true' factives, right): Mean ratings with 95% confidence interval

Experiment 2 tested ellipsis with 'true' factive embedding verbs, which select for the subjunctive. Otherwise, the design was equivalent to that of Experiment 1. 43 participants completed the survey. The data of 27 of them (6 female, 21 male, ages 19-51, median age 33) entered the analysis. Table 2 and Figure 1 show the results for Experiment 2. Descriptively, there is a notable difference between clauses with and without *que* within the gapping ratings. Clauses without *que* are rated as more acceptable than those with *que*. Within the TPE ratings, there is virtually no difference.

The statistical model confirmed these observations. It indicated no significant effect of the type of ellipsis ($b = -0.41, SE = 0.90, t = -0.45, p = 0.66$), the effect of *que* was significant ($b = 3.28, SE = 1.47, t = 2.24, p = 0.03$) and there was a significant interaction of the two fixed factors ($b = 3.14, SE = 3.18, t = 2.66, p = 0.01$). We split

Table 2: Experiment 2 (subjunctive 'true' factives): Mean ratings per experimental condition

Ellipsis Type	Complementizer	Mean Rating	SD
Gapping	Ø	71.09	21.42
Gapping	que	58.49	25.81
TPE	Ø	65.75	23.38
TPE	que	65.48	21.09

the data into a gapping set and a TPE set and conducted single comparisons. The model for the gapping data indicated a significant effect of *que* ($b = 6.28, SE = 1.21, t = 5.17, p < 0.001$), but the model for the TPE data indicated no significant effect.

Despite the significantly worse ratings for *que* in gapping, this condition does not appear to be outright unacceptable. The mean rating for these clauses is still well over 50. Furthermore, it is clearly different from the unacceptable control items, see Figure 2. This indicates that participants still made a categorical difference between gapping clauses with *que* under factives and structurally unacceptable or semantically incongruent sentences ("bad" fillers). Figure 2 also indicates that none of the experimental conditions patterned with the acceptable controls either. We tentatively take this finding to be an effect of the complexity of the test sentences, which all included clausal embedding, clausal coordination and ellipsis at the same time. The acceptable control items were less complex in structure, which may account for the difference in ratings.

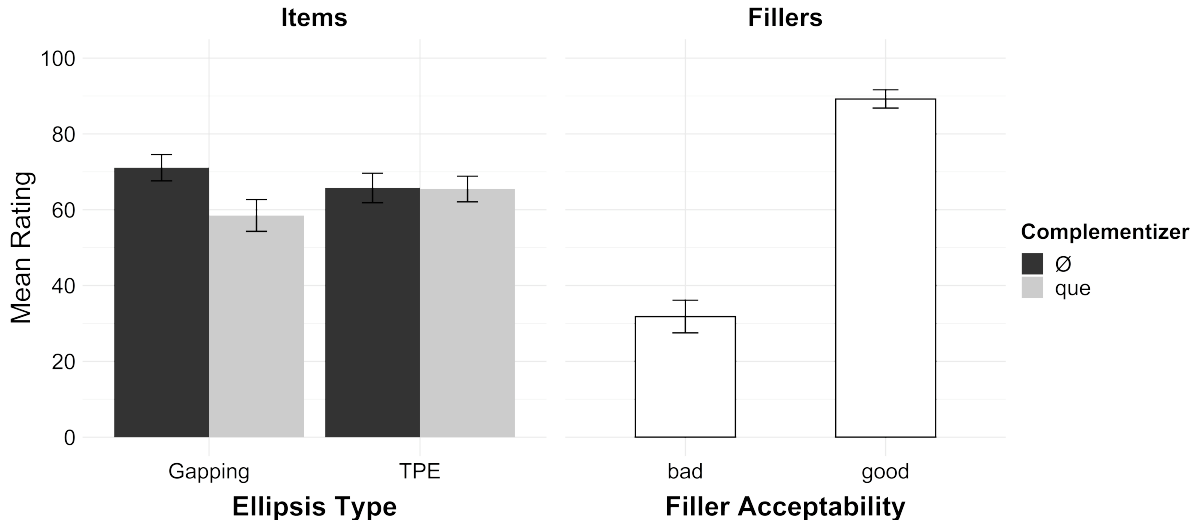

Figure 2: Experimental conditions compared to control items (Experiment 2)

3.1.1 Comparing Experiments 1 and 2

Comparing the two experiments, we tentatively conclude that the acceptability of *que* in gapping is constrained by the factivity of the embedding verb. We found no significant difference between clauses with and without *que* under non-factives (Exp. 1), but did so under factives (Exp. 2). However, since comparisons across experiments are not ideal, we conducted a replication experiment (Exp. 3). For TPE clauses we found no significant difference regardless of the factivity of the embedding verb. We will therefore leave the TPE data aside and concentrate on gapping.

Another observation is that the ratings across all four experimental conditions are notably lower in Experiment 2 than Experiment 1 (compare Figure 1). A linear mixed effects model of the combined experimental items revealed a significant difference between experiments ($b = -5.42, SE = 2.67, t = -2.03, p = 0.048$). In contrast to the experimental items, the ratings for the filler items, which were identical in the two experiments, were relatively constant across experiments, see Table 3. We fitted a linear mixed effects model of the combined filler data from Experiments 1 and 2. It contained experiment (1 vs. 2) and predicted acceptability (good vs. bad), as well as the interaction term as fixed factors. The model revealed no significant effect for the different experiments ($b = 0.45, SE = 1.17, t = 0.40, p = 0.70$) or the interaction of acceptability and experiment ($b = 1.11, SE = 1.02, t = 1.09, p = 0.28$). Unsurprisingly, bad fillers were rated significantly worse than good ones ($b = -29.21, SE = 2.53, t = -11.54, p < 0.001$).

The fact that we found significantly lower ratings for the experimental items between the experiments, but not for the filler items, leads us to conclude that embedded elliptical clauses are generally less acceptable under factives than under non-factives. To corroborate this conclusion, Experiment 3 explored the difference between non-factives and factives again, in order to see whether the results would replicate.

Table 3: Comparison of filler ratings of Exps. 1 & 2

Experiment	Predicted Acceptability	Mean Rating	SD
1	good	90.20	17.44
2	good	89.16	19.89
1	bad	29.25	29.67
2	bad	32.28	35.30

3.2 Experiments 3 & 4

Experiment 3 examined the gapping materials of Experiments 1 and 2. Every participant saw every embedding verb and every embedded clause once, either with a non-factive embedding verb (and indicative mood on the embedded verb) or with a factive verb (and subjunctive mood on the embedded verb). For a sample item, see (19) above. 65 participants completed the survey. The data of 32 of them (8 female, 24 male, ages 18-50, median age 32) entered the analysis. The results of Experiment 3 are shown in

Table 4 and Figure 3. The linear model indicated significant effects for both experimental factors. Sentences without *que* were rated significantly better than sentences with *que* (b=3.45, SE=0.92, t=3.75, p=0.001). Factives were rated significantly worse than non-factives (b=-2.52, SE=0.99, t=-2.56, p=0.02). The interaction of the fixed effects was significant as well (b=2.45, SE=0.77, t=3.19, p=0.005).

To resolve the interaction, and in order to explore the difference we observed between experiments 1 and 2, we partitioned the data twice, once by verb type and once by presence/absence of *que*. Due to the resulting multiple comparisons within the same data, we report Bonferroni-Holm-corrected p-values for the four tests we conducted. First, we split the data into a non-factive and a factive set and fitted a linear model for each set. For the non-factive data set, the model indicated no significant effect of *que* on the ratings ($b = 1.00, SE = 0.93, t = 1.07$, corrected $p = 0.6$). For the factive data set, the model did find a significant effect of *que* ($b = 5.87, SE = 1.19, t = 4.96$, corrected $p < 0.001$). This finding leads us to conclude that it is only under factives that *que* causes a degradation in acceptability.

Table 4: Experiment 3 (gapping with indicative non-factives and subjunctive 'true' factives): Mean ratings per experimental condition

Factivity	Complementizer	Mean Rating	SD
factive	Ø	82.05	18.90
factive	que	70.14	27.70
non-factive	Ø	82.10	18.99
non-factive	que	80.42	20.88

The split by presence/absence of *que* yielded the following result: The model for the Ø-set indicated no significant effect of factivity ($b = 7.6 \times 10^{-3}, SE = 0.87, t = 0.01$, corrected $p = 0.99$). The model for the *que*-set did indicate a significant effect for factivity ($b = -4.86, SE = 1.53, t = -3.17$, corrected $p = 0.015$).

Thus, the results of Experiments 1 and 2 were replicated: Clauses with *que* are significantly degraded with factive verbs, but not with non-factives. What was not replicated was the overall difference between Experiments 1 and 2. Although the statistical model indicates a significant difference between non-factives and factives in Experiment 3 as well, the single comparison shows that this is due to only one degraded condition (factives with *que*), and not a general property of non-factives vs. factives.[8]

Experiment 4 investigated two new sets of embedding verbs: semi-factives, which select for indicative, and another set of non-factives, which select for subjunctive mood.

[8] As two reviewers point out, the data do not show whether the observed effect is specific to gapping. The interaction of *que* and factivity could exist regardless of whether the verb in the second conjunct is elided. We therefore tested the full clause equivalents of the items from Experiment 3 in a new experiment with an otherwise identical design. The results revealed no significant effects of either factor, nor of the interaction. We take this as evidence that in non-elliptical structures, *que* does not cause the same degradation under subjunctive-taking, 'true' factives. For reasons of space, we cannot elaborate on this additional experiment. See Bonke (in preparation) for details.

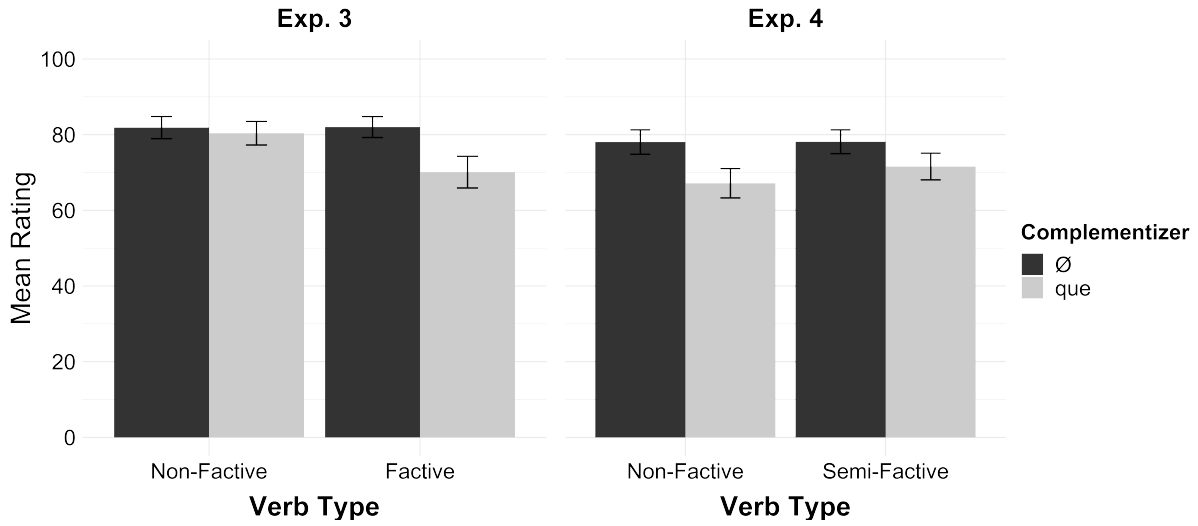

Figure 3: Results of Exps. 3 (indicative non-factives vs. subjunctive 'true' factives) & 4 (subjunctive non-factives vs. indicative semi-factives): Mean ratings with 95% confidence interval

We changed the 'old' embedding verbs for the 'new' ones such that each of the 24 new verbs came with two embedding clauses, thus copying the design of Experiment 3. Some of the lexical material of some of the embedded clauses was slightly adjusted so as to fit the lexical meaning of the embedding verb. Likewise, contexts were adjusted so as to facilitate participants' interpretation of the lexical material of the embedded clauses, of the lexical meaning of the new embedding verb, and the intended non-factive or factive interpretation.

Table 5: Experiment 4 (indicative semi-factives and subjunctive non-factives): Mean ratings per experimental condition

Factivity	Complementizer	Mean Rating	SD
Non-factive	Ø	78.04	20.79
Non-factive	que	67.16	25.12
Semi-factive	Ø	78.13	20.58
Semi-factive	que	71.59	22.76

61 participants completed the survey. The data of 30 of them (10 female, 19 male, 1 n.a., ages 18-45, median age 29) entered the analysis. Table 5 and Figure 3 show the results. The difference between semi-factives and non-factives is not significant ($b = 1.10, SE = 1.03, t = 1.07, p = 0.30$). Clauses with *que* are rated significantly worse than clauses without *que* ($b = 4.12, SE = 1.72, t = 2.93, p = 0.002$). The interaction of the two fixed effects is not significant ($b = -1.05, SE = 0.66, t = -1.59, p = 0.11$).

3.3 Discussion

Our results show that the complementizer *que* is generally acceptable in embedded gapping and TPE in Spanish. We can therefore confidently conclude that Spanish does not adhere to Wilder's *Head Constraint*. However, a closer inspection of the results indicates that while the acceptability of *que* seems to be robust in TPE across the board, the same cannot be said for gapping. Here, we observe more intricate patterns, which is why we will focus on gapping and set aside TPE. In gapping, *que* receives degraded ratings to varying degrees, depending on the type of embedding verb. Notably, however, this degradation is not so severe as to cause outright unacceptability for any of the four embedding verb types we tested.

The different degrees of degradation caused by *que* under the different verb types are visualised in Figure 4, which contains the collapsed gapping-data from all four experiments. It shows the differences in average ratings between the Ø- and *que*-condition for each of the four verb types. All four bars have positive values, which means that for all verb types, clauses without *que* were preferred. The preference within non-factives with indicative was only slight, at about 3 (out of a possible 100). Both experiments that investigated these verbs (Exps. 1 and 3) indicated no statistically significant effect of the presence of complementizer on acceptability ratings for these verbs. The other three verb types show a greater sensitivity to *que*, with the difference for semi-factives at about 6, and the two subjunctive-taking verb types showing the greatest sensitivity, at a difference of 11 (non-factives) and 12 (factives). The statistical evaluations of the relevant experiments (Exps. 2, 3, and 4) indicate the significant degradation of the *que*-conditions in gapping for these types.

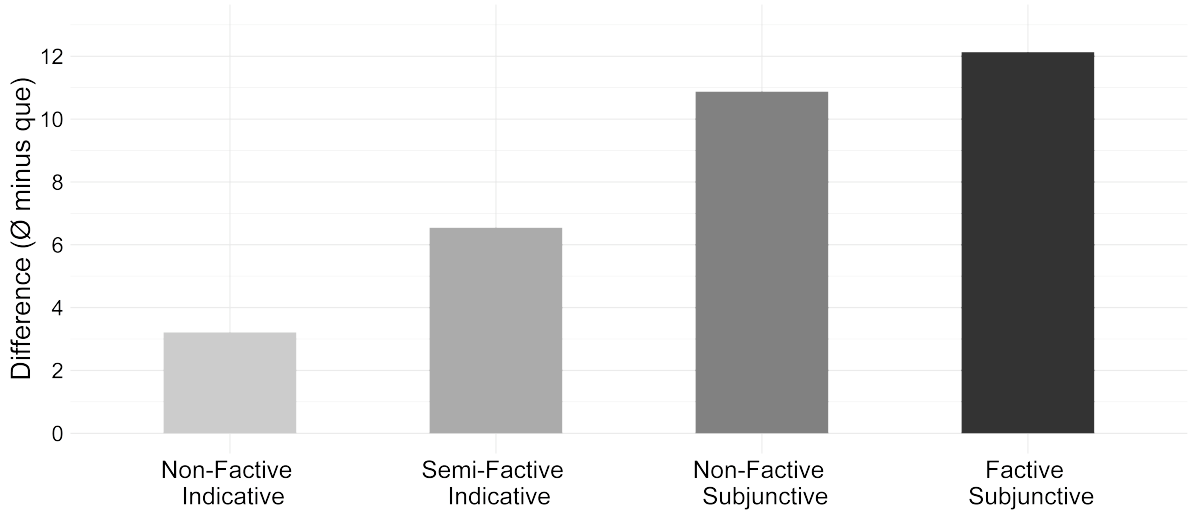

Figure 4: Difference of average Ø- and *que*-ratings for the four verb types (collapsed gapping data from all four experiments)

Thus, all in all our experimental findings do not confirm our hypothesis that factivity

determines the acceptability of *que*, since the two groups of non-factives behave differently.[9] However, the results do lend some credence to our initial suspicion that the *Head Condition* and the *No Embedding Constraint* are connected: Descriptively speaking, the three verb types examined in both Bîlbîie and de la Fuente's (2019) study and ours display the same gradual ordering: (Indicative-taking) non-factives show the smallest effect, 'true' factives (which always come with the subjunctive) the largest, and semi-factives range in between.

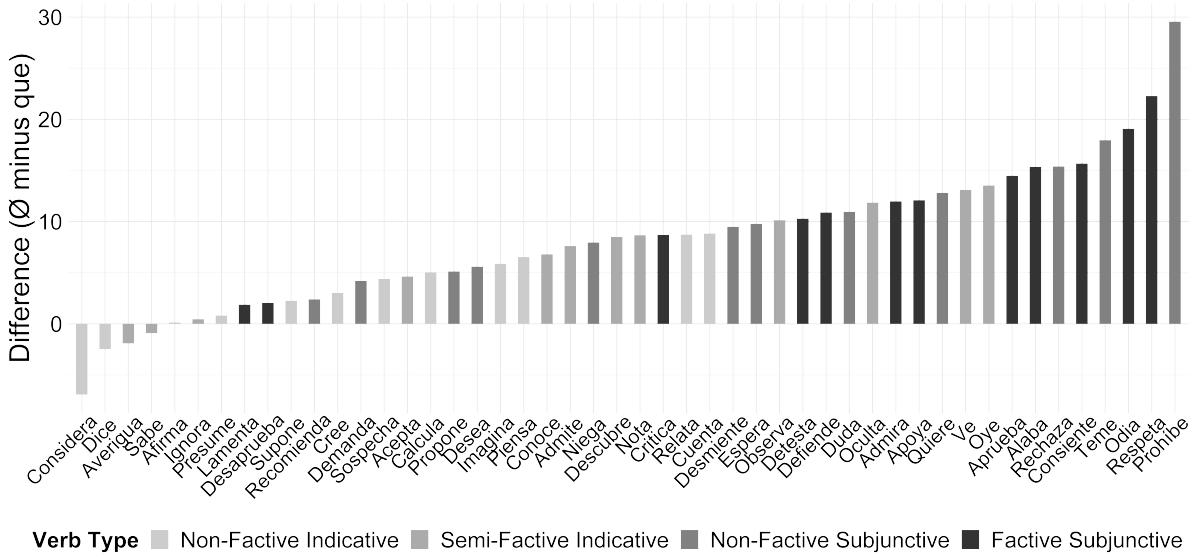

Figure 5: Difference of average Ø- and *que*-ratings for each verb (collapsed gapping data from all four experiments)

Given the presence of an effect of *que* in subjunctive-taking non-factives and both types of factives, we may speculate that these three verb types form a joint class (with, potentially, variation within the class) to the exclusion of indicative-taking non-factives. However, a close look at the individual verbs reveals that neither this two-way split, nor the split into the four verb classes (see Fig. 5) neatly captures the variation of the acceptability of *que*. Figure 5 displays the difference between Ø- and *que*-ratings for every individual embedding verb. The figure shows that the verbs of none of the four types exhibit a strictly uniform pattern. There are no clear-cut borders between verb types, and differences between types only surface as tendencies. For instance, as expected from the average differences between verb types, indicative-taking non-factives tend occur towards the lower end of the scale, and subjunctive-taking 'true' factives tend to occur towards the higher end. However, some indicative non-factives incur a relatively large *que*-penalty, and some subjunctive factives incur a relatively small one. The verbs of the other two types display a similarly variable behaviour. These observations, in addition

[9]Note that while both subjunctive-taking verb types display a significant penalty on *que*, only one of the indicative-taking ones does so (i.e., the semi-factives). The data thus does not indicate that mood selection is a reliable predictor for the acceptability of *que* either.

to the heterogeneous behaviour of the two sub-groups of non-factive verbs, indicates that factivity as such may only tangentially play a role in the acceptability of *que*. In the next section, we will attempt to relate the sensitivity to *que* to a different interpretative property of the embedding verbs, and use this as a basis to sketch a structural analysis.

4 Sketching a structural analysis

The presence of the complementizer *que* in embedded gapping in Spanish has not played a central role in any in-depth theoretic analysis of this type of ellipsis. This is despite the fact that embedded environments may provide important insights for the long-standing discussion of what syntactic objects are coordinated in gapping: 'large', i.e. clausal, or 'small', i.e. sub-clausal conjuncts.[10] In this section, we provide a rough sketch on how existing proposals from the literature on gapping and on the structure and interpretation of complement clauses could work together to explain the data we observed in our experiments. We will adopt a 'hybrid' approach to gapping, which involves both clausal and sub-clausal coordination for embedded gapping with and without *que*, respectively. Since gapping with *que* showed a sensitivity to the type of embedding verb, the relevant structure (i.e., clausal-coordination gapping) will then be scrutinized more closely. We outline how the truncation of functional structure in (some) complement clauses might account for the degradation we see in the data, and how this intertwines with effects on interpretation.

In order to arrive at a structural analysis for gapping, we will take a short detour via TPE. Recall that in our data, TPE and gapping share the characteristic that *que* is in general optional, the difference being that gapping shows degradation for the structure with *que* if embedded under certain verbs. Since embedded TPE has received more attention in the literature than gapping (cf. Section 3), we will use TPE as a starting point for our discussion to explain the general optionality of *que* and then turn to the degradation in gapping. Concretely, we will capitalize on Fernández-Sánchez's (2019) proposal on TPE, which accounts for the optionality of *que* by a 'hybrid' analysis involving variably clausal or sub-clausal coordination. Sub-clausal conjuncts do not include a structural position for the complementizer (i.e. the head of CP), and therefore no *que* surfaces in the second conjunct, see (20). Clausal conjuncts, on the other hand, include such a position for *que*, which is why it surfaces, see (21).[11]

(20) [*embedding verb* [[$_{CP}$ *que* [[$_{XP}$ . . .] & [$_{XP}$ . . .]]]]] (sub-clausal coordination)

(21) [*embedding verb* [[$_{CP}$ *que* . . .] & [$_{CP}$ *que* . . .]]] (clausal coordination)

[10] For reasons of space, we will not discuss the different approaches to this question in detail, see Bîlbîie and de la Fuente (2019) for a detailed overview and criticism.

[11] Fernández-Sánchez (2019) identifies the relevant coordinated phrases as CPs for clausal coordination and TP/F(ocus)P for asymmetric sub-clausal coordination. We follow Fernández-Sánchez in assuming that clausal coordination occurs at CP, but we will remain non-committal as to the exact identity of the sub-clausal constituents (TPs, *v*Ps, VPs etc.). We will also remain non-committal to the exact mechanism governing ellipsis (move-and-delete, ATB-movement, *in situ*-deletion etc.), since it is immaterial to the discussion at hand.

An advantage of this proposal is that the optionality of the complementizer is entirely structural and thus independent of the ellipsis itself, thereby mirroring the optionality of the complementizer in the second of two coordinated, non-elliptical complement clauses (cf. footnote 8). No additional ellipsis-specific rule needs to be stipulated, which would be necessary in invariant (sub-)clausal conjunct approaches. We will adopt this proposal for embedded gapping.[12]

The 'hybrid' approach predicts that gapping with *que* and gapping without *que* are both grammatical. As such, it covers a major part of our experimental findings, in that *que* was judged overall acceptable for all verb types in all experiments. However, the approach is not yet fit to account for the more intricate patterns we found: the degradation of *que* under some of the verbs. For this, we will take a closer look at the structure of the elliptical conjunct in clausal conjunct gapping (i.e., gapping with *que*). Since gapping without *que* in comparison shows a uniform pattern in the data, we will not scrutinize gapping with sub-clausal conjuncts in the same way.

We will follow the popular approach in the literature that remnant constituents occupy left-peripheral positions in the clause. This has been adopted for Spanish gapping (Centeno 2011), as well as for other types of ellipsis (such as TPE, Fernández-Sánchez 2019, Villa-García 2016). According to this approach, the remnant constituents do not occupy their thematic positions lower down the clause, but instead must be in positions in the CP-domain (i.e., outside the TP),[13] in order for gapping to be possible. We will return to this in more detail below, because some further aspects of the structure of embedded clauses need to be addressed first. What is relevant for now, is that we can speculate that, rather than gapping itself, it is these left-peripheral positions that are responsible for the variable degradation of *que* under different verbs. For this, we will turn to the internal structure of embedded CPs, and the way this structure interacts with the interpretation of the clause.

As put forward by Haegeman (2006), the structure of an embedded clause in general depends on the type of embedding verb. Specifically, Haegeman observes that in English, a complement clause may not host a left-dislocated element, if the clause is embedded under the factive verb *regret*. She therefore concludes that complements of factives have a truncated left periphery, which lack the structural positions for dislocated elements. These are the same positions that the remnant constituents occupy in clausal conjunct gapping. We have reason to assume that the same truncation is at play in Spanish complement CPs,[14] because of independent evidence from recomplementation, i.e. the occurrence of multiple complementizers in the same embedded clause. (22) illustrates

[12] 'Hybrid' approaches to gapping have been proposed, both for English (Potter et al. 2017) and Spanish (Centeno 2011, Jung 2016). These proposal aim to capture certain facts of operator scope (amongst others) and only discuss matrix gapping. We will therefore not discuss them in detail.

[13] These positions are usually thought to fulfil information structural functions such as Focus or Topic. Our proposal is contingent with this, but we will remain non-committal as to the exact identities of the phrases in question, since we are not concerned with issues of information structure here. For similar reasons, we will not discuss the mechanism by which the remnants arrive in these positions (i.e. movement or base generation).

[14] See also de Cuba and MacDonald (2013) and García-Núñez (2020), who assume similar truncation approaches for Spanish.

that a clausal constituent that is left-dislocated in an embedded clause such that it directly follows the complementizer *que*, it may itself be followed by a second *que*. In (22), the dislocated adverbial PP headed by *a* 'at' is sandwiched between two *que*s. Villa-García (2016) analyses the second *que* as the head of a left-peripheral phrase, with the dislocated element occupying the specifier of the phrase. For a rough structural sketch, see (24).[15] Under factive verbs, dislocation only seems to be available without the second *que* as in (23), where the dislocated DP *ese coche* 'that car' cannot be followed by a second *que* because its host CP is embedded under factive *lamentar* 'regret' (Demonte and Fernández-Soriano 2009). We take the obligatory absence of secondary *que* to indicate that in factive complement clauses, left-peripheral positions are indeed not available for dislocated elements, see (25). These must occupy positions lower in the clause.

(22) *Dice* ***que*** *a pesar del fracaso electoral, (****que****) nadie ha dimitido.*
says that at despite of+the fail electoral that nobody has resigned
'S/he says that despite the electoral disaster, nobody resigned.'
(Villa-García 2019: 3)

(23) *Lamento* ***que*** *ese coche (*****que****) no lo compres.*
am.sorry that that car that not CL_{3sg} buy-2SG.SUBJ
'I am sorry that you won't buy that car.'
(Demonte & Fernández-Soriano 2009: 47)

(24) $[_{CP1}$ *que* $[_{CP2}$ [dislocated XP] (*que*) $[_{TP} \ldots]]]$ (non-factive complement CP)

(25) $[_{CP}$ *que* $[_{TP} \ldots]]$ (factive complement CP)

To summarize: We assume that non-factive complement clauses have a rich left periphery that includes positions for dislocated phrases, and that factive complement clauses lack these positions. As we discussed above, we also assume that in clausal coordination gapping, remnants must occupy left peripheral positions. As per these assumptions, clausal conjunct gapping is barred under factives because the complement clauses of factives do not have the relevant left-peripheral positions to host the remnant constituents. A *que* in the gapping conjunct thus not only indicates that the conjunct is a CP, but also that it is a structure you would expect for the complement clause of a non-factive verb. With factives, *que* would thus indicate a mismatch between the type of the embedding verb and the structural make-up of the embedded clause. As a result, acceptability ratings of such structures would be expected to drop. This proposal predicts sensitivity to verb type as is required to account for the data from our experiments. However, it does not make quite the right predictions. First, the violation of a syntactic constraint should result in outright unacceptability rather than the gradual degradation we observe in the

[15] A common way of specifying the left-peripheral phrases in question is by means of Rizzi's (1997) cartographic approach, where the phrases hosting primary and secondary *que* are identified as ForceP and FinP, respectively, and the position hosting the dislocated XP as TopP (e.g., de Cuba and MacDonald 2013, Demonte and Fernández-Soriano 2009, Villa-García 2016). We will not discuss this, see footnote 13. For illustrative purposes, we use the more neutral placeholder labels *CP1* and *CP2* in (24).

data. Second, the approach makes use of the non-factive/factive distinction, which we concluded is not the decisive characteristic for the acceptability of *que* (see Section 3.3). Rather, we observed that degradation is present mostly, but not only, under factives.

To resolve this tension, let us return to Haegeman's (2006) discussion of dislocation in English. Recall that, similar to what we assume for *que* in embedded gapping, dislocation in complement clauses is thought to be indicative of a non-factive structure. As Haegeman notes, if the complement CP of *regret* (a factive verb) hosts a dislocated element, such as the adjective phrase headed by *due* in (26), the sentence does not become outright ungrammatical. Instead, the interpretation of the sentence shifts: It no longer contains "the subject's emotive reaction to a particular 'fact' " (Haegeman 2006: 1666), but an embedded assertion, i.e. an utterance with which new information is introduced into discourse. It thus differs from a factive clause, which contains a proposition whose truth is presupposed. We will make use of assertion embedding as a central piece to our proposal.

(26) *We regret that due to a funding shortage there will no longer be any drinks available at the bar for non members.*
(Haegeman 2006: 1666)

For embedded gapping with *que*, we will assume that the complementizer, like the dislocated element in (26), signals that the embedded clause is connected to assertion (rather than 'non-factivity' as such), because it is part of a rich left periphery under clausal coordination.[16] Importantly, we assume that a clause introduced by *que* can embed under any verb without creating a syntactic mismatch (and thus without causing outright ungrammaticality). However, depending on the verb there may be a semantic/pragmatic mismatch that leads to difficulties in interpretation. For certain verbs, such as *verba dicendi*, there will be no issue, since these can straightforwardly embed assertions and would thus not receive degraded ratings. For other verbs including factives and non-assertive non-factives (such as desideratives and dubitatives), the required shift in interpretation will lead to a degradation in acceptability. Assertive readings under these verbs will be more difficult for participants to coerce, or result in inappropriate sentence meaning. This, in turn, will bring down acceptability judgments somewhat, but not enough to indicate ungrammaticality. These assumptions account for the degradation of *que* we observe in the verb types in our experiments: Many verbs that easily embed assertions are indicative taking non-factives, which as a group display the smallest degradation for *que*. The other three types largely include verbs that are less suited to embed assertions (i.e., factives and non-assertive non-factives) and as groups incur notably larger penalties. However, the required shift towards an embedded assertion has a different degradation size effect on the individual verbs, leading to the gradualness we observe across verbs in our data.[17]

[16] Also recall that we assume that the remnant constituents in embedded gapping with *que* are dislocated. They occupy the same positions as the dislocate in (26). However, since in gapping the exact position of the remnants (left-peripheral vs. thematic) is not transparent, the remnants themselves are not indicative of the structure of the clause.

[17] A quantitative study on whether or not *que* can cause such an interpretative shift is planned, see

To illustrate this, let us look at an example from our experimental materials. The sentence in (19) above is reproduced in its version with *que* in (27). The embedding verb is *critica* 'criticizes', which we classed as factive in the experiments. If our analysis is on the right track, we should arrive at a degraded (but not unacceptable) rating roughly in the following way: The presence of *que* in the second conjunct indicates that the conjuncts must be clausal, which goes together with an assertive structure. In combination with the gapped verb, this is structural evidence that the content of the clause is not presupposed, but an embedded assertion. This is incongruous with the 'normal' factive reading of the embedding verb. However, we can 'rescue' the sentence by shifting the expected or commonly used factive reading of the embedded clause to an assertive reading. The resulting interpretation of (27) is thus not *Isabel criticizes the fact that* p (where p is the propositional content of the complement clause), but rather an assertion that p and that *Isabel is critical of* p.[18]

(27) *Isabel critica que el tenista se dope desde 1998 y* ***que***
Isabel criticizes that the tennis player REFL dopes-SUBJ since 1998 and that
el golfista, desde 2001.
the golfer since 2001.
'Isabel criticizes that the tennis player dopes since 1998 and the golfer since 2001.'

As we mention above, an advantage of our proposal is that it capitalises on general structural properties of embedded clauses and is not restricted to embedded gapping. Thus, there should in principle be similar structures to which it could be applied. SCEG is a good candidate to be one of those structures: The constituent containing the gap must be a CP, because it is selected for by a clause-embedding predicate. It is thus (invariably) structurally equivalent to the large conjunct we find in embedded gapping with *que*, which could explain the shared sensitivity to verb types between the two types of structures. However, as for embedded gapping, more research is required on the interpretation of SCEG under different verbs.

Another fairly immediate parallel can be drawn to embedded polarity answers. De Cuba and MacDonald (2013) argue that the inability of some verbs to embed polarity answers, e.g. *lamento* 'regret' in (28), is due to a lack of functional structure in the (in this case truncated) complement clause. However, corpus examples of embedded polarity answers under *lamentar* like (29) can be found. As a matter of fact, our informants tell us that *lamenta* receives a *verbum dicendi* reading in (29), which is reflected in our translation. Thus, we could hypothesize that the larger functional structure in the complement clause causes an interpretative shift from factive to assertive, similar to what we hypothesize about embedded gapping with *que*.

Bonke (in preparation).

[18] One reviewer points out that assertive readings should be more available given the appropriate context. We agree with this, but recall that sentences were indeed presented in a context in our experiments, but this context was constructed such that it aided the *intended* interpretation, which would have been a factive one in (27).

(28) A: *Did they arrive on time?*
B: *Creo/*Lamento que sí/no.*
think/regret that yes/no.
'I think/regret so/not.'
(de Cuba and MacDonald 2013: 312)

(29) Context: In a survey, participants were asked "whether the lack of governance was detrimental to the economy".
Un contundente 71,7% lamenta que sí.
a overwhelming 71.7% regrets that yes
'An overwhelming 71.7% regrettingly say yes.'
(`https://www.elmundo.es/espana/2016/02/21/56ca224046163f3b3d8b45e6.html`, slightly adapted. Accessed Sept. 24, 2019.)

Another structure, in which the presence of *que* affects the interpretation of the complement clause, involves embedded questions. In Spanish, embedded questions can either be introduced by a 'bare' *wh*-pronoun, or an interrogative complementizer, or by *que* preceding the *wh*-pronoun/complementizer (García-Núñez 2020, Suñer 1999). The latter variant is in (30), where the *wh*-pronoun *cuándo* 'when' is preceded by *que*. In these structures, the presence of *que* has a semantic effect that is similar to the one we suggest for embedded gapping: It indicates that the clause it heads is an embedded speech act, rather than a regular question (García-Núñez 2020). Although our proposal involving assertion can obviously not be transferred to embedded questions one to one, a unified analysis of *que* in these two structures certainly seems possible. We won't attempt to resolve this here. Importantly, the parallels between the structures are not only semantic in nature, but also structural. Under *que*, the clause has a greater left peripheral structure than the equivalent clause without *que* (García-Núñez 2020). This is evident in clauses involving dislocation: A dislocated constituent that precedes the *wh*-word, such as the direct object *los regalos* in (31), causes *que* to become obligatory.

(30) *María pregunta **que** cuándo habéis comprado los regalos.*
María asks that when have$_{2Pl}$ bought the presents
'María asks when you have bought the presents.'
(García-Núñez 2020: 56)

(31) *María pregunta ***(que)** los regalos cuándo los habéis comprado.*
María asks (that) the presents when CL$_{3Pl}$ have$_{2Pl}$ bought
'María asks when you have bought the presents.'
(García-Núñez 2020: 56)

A caveat to our analysis comes from our own data. Since we transferred the structure we assume for clausal-coordination gapping from Fernández-Sánchez's (2019) and Villa-García's (2016) treatments of TPE, the two types of ellipsis should be no different when it comes to *que*. However, our Experiments 1 and 2 do indicate differences. TPE does not undergo the same degradation with *que* with factives that gapping does. We acknowledge this problem, but will not attempt to solve it here. As mentioned above

for gapping, more empirical work is needed on the interpretative consequences of *que* in this type of ellipsis as well.

5 Conclusion

In this paper, we investigated whether the restrictions on gapping in two embedded environments are comparable. Specifically, we speculated that the *Head Condition* and the *No Embedding Constraint* are instances of the same underlying grammatical phenomenon. We conducted four experiments on the acceptability of the complementizer *que* 'that' in the elliptical conjunct in Spanish embedded gapping, thus targeting the *Head Condition*. Our results indicate that *que* may generally surface in the elliptical conjunct, but depending on the (type of) embedding verb, this may lead to varying degrees of degradation: *Que* causes little degradation under (indicative-taking) non-factives, and larger degradation under 'true' factives, with semi-factives ranging in between. Our results thus by and large parallel those of Bîlbîie and de la Fuente's study (2019) on SCEG (which targets the *No Embedding Constraint*). These similar results lend some credence to our speculation as to the connection of the *Head Condition* and the *No Embedding Constraint*, at least in Spanish. However, the fourth verb type we examined, subjunctive-taking non-factives, as well as the ratings for the individual embedding verbs outside of this four-way categorization suggest that factivity itself is unlikely to be solely responsible for the effect of *que* on acceptability. We suggest that assertion embedding might the relevant property instead. We sketched an account based on the structural ambiguity of gapping and the truncation of non-assertive complement clauses. The degradation, we argue, stems from the interplay of clausal structure and interpretation: The easier an assertive interpretation is obtained for a given verb, the smaller the *que*-penalty will be. This analysis may be unified with existing accounts of SCEG, embedded fragments, embedded questions with *que*, and potentially further structures. In future work, close attention should be paid to the exact interpretative effects of *que* under the different (types of) verbs in these structures.

Appendix - Embedding verbs of the experiments

Non-Factives (with indicative)		**'True' Factives** (with subjunctive)		**Non-Factives** (with subjunctive)		**Semi-Factives** (with indicative)	
Spanish	*English*	*Spanish*	*English*	*Spanish*	*English*	*Spanish*	*English*
cree	thinks	desaprueba	disapproves	demanda	demands	acepta	accepts
dice	says	critica	criticizes	desea	desires	admite	admits
sospecha	suspects	aprueba	approves	desmiente	denies	averigua	finds out
considera	considers	consiente	tolerates	duda	doubts	conoce	knows
imagina	imagines	alaba	praises	espera	expects	descubre	discovers
relata	relates	lamenta	regrets	niega	denies	ignora	ignores
calcula	estimates	admira	admires	prohíbe	forbids	nota	notes
cuenta	tells	apoya	supports	propone	proposes	observa	observes
afirma	claims	detesta	detests	quiere	wants	oculta	hides
piensa	thinks	odia	hates	rechaza	rejects	oye	hears
presume	presumes	defiende	defends	recomienda	recommends	sabe	knows
supone	supposes	respeta	respects	teme	fears	ve	sees

References

Anand, Pranav & Valentine Hacquard. 2014. Factivity, belief and discourse. In Luka Crnič & Uli Sauerland (eds.), *The art and craft of semantics: A festschrift for Irene Heim*, 69–90. Cambridge, MA: MIT Working Papers in Linguistics.

Barr, Dale J., Roger Levy, Christoph Scheepers & Harry J. Tily. 2013. Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory & Language* 68. 255-278.

Bates, Douglas, Martin Maechler, Ben Bolker & Steve Walker. 2015. Fitting linear mixed-effects models using lme4. *Journal of Statistical Software* 67(1). 1-48.

Bîlbîie, Gabriela & Israel de la Fuente. 2019. Can gapping be embedded? Experimental evidence from Spanish. *Glossa: a journal of general linguistics* 4(1). Article 110.

Bîlbîie, Gabriela & Pegah Faghiri. 2022. An experimental perspective on embedded gapping in Persian. *The Linguistic Review*. This issue.

Bonke, Max. In preparation. *Complementizers in embedded gapping.* Köln: Universität zu Köln dissertation.

Centeno, Naiara. 2011. *Gapping and determiner sharing in Spanish.* Euskal Herriko Unibertsitatea-University of the Basque Country dissertation.

Cuba, Carlos de & Jonathan E. MacDonald. 2013. On the referential status of embedded polarity answers in Spanish. In Jennifer Cabrelli Amaro, Gillian Lord, Ana de Prada Pérez & Jessi Elana Aaron (eds.), *Selected proceedings of the 16th Hispanic Linguistics Symposium*, 312–323. Somerville, MA: Cascadilla.

Degen, Judith & Judith Tonhauser. Accepted. Are there factive predicates? An empirical investigation. *Language*.

Demonte, Violeta & Olga Fernández-Soriano. 2009. Force and finiteness in the Spanish complementizer system. *Probus* 21. 23–49.

Depiante, Marcela A. 2004. Dos casos de elipsis con particula de polaridad en Español - Evidencia a favor de una visión no uniforme de la elipsis. *RASAL Lingüistica* 1. 53-69.

Erschler, David. 2018. *Typology of bizarre ellipsis varieties*. Amherst, MA: University of Massachusetts Amherst dissertation.

Farudi, Annahita. 2013. *Gapping in Farsi: A cross-linguistic investigation*. Amherst, MA: University of Massachusetts Amherst dissertation.

Fernández-Sánchez, Javier. 2019. Against a clausal ellipsis account of all stripping strings in Spanish. *Poznań Studies in Contemporary Linguistics* 55(1). 53–87.

Fiengo, Robert W. 1974. *Semantic conditions on surface structures*. Cambridge, MA: MIT dissertation.

Garcia-Marchena, Oscar. 2018. Polar verbless clauses and gapping subordination in Spanish. In Eric Fuß, Marek Konopka, Beata Trawiński & Ulrich H. Waßner (eds.), *Grammar and Corpora 2016*, 169-182. Heidelberg: Heidelberg University Publishing.

García-Núñez, José María. 2020. On the left periphery of Spanish indirect interrogatives. *Probus* 32(1). 55–92.

Haegeman, Liliane. 2006. Conditionals, factives and the left periphery. *Lingua* 116. 1651–1669.

Hankamer, Jorge. 1979. *Deletion in coordinate structures*. New York: Garland Publishing.

Hartmann, Katharina. 2000. *Right node raising and gapping: Interface conditions on prosodic deletion*. Amsterdam: Benjamins.

Hooper, Joan & Sandra Thompson. 1973. On the applicability of root transformations. *Linguistic Inquiry* 4. 465–497.

Hooper, Joan B. 1975. On assertive predicates. In John P. Kimball (ed.), *Syntax and Semantics 4*, 91-124. New York: Academic Press.

Hope, Ryan M. 2013. Rmisc: Ryan miscellaneous. R package version 1.5. `https://CRAN.R-project.org/package=Rmisc`

Johnson, Kyle. 2014. Gapping. Ms. University of Massachusetts at Amherst.

Johnson, Kyle. 2019. Gapping and stripping. In Jeroen van Cranenbroek & Tanja Temmerman (eds.), *The Oxford Handbook of Ellipsis*, 562-604. Oxford: OUP.

Jung, Wonsuk. 2016. *The non-unity of gapping*. Euskal Herriko Unibertsitatea-University of the Basque Country dissertation.

Karttunen, Lauri. 1971. Some observations on factivity. *Papers in Linguistics* 4. 55–69.

Lleó, Conxita. 1979. *Some optional rules in Spanish complementation - Towards a study of the speaker's intent*. Tübingen: Niemeyer.

Majías-Bikandi, Errapel. 1994. Assertion and speaker's intention: A pragmatically based account of mood in Spanish. *Hispania* 77(4). 892-902.

Martínez Vera, Gabriel. 2020. On recomplementation, high adverbs and V-movement in Spanish. In Irene Vogel (ed.), *Selected papers from the 47th Linguistic Symposium on Romance Languages (LSRL), Newark, Delaware* (Romance Languages and Linguistic Theory 16). 187-202. Amsterdam/Philadelphia: John Benjamins.

Merchant, Jason. 2001. *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford: OUP.

Potter, David, Michael Frazier & Masaya Yoshida. 2017. A two-source hypothesis for gapping. *Natural Language and Linguistic Theory* 35. 1123–1160.

Quer, Josep. 2010. On the (un)stability of mood distribution in Romance. In Martin G. Becker (ed.), *Mood and modality in Romance: modal interpretation, mood selection, and mood alternation*, 163-179. Berlin: De Gruyter.

R Core Team. 2021. *R: A language & environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/

Repp, Sophie. 2009. *Negation in gapping*. Oxford: OUP.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In Liliane Haegeman (ed.), *Elements of grammar*. Dordrecht: Kluwer. 281-337.

Roberts, Craige. 1996. Information structure: Towards an integrated formal theory of pragmatics. In Je Hak Yoon & A. Kathol (eds.), *Ohio State University Working Papers in Linguistics (OSUWPL) Volume 49: Papers in Semantics.* Columbus, OH: The Ohio State University Department of Linguistics.

Roberts, Craige. 2012. Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics & Pragmatics* 5: 1–69. [Reprint of Roberts 1996.]

Singmann, Henrik, Ben Bolker, Jake Westfall, Frederik Aust & Mattan S. Ben-Shachar. 2021. afex: Analysis of factorial experiments. R package version 1.0-1. https://CRAN.R-project.org/package=afex

Suñer, Margarita. 1999. La subordinación sustantiva. La interrogación indirecta. In Ignacio Bosque & Violeta Demonte (eds.), *Gramática Descriptiva de la Lengua Española*, vol. 2, 2149–2195. Madrid: Espasa Calpe.

Terrell, Tracy & Joan Hooper. 1974. A semantically based analysis of mood in Spanish. *Hispania* 57(3). 484-494.

Tonhauser, Judith, David I. Beaver & Judith Degen. 2018. How projective is projective content? Gradience in projectivity and at-issueness. *Journal of Semantics* 35(3). 495–542.

Villa-García, Julio. 2016. TP-ellipsis with a polarity particle in multiple-complementizer contexts in Spanish: On topical remnants and focal licensors. *Borealis: An International Journal of Hispanic Linguistics* 5(2). 135-172.

Villa-García, Julio. 2019. Recomplementation in English and Spanish: Delineating the CP space. *Glossa: a journal of general linguistics* 4(1). Article 56.

Wilder, Chris. 1996. V2-Effekte: Wortstellungen und Ellipsen. In Ewald Lang & Gisela Zifonun (eds.), *Deutsch - typologisch*, 142-180. Berlin: de Gruyter.

Wilder, Chris. 1997. Some properties of ellipsis in coordination. In Artemis Alexiadou & T. Alan Hall (eds.), *Studies on Universal Grammar and typological variation*, 59-107. Amsterdam: John Benjamins.