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# Short sources, islandhood, and pronominal correlates: New experimental support from German and Spanish for a short source approach to apparent exceptions to the clausemate condition on multiple sluicing

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This paper focuses on multiple sluicing (MS) utterances in which the antecedent for sluicing is syntactically complex, insofar as it contains at least one embedded clause. Complex antecedent MS (henceforth caMS) is subject to the clausemate condition (CC). Phrased in sententialist terms, the CC bans sluiced wh-phrases from being base-generated in different finite clauses in the elliptic clause. Under specific conditions, it seems that the CC is obviated. We report results from acceptability judgment experiments on German and Spanish that provide further evidence that elliptic wh-clauses in caMS can be monoclausal in nature and that these monoclausal elliptic clauses (so-called short sources) are judged as significantly more acceptable than their isomorphic, biclausal elliptic clause counterparts. We interpret these results as supporting the view that purported obviations to CC are only apparent, following Cortés Rodríguez (2022a) and Cortés Rodríguez & Griffiths (to appear). Because these experiments are novel in that they focus on caMS configurations involving syntactic islands, their results provide new insights into how putative CC-obviation and islandhood interact and demonstrate that not only personal but also relative pronouns can function as correlates in MS.

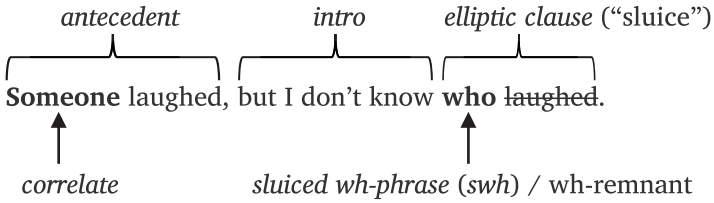
## 1 Introduction: The clausemate condition on multiple sluicing

This paper adopts a sententialist, silent-structure approach to *sluicing* (Ross 1969), according to which (1) is an elliptic version of (2), where 'ellipsis' refers to the phonological nonrealization of linguistic structure (Ross 1969; Merchant 2001).[1] We adopt familiar terminology and notation from the sententialist literature; see (3).

(1) Someone laughed, but I don't know who.

(2) Someone laughed, but I don't know who laughed.

(3)




(strikethrough = ellipsis)

This paper focuses on *multiple sluicing* (MS), which refers to a sluicing configuration that displays more than one swh in a single elliptic clause (e.g., Takahashi 1994):

(4) Everyone dreamt about something, but I just don't know [**who**] [**about what**].

swh1 swh2

In particular, we focus on MS configurations that display a biclausal antecedent in which one clause is contained in the other (henceforth complex antecedent multiple sluicing, caMS). Researchers have observed that caMS configurations such as (5),[2] in which the correlates occupy different (finite) clauses in the antecedent, are judged as less acceptable than caMS such as (6), in which the correlates occupy the same finite clause in the antecedent (Takahashi 1994; Nishigauchi 1998; Merchant 2001; Rodrigues & Nevins & Vicente 2009; Lasnik 2014; Abels & Dayal 2017; Cortés Rodríguez 2022a). Note that the contrast exemplified by the English sentences in (5) and (6) is also observed in many other languages (Abels & Dayal 2023).

(5) *[$_{CP1}$ **Every student** mentioned [$_{CP2}$ that Angela talked **with some professor**], I just don't know which student with which professor.

[1] As will become clear shortly, this paper addresses issues surrounding the extent to which elliptic clauses can deviate in form from their antecedents in multiple sluicing contexts, and it investigates the possibility that exceptions to the clausemate condition on multiple sluicing are only apparent. To our knowledge, multiple sluicing has received no systematic attention in the nonsententialist literature and therefore determining how to even frame the above-described issues in a nonsententialist framework is difficult to ascertain.

[2] The "*" judgment attributed to (5) represents the judgment reported in Lasnik (2014: 12); Abels & Dayal (2017: 4); Barros & Frank (2023: 654) (among others) for similar examples exemplifying the same configuration. See Cortés Rodríguez (2022) for experimental results supporting the acceptability contrast between (5) and (6).

(6) [$_{CP1}$ Angela mentioned [$_{CP2}$ that **every student** talked **with some professor**], I just don't know which student with which professor.

In the sententialist ellipsis literature, this observation is described by reference to the *Clausemate Condition* (CC):[3]

> **Clausemate condition on MS** (Abels & Dayal 2023: 432)
> All remnants of sluicing must originate in the same (finite) clause.

Whether caMS configurations such as (7) represent an exception to the CC depends on whether the elliptic clause is syntactically isomorphic or nonisomorphic to its antecedent.[4,5] If isomorphic, then (7) represents a true exception to the CC, as the remnants of sluicing originate in different finite clauses in the ellipsis site (see (8)), and yet the sentence is judged as fully acceptable. If the ellipsis site is a nonisomorphic monoclause (henceforth a *short source*; see (9)), then (7) does not represent an exception to the CC, as the remnants of sluicing originate in the same finite clause, which obeys the CC.

(7) Everybody$_k$ claimed that they$_k$ had talked to some professor, but I can't remember who to which professor. (Abels & Dayal 2023: 436)

(8) … remember [$_{CP1}$ who$_k$ ~~claimed~~ [$_{CP2}$ ~~that they$_k$ had talked~~ to which professor]].

(9) … remember [$_{CP1}$ who ~~had talked~~ to which professor]

Cortés Rodríguez & Griffiths (to appear) present results from an acceptability judgment experiment on German caMS configurations that are similar in structure to (8) and (9) (insofar as the embedded clause in the antecedent clause of each of their experiment's test sentences is always a finite complement of the matrix verb) that strongly support a 'short source' explanation

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[3] To our knowledge, CC effects are claimed to be entirely absent in MS configurations in only two languages, Serbo-Croatian and Indonesian (Lasnik 2014; Sato 2016). For Serbo-Croatian, this absence is observed only for speakers that also allow multiple wh-fronting from separate clauses in nonelliptic multiple questions. For Indonesian MS, Sato (2016) argues that this language shows an absence of CC effects because the second wh-remnant undergoes neither covert nor overt movement; see Sato (2016) for details.

[4] In examples in which the internal structure of the elliptic wh-clause is presented, we represent the second sluiced wh-phrase as being phonologically realized in its base position. We do this merely to increase readability. Although we follow the literature in assuming that the second sluiced wh-phrase undergoes movement to left-periphery of the elliptic clause in the languages we are investigating (German and Spanish) (see, e.g., Abels & Dayal 2023, *contra* Sato 2016 for Indonesian), we remain noncommittal about whether the second wh-phrase is phonologically realized in its base or moved position. Where relevant, the landing position of swh2 is denoted by a Δ.

[5] Following Fox & Lasnik (2003: 150), who build on Fiengo & May (1994), we treat an elliptic clause as syntactically isomorphic to its antecedent only if it is structurally identical to the entirety of its antecedent, meaning that variables in the two clauses are bound from parallel positions.

for why configurations such as (7) are judged acceptable. Furthermore, they provide informally collected acceptability judgment data from English that undermines Barros & Frank's (2023) claim that there exist caMS configurations that are true exceptions to the CC. Put differently, Cortés Rodríguez & Griffiths argue against Barros & Frank's claim that there are acceptable sentences similar to (7) to which a 'short source' analysis cannot be plausibly applied.

This paper functions to extend and strengthen the empirical base for the short source analysis defended by Cortés Rodríguez & Griffiths (to appear). It reports the results of acceptability judgment experiments on caMS configurations in German and Spanish that are structurally dissimilar to those in (7), insofar as the subclause is a strong syntactic island. These results align with Cortés Rodríguez & Griffiths' in that they support a short source approach, and they also provide novel evidence that (relative) pronouns can function as correlates in caMS configurations.

The paper is structured as follows. §2 sketches the current debate regarding whether examples such as (8) and (9) constitute true exceptions to the CC. §3 enters uncharted empirical territory, in that it introduces and presents predictions about a caMS configuration that has received no attention in the previous literature, but whose investigation is likely to be revealing about the nature of the CC. §4 describes two acceptability judgment experiments on German and Spanish and presents their results. In §5, we argue that the results from §4 provide further support for the source short analysis of apparent exceptions to the CC in caMS.

## 2 Are reported exceptions to the CC only apparent exceptions?

The idea that an elliptic wh-clause can be syntactically nonisomorphic to its antecedent was popularized in the modern sententialist literature by Merchant (2001) and has since been supported by van Craenenbroeck (2004), Rodrigues & Nevins & Vicente (2009), Gribanova (2013), Barros (2014), Barros & Elliott & Thoms (2014), Marušič & Žaucer (2018), Griffiths (2019), Rudin (2019), and Anand & Hardt & McCloskey (2023), among others. Evidence for the existence of nonisomorphic elliptic wh-clauses comes from fully acceptable sluicing configurations in which a nonisomorphic elliptic clause must be present for grammaticality and/or a congruent interpretation to obtain:

(10) A: Sally has a new boyfriend.
B: Really? Who? (Barros & Vicente 2016: 60)
*Incongruent isomorphic elliptic clause:* who ~~does Sally have~~
*Congruent nonisomorphic elliptic clause*: who ~~is {he / Sally's new boyfriend}~~

(11) Sally can't build a barn because she doesn't know how. (adapted from Merchant 2001)
*Incongruent isomorphic elliptic clause:* how ~~she can't build a barn~~
*Congruent nonisomorphic elliptic clause:* how ~~to build a barn~~

(12) A: Always save a little from each paycheck.
B: Why? (adapted from Rudin 2019: 267)
*Ungrammatical isomorphic elliptic clause:* Why ~~always save a little from each paycheck~~
*Grammatical nonisomorphic elliptic clause:* Why ~~should one always save a little from each paycheck~~

Sluicing is known to display variable island-sensitivity (e.g., Chung & Ladusaw & McCloskey 1995; Merchant 2001): the presence of an island-bound correlate in the antecedent clause of a single sluicing configuration sometimes yields a degradation in acceptability (13) and sometimes does not (16). Many researchers have appealed to the existence of nonisomorphic elliptic clauses to explain this contrast (Merchant 2001; Abels 2011; Barros 2014; Barros & Elliott & Thoms 2014; Griffiths 2019). According to this approach, which is now known as the 'island evasion' approach, the examples in (13) are degraded because the only pragmatically congruent elliptic clause available is the isomorphic one, which displays island-violating wh-movement (which lowers acceptability; see (14) and (15)), whereas the examples in (16) are not degraded because a pragmatically congruent nonisomorphic elliptic clause is available, in which no island-violating wh-movement occurs (see (17) and (18)). As mentioned already in §1, the 'island-evading' monoclausal nonisomorphic elliptic clauses that are exemplified by the b-examples in (14), (15), (17), and (18) are known as *short sources* for ellipsis (Barros & Elliott & Thoms 2014).

(13) a. *They examined [$_{\text{ISLAND}}$ a (**well**)-prepared student] – guess how well!
*Intended*: … how well prepared the student that they examined was. (Merchant 2001: 181)
b. *The library hired [$_{\text{ISLAND}}$ a **hard** worker], but I don't know exactly how hard.
*Intended:* … how hard a worker the library hired. (Barros & Elliott & Thoms 2014: 13)

(14) **Candidate elliptic clauses for (13a)**
a. *isomorphic:* * [how well]$_1$ ~~they examined~~ [$_{\text{ISLAND}}$ ~~*a t*$_1$ student~~]
b. *nonisomorphic:* no plausible candidate available

(15) **Candidate elliptic clause for (13b)**
a. *isomorphic:* * [how hard]$_1$ ~~the library hired~~ [$_{\text{ISLAND}}$ ~~*a t*$_1$ worker~~]
b. *nonisomorphic:* # [how hard]$_1$ ~~the worker that the library hired is~~

(16) a. They hired [$_{\text{ISLAND}}$ someone who speaks a Balkan language] – guess which! (Merchant 2001: 209)
b. Ben will be mad [$_{\text{ISLAND}}$ if Abby talks to **one of the teachers**], but she couldn't remember which. (Merchant 2008: 136)

(17) **Candidate elliptic clauses for (16a)**

a. *isomorphic:* * [which (language)]$_1$ ~~they hired~~ [$_{\text{ISLAND}}$ ~~someone who speaks *t*$_1$~~]

b. *nonisomorphic:* [which (language)]$_1$ ~~she speaks *t*$_1$~~]

(18) **Candidate elliptic clause for (16b)**

a. *isomorphic:* * [which (teacher)]$_1$ ~~Ben will be mad~~ [$_{\text{ISLAND}}$ ~~if she talks to *t*$_1$~~]

b. *nonisomorphic:* [which (teacher)]$_1$ ~~she shouldn't talk to *t*$_1$~~].

As mentioned in §1, single sluicing and MS are treated as the same core phenomenon in the sententialist literature, differing only in the number of wh-remnants each configuration type exhibits. On this view, the existence of nonisomorphic elliptic clauses in single sluicing entails the existence of nonisomorphic elliptic clauses in MS. This entailment has already been exploited to explain variable island-sensitivity in MS (Barros & Elliott & Thoms 2014; Lasnik 2014; Abels & Dayal 2017; 2023). Just like with single sluicing, one can appeal to the availability of a grammatical and contextually congruent short source to explain why caMS configurations such as (19) are acceptable despite having island-bound correlates. Similarly, one can appeal to the unavailability of a suitable short source to explain why the caMS configurations in (21), which also have at least one island-bound correlate, are judged as degraded.

(19) Ich kenne [$_{\text{ISLAND}}$ einen Lehrer, der **jedem Kind ein Geschenk** gegeben
I know a.ACC teacher who every.DAT child a.ACC present given
hat], aber ich weiß nicht genau welchem Kind welches Geschenk.
has but I know not exactly which.DAT child which.ACC present
'I know a teacher who gave every child a present, but I don't know exactly which child which present.' (German, Abels & Dayal 2023: 433)

(20) **Candidate elliptic clauses for (18)**

a. *isomorphic:* * [welchem Kind]$_1$ $\Delta_2$ ~~ich einen Lehrer kenne~~, [$_{\text{ISLAND}}$, ~~der *t*$_1$~~ [welches Geschenk]$_2$ ~~gegeben hat~~]

b. *nonisomorphic:* [welchem Kind]$_1$ $\Delta_2$ ~~der Lehrer *t*$_1$~~ [welches Geschenk]$_2$ ~~gegeben hat~~

(21) a. *Every guide spoke to [$_{\text{ISLAND}}$ the tourists from some country], but I'm not sure which guide from which country. (Abels & Dayal 2023: 435)
*Intended*: … which guide spoke to the tourists from which country.

b. Fred denied [$_{\text{ISLAND}}$ that a certain boy talked to a certain girl].
??? I wish I could remember which boy to which girl. (Lasnik 2014: 12)

c. *[$_{\text{ISLAND}}$ A donation from a famous philanthropist] was spent on [$_{\text{ISLAND}}$ equipment for a certain hospital], but I don't know which famous philanthropist for which hospital. (the judgment comes from this paper's 2nd author)

(22) **Candidate elliptic clauses for (20a)**

a. *isomorphic:* * [which guide]$_1$ $\Delta_2$ $t_1$ ~~spoke to~~ [$_{\text{ISLAND}}$ ~~the tourists~~ [from which country]$_2$]

b. *nonisomorphic:* no island-evading short source available

(23) **Candidate elliptic clauses for (20b)**

a. *isomorphic:* *[which boy]$_1$ $\Delta_2$ ~~Fred denied~~ [$_{\text{ISLAND}}$ ~~that $t_1$ talked~~ [to which girl]$_2$]

b. *nonisomorphic:* [which boy]$_1$ $\Delta_2$ ~~talked~~ [to which girl]$_2$
*(short source available but incongruous in the discourse context)*

(24) **Candidate elliptic clauses for (20c)**

a. *isomorphic:* * [which famous philanthropist]$_1$ $\Delta_2$ [$_{\text{ISLAND}}$ ~~a donation from $t_1$~~] ~~was spent on~~ [$_{\text{ISLAND}}$ ~~equipment~~ [for which hospital]$_2$]

b. *nonisomorphic:* no island-evading short source available

Barros & Frank (2023) propose that a *full source* (i.e., a biclausal, isomorphic elliptic clause) is available for caMS configurations such as (7) from §1 (repeated below in (25)); recall (8). In other words, they view such configurations as genuine exceptions to the CC. Briefly and approximately stated, they assume that swh2's movement to the left-periphery of the matrix clause cannot proceed successive-cyclically (unlike regular wh-movement) and is, therefore, ordinarily clause-bound (following Grano & Lasnik 2018). They propose that a clause C ceases being a boundary for swh2's movement if C's subject fails to shift attention away from the most salient discourse referent evoked in the clause that embeds C (henceforth, a *stable* subject). Because C's subject in (25) is a bound pronoun that co-refers with the universally quantified DP introduced in the matrix clause, it is stable, and therefore, C is permeable for swh2's movement. Thus, it yields an acceptable "full source" caMS configuration.[6]

(25) Everybody$_k$ claimed that they$_k$ had talked to some professor, but I can't remember who to which professor. (Abels & Dayal 2023: 436)

Considering that MS permits short sources (as the discussion above regarding variability to island-sensitivity in MS has already shown), it is also feasible that (25)'s acceptability derives from the fact that its elliptic clause is a short source (see (9)) and therefore do not constitute a true exception to the CC. Cortés Rodríguez & Griffiths (to appear) provide experimental evidence

[6] In this section, we intentionally set aside caMS configurations whose antecedents contain nonfinite complement clauses. Although it seems likely that the CC in MS also extends to nonfinite CPs (see Barros & Frank 2023: fn.18 for some illuminating examples), more research is required before this can be confirmed.

from German that, when morphological case-marking on the wh-remnant is used to force either the short source or full source versions of these sentences (compare the elliptic sources presented in (26)), the short source version receives a significantly higher acceptability rating than its full source counterpart.

(26) Nadine hat [einem Investor]$_i$ erzählt, dass **er**$_i$ Tanja einem Verkäufer
Nadine has a.DAT investor told that he.NOM Tanja a.DAT clerk
nahelegen soll, aber ich weiß nicht genau,
recommend should but I know not exactly
'Nadine told [an investor]$_i$ that he$_i$ should recommend Tanja to a clerk, but I don't know…'

a. welchem Investor welchem Verkäufer. **[full source]**
which.DAT investor which.DAT clerk
*Interpretation:* '… [to which investor]$_i$ Nadine said that he$_i$ should recommend Tanja to which clerk.'

b. welcher Investor welchem Verkäufer. **[short source]**
which.NOM investor which.DAT clerk
*Interpretation:* '… which investor should recommend Tanja to which clerk.'

Although Barros & Frank do not reject the possibility that caMS configurations exemplified by (26) could involve short sources, they do claim that a short source is unavailable for each of the caMS examples in (27) to (29). If Barros & Frank are indeed correct that no short source is available for any case, then these examples constitute true exceptions to the CC, saving their analysis from being superfluous.

(27) **Expletive *there* occupies the subject position of the finite complement clause**
Some student claimed that there was a problem with some professor, but I can't recall [$_{CP1}$ which student ~~claimed~~ [$_{CP2}$ ~~that there was a problem~~ with which professor]].
(Barros & Frank 2023: 655)

(28) **A negatively quantified DP occupies the subject position of the finite complement clause**
Some student lamented that no professor talked about a certain topic, but I can't recall [$_{CP1}$ which student ~~lamented that~~ [$_{CP2}$ ~~no professor talked~~ about which topic]].
(Barros & Frank 2023: 655)

(29) **A narrow-scoping existentially quantified DP occupies the subject position of the finite complement clause**
Some linguist said that somebody might have written a paper about a Balkan language, but I can't recall [$_{CP1}$ which linguist ~~said~~ [$_{CP2}$ ~~that somebody might have written a paper~~ about which Balkan language]].
(Barros & Frank 2023: fn.9)

Cortés Rodríguez & Griffiths (to appear) contend that short sources are indeed available for each of the examples in (27) to (29); see (30). Following Abels & Dayal (2023: 436), Cortés Rodríguez & Griffiths emphasize that these short sources are indeed licensable according to recent theories of ellipsis identity.[7]

(30) a. … which student ~~had a problem~~ with which professor. (short source for (27))
b. … which student ~~lamented~~ about which topic. (short source for (28))
c. … which linguist ~~might have written a paper~~ about which Balkan language. (short source for (29))

Furthermore, Cortés Rodríguez & Griffiths report that the caMS sentences in (31) to (33) are judged as strongly degraded compared to their structurally similar counterparts in (27) to (29) (these judgments were informally collected from 8 native speakers: 6 linguists; 2 nonlinguists). The difference between these two sets of sentences is that pragmatically congruous short sources are available for the first set (i.e., (27) to (29)) but not for the second (i.e., (31) to (33)), this comparison provides additional support for Cortés Rodríguez & Griffiths' claim that the relative acceptability of the examples in (27) to (29) is directly correlated with the availability of a short source for each example. This comparison also undermines Barros & Frank's claim that the acceptability of the examples in (27) to (29) is directly connected to the fact that, in each example, the subject of the embedded clause in the antecedent clause fails to introduce a new discourse referent.[8]

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[7] Anand & Hardt & McCloskey (2023) state that a head in an argument domain XP is licensed for ellipsis in sluicing if it has a structure-matching correlate in an antecedent argument domain YP, where 'correlate' refers to a token of the same lexical item and 'structure-matching' refers to occupying the same structural position in XP and YP. According to this licensing condition, both *lament* in (30b) and each head in *write a paper* in (30c) are licensed for deletion. Thoms (2015) and others propose that antecedents for ellipsis can be accommodated (cf. Tancredi 1992; Fox 2000; van Craenenbroeck 2013). Assuming that an accommodated antecedent must be mutually entailed by the explicit antecedent (Kotek & Barros 2018; Griffiths 2019, to appear), then *some student had a problem with some professor* can be accommodated from the explicit antecedent in (27) only in those worlds in which the problem is the student's (which is the only reading available for (27)). Ellipsis is straightforwardly licensed in (30a) from this accommodated antecedent.

[8] An anonymous reviewer suggests that the difference in full source availability for (27) and (31) stems from the difference in specificity of *a problem* and *a pile of books*: the former "evokes any kind of problem" and therefore fails to introduce a new discourse referent, whereas the latter is specific and, therefore, introduces a new discourse referent. If this is correct, then the contrast between (27) and (31) does not constitute a valid counterexample to B&F's claims. We find this suggestion implausible: *a cover-up* in (i) is equally as specific *a problem* in (27)—it evokes any kind of cover-up—and yet no long source interpretation is available for (i), contrary to expectations if the reviewer's suggestion were correct. The reviewer makes a similar suggestion about (33), claiming that *somebody* in this example introduces a discourse referent and that the full source interpretation becomes available once *somebody* is replaced with *nobody*. This paper's second author disagrees with the reviewer's judgment. Furthermore, we point out that (ii) has no full source interpretation despite having a negatively quantified embedded subject DP, which is again unexpected if the reviewer's suggestions were correct.

(31) **Alternative to (27) (expletive *there* as subject of the embedded clause)**

?* Some student claimed that there was a pile of books in some professor's office, but I can't recall which student in which professor's office.

*Full source:* which student ~~claimed that there was a POB~~ in which professor's office.

*Short source:* # which student ~~was~~ in which professor's office.

(32) **Alternative to (28) (negatively quantified DP as subject of the embedded clause)**

?* Some student lamented that no professor spoke next to a certain lectern, but I can't recall which student next to which lectern.

*Full source:* which student lamented that no professor spoke next to which lectern.

*Short source:* # which student ~~lamented~~ next to which lectern.

(33) **Alternative to (29) (narrow-scoping *somebody* as subject of the embedded clause)**

?* Some linguist said that somebody might have written a paper about a particular subatomic particle, but I can't recall which linguist about which subatomic particle.

*Full source:* which linguist ~~said that somebody might have written a paper~~ about which subatomic particle

*Short source:* # which linguist ~~might have written~~ about which subatomic particle.

Cortés Rodríguez & Griffiths report that when the full source interpretation of (26) is forced, the mean rating returned is 3.49 (out of 7), and when the short source is forced, the mean rating is 4.13; a difference of 0.64. In a different experiment reported in Cortés Rodríguez (2022a), caMS configurations exemplified by (34), in which the embedded clause's subject is an R-expression that introduces a new discourse referent (henceforth, a *shifty* subject), were tested. The mean rating for the full source of (34) is 3.24, whereas the short source is 4.68; a difference of 1.44. In both cases, the differences reported are statistically significant.

(34) a. Jeder berichtete, dass Simon an etwas gedacht hat, aber ich
everyone reported that Simon about something thought has but I
weiß nicht wer an was. **[full source]**
know not who about what
'Everybody reported that Simon has thought about something, but I don't know who about what'.

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(i) ?*Every crackpot believes that there is a cover-up happening inside some government department, but I'm unsure which crackpot inside which government department.

(ii) ?*Every critic reckons that nobody has ever died during a certain play, but I can't remember which critic during which play.

As mentioned already in Cortés Rodríguez & Griffiths (to appear), we acknowledge that judgments on English caMS are subtle and clearly subject to idiolectal variation, and therefore view the datapoints in (31) to (33) (and (i) and (ii)) as preliminary evidence. Future experimental work is therefore required to obtain a reliable empirical base for research in this domain.

b. Simon berichtete, dass jeder an etwas gedacht hat, aber ich
Simon reported that everyone about something thought has but I
weiß nicht wer an was. **[short source]**
know not who about what
'Simon reported that everyone has thought about something, but I don't know who about what'.

If we assume momentarily that the raw mean results obtained in these different experiments are directly comparable (this a questionable assumption), then it appears that having a stable subject in the embedded clause improves acceptability relative to having a shifty subject. This could be interpreted as showing that the locality constraints on wh-moving swh2 from the embedded clause are indeed suspended in configurations such as (26a), as Barros & Frank propose. Cortés Rodríguez & Griffiths reject this conclusion and instead conclude that, should an amelioration effect indeed be obtained by having a bound pronoun subject in an unambiguously CC-violating caMS configuration, this effect arises because the presence of a bound pronoun subject diminishes the processing burden associated with attempting to recover an ellipsis site in which a grammatical constraint – namely, whatever syntactic locality constraint underlies the CC – is violated.[9] The reasoning behind Cortés Rodríguez & Griffiths' conclusion is this: if (26a) did involve a genuine suspension of the syntactic locality constraint underlying the CC, then so should each of the examples in (31) and (33), according to Barros & Frank's theory. As shown already, this situation does not transpire.[10]

To summarize §2: the short source approach advocated by Cortés Rodríguez & Griffiths states that there are no true exceptions to the CC, and that the availability of a CC-evading nonisomorphic elliptic wh-clause (i.e., a *short source*) can sometimes give the false impression that the CC has exceptions. There are four main reasons to favor the short source approach over its main competitor, namely Barros & Frank's (2023) analysis. First, the existence of short sources is well established for both single and multiple sluicing. Second, analyses that postulate true CC-obviations cannot capture the significant differences in acceptability observed between short and full source configurations when a short or full source interpretation is forced. Third,

[9] Certain sentences that display grammatical violations can be judged and processed as acceptable, due to a wide range of factors such as flawed retrieval from memory, partial cue-match, the possibility of intermediate analysis in which relevant constraints are satisfied, reanalysis of ambiguous or confusing structures, or purely due to the presence of a syntactic illusion (e.g., Fodor & Ferreira 1998; Fanselow & Frisch 2004; Vasishth et al. 2008; Leivada & Westergaard 2020). We assume that certain grammatical violations inside ellipsis sites fall into this category, following, e.g., Molimpakis (2019).

[10] Two additional reasons to disfavor Barros & Frank's (2023) approach are that it fails to predict the presence of an amelioration effect in caMS configurations with bound object pronouns in the embedded clause and that it makes incorrect predictions regarding island-crossing A′-movement (see the data and discussions in §5.1 and §5.2, respectively).

the variability in CC-sensitivity directly tracks the availability of a short source. Fourth, the variability in CC-sensitivity does not directly track the presence/absence of a shifty subject in the embedded clause of the antecedent, which undermines Barros & Frank's analysis.

## 3 Entering uncharted territory in the study of caMS

In the previous section, variable island-sensitivity under MS and putative CC-obviations in MS were discussed as independent phenomena. A natural springboard for further exploration of caMS configurations is to investigate what happens when these phenomena interact, as in caMS configurations that fit one of the schemas in (35). In (35a), the subject of the clause-sized island is shifty, whereas in (35b), this subject is stable.

(35) a. $[_{CP1}$ … correlate1$_i$ … $[_{CP2(ISLAND)}$ subj$_k$ … correlate2 … ] …] … swh1 swh2
b. $[_{CP1}$ … correlate1$_i$ … $[_{CP2(ISLAND)}$ subj$_i$ … correlate2 … ] …] … swh1 swh2

As we will henceforth be comparing the schemas in (35) to the caMS configurations discussed in the previous section, it is useful to introduce some shorthand terminology at this juncture. We now have three degrees of freedom to contend with: (i) whether correlate2 is island-bound or contained in a finite complement clause, (ii) whether the subject of the clause in which correlate2 is contained displays a shifty or stable subject, and (iii) whether the ellipsis site is a short source or full source. Hereafter, we use *comp* and *island* to describe the nature of the embedded clause, we continue to use *shifty* and *stable* to describe the subject of the embedded clause, and we use subscripted *F* and *S* to distinguish between full or short source ellipsis sites. Putting these terms together, one yields shorthand descriptions such as a *stable-comp*$_F$ (for the full source version of, e.g., (26a)) and *shifty-island*$_S$ (for short source versions of configurations fitting the schema in (34a)).

Cortés Rodríguez (2022a) reports that, in English, German, and Spanish, there is no significant difference in acceptability between shifty-comp$_F$ (recall (34a)) and shifty-island$_F$ configurations ((36) below exemplifies the shifty-island$_F$ configuration in German). The fact that acceptability is degraded to the same degree in both configurations suggests that the same syntactic locality constraint on wh-moving swh2 is operative in both cases, despite the fact that (34) involves extracting swh2 from a finite embedded clause and (36) involves extracting swh2 from a strong island (according to Grano & Lasnik 2018; Barros & Frank 2023, this locality constraint is the *phrase impenetrability condition*, PIC).

(36) Jeder war begeistert, weil **Simon** an etwas gedacht hat,
everyone was excited because Simon about something thought has
aber ich weiß nicht wer an was. **[full source]**
but I know not who about what
'Everyone was excited because Simon thought about something, but I don't know who about what.'

If the same locality constraint is operative in both shifty-comp$_F$ and shifty-island$_F$ cases, and if the presence of a stable, bound pronoun subject in stable-comp$_F$ sentences such as (26a) diminishes the processing burden incurred by violating this locality constraint, then one expects the same amelioration effect to be observed in stable-island$_F$ configurations (i.e. the full source version of (35b)). Thus, the first issue related to the schemas in (35) is whether or not this expectation is met.

Another question relating to the schemas in (35) is whether a short source is available in either schema. Note that obtaining the short source reading for stable-comp configurations such as (26) involves the hearer taking a pronoun as the correlate for swh1. As pointed out to us by Andrew Murphy (pers. comm.), this possibility seems unique to MS, as, in single sluicing, associating the sluiced wh-phrase with a pronominal correlate is impossible (in German, at least):[11]

(37) Anna hat jemandem$_i$ gesagt, dass er$_i$ gehen muss, aber ich weiß
Anna has someone.DAT told that he.NOM go must but I know
nicht genau {wem / *wer}.
not exactly who.DAT who.NOM
'Anna has told someone$_i$ that he$_i$ must leave, but I don't know exactly who.'

A pressing question is, therefore, to what extent bound pronouns can function as correlates in caMS configurations. In (26), one observes that a bound subject pronoun in a finite complement clause can function as swh1's correlate in German. But can subject pronouns inside other types of subclause – particularly, clausal islands – also function as correlates? And is this ability restricted to German or observed in other languages?

The experiment reported in the following subsection addresses both of these issues. It does this by first testing whether full and/or short sources are available in German and Spanish for two caMS configurations that exemplify the stable subject schema in (35b). The judgments obtained are then compared to results from previous experiments on caMS (from Cortés Rodríguez 2022a; Cortés Rodríguez & Griffiths to appear).

# 4 An acceptability judgment experiment on German and Spanish caMS

## 4.1 The purpose of the experiment and its general setup

As mentioned already in §2, the experiment reported in Cortés Rodríguez & Griffiths (to appear) focused on German stable-comp configurations. There, we exploited the morphological case-marking on the wh-remnant to disambiguate caMS configurations as involving either a short source or full source, and we discovered that the short source versions of our test sentences received significantly higher acceptability ratings than their full source counterparts.

[11] For discussion of what types of phrases can function as correlates for single sluicing and why, see Chung & Ladusaw & McCloskey (1995), Ginzburg & Sag (2000), Barker (2013), Barros (2013), AnderBois (2014), among others.

In the experiment reported below, the same experimental setup is applied to two different stable-island configurations. These configurations are exemplified by the English sentences in (38) and (39). In both configurations, CP2 occupies an extraposed position but is interpreted as either a restrictive relative modifier or a complement of the noun *salesman*. The caMS configurations in (38) and (39), therefore, differ from the canonical stable-comp configuration discussed in the literature (i.e., (25)) in that, in (38) and (39), CP2 is an island for wh-extraction. Like in our previous experiment, we presented participants with two versions of each caMS configuration, one in which the full source continuation is forced (see the a-examples in (38) and (39)) and one in which the short source continuation is forced (see the b-examples in (38) and (39)).[12]

(38) **The 'relative clause' (RC) caMS configuration**

[$_{CP1}$ Greta has reported on a salesman] [$_{CP2(ISLAND)}$ who gossiped about a co-worker], but I don't know…

a. … on which salesman about which co-worker. **[full source]**

b. … which salesman about which co-worker. **[short source]**

(39) **The 'noun complement clause' (NCC) caMS configuration**

[$_{CP1}$ Greta has found a message about a salesman] [$_{CP2(ISLAND)}$ that he gossiped about a co-worker], but I don't know…

a. … about which salesman about which co-worker. **[full source]**

b. … which salesman about which co-worker. **[short source]**

The purpose of this experiment was threefold.

First, it tests to see if (relative) pronouns that are the subjects of clause-sized islands and which are not c-commanded by their antecedent DP (in the surface structure, at least) can function as correlates for MS, given the presence of sufficient cues, such as case-marking and co-reference (see §3). Because these pronouns only function as correlates for swh1 in the short source versions of (38) and (39), we obtain evidence that these pronouns can indeed function as correlates in MS if the short source versions of (38) and (39) receive high mean ratings, as this shows these short source versions are available.

Second, it tests if the processing burden associated with wh-moving swh2 over an island boundary is ameliorated when the island's subject is a bound pronoun (i.e., *stable*). As mentioned in §3, we expect an amelioration effect to be observed. This prediction is **not** borne out only if the ratings attributed to our stable-island$_F$ test items and to shifty-island$_F$ sentences (e.g., (36)) are sufficiently similar. We will determine whether this outcome obtains by performing a *post*

[12] Attentive readers will have observed that, in the English examples in (38) and (39), the b-examples are actually ambiguous between a full and short source interpretation, due to the fact that English usually permits P-omission under sluicing. No such ambiguity was present in our German and Spanish test sentences, see §4.2.1 and §4.3.1 for details.

*hoc* cross-experimental comparison. This involves comparing the ratings for our stable-island$_F$ test sentences to the ratings obtained for stable-comp$_F$ and shifty-island$_F$ caMS configurations in previous experiments (reported in Cortés Rodríguez 2022a; Cortés Rodríguez & Griffiths to appear, respectively). Precisely how this comparison will be conducted is described in §4.2.2.[13]

Third, by running the experiment on Spanish speakers (in Spanish) as well as German speakers (in German), the experiment broadens the crosslinguistic base with robust and experimentally procured caMS data. Specifically, we aim to show with this experiment that our previous and current experimental findings on caMS are not just quirks of German but reflect broader – perhaps universal – tendencies.

## 4.2 Subexperiment 1: German

### 4.2.1 Methods

#### 4.2.1.1 Design and materials

We conducted an acceptability judgment experiment with 24 sentence quadruplets containing caMS configurations. The experiment followed a 2 × 2 within-item and within-subject design. The two independent variables were SOURCE and EMBEDDING TYPE. The two levels for SOURCE were *full source* and *short source*. In the full source condition, swh1 displays the same form as the PP in the antecedent's matrix clause (i.e., the italicized PPs in (40) and (41)). In the short source condition, swh1 displays the same case as the personal or relative pronoun in the subject position of the extraposed clause (i.e., the straight-underlined DPs in (40) and (41)). The two levels for EMBEDDING TYPE were *relative clause* (RC) and *complement of N* (NCC). In the RC condition, the extraposed clause is a restrictive relative clause. In the NCC condition, the extraposed clause is a noun complement clause. Examples of each condition are presented in (40) and (41). Note that the EMBEDDING TYPE factor is included to ensure reliability. Put differently, we included two different island types in our experiment to control for the possibility that the effect of modulating SOURCE is specific to certain islands (and therefore possibly different across different types of islands).

(40) **EMBEDDING TYPE: *relative clause* (RC)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Greta | hat | *über* | *einen* | *Verkäufer* | berichtet, | der | **über** | **einen** | **Mitarbeiter** |
| Greta | has | about | a.ACC | salesman | reported | who.NOM | about | a.ACC | co-worker |
| gelästert | hat, | aber | ich | weiß | nicht | genau | | | |
| gossiped | has | but | I | know | not | exactly | | | |

[13] Instead of conducting a 2 × 2 experiment and then comparing the results to results obtained in previous experiments (as we do here), one could instead conduct a 2 × 2$_K$ (×2$_K$) experiment whose factors are SOURCE (*full*, *short*), ISLAND (*island*, *non-island*), and ISLAND-TYPE (*RC*, *NCC*), where ISLAND-TYPE is nested under ISLAND (as marked by the subscript "K"). We decided against this option to retain simplicity and sufficient power in our statistical analysis.

a. über welchen Verkäufer über welchen Mitarbeiter. **[full source]**
about which.ACC salesman about which.ACC co-worker

b. welcher Verkäufer über welchen Mitarbeiter. **[short source]**
which.NOM salesman about which.ACC co-worker

(41) **EMBEDDING TYPE: *noun complement clause* (NCC)**
Greta hat eine Nachricht *über einen Verkäufer* gefunden, dass er **über**
Greta has a message about a.ACC salesman found that he.NOM about
**einen Mitarbeiter** gelästert hat, aber ich weiß nicht
a.ACC co-worker gossiped has but I know not

a. über welchen Verkäufer über welchen Mitarbeiter. **[full source]**
about which.ACC salesman about which.ACC co-worker

b. welcher Verkäufer über welchen Mitarbeiter. **[short source]**
which.NOM salesman about which.ACC co-worker

In every condition, swh2 was a PP. Although the syntactic category of swh2 (DP versus PP) has no effect on the acceptability of MS in German (Cortés Rodríguez to appear), there is a statistically significant preference for a PP swh2 in Spanish (Cortés Rodríguez 2021, see also Cortés Rodríguez 2024).[14] To maintain consistency, we therefore decided to use only PP swh2 in both our German and Spanish subexperiments.

Some researchers have claimed that MS is only licensed when the correlate for swh1 is a universally quantified DP (Nishigauchi 1998; Merchant 2001). This is untrue for English and German; see Cortés Rodríguez (2024) for experimental evidence and additional references. Therefore, the fact that this experiment's test sentences involve no universal quantified DPs as correlates is unproblematic. Abels & Dayal (2017; 2023) recommend using a universally quantified DP as a correlate to exclude the possibility that hearers interpret the ellipsis as an asyndetic coordination of single sluicing elliptic wh-clauses, as in (42). Although exercising caution is commendable, there is no evidence among any of the experimental findings on English, German, and Spanish by Cortés Rodríguez (2024) to suggest that hearers ever retrieve a 'conjunction of single sluices' parse for ellipsis site in the absence of an overt coordinator between the sluiced wh-phrases, regardless of whether the correlate for swh1 is a universally or existentially quantified DP. Therefore, the current experiment runs no risk of eliciting unwanted and confounding 'conjunction of single sluices' parses for the ellipsis site from its participants.

[14] This preference for PP swh2 has also been observed for English (Richards 2010; Lasnik 2014; Cortés Rodríguez to appear), Dutch (de Vries 2020), French (Gotowski 2022), and Mandarin Chinese (Bai & Cortés Rodríguez & Takahashi 2023) multiple sluicing.

(42) Apparently, one of your professors has been talking about a taboo topic, but I don't know which professor ~~has been talking a taboo topic~~; (and/or) about which taboo topic ~~the professor has been talking~~.

Every participant saw a total of 6 items in each condition; thus, 24 critical items in total. Additionally, 72 fillers were included in every list. Fifteen out of these 72 fillers corresponded to the *standardized items* from Featherston (2009), which range from A-type fillers (most natural) to E-type fillers (least natural). Standardized items were included to ensure proper scale usage. In total, each participant rated 96 experimental tokens. The experimental stimuli were presented in a Latin-square design of 4 lists. All participants saw all fillers, and the order of stimuli was randomized at runtime. The participants undertook a practice round of 5 sentences before starting the experiment in earnest.

#### 4.2.1.2 Participants and procedure

The acceptability judgment test was created using *PsychoPy 3* software (Peirce et al. 2019). Thirty-two self-reported native speakers of German were recruited via *Prolific* (www.prolific.co) and paid £3 for participating. The experiment lasted ~20 minutes. Participants were instructed to read carefully and then rate the naturalness of the test sentences on a 7-point scale, from 1 (very unnatural) to 7 (very natural). Additionally, they were told that there were no right or wrong answers and that they should just follow their intuition. We discarded the data from 3 participants: 1 participant disclosed that their native language was not German, and the other 2 misused the rating scale based on their answers to the standardized items. Accordingly, data from 29 participants (15 female, 12 male, 2 non-binary; Mean age = 33.0, $SD$ = 12.3) were used in the statistical analysis.

#### 4.2.1.3 Predictions

As discussed in §4.1, one of the purposes of this experiment is to replicate and extend the findings reported in Cortés Rodríguez & Griffiths (to appear). Therefore, we predict that the short source versions of our test sentences will receive significantly higher acceptability ratings than their full source counterparts. As mentioned in §3, we expect that the full source versions of our test sentences (i.e., stable-island$_F$) receive the same ratings as stable-comp$_F$ caMS configurations, given that the presence of a bound pronominal subject in both cases provides an amelioration effect for swh2's transgressive wh-movement (or so we claim).

Recall from the previous subsection that we have included EMBEDDING TYPE as a dependent variable in this experiment. This decision is based on our own impressionistic judgments that antecedents in caMS configurations involving an extraposed noun complement clause (e.g., (39) and (41)) are harder to parse than caMS configurations involving an extraposed relative clause

(e.g., (38) and (40)). We suspect that the source of this disparity is unrelated to ellipsis, and therefore, we predict a main effect for EMBEDDING TYPE but no interaction between SOURCE and EMBEDDED TYPE. Note that these predictions, which we list in (43) for the reader's convenience, apply to both subexperiment 1 (German) and subexperiment 2 (Spanish).

(43) **Predictions**

a. Short source test items receive significantly higher acceptability ratings than full source test items (i.e., a main effect for SOURCE).
b. The full source test items from the current experiment lower acceptability by the same amount as stable-comp$_F$ caMS configurations do.
c. Test items in the RC condition receive significantly higher acceptability ratings than test items in the NCC condition (i.e., a main effect for EMBEDDING TYPE).
d. There is no interaction between the two factors under investigation.

### 4.2.2 Results of the experiment and post hoc comparison

The mean acceptability ratings for the 4 experimental conditions are listed in **Table 1**. These means are plotted, along with their 95% confidence intervals, in **Figure 1**.

| SOURCE | EMBEDDING TYPE | Mean | SD |
|---|---|---|---|
| *full* | *NCC* | 4.30 | 1.30 |
| *full* | *RC* | 4.74 | 1.22 |
| *short* | *NCC* | 4.73 | 1.35 |
| *short* | *RC* | 4.99 | 1.17 |

**Table 1:** Mean scores per condition (German).

In terms of inferential statistics, the data were analyzed in *R*, version 4.1.2 (R Core Team 2021). We employed a cumulative link mixed effect model (CLMM) to analyze the ordinal data obtained from the Likert scale using the *clmm* function of the *ordinal* package (Christensen 2019). The model with the best fit was selected using a manual backward model selection process. This process involves taking a full model that includes all experimental factors and interactions as fixed effects and which also includes random intercepts and slopes for both subjects and items and then simplifying this full model, one factor at a time. The fit of each simplified model *m-1* is compared to the fit of its immediate, more complex predecessor *m* using the *anova* function. The corresponding formula is provided in the table with the statistical analyses.

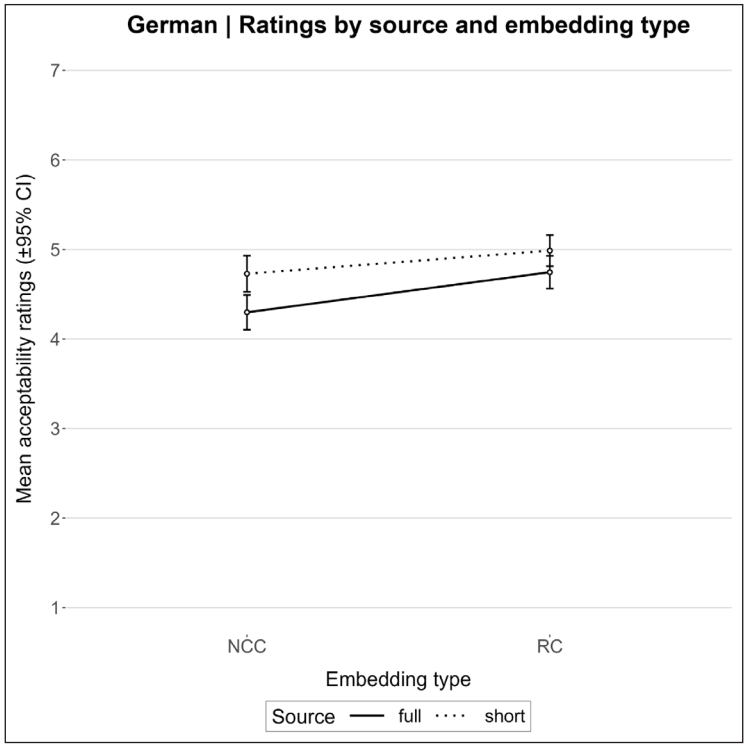


**Figure 1:** Mean scores (German; $n = 29$).

The results of the statistical analysis are presented in **Table 2**. The best fitting model shows a main effect for both SOURCE and EMBEDDING TYPE but no significant interaction between them. Regarding SOURCE, the short source versions of our test items were rated as significantly more acceptable than their full source counterparts. Regarding EMBEDDING TYPE, participants rated test sentences with an extraposed relative clause as significantly more acceptable than those with an extraposed noun complement clause.

| | **Estimate** | **Std. error** | ***z* value** | **Pr(>\|z\|)** | |
|---|---|---|---|---|---|
| SOURCE*(short)* | 0.6202 | 0.1406 | 4.411 | 1.03e-05 | *** |
| EMBEDDING TYPE(*RC)* | 0.5607 | 0.1540 | 3.640 | 0.000273 | *** |

**Table 2:** CLMM fitted with the Laplace approximation (subexperiment 1, German).

**Formula:** *rating ~ source + embeddingType + (1 | subject) + (embeddingType | item),* threshold = "symmetric".

One sees that the predictions in (43a), (43c), and (43d) are straightforwardly borne out: main effects were observed for SOURCE (short source favored) and EMBEDDING TYPE (RC favored), whereas no interaction was observed between them.

Although it is possible to perform statistical tests on data collected from different experiments to determine if the prediction in (43b) is borne out, we refrain from doing this here, as the experiments being compared each employed quite different experimental designs, target items, and fillers, and therefore the reliability of statistical results would be questionable. Acknowledging thus that our comparison will be inherently impressionistic, we opt to employ an informal binary heuristic, which states that the prediction in (43b) is borne out if the ratings for the current experiment's test items are numerically closer to the ratings for the stable-comp$_F$ configurations from Cortés Rodríguez & Griffiths (to appear) than to those for the shifty-island$_F$ configurations from Cortés Rodríguez (2022a). Nonetheless, in an effort to control for variation as much as possible, we *z*-score all ratings,[15] calculate the difference D between the full and short source versions of each caMS configuration being compared (thus further controlling for across-item variation), and then apply our heuristic to these Ds.

| **properties of the clause containing swh2** | | | | ***z*-scored mean rating for test sentences** | | **diff. in rating between full and short source** |
|---|---|---|---|---|---|---|
| ***island*** | ***subject*** | ***clause type*** | ***ex.*** | ***full source*** | ***short source*** | |
| yes | stable | extraposed relative clause | (40) | 0.08 | 0.19 | 0.11 |
| | | extraposed noun complement clause | (41) | –0.13 | 0.07 | 0.20 |
| | shifty | **adjunct clause (*because*)** | (44) | –0.63 | 0.07 | 0.76 |
| no | stable | finite complement clause | (26) | –0.52 | –0.22 | 0.30 |

**Table 3:** Differences in *z*-scored mean raw scores between full and short source test sentences, across three experiments (German).

**Legend**: current study; **Cortés Rodríguez 2022a**; Cortés Rodríguez & Griffiths to appear.

[15] Following Gerbrich & Schreier & Featherston's (2019) recommendations, *z*-scores were calculated using participants' mean ratings (and the standard deviations thereof) for the experiment's standard fillers, as opposed to using participants' mean ratings (and the standard deviations thereof) for the entire dataset.

(44) a. Jeder war begeistert, weil Simon an etwas gedacht hat,
everyone was excited because Simon about something thought has
aber ich weiß nicht wer an was. **[full source]**
but I know not who about what
'Everyone was excited because Simon thought about something, but I don't know who about what.'

b. Simon war begeistert, weil jeder an etwas gedacht hat,
Simon was excited because everyone about something thought has
aber ich weiß nicht wer an was. **[short source]**
but I know not who about what
'Simon was excited because everyone thought about something, but I don't know who about what.'

According to our heuristic, the prediction in (43b) is borne out, as the figures presented in the final column of **Table 3** for the current experiment's test item's differences are numerically closer to the figure obtained for configurations exemplified by (26) than to the figure obtained for configurations exemplified in (44).

## 4.3 Subexperiment 2: Spanish

### 4.3.1 Methods

#### 4.3.1.1 Design and materials

The 24 test items used in our Spanish subexperiment were structurally identical to their German counterparts (see §3.2.1), barring some necessary adjustments. In the Spanish RC condition, the relative clause modifying the object of the matrix clause appeared right after the modified noun, meaning that an in-situ or an extraposed parse was available for the relative clause (in both positions, the relative clause is ordinarily an island for wh-extraction). In the NCC condition: the Spanish noun complement clause is headed by a preposition, unlike its German counterpart.

(45) **EMBEDDING TYPE: *relative clause* (RC)**
María habló *sobre un actor* que había colaborado **con un delincuente**,
Maria talked about an actor who had collaborated with a criminal
pero no sé
but not know.1SG

a. sobre qué actor con qué delincuente. **[full source]**
about which actor with which criminal

b. qué actor con qué delincuente. **[short source]**
which actor with which criminal

(46) **EMBEDDING TYPE: noun complement clause (NCC)**
María difundió el rumor *sobre un actor* de que este había
Maria spread the rumour about an actor of that this.MASC had
colaborado **con un delincuente**, pero no sé
collaborated with a criminal but not know.1SG

a. sobre qué actor con qué delincuente. **[full source]**
about which actor with which criminal

b. qué actor con qué delincuente. **[short source]**
which actor with which criminal

All items and fillers followed the same distribution as in subexperiment 1. For the standard/control items, we used the 15 filler items from Cortés Rodríguez (2021, 2024), which aim to provide absolute measures for 5 levels of acceptability in Spanish, following the standardized items created for German (Featherston 2009) and English (Gerbrich & Schreier & Featherston 2019).

#### 4.3.1.2 Participants, procedure, and predictions

The procedure of subexperiment 2 replicated the procedure for subexperiment 1. We discarded the data from 3 participants who misused the rating scale based on their answers to the control items. Accordingly, the data from 29 participants (14 female, 15 male; Mean age = 28.6, *SD* = 8.6) were used in the statistical analysis.

As mentioned already, the predictions for subexperiment 2 were the same as for subexperiment 1 (see (43)).

### 4.3.2 Data analysis and results

The mean acceptability ratings for the 4 experimental conditions are listed in **Table 4**. These means are plotted, along with their 95% confidence intervals, in **Figure 2**.

| SOURCE | EMBEDDING TYPE | Mean | SD |
|---|---|---|---|
| *full* | *NCC* | 3.86 | 1.51 |
| *full* | *RC* | 4.49 | 1.49 |
| *short* | *NCC* | 4.23 | 1.52 |
| *short* | *RC* | 4.64 | 1.37 |

**Table 4:** Mean scores per condition (Spanish).

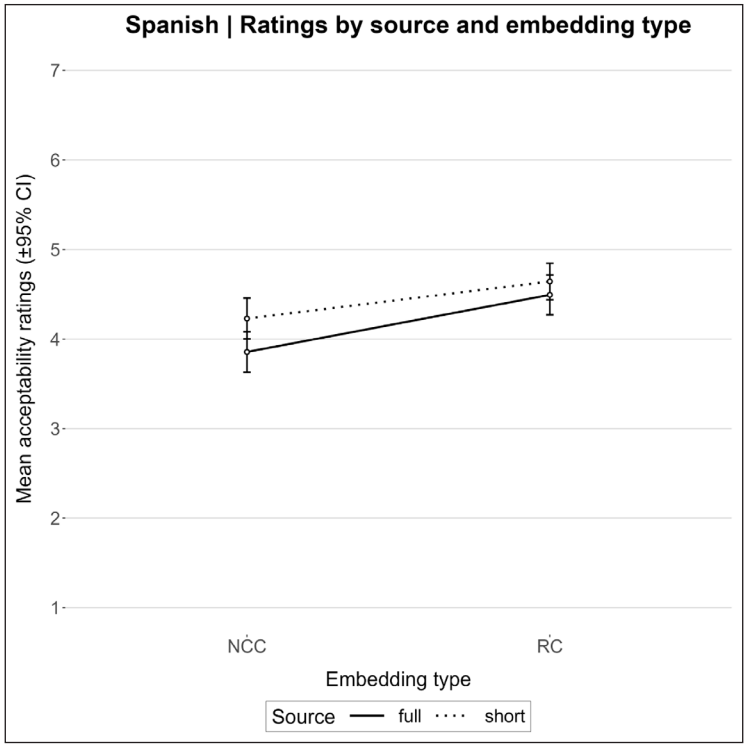


**Figure 2:** Mean scores (Spanish; $n = 29$).

Regarding inferential statistics, the data were analyzed following the same procedure as in subexperiment 1. The results of the statistical analysis are presented in **Table 5**. The best fitting model shows a main effect for both SOURCE and EMBEDDING TYPE but no significant interaction between them. Regarding SOURCE, the short source versions of our test items were rated as significantly more acceptable than their full source counterparts. Regarding EMBEDDING TYPE, participants rated test sentences with an extraposed relative clause as significantly more acceptable than those with an extraposed noun complement clause. The Spanish subexperiment, therefore, replicated the results of the German subexperiment.

| | **Estimate** | **Std. error** | ***z* value** | **Pr(>\|z\|)** | |
|---|---|---|---|---|---|
| SOURCE*(short)* | 0.4329 | 0.1403 | 3.086 | 0.00203 | ** |
| EMBEDDING TYPE(*RC)* | 0.9046 | 0.2950 | 3.067 | 0.00217 | ** |

**Table 5:** CLMM fitted with the Laplace approximation (subexperiment 2, Spanish).
**Formula:** *rating ~ source + embeddingType + (embeddingType | subject) + (1 | item)*.

**Table 6** presents the *z*-scored mean scores for the full and short source versions of the test sentences from the current subexperiment and from previously run experiments on Spanish caMS configurations.

| **properties of the clause containing swh2** | | | | ***z*-scored mean rating for test sentences** | | **diff. in rating between full and short source** |
|---|---|---|---|---|---|---|
| ***island*** | ***subject*** | ***clause type*** | ***ex.*** | ***full source*** | ***short source*** | |
| yes | stable | extraposed relative clause | (45) | –0.15 | –0.08 | 0.07 |
| | | extraposed noun complement clause | (46) | –0.45 | –0.27 | 0.18 |
| | shifty | **adjunct clause (*because*)** | (47) | –0.75 | –0.28 | 0.47 |
| no | stable | finite complement clause | (48) | –0.31 | –0.33 | 0.02 |

**Table 6:** Differences in z-scored mean raw scores between full and short source test sentences, across three experiments (Spanish).

**Legend**: current study; **Cortés Rodríguez 2022a**; Cortés Rodríguez 2022b.

(47) a. Alguien estaba decepcionada porque Marta mintió sobre algo,
someone was disappointed because Marta lied about something
pero no sé quién sobre qué. **[full source]**
but not know.1SG who about what
'Marta was disappointed because someone lied about something, but I don't know who about what.'

b. Marta estaba decepcionada porque alguien mintió sobre algo,
Marta was disappointed because someone lied about something
pero no sé quién sobre qué. **[short source]**
but not know.1SG who about what
'Marta was disappointed because someone lied about something, but I don't know who about what.'

(48) Los jefes le contestaron a una secretaria$_i$, que (ella$_i$) debía
the managers IO answered DOM a secretary that she should
intervenir en un problema, pero no sé
intervene in a problem but not know.1SG
'The managers answered to the secretary that she should intervene in a problem, but I don't know…'

a. a qué secretaria en qué problema. **[full source]**
DOM which secretary in which problem

b. qué secretaria en qué problema. **[short source]**
which secretary in which problem

To determine if the prediction in (43b) is borne out for Spanish, we use the same comparison heuristic as for German (see the text under **Table 3**). We see that, just as with German, the prediction in (43b) is borne out, as the figures presented in the final column of **Table 6** for the current experiment's test item's differences are numerically closer to the figure obtained for configurations exemplified by (48) than to the figure obtained for configurations exemplified by (47).

# 5 Discussion

## 5.1 Short sources: (relative) pronouns can function as correlates in MS

Previous research has shown that standard, "good" caMS configurations – i.e., caMS sentences that violate no known grammatical constraints – are rated as 4.68(1.58) in German and 4.22(1.50) in Spanish (Cortés Rodríguez 2022a). The stable-island$_S$ configurations tested in our current study received comparable ratings (a mean rating of 4.86 for German and a mean rating of 4.44 for Spanish) and are significantly more acceptable than their full source counterparts. We interpret these results as demonstrating that this study's stable-island$_S$ configurations are, in relative terms, acceptable, and that this provides novel evidence that (surface-) unbound personal pronouns and relative pronouns can function as correlates of sluiced wh-phrases in MS. This evidence is obtained from the fact that swh1 in the short source variants of our test sentences can only be associated with these pronominal phrases, and not their full DP antecedents (assuming that case-mismatch is avoided whenever possible, see the discussion surrounding (53) below). These results, when added to Cortés Rodríguez & Griffiths' (to appear) results for German showing that bound subject pronouns in finite complement clauses can also function as correlates, demonstrate that the range of elements that can function as correlates in MS is greater than in single sluicing.

Before moving on, we wish to preemptively respond to two potential criticisms of our analysis. One argument that could be voiced against the short source approach to explaining apparent exceptions to the CC is that the approach overgenerates. For instance, it has been

reported that the shifty-comp configuration in (49), in which the swh2's correlate in the embedded clause of the antecedent is a bound object pronoun, as unacceptable. Because a short source is readily available for the elliptic clause in (49) (albeit with some modal subtlety lost; see (50)), one might contend that the short source approach incorrectly predicts that (49) should be judged as acceptable.

(49) * [Some student]$_k$ claimed that Mary introduced him$_k$ to some professor, but I don't know which student to which professor. (Barros & Frank 2023: 653)

(50) … which student ~~Mary introduced~~ to which professor.

There are conceptual and empirical problems with this argument. Conceptually, it requires one to move from the weaker position that short sources are sometimes unavailable for caMS configurations that are apparent exceptions to the CC to the stronger position that short sources are simply never available for any caMS configurations. When one considers the independent evidence for the existence of short sources in caMS configurations is now robust (recall the 'variable island-sensitivity' discussion from §2 and see the 'morphological case marking' data discussed in Abels & Dayal 2017; 2023; Cortés Rodríguez & Griffiths to appear), this stronger position cannot be plausibly maintained. Empirically, the *-mark attributed to (49) is an exaggeration. We informally collected judgments from 9 native speakers of English (4 linguists, 5 non-linguists) on (49) and its 'stable subject' counterpart (namely, *Some student claimed that **she** introduced John to some professor,* …) and found reasonably small differences, albeit with high standard deviation ($\bar{x} = 3.1$, $s = 1.53$ for (49); $\bar{x} = 3.8$, $s = 2.17$ for the stable subject equivalent). Furthermore, Cortés Rodríguez & Griffiths report that the German equivalent of (49) is judged as acceptable. Specifically, they report that the German version of (49) is judged as acceptable when disambiguated as involving a short source (see (51a)) and is judged as degraded when disambiguated as involving a full source (see (51b)). This empirical picture suggests to us that an extraneous factor is responsible for modulating (49)'s acceptability across languages. Our preliminary – and therefore tentative – analysis of this variation runs as follows: (i) bound pronouns must be above a particular threshold of discourse saliency to function as correlates in MS configurations, (ii) bound subject pronouns are inherently more salient than bound object pronouns (Barros & Frank 2023: 660) such that, by themselves, subject but not object pronouns are sufficiently salient to function as correlates, (iii) the accusative case-marking on swh1 in (51a) functions as a cue that directs the hearer's attention to the accusative case-marked object pronoun in the antecedent, which increases the pronoun's saliency enough that it can function as a correlate, and (iv) this saliency-boost does not occur in the English example in (49) because swh1 shows no overt morphological marking of accusative case.

(51) Ein Student behauptete, dass Mary ihn einem Professor vorgestellt
a.NOM student claimed that Mary him.ACC a.DAT Professor introduced
hat, aber ich weiß nicht genau…
has but I know not exactly
'A student claimed that Mary introduced him to a professor, but I don't know exactly…'

a. … welchen Student ~~Mary~~ welchem Professor ~~vorgestellt~~ ~~hat~~ **[short]**
which.ACC student Mary which.DAT professor introduced has

b. ?* … welcher Student ~~behauptete,~~ ~~dass~~ ~~Mary~~ ihn welchem Professor
which.NOM student claimed that Mary him which.DAT professor
~~vorgestellt~~ ~~hat~~ **[full]**
introduced has

If this explanation is on the right track, then it indicates that a variety of conditions must be satisfied for a pronoun to function as a correlate for MS, and that these conditions may differ across languages. Determining precisely what these conditions are and how they differ across languages must remain a task for future research. With this in mind, the (alleged) unexpected absence of a short source interpretation for a particular caMS configuration (such as (49)) does not *prima facie* invalidate the source short approach, as extraneous restrictions might obtain.

Second, let us address a potential alternative interpretation of our results. Elliott & Murphy (2019) show that, in so-called unconditional sluicing in German, the sluiced wh-phrase must bear the same morphological case marking as its correlate, despite the fact that the only congruous ellipsis site for this configuration is a nonisomorphic short source (compare the possible elliptic clauses in (52a) and (52b)):

(52) Er würde wirklich jedem vertrauen, egal {wem / * wer}!
He would really everyone.DAT trust no.matter {who.DAT / who.NOM}
'He would really trust anyone, it doesn't matter who!'

a. # wem ~~er vertrauen würde~~
b. wer ~~er ist~~

Seeing as the morphological case-marking on German sluiced wh-phrases is not always a reliable indicator of the structure of the ellipsis site, could it be that the current experiment's German 'short source' test items (and also the 'short source' test items from the experiment reported in Cortés Rodríguez & Griffiths) are not forcing a short source ellipsis site after all? Could it be that the putative 'short version of, e.g., (26) (repeated below in (53)) actually involves the full source, but with exceptional case-marking on swh1 (see (54))? If so, then MS does not uniquely permit pronouns to function as correlates after all: in reality, MS and single sluicing are alike in disallowing pronominal correlates.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| (53) | Nadine | hat | [einem | Investor]$_i$ | erzählt, | dass | **er**$_i$ | Tanja | einem | Verkäufer |
| | Nadine | has | a.DAT | investor | told | that | he.NOM | Tanja | a.DAT | clerk |
| | nahelegen | soll, | aber | ich | weiß | nicht, | welcher | Investor | welchem | |
| | recommend | should | but | I | know | not | which.NOM | investor | which.DAT | |
| | Verkäufer | | | | | | | | | |
| | clerk | | | | | | | | | |

(54) [Welcher Investor]$_1$ $\Delta_2$ ~~Nadine hat $t_1$ erzählt, dass er Tanja~~ [welchem Verkäufer]$_2$ ~~nahelegen soll~~

There are a number of reasons to be sceptical of this alternative analysis. First, it involves a false analogy. In the unconditional sluicing case, there is motivation for the sluiced wh-phrase to bear exceptional case – obtaining morphological parallelism between the wh-phrase and its correlate overrides the usual case-assignment algorithm. This same motivation is absent in (54), in which the usual case-assignment algorithm is overridden, and yet morphological parallelism between the wh-phrase and its correlate is not achieved. Second, if (54) were indeed the elliptic clause for (53), then one expects (53) to be harder to process (which translates into lower acceptability) than the full source version of (54),[16] in which swh1 **does** match in case with its correlate *einem Investor*. One expects greater processing costs in the former configuration because the case-mismatch between *welcher Investor* and *einem Investor* should impede the process of establishing *einem Investor* as swh1's correlate rather than facilitate it. We have repeatedly shown through our experiments that this expectation is not borne out since our 'short source' test items are consistently rated significantly higher than their 'full source' counterparts. Third, this alternative analysis is German-specific and, therefore, does not explain why the results we obtained for German are replicated in Spanish, which does not show exceptional case-marking under sluicing (to our knowledge). For these reasons, we discard the alternative analysis outlined above and continue to advocate the conclusion that, under the right conditions, pronouns can function as correlates in caMS configurations.

## 5.2 Full sources: The amelioration effect of having a stable subject

As mentioned already, we interpret the results of our *post hoc*, across-experiment comparison as demonstrating that the presence of a bound pronominal subject in a clausal island reduces the processing burden associated with wh-extracting across that island boundary in both German and Spanish. Because the same amelioration effect is observed for stable-comp$_F$ configurations (see Cortés Rodríguez & Griffiths for German; Cortés Rodríguez 2022b for Spanish), we extrapolate that the effect is observed for any clause-sized locality domain.

[16] The assumption that ungrammatical sentences and grammatically complex sentences lead to processing difficulties is supported by various studies in psycholinguistics and cognitive science (e.g., Friederici & Pfeifer & Hahne 1993; Vos et al. 2001; Friederici et al. 2006; Hofmeister et al. 2013).

There is, of course, an alternative analysis available, which runs as follows: (i) the presence of a bound pronoun in C's subject position renders C permeable to swh2's movement, and (ii) stable-comp$_F$ configurations receive a lower acceptability rating than short source caMS configurations because the former but not the latter involve recovering a complex, biclausal elliptic clause, which incurs a processing cost that translates into an acceptability penalty. We do not currently advocate this approach because the theories in which this explanation is endorsed – namely, Grano & Lasnik (2018) and Barros & Frank (2023) – make incorrect predictions elsewhere. Regarding Grano & Lasnik, they claim that a clause-level barrier to extraction is suspended only if a c-commanding subject binds C's pronominal subject. Although Grano & Lasnik are primarily concerned with non-island clauses, they extend their claim to clausal islands, noting that an amelioration is observed for standard argumental wh-movement (compare the examples in (55)).

(55) a. What$_1$ did Ann$_i$ go home [after PRO$_i$ reading $t_1$]?
b. ? What$_1$ did Ann$_i$ go home [after she$_i$ read $t_1$]?
c. * What$_1$ did Ann$_i$ go home [after Mary$_k$ read $t_1$]? (Grano & Lasnik 2018: 494)
d. * How$_1$ did John$_1$ go home [after he$_1$ solved the problem $t_1$]? (*ibid.*: 495)

As pointed out by Barros & Frank (2023: 672), the technical details of Grano & Lasnik's theory yield the prediction that any clause-sized barrier that obtains between pronominal subject and its binder is suspended, which is not borne out (compare (55a) and (55b)). Barros & Frank also show that, in non-island configurations, an amelioration effect for cross-clausal movement is also obtained when the binder is a non-subject. Seeing as most of our experimental items involve an indirect object in the matrix clause as the c-commanding binder, our experimental results confirm this. This is not predicted by Grano & Lasnik's theory.

(56) a. ? Which article$_2$ did Ann$_i$ cheer [because **she**$_i$ won the Pulitzer [after she$_i$ published $t_2$]]?
b. * Which article$_2$ did Ann$_i$ cheer [because **Bill** won the Pulitzer [after she$_i$ published $t_2$]]? (Barros & Frank 2023: 672)

Recall from §2 that Barros & Frank claim that any non-referential expression, as opposed to only a bound pronoun, can function as a stable subject, thus making subclauses permeable to swh2-extraction. Also, recall from §2 that Cortés Rodríguez & Griffiths offer evidence from informally collected judgments on English stable-comp configurations that lack a short source interpretation to suggest that this claim is incorrect. If one extends Barros & Frank's analysis to cover the stable-island$_F$ configurations under discussion here, the same criticism holds – it appears that a clausal adjunct is not rendered permeable to wh-extraction when its subject is expletive *there* or a negatively quantified DP:

(57) a. * Which article did Ann cheer [because **there** was a problem with $t_1$]?
b. * Which student did Ann console [because **no professor** would supervise $t_1$]?

Should a theory be developed that amalgamates Grano & Lasnik's and Barros & Frank's (this theory would capture that observation that only bound pronouns can suspend clausal barriers to extraction and that the pronoun can be bound from any c-commanding position), then this theory would represent a serious competitor to the position that we currently endorse. We suspect that online experiments (e.g., self-paced reading, eye-tracking) would be required to empirically distinguish between these competing analyses.

### 5.3 The main effect of EMBEDDING TYPE

As mentioned in §4.2.1, EMBEDDING TYPE was included in the experiment reported in §4 merely to ensure reliability. We predicted a main effect for EMBEDDING TYPE based on our intuitions, and this prediction was borne out. Because no interaction between EMBEDDING TYPE and SOURCE was observed for either German or Spanish, we can be confident that the main effect obtained for EMBEDDING TYPE's is entirely unrelated to ellipsis. Therefore, offering a viable explanation for why this main effect obtains is not necessary here. If pushed to speculate, we would suggest that the observed difference is related to the fact that the relative clause in the RC condition is an adjunct, whereas the noun complement clause in the NCC condition is a complement. According to some researchers (e.g., Fox & Nissenbaum 1999), adjunct extraposition involves base-generation, whereas argument extraposition involves rightward movement. If so, the NCC condition is syntactically more complex, which could translate into a greater processing cost.

## 6 Conclusion

In this paper, we reported the results of experiments conducted on complex antecedent multiple sluicing (caMS) constructions in German and Spanish and undertook a comparison of these results with those obtained in prior work (reported in Cortés Rodríguez 2022a,b; Cortés Rodríguez & Griffiths to appear). We interpreted our results and subsequent across-experiment comparison as showing that (i) short elliptic sources corresponding to clausal islands are available and preferred, (ii) both relative and personal pronouns can function as correlates in MS, and (iii) the processing burden associated with island-crossing wh-movement of the second sluiced wh-phrase (swh2) is partly ameliorated by the presence of a bound pronoun in the subject position of the island, just as the burden associated with wh-moving swh2 across a non-island finite clausal boundary is. These results therefore not only support the position endorsed in Cortés Rodríguez (2022a,b) and Cortés Rodríguez & Griffiths (to appear) that apparent clausemate condition obviations are, from a grammatical standpoint, illusory, but complete an empirical paradigm of caMS configurations and present novel evidence that there are usually far more options available for resolving the ellipsis site than previously considered and that the options that are (salient enough to be) available will depend on language-specific factors related to what counts as a cue for ellipsis resolution.

## Data availability

All data processing and analysis code are publicly accessible through an OSF repository: https://doi.org/10.17605/OSF.IO/MWJZ9. The supplementary files with the material and results of Subexperiments 1 and 2 are available in the same OSF repository.

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## Competing interests

The authors have no competing interests to declare.

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