

A morphosyntactic condition on sluicing: evidence from Spanish/German code-switching

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Abstract

It is widely accepted that a semantic condition holds for sluicing: the sluice and the antecedent have to entail each other (Merchant 2001). In addition to this, we propose a morphosyntactic condition: the sluice has to share at least some morphosyntactic features with the antecedent. Our data show that the case assigner of the remnant must at least share the case features with its correlate in the antecedent. Our proposal is based on experimental data from Spanish-German code-switching.

Keywords: ellipsis, sluicing, code-switching, case, German, Spanish

1 Introduction

Sluicing is a type of ellipsis in which the sentential part of an embedded interrogative clause is omitted, and the *wh*-phrase (the *remnant*) is the only element of the clause pronounced (cf. Van Craenenbroeck and Lipták 2009 for a possible revision of this definition). An example is shown in (1a) along with its non-sluced counterpart (1b).

- (1) a. Someone called the cops, but they don't know who.
b. Someone called the cops, but they don't know who called the cops.

Ross (1969) pointed out a case-matching effect in sluicing: The remnant must bear the same case that its non-elided counterpart bears, as in the example in Spanish in (2)ⁱ:

(2) Spanishⁱⁱ

- a. Pedro le gusta a alguien, pero no sé {a quién/ *quién}.

PEDRO CL likes someone.DAT but not know.1SG who.DAT NOM

‘Someone likes Pedro, but I don't know who.’

- b. Pedro le gusta a alguien, pero no sé a quién le gusta.

PEDRO CL likes someone.DAT but not know.1SG who.DAT CL likes

‘Someone likes Pedro, but I don't know who likes Pedro.’

This case-matching effect, among other identity effects, has been used as evidence for deletion theories of sluicing. In this family of theories, a sluiced phrase is in fact a complete syntactic phrase that undergoes deletion at one point. In his seminal work, Merchant (2001) proposed that the deleted phrase must be semantically equivalent to the antecedent phrase, without imposing additional conditions of lexical or morphosyntactic identity. Subsequent work (Chung 2005, 2013; Merchant 2013) has proposed some

syntactic sensitivity for different types of ellipsis, including sluicing. In this article, we offer further evidence of a syntactic condition on sluicing.

Our evidence comes from code-switching. Consider the following examplesⁱⁱⁱ:

(3) Spanish

Juan amenazó a alguien pero no sé a quién <amenazó>.

Juan threatened someone.ACC but not know.1SG who.ACC threatened.3SG

(4) German

Juan hat jemandem gedroht aber ich weiß nicht wem <er gedroht hat>.

Juan has threatened someone.DAT but I know not who.DAT he threatened has

(5) Spanish/*German*

Juan amenazó a alguien *aber ich weiß nicht {*wen/wem} er gedroht hat.*

Juan threatened someone.ACC but I know not who.DAT he threatened has

(6) Spanish/*German* sluicing

Juan amenazó a alguien *aber ich weiß nicht a. / wen < ? >.*

b. / *wem < ? >.

‘Juan threatened someone, but I don’t know who (he threatened).’

Sentence (3) is a monolingual Spanish sentence in which the final chunk can be sluiced (we indicate unpronounced material with angled brackets). Notice that the wh-phrase bears accusative case. In this example we know it is accusative because if the remnant is substituted by a clitic pronoun it is realized as accusative. In (4) we have the German equivalent to (3); the wh-phrase bears dative case here, morphologically overtly realized in German nominal complex (on determiner and adjective and on pronouns). In (5) we

have a non-sluced sentence in Spanish/German code-switching. Unsurprisingly, the wh-phrase bears dative case, assigned by German *drohen*, as in (4). The surprise comes with (6), which is the sluiced counterpart to (5). The wh-phrase in (6) must bear accusative and not dative case. This is surprising because both (6a) and (6b) would satisfy any semantic condition of equivalence or identity between antecedent and deleted phrase, given that case is the only feature distinguishing the wh-phrase in both sentences. Further, there is no reason specific to code-switching why either (6a) or (6b) should be ungrammatical. We can conjecture that in (6a) the sluiced TP is in Spanish, while in (6b) it is in German. We argue in this article that (6b) is ungrammatical because the antecedent includes a verb that assigns its complement accusative case and the sluiced clause must match this property. This leads to the conclusion that additional morphosyntactic requirements must hold between the sluiced constituent and its antecedent, on top of a semantic condition. We suggest a proposal that independently reaches conclusions similar to Merchant (2013) and Chung (2013).

2 Sluicing and Case

As mentioned above, the remnant wh-phrase must match the case of its non-elided counterpart. In monolingual contexts this is equivalent to the case of the correlate in the antecedent, as seen in (1). This property of sluicing remains a crux for theories that aim to account for sluicing without appealing to structure within the ellipsis site.

To see the difficulty, we may look at general theories of ellipsis. Kehler (1997) proposes a discourse-copying algorithm to explain strict and sloppy readings of VPE.

This algorithm uses role-linking, where a role within an event structure can be given by a function. The algorithm links an element (such as *his* in *John likes his mother*) to the closest possible c-commanding coreferential. However, if we were to extend this algorithm to sluicing, it is not clear why we get (6a) but not (6b), given that the wh-phrase in each case should get the same role irrespective of case. We see in (5) that the remnant can get dative case, yet the same remnant cannot get dative case in a sluiced structure (6b), where its role should be the same.

In another proposal, Ginzburg and Sag (2000) offer a theory in which there is no structure beyond the wh-phrase in sluicing. In this analysis the wh-phrase found in these constructions is different from other wh-phrases, with its own specific features that allow for reinterpretation. Without going too deep into the details of these approaches, accounting for Case matching effects in monolingual contexts in a natural manner remains problematic for this line of research (cf. Chung 2005), and in a bilingual context, the problem only exacerbates. To see this, we need only look at (6) again: it is not clear how the German remnant wh-phrase would have a certain set of features when the antecedent verb is in German, and a different set when the antecedent verb is in Spanish. This holds, in fact, for any theory that depends only on pragmatic inferences for ellipsis resolution^{iv}.

In a deletion theory of sluicing, Case matching effects follow naturally, since an utterance like (1a) is derived just as (1b), up until a point in the derivation where deletion occurs. Merchant (2001) proposes a general theory of ellipsis in which it is explained as

PF deletion. In his approach to sluicing, a formal feature [E] in C triggers deletion at PF of C's complement, TP. The characteristics of [E] are given in (7):

- (7) a. The syntax of E: $E [uwh^*, uQ^*]$
- b. The phonology of E: $\varnothing TP \rightarrow \emptyset / ES_$
- c. The semantics of E: $[[E]] = \lambda p : e\text{-GIVEN}(p) [p]$

(Merchant 2004)

The syntax of E only allows the feature [E] in interrogative C heads in wh-questions. The semantics of [E] constrains it to cases where the element to be deleted is e-GIVEN (for the notion of GIVENNESS see Schwarzschild 1999), i.e. a “two-way entailment” holds: a constituent *A* and its antecedent must entail each other for *A* to delete. This semantic condition is illustrated for VPE in (8):

- (8)a. She called Ben an idiot, but I don't know who else \langle_{TP} she called *t* and idiot \rangle .
- b. *She called Ben an idiot, but I don't know who else \langle_{TP} she insulted *t* \rangle .

(Merchant 2001:35)

In (8a) the antecedent TP and the elided TP entail each other, so ellipsis is possible. Since insulting someone does not entail calling him an idiot, the mutual entailment does not hold in (8b), and the ellipsis is impossible^v.

As pointed out in Chung 2005, a problem for a semantics-only theory of deletion is the case of sprouting sentences. Sprouting refers to sentences that do not contain an overt inner antecedent, as in (9) and (10):

- (9) a. They're jealous of someone, but it's unclear of who_i \langle they're jealous *t_i* \rangle .
- b. They're jealous of someone, but it's unclear who_i \langle they're jealous of *t_i* \rangle .

(10) a. They're jealous, but it's unclear of who_i <they're jealous *t_i* >.

b. *They're jealous, but it's unclear who(m)_i <they're jealous of *t_i* >.

(Chung 2005:7)

In (9) the antecedent contains the correlate that the remnant is asking about. In (10) however the correlate is only implicit. This distinction is connected to another interesting empirical difference between the two sentence types. In (9) where the PP *of someone* is present in the antecedent, the preposition *of* can be either stranded or pied-piped in the sluiced part of the sentence. When the PP is absent from the antecedent, as in (10), the preposition cannot be stranded.

This difference is difficult to account for in a semantics-only system, since a preposition semantically empty such as *of* should not come into play when determining double entailment. The fact that the presence of the preposition *of* in example (10) is indispensable to render the sentence grammatical escapes Merchant (2001)'s semantic condition^{vi}.

Chung 2005 explains (9-10) with a lexical requirement that supplements Merchant's semantic condition. The requirement is in (11):

(11) Every lexical item in the numeration of the sluice that ends up (only) in the elided IP must be identical to an item in the numeration of the antecedent CP.

(Chung 2005:11)

This condition states that a lexical item *LI* can be part of the sluice if and only if there is an identical (overt) LI in the antecedent. Take examples (9) and (10) again. In example (9a) the sluiced part contains *they're jealous*. This chunk is present in identical form in

the antecedent. Chung correctly predicts this sluice to be acceptable. In (9b) the sluiced portion of the sentence is also identical to some part of the antecedent: *they're jealous of*. The sprouting examples in (10) are more interesting. In (10a) the preposition *of* is pied-piped along with the remnant out of the part of the sentence to be sluiced before deletion takes place. Therefore, even though the preposition is not present in the antecedent this sentence is grammatical; nothing is actually deleted that is not also present in the antecedent. In (10b), however, the preposition *of* is not pied-piped with the remnant and remains in the sluiced portion of the sentence. In this case, there is no identical LI for the deleted preposition in the antecedent. This example is correctly ruled out by Chung's condition. The question remains, however, whether all features of the involved LIs are at play in (11), i.e. if the whole LI has to be identical or just a subset of its features. The code-switching data in this article suggest that along with semantic features, at least certain morphosyntactic features, those related to case, must be subject to a condition such as (11).

Similar to Chung 2005, Merchant (2013) proposes a partial syntactic identity, whereby structural identity, though not isomorphism, is required to hold between the sluice and its antecedent. Merchant notes that *voice* cannot differ between the ellipsis and its antecedent in sluicing, whereas in VPE a mismatch in voice is allowed, as in (12):

(12) a. *Joe was murdered, but we don't know who.

b. Joe was murdered, but we don't know who murdered Joe.

(Merchant 2013)

This, he argues, is due to the fact that in VPE the ellipsis site is smaller than in sluicing. Given that (12a) is ungrammatical but its non-sluiced counterpart (12b) is not, one is led to believe that the ungrammaticality results from the sluicing of the clause, and not from any violation in the original construction (12b). If sluicing amounts to deletion of TP—and voiceP is contained in TP, and therefore inside the ellipsis site—the ungrammaticality of (12a) follows naturally as a case of structure mismatch within the ellipsis site.

Chung (2013) offers yet a more nuanced account of the requirements for identity at the structure level. In this proposal, in addition to some identity condition, the syntactic restriction concerns argument structure and Case only. Concerning argument structure, the sluice cannot have a different argument structure than its antecedent clause. As for Case, if the remnant of the sluice is a DP, its licensing head within the ellipsis must be identical to the licensing head of its correlate in the antecedent clause. Evidence for these restrictions is shown with some intransitive verbs in Chamorro that have derived transitive counterparts. Consider (13):

(13) a. Ekgu' si Joe, lao ti hu tungu' [håyi ha

ekgu'i].

AGR.jealous NM Joe but not AGR know who? WH[OBJ].AGR

jealous.of

‘Joe is jealous, but I don’t know who he is jealous of.’

b. *Ekgu' si Joe, lao ti hu tungu' [håyi ____].

AGR.jealous NM Joe but not AGR know who?

(‘Joe is jealous, but I don’t know who.’)

(Chung 2013)

The verb *ekgu*’ is an intransitive predicate which can introduce an internal argument as a PP, though this argument may be omitted. Its counterpart *ekgu*’i is semantically similar yet it introduces its internal argument as a DP. Now, in (13a) we have an unsluiced example of an embedded question with the transitive *ekgu*’i preceded by an antecedent with intransitive *ekgu*’. (13b) shows how a sluice in this situation results in ungrammaticality, even though semantically any condition should be satisfied. Chung concludes that the ungrammaticality must lie in the argument structure difference between the two verbs.

Case effects also suggest a structural condition on sluicing. Chung (2013) proposes that the remnant in a sentence like (14) can be seen as a possessive DP with its complement elided.

(14) They impounded a car, but I’m not sure [whose D <car>].

(Chung 2013)

If this is indeed the case, both the possessor and possessive DP get Case within the sluice: the possessor gets its Case from D in the possessive phrase, and the possessive DP gets its Case from the transitive verb. A mismatch occurs if there is no possessor in the sluice, however.

(15) *They impounded a car, but I’m not sure who.

(Chung 2013)

The antecedent in (15) does not contain a possessive DP. Consequently, the possessor in (15) cannot be licensed by the same head as its antecedent: there simply is no corresponding Case-licensing head in the antecedent. Thus, ungrammaticality results. Compare now (15) to (16):

(16) They impounded someone's car, but I'm not sure who.

(Chung 2013)

In (16), the antecedent contains a possessive DP, so its counterpart within the sluice should have the necessary features to license the wh-phrase.

At this point, we can see that there is growing evidence for some sort of syntactic identity condition between the ellipsis and its antecedent. In the following section we present new data from code-switching that support an analysis that requires both semantic and structural identity conditions.

3 Code-Switching

The data we base our analysis on are code-switched sentences. Code-switching is the simultaneous use of two languages within a discourse by bilingual speakers. An example of code-switching is (5) repeated here as (17):

(17) Juan amenazó a alguien *aber ich weiß nicht wem* *<er gedroht hat>*.

Juan threatened someone.ACC but I know not who.DAT he threatened has

‘Juan threatened someone, but I don't know who <he threatened>’.

Bilingual speakers have competence: they have clear intuitions about the acceptability of code-switched sentences.

In some traditions of code-switching theory it is common to propose code-switching-specific rules to explain restrictions in the possible switches between languages (e.g. Poplack 1980, Myers-Scotton 2001, among others). This is undesirable on two accounts. First, it is theoretically costly to assume an unmotivated extra mechanism to explain code-switching. Second, assuming code-switching is regulated by special rules denies us the opportunity to directly compare code-switching to monolingual speech and therefore to take advantage of “a fertile new source of evidence bearing on a wide range of questions in current grammatical theory” (Woolford 1983).

Our approach adheres to the position that there are no code-switching-specific rules (see Mahootian 1993, Macswan 1999, 2000, González 2005, González and López 2011, 2012, Bartlett and González, 2013)^{vii}. In a minimalist approach the computational mechanisms of language should be invariant, the variation between languages accounted for solely in terms of the lexicon (Chomsky 1995, 2000). Thus, assuming code-switching is just an expression of a speaker’s I-language, code-switching should only be constrained by the valuation operation of the features in the LIs in a derivation, the same as monolingual speech.

Data from code-switching can give us access to combinations of elements and features that we may otherwise be unable to separate in monolingual data. A bilingual’s competence in combining LIs from two (or more) lexica into one derivation can allow us to isolate certain features or feature combinations and see what impact they have on the derivation (cf. González-Vilbazo and López, 2012). For our purposes, this translates to the possibility of experimentally separating the semantic from the case conditions. By

using two equivalent verbs from two distinct languages, we can ensure we match the semantic condition. In our language pair, we identify several verbs that are translational equivalents yet nevertheless assign different case. *Drohen* and *amenazar* are translational equivalents ('*threaten*'), i.e. they satisfy the semantic identity condition. However, *drohen* assigns dative case and *amenazar* accusative. This should allow to test the case condition independently of the semantic condition.

4 Experiment

For this study we are interested in whether code-switching can happen at an unpronounced level and what, if anything, constrains sluicing has in code-switching.

Explicitly stated the research questions are:

1. Is code-switching possible within ellipsis?
2. What is the identity relationship between the antecedent and the deleted phrase?
Should it be purely semantic or should they also have morphosyntactic features in common as well?

We considered three factors in answering these questions:

1. *complexity*: *simple* remnant 'who' / *complex* remnant 'which person'
2. *case*: NOM/ ACC/ DAT
3. *embedded TP*: *sluiced* TP/ *Spanish* TP/ *German* TP.

Complexity refers to whether the remnant is (a) a one word Wh-constituent (*who*, *what*, *where*, *etc...*) or (b) a two-word constituent (*what book*, *which teacher*, *etc...*). *Case* refers to the case of the remnant, either (a) nominative, (b) accusative, (c) dative.

Embedded TP refers to whether the TP in the embedded clause was (a) not present (sluiced), (b) in Spanish, or (c) in German.

Participants provided acceptability judgments (AJTs) on 90 target stimuli consisting of code-switched constructions. Participants rated the stimuli on a five-point Likert scale, with 1 being completely unacceptable and 5 completely acceptable. The experiment included repeated stimuli for testing consistency in participants' responses. The target stimuli were mixed in among 80 code-switched distracter sentences and all sentences were pseudo-randomized. All target stimuli consisted of an antecedent clause in Spanish followed by a second clause and remnant in German, as seen in (18).

(18) a. Juan amenazó a alguien, *aber ich weiß nicht wen.*

Juan threatened someone.ACC but I know not who.ACC

b. Juan amenazó a alguien, *aber ich weiß nicht wen* Juan amenazó.

Juan threatened someone.ACC but I know not who.ACC Juan threatened

c. Juan amenazó a alguien, *aber ich weiß nicht wen* *Juan gedroht*

Juan threatened someone.ACC but I know not who.ACC Juan threatened
hat.

has

‘Juan threatened someone, but I don’t know who (Juan threatened).’

All stimuli examples in (18) are composed of a Spanish antecedent (*Juan amenazó a alguien*) followed by a German adversative clause *aber ich weiß nicht [X]*. This German adversative includes an embedded clause that contains the remnant *wen* and either a sluice (18a), a Spanish TP (18b), or a German TP (18c). The reason for choosing this

structure for the stimuli is that we wanted (i) the correlate and the remnant to be in different languages and being potentially assigned different case, (ii) the remnant to be in German, which has richer overt case marking than Spanish, and (iii) to have as few switches as possible to reduce potentially confounding factors.

All target stimuli contain a verb that assigns a different case in Spanish and German. Of these verbs, four assign accusative to their internal argument in Spanish, while their equivalents in German assign dative. In the case of ‘to like’, it is the *experiencer* argument that receives different case, dative in Spanish and nominative in German. The verbs are listed in (19).

(19) Spanish	German	
a. <i>gustar</i> (DAT)	<i>mögen</i> (NOM)	‘to like’
b. <i>seguir</i> (ACC)	<i>folgen</i> (DAT)	‘to follow’
c. <i>lastimar</i> (ACC)	<i>wehtun</i> (DAT)	‘to hurt’
d. <i>amenazar</i> (ACC)	<i>drohen</i> (DAT)	‘to threaten’
e. <i>contradecir</i> (ACC)	<i>widersprechen</i> (DAT)	‘to contradict’

An important problem specific to code-switching stems from the fact that code-switching is often socially stigmatized and therefore considered substandard. In previous projects we found that this leads to a tendency to generally rate code-switching stimuli lower than monolingual stimuli^{viii}. In order to mitigate this problem, we included all instructions and remarks in both languages and (whenever possible) in code-switching. These instructions and remarks have been written by one of the authors, a competent German-Spanish bilingual and code-switcher himself. Also, in order to help our participants understand

how to rate the data we include a training unit that familiarizes the subjects with linguistic stimuli (albeit not the target ones), and with rating on Likert scales.

Participants signed a consent form then filled out a linguistic background questionnaire and received task specific training on grammaticality rating in code-switching utterances. Afterwards, they read the stimuli and distracters, giving each a rating. After finishing the experiment, they completed a Spanish dialectal survey to confirm case assignment for their dialect. We found some variation in Spanish case assignment, which we took into consideration in our analysis, as we will see below. There was no dialectal variation in participants' German.

For the purpose of our study we used informants that are native speakers of both Spanish and German and are used to code-switching. We used the following criteria to select our subjects: (i) The competent bilingual speaker has to have acquired both languages before a certain age (3), and they have to have used both languages consistently throughout their lives; and (ii) a competent bilingual has to be identified by monolingual native speakers of both languages as a native speaker and complete a standard proficiency test (as far as available).

Using these criteria, six^{ix} 28-43 year-old highly proficient Peninsular Spanish/German bilinguals were recruited via email and in person to participate in the study. Age of exposure *AoE* to both languages was reported less than 1 year in all but one case (*AoE*=3).

5 Data

The *complexity* factor was included in this study because it seems to play a role in an ongoing experiment on the acceptability of wh-movement in code-switching (Ebert and González, in prep). Complex wh-phrases like *which book* are on average easier to switch than wh-phrases containing just one word like *what*. However, of the three factors considered in the present study, *complexity* was not found to be relevant and we will consequently not report further on this finding.

The other two factors under consideration, *case* and *embedded TP*, will be considered together. We organize the presentation of the data by groups of verbs. The first group contains ‘threaten’, ‘follow’, and ‘hurt’, which for our participants assign accusative in Spanish and dative Case in German. The second group only includes ‘like’, and according to our subject’s intuitions, it assigns dative to the experiencer in Spanish and nominative in German. The third group also only contains one verb: ‘contradict’. This verb was initially supposed to be part of the first group as it is usually assumed to assign accusative case in Spanish and dative case in German. However, some of our subjects prefer for ‘contradict’ to assign dative in Spanish as well, thus we discuss this verb separately.

1st group: ‘threaten’, ‘follow’, ‘hurt’

These verbs were found consistently to assign accusative to their internal argument in Spanish, as reported in the Spanish dialectal survey. In German they assign dative to their internal argument.

In (20) we find some examples with ‘threaten’.^x In each of these examples we include all case options for the remnant: *wer* (nominative), *wen* (accusative), *wem* (dative). In the actual experiment the subjects had to rate these options separately.

(20) Code-switching data without ratings

- a. Xavi amenazó a alguien. *Rate {wer/ wen/ wem}*.
b. Xavi amenazó a alguien. *Rate {wer/ wen/ wem}* amenazó Xavi.
c. Xavi amenazó a alguien. *Rate {wer/ wen/ wem}* Xavi gedroht hat.

Xavi threatened someone.ACC guess who.NOM ACC DAT Xavi threatened
‘Xavi threatened someone. Guess who Xavi threatened!’

Table 1 shows the results of the code-switching experiment.

Table 1. Verbs that assign accusative in Spanish (ratings on a 1-5 Likert scale, M=mean, SD=standard deviation)

	NOM		ACC		DAT	
	M	SD	M	SD	M	SD
Sluiced	1.38	0.58	4.00	1.29	2.08	1.21
Spanish	1.21	0.66	4.00	1.25	2.17	1.43
German	1.13	0.34	1.71	0.81	5.00	0.00

Table 1 gives us the mean ratings and standard deviations for the tested stimuli. The columns refer to the case of the remnant (*wer*, *wen*, *wem*), and the rows tell us whether the TP of the embedded clause was sluiced, in Spanish, or in German. As we can see in the table, a remnant with overt nominative case was rejected across the board. This is not

surprising given that neither the Spanish nor the German equivalent of the verbs in this group assigns nominative to its internal argument. When the embedded TP is sluiced, as in (20a), accusative was the preferred case for the remnant. When the embedded TP is Spanish, as in (20b), accusative was again preferred. When the embedded TP is in German, though, as in (20c), dative was the only acceptable option for the remnant. With this group of verbs, sluicing seems to pattern with Spanish. Thus, we interpret the grammaticality of the examples as in (21):

- (21) a. Xavi amenazó a alguien. *Rate* {**wer/* *wen/ *wem*}.
- b. Xavi amenazó a alguien. *Rate* {**wer/* *wen/ *wem*} amenazó Xavi.
- c. Xavi amenazó a alguien. *Rate* {**wer/* **wen/ wem*} *Xavi gedroht hat*.
- Xavi threatened someone.ACC guess who.NOM ACC DAT Xavi threatened'
- 'Xavi threatened someone. Guess who <Xavi threatened>!'

2nd group: 'like'

Spanish *gustar* 'to like' assigns dative to the experiencer, while the equivalent German *mögen* assigns it nominative. Examples similar to our stimuli are shown in (22).

(22) Code-switching data without ratings

- a. A alguien le gusta Andrés. *Rate* {*wer/* *wen/ wem*}.
- b. A alguien le gusta Andrés. *Rate* {*wer/* *wen/ wem*} le gusta.
- c. A alguien le gusta Andrés. *Rate* {*wer/* *wen/ wem*} *ihn mag*.
- someone.DAT CL likes Andrés guess who.NOM ACC DAT CL likes
- 'Someone likes Andres. Guess who <likes him>!'

The results are shown in table 2.

Table 2.

Case assignment with ‘like’

	NOM		ACC		DAT	
	M	SD	M	SD	M	SD
Sluiced	2.08	1.24	2.42	1.38	4.42	1.38
Spanish	1.75	1.42	2.25	1.60	3.08	1.44
German	4.67	1.15	1.25	0.87	1.08	0.29

In table 2 we see that accusative was always disfavored for the remnant. This, again, was to be expected as neither of the equivalents of ‘like’ assigns accusative. For sluiced TPs (22a), dative was preferred. For Spanish embedded TPs (22b) dative was also slightly preferred. If the embedded TP is in German (22c), nominative was strongly preferred. Again, it seems like sluicing patterns with Spanish. The grammaticality judgments for the verb of this group are in (23).

- (23) a. A alguien le gusta Andrés. *Rate* {**wer/* **wen/ wem*}.
- b. A alguien le gusta Andrés. *Rate* {**wer/* **wen/ ?wem*} le gusta.
- c. A alguien le gusta Andrés. *Rate* {*wer/* **wen/ *wem*} *ihn mag*.
- someone.DAT CL likes ANDRES guess who.NOM ACC DAT CL likes
- ‘Someone likes Andres. Guess who <likes him>!’

3rd group: ‘contradict’

With ‘contradict’, we found a nuanced distinction. In the Spanish dialectal survey, three participants preferred dative clitic *le* with ‘contradict’ instead of the expected accusative *lo*. Case assignment was reported as shown in (24). The German equivalent, however, was unanimously found to assign dative.

(24) Case assignments of Spanish *contradecir* and German *widersprechen*

Spanish	German
a. Juan <i>le</i> <i>contradijo</i> . (DAT)	c. Hans widerspricht ihm. (DAT)
Juan CL.DAT contradicts	Hans contradicts him.DAT
b. Juan <i>lo</i> <i>contradijo</i> . (ACC)	
Juan CL.ACC contradicts	

As with the previous data, examples similar to our stimuli are shown in (25). Again, in each of these examples we include all case options for the remnant: *wer* (nominative), *wen* (accusative), *wem* (dative). In the actual experiment the subjects had to rate these options separately.

(25) Code-switching data without ratings

- a. Pep *contradijo* a alguien. *Rate* {*wer/* *wen/ wem*}.
- b. Pep *contradijo* a alguien. *Rate* {*wer/* *wen/ wem*} *contradijo* Pep.
- c. Pep *contradijo* a alguien. *Rate* {*wer/* *wen/ wem*} *Pep widersprochen hat*.
Pep contradicted someone guess who.NOM ACC DAT Pep contradicted has
‘Pep contradicted someone. Guess who Pep contradicted!’

The results for this verb are shown separately in tables 3 and 4, depending on whether participants respectively reported using clitic *le* (dative) or *lo* (accusative) in Spanish.

Table 3.

Contradict SPAN→ dative

	NOM		ACC		DAT	
	M	SD	M	SD	M	SD
Sluiced	1.00	0.00	1.67	0.82	4.83	0.41
Spanish	1.00	0.00	2.00	0.89	3.83	1.17
German	1.00	0.00	1.67	0.52	5.00	0.00

In table 3 we see that when our subjects consider ‘contradict’ to assign dative case in Spanish, in sluiced utterances the remnant must bear dative. Similarly, for these speakers, utterances with the embedded clause in Spanish or German also must have the remnant bearing dative. Given that the equivalent verbs of ‘contradict’ in both Spanish and German assign dative, this finding was to be expected.

Table 4.

Contradict SPAN→ accusative

	NOM		ACC		DAT	
	M	SD	M	SD	M	SD

Sluiced	1.00	0.00	5.00	0.00	1.00	0.00
Spanish	1.00	0.00	4.00	1.41	1.00	0.00
German	1.00	0.00	1.00	0.00	3.00	2.83

When the subjects prefer the Spanish equivalent of ‘contradict’ *contradecir* to assign accusative (Table 4), things change. In this case, the remnant was preferred bearing accusative in both sluiced utterances and sentences with Spanish embedded TPs. When the embedded TP is in German, dative was preferred across the board. These findings are similar to what was found in the data with group 1 verbs.

To summarize, all groups showed a similar pattern. When the embedded TP was present, the case of the remnant corresponded to the case assigned in the language of the embedded TP. When the embedded TP was sluiced, the case of the remnant corresponded with the case assigned in Spanish, the language of the antecedent clause.

6 Discussion

We can draw two generalizations about sluicing from the code-switching data in the previous section:

- (23) a. In non-sluiced sentences, the embedded Case assigner determines the case of the remnant.
- b. In sluiced cases, the embedded Case assigner assigns the same Case to the remnant as the antecedent would.

If there is no sluicing, the embedded Case assigner assigns Case to its complement. This is true regardless of the Case that the verb in the antecedent assigns. In code-switching we find examples in which the verb in the antecedent and the verb in the second clause assign different Case, such as (27):

(27) Juan siguió a alguien, *aber ich weiss nicht wem* Juan gefolgt ist.

Juan followed someone.ACC but I know not who.DAT Juan followed is

‘Juan followed someone, but I don’t know who Juan followed.’

If, however, the sentential part of the second clause is sluiced, then (26b) holds, i.e. the remnant gets the same Case that the verb in the antecedent assigns. If we assume that deletion theories are on the right track, we have to conclude that the remnant’s Case was assigned by the verb in the deleted TP. Therefore, the morphosyntactic features for Case assignment of the verb in the sluice have to be identical to the ones of the verb in the antecedent.^{xi}

These results suggest a further condition on top of the semantic requirements for sluicing. For now, we can say that there is at least a condition for the Case assigner of the remnant to share the Case features with its correlate in the antecedent.

This amended condition would explain the difference in grammaticality between the following examples:

(28)a. Juan siguió a alguien, *aber ich weiß nicht wen* <Juan siguió >.

b. *Juan siguió a alguien, *aber ich weiß nicht wem* <Juan gefolgt ist>.

Juan followed someone.ACC but I know not who Juan followed

‘Juan followed someone, but I don’t know who.’

Since both the elided and the antecedent TP are semantically indistinct, from a semantics-only approach to sluicing it is not clear why we find the difference in (28). If we take, for instance, Merchant 2001's double entailment requirement, (28b) satisfies it as well as (28a). What causes the ungrammaticality in (28b) is the Case of the remnant. Similarly, a theory based on pragmatic inference, such as Ginzburg and Sag 2000, has to account for why the *wh*-phrase must bear the Case that its correlate in an antecedent clause does, and not, for instance, a default Case. Thus, morphosyntactic features also need to be accounted for in a theory of sluicing; a semantics-only or pragmatics-only approach does not appear to be enough.

While a semantics-only approach to sluicing does not explain the data shown above, Chung (2005)'s lexical requirement in (11) may fare better (repeated here as (29)).

(29) Every lexical item in the numeration of the sluice that ends up (only) in the

elided IP must be identical to an item in the numeration of the antecedent CP.

If German *folgen* is considered an equivalent of Spanish *seguir* 'to follow', this does not imply that these LIs are identical. Differences exist between them (phonological, morphosyntactic). Given (29), we could say that LIs from different languages are not identical. Thus, if the sluice contains LIs that are equivalent but not identical to the LIs in the antecedent, (29) will have been violated.

The problem we see with this condition is that it suggests that LIs have to be identical in all respects. This is a stronger claim than what our data suggest. In this article we have provided some experimental evidence that, in addition to the semantic condition, at least some morphosyntactic features in the sluice have to be identical to the ones in the

antecedent. It is nevertheless still possible that not all features have to be identical. Further, the data do not support the claim that all LIs inside the ellipsis must be identical, i.e. in the same language, to their counterparts in the antecedent clause; only that the Case assigner is. Whether a stricter lexical condition is also necessary is a matter that requires further research.

Two other theories successfully account for the data presented above. Both Merchant (2008, 2013) and Chung (2013) argue for a structure condition on sluicing on top of the semantic requirements. For Merchant, the structure of the ellipsis must be identical. Voice mismatches, allowed in VPE but not in sluicing, are explained by positing voice into a functional projection that contains the VP. This way, the head that determines voice sits outside of the ellipsis in VPE but not in sluicing. For its part, Chung (2013) argues that sluicing is constrained by a condition that the argument structure of the elided predicate and its antecedent be identical, and that any DP-remnant must be Case-licensed by head identical to its correlate in the antecedent. As per the data presented in section 5, both of these proposals seem to concur with our analysis. In Merchant's model, given that the Case assigner would remain inside the ellipsis, no Spanish-German mismatch between the antecedent and sluiced Case assigner could occur. In Chung's theory, its Case condition directly addresses the core of our data. Given the Case condition, the *wh*-phrase, even if in another language, must bear the same Case as its correlate in the antecedent.

Interestingly, Merchant expands his theory of movement and deletion for sluicing to account also for fragment answers (2004; Merchant et al. 2013), given some parallels

found in those two constructions such as connectivity effects. It should be possible to expand our project to include fragment answers in code-switching contexts. As a matter of fact, informal reports by some of our consultants seem to indicate that the same type of case-matching condition found in sluicing applies to fragment answers:

(30) Fragment answers in code-switching

A: ¿A quién amenazó Juan?

who.ACC threatened Juan

B: { *Der/ Den/ *Dem } Lehrer.

the.NOM the.ACC the.DAT teacher

As (30) shows, only the answer bearing accusative is acceptable, even though in German this same answer must bear dative. Assuming a deletion approach to fragment answers, this datum suggests that the case assigner must be the same as in the question. Further research is nevertheless necessary.

Finally, after addressing research question 2 of section 4 we now turn to research question 1: Is code-switching possible within ellipsis? Notice that this question can be interpreted in two ways: (a) is a code-switch possible between elements inside an ellipsis and elements outside of it, and (b) is code-switching possible between elements inside the ellipsis? The simple answer to the former is yes, it is possible. In the following example we have a switch between the German remnant outside the ellipsis and the Spanish TP in the ellipsis.

(30) Sluicing under code-switching

Juan siguió a alguien, *aber ich weiß nicht wen₁* <siguió *t₁* Juan>.

Juan followed someone.ACC but I know not who.ACC followed Juan

‘Juan followed someone, but I don’t know who.’

The second way in which research question 1 can be interpreted is more difficult to answer, since, by its very nature, what is elided is difficult to classify as being part of one or another lexicon. After the discussion in this paper, however, we have enough evidence to answer the question affirmatively. Take example (28a) again. We see that the remnant is the German *wen* but the case assigner, in this case the verb inside the TP, must have been drawn from the Spanish lexicon in order for the remnant to get accusative. The remnant has been moved out of the TP but its trace is a copy of the German remnant. The idea that a trace (copy) belongs to one or another lexicon has several important theoretical implications that go beyond the scope of this article. For our purposes, it should suffice to say that we know from the analysis of the data presented in this article that in (28a) the case assigner in the sluice has to come from the Spanish lexicon (as it assigns accusative) whereas the copy of the remnant *wen* must have been drawn from the German lexicon. Thus, we have code-switching inside the sluice.

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ⁱ For this paper we use the following abbreviations: NOM=nominative, ACC=accusative, DAT=dative, CL=clitic, 1SING= first person singular, 3SING= third person singular.

ⁱⁱ Martín González 2010 claims that case mismatches are not relevant in Spanish (p. 36, fn 16), as shown in (I):

I. Han expulsado a uno de sus amigos pero no recuerdo cuál.

have.THEY expelled ACC one of his friends but not remember.1SG which

This clearly cannot be true, however, as evidenced by (II):

II. *Han expulsado a alguien_i pero no sé quién_i.

have.THEY expelled ACC someone but not know.1SG who.NOM

While the difference between (I) and (II) seems to hinge on D-linking, we do not expound on this question further.

ⁱⁱⁱ As is traditional in code-switching literature, *italics* will be used in the examples to indicate a code-switch.

^{iv} We are grateful to an anonymous reviewer for raising this point to us.

^v Hartman (2009) proposes a stricter semantic condition for licensing VPE, and also extends it to sluicing. Specifically, Hartman argues that Merchant's semantic condition over-predicts for relational-opposites in VPE. Consider (I):

I. *John₁ is taller than his₁ spouse, and Bill₂ is <shorter than his₂ spouse>, also.

(Hartman 2009:3)

In (I) the mutual entailment between TPs would hold, since the fact that someone is taller than their spouse entails that someone is shorter than their spouse, and vice versa.

Merchant's condition thus would predict (I) to be grammatical, contrary to fact.

Hartman suggests instead a different semantic condition based on *parallelism* and, following Rooth (1992), requiring semantic identity under some variable assignment.

This proposal would correctly rule out (I):

II. [[VP_A]] = $\lambda x.x$ is taller than x 's spouse

[[VP_E]] = $\lambda x.x$ is shorter than x 's spouse

In (II) the values of the variables in the antecedent and in the elided VPs are not equal and therefore (I) violates Hartman's semantic condition. Hartman, then, correctly predicts (I) to be ungrammatical. Sprouting sentences and the code-switched data presented in this paper would still be problematic for such an account, however. Although Hartman suggests that for cases with implicit arguments (sprouting), these arguments are nevertheless syntactically represented somehow, he gives no further details. However, it seems that even if these implicit arguments are represented syntactically, it would still be unclear why the absence of a semantically vacuous preposition in the sluice should affect any semantic condition based on double entailment (Merchant) or parallelism (Hartman). Similarly, Case matching effects in code-switched sluiced sentences are not explained by parallelism.

^{vi} This has also been discussed in greater detail by Chung, Ladusaw and McCloskey 2011. The authors showed that accounts based on syntactic identity, semantic double-entailment or non-deletion approaches all struggle to account for cases of sprouting. We did not look at cases of sprouting in code-switching for this article, so we limit ourselves to cases of sluicing with overt correlates.

^{vii} An anonymous reviewer suggested we include the work of Joshi (Joshi 1985) as an approach that does not posit a special code-switched grammar. While this goal is stated explicitly in the article, we disagree that the system proposed is without special rules for code-switching. Indeed, it seems clear that the Constraint on closed-class items, wherein switches into an embedded language cannot occur between a closed-class item and an

open-class item, would not be part of the grammar of any language but rather a rule specific to code-switching.

^{viii} See Grosjean 1998 for some methodological issues concerning the study of bilinguals. Also, see Ebert 2011 and González-Vilbazo et. al 2013 for possible solutions to some of these issues.

^{ix} Two participants were not included in the results because of systematic inconsistencies in rating repeated stimuli. Thus the results reported are of four of the participants.

^x In each of the examples in (17) we include all case options for the remnant: *wer* (NOM), *wen* (ACC), *wem* (DAT). In the actual experiment the subjects had to rate these options separately.

^{xi} An anonymous reviewer wondered whether the same conditions would surface in code-switching for downstressing. Indeed, given the fact that our participants accepted non-sluiced utterances with either a Spanish TP or a German TP (the *wh*-phrase in each bearing the Case it would in a monolingual context) one may well suspect that the Case condition only holds in ellipsis, and not downstressing. This is a question worth pursuing further, though it presently falls outside the scope of this study.