

## Article

# Why Is There No Raising to Object in Spanish? A Study of Code-Switching

Jeanne Heil <sup>1,\*</sup>  and Luis López <sup>2</sup>

<sup>1</sup> Department of Linguistics, University of Southern Maine, Portland, ME 04103, USA

<sup>2</sup> Department of Hispanic and Italian Studies, University of Illinois at Chicago, Chicago, IL 60607, USA; luislope@uic.edu

\* Correspondence: jeanne.heil@maine.edu

**Abstract:** Raising to Object (RtoObj), like other types of Raising configurations, features a determiner phrase (DP) in a dual-clausal relationship with both the matrix and the embedded clauses. RtoO is possible in English and a few other languages, most famously, Icelandic. However, it is not possible in many other languages, such as Spanish. As far as we can tell, insight into what licenses RtoObj is largely speculative. The main goal of this paper is to limit the range of possible hypotheses by pinpointing the source of the cross-linguistic difference using code-switching data. *A priori*, we could hypothesize two possible sources for the licensor of RtoObj: it could be a feature in the matrix clause or a feature in the infinitival complement. In this chapter, we present code-switching data that support the second option: English T<sub>defP</sub> is linked to the licensing of RtoObj. We find that early Spanish/English bilinguals overwhelmingly prefer code-switched RtoObj samples when the infinitival complement is in English and they reject RtoObj when the complement is a Spanish infinitival. This suggests that Spanish T<sub>def</sub> is either different or altogether missing.



**Citation:** Heil, Jeanne, and Luis López. 2021. Why Is There no Raising to Object in Spanish? A Study of Code-Switching. *Languages* 6: 172. <https://doi.org/10.3390/languages6040172>

Academic Editor: Bryan Koronkiewicz

Received: 21 July 2021

Accepted: 12 October 2021

Published: 19 October 2021

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Keywords:** code-switching; raising to object; Spanish; English

## 1. Introduction

Raising to Object (henceforth RtoObj), like other types of Raising configurations, features a determiner phrase (DP) in a dual-clausal relationship with both the matrix and the embedded clauses. Consider Example (1).

1. John believes Mary to be intelligent.

In (1), Mary is thematically linked to the infinitival complement—‘Mary’ is an argument of ‘being intelligent’. At the same time, it has the grammatical function of object in the matrix clause, as is revealed using common tests, such as passivization or case morphology:

2. a. Mary is believed to be intelligent.  
b. She believes him to be intelligent.

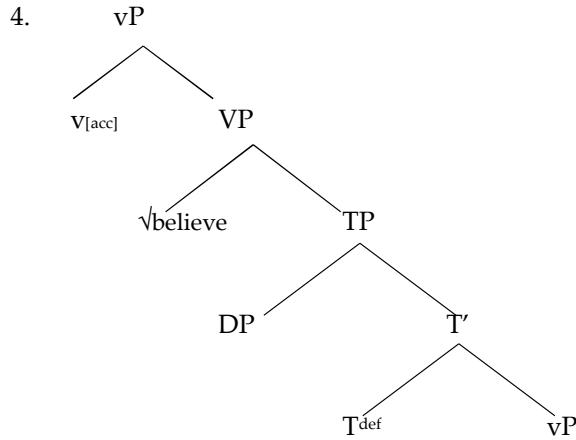
RtoObj is possible in English and a few other languages, most famously, Icelandic. RtoObj appears very infrequently in corpora (Heil 2015). The set of verbs that allow RtoObj is small but coherent: ‘accept’, ‘affirm’, ‘assume’, ‘believe’, ‘conclude’, ‘confirm’, ‘consider’, ‘guess’, ‘imagine’, ‘presume’, ‘proclaim’. They have in common that they denote an epistemic state and cannot select infinitivals consisting of bare dynamic predicates (see Heil 2015 for detailed description). However, RtoObj is not possible in many other languages, such as Spanish. Example (3) shows this:<sup>1</sup>

3. \* Juan cree                  a María ser                  inteligente.  
                                  Juan believes            ACC Maria be.INF                  intelligent

The contrast between (1) and (3) raises the question of what feature or features differentiate Spanish from English and give(s) rise to the distinct acceptability judgments. As far

as we can tell, insight into what licenses RtoObj is largely speculative. Additionally, RtoObj has limited cross-linguistic distribution, which creates additional difficulty to further investigate the question of licensure. The main goal of this paper is to limit the range of possible hypotheses by pinpointing the source of the cross-linguistic difference.

The licensing of a RtoObj structure requires the presence of two features in the syntactic structure: a feature in the matrix clause and a feature in the infinitival complement. Let us use the abstract tree in (4) to illustrate the discussion:



RtoObj involves a functional feature in the matrix clause that establishes a dependency with an argument in the lower clause—hence, the accusative case and the object-like property of the raised DP. This functional feature must be able to probe into a subordinate clause. In our structure in (4), and following a tradition that begins with Chomsky (1995), we take it that the head that assigns accusative case to the argument of the lower clause is *v*.

Additionally, RtoObj requires a feature in the infinitival complement that makes it transparent for a probe in the matrix clause. Following a line of thinking that originates in Chomsky (1995), we assume that English epistemic verbs can select a deficient T phrase ( $T_{\text{def}}P$ ) that is unable to license an overt or covert DP, with the consequence that the thematic subject of the infinitival complement must establish a dependency in the matrix clause.

Since RtoObj requires two features in the structure, the absence of RtoObj in Spanish could come about due to the absence of one of these features in the Spanish inventory. One possibility is that the Spanish *v* does not have the ability to probe lower than a TP barrier. Alternatively, the absence of RtoObj in Spanish would suggest that epistemic verbs cannot select for  $T_{\text{def}}$  or that Spanish lacks this category altogether.

Thus, the question that this article addresses is: What makes English and Spanish distinct—is it the matrix *v* or the subordinate  $T_{\text{def}}$ ? In order to extricate the feature or features that yield RtoObj, we propose using code-switching data. As we shall show, code-switching by deep bilinguals—those that acquired both languages from a very early age and continued to develop both languages into adulthood (see López 2020 for discussion of the concept of ‘deep bilingual’)—helps us set the laboratory conditions to investigate alternative hypotheses.

Let us say a few words about intra-sentential code-switching. For starters, let us introduce an example that appeared in the Facebook feed of one of the authors of this article:

- Antes de que se vaya*, thank President Obama for everything he's achieved. He's worked hard
5. to protect and defend *nuestros terrenos, nuestro aire, nuestras aguas, nuestras comunidades, y nuestra madre tierra*. Add your name to our thank you letter today!  
 (“antes de que se vaya” = “before he leaves”)  
 (“nuestros terrenos, nuestro aire, nuestras aguas, nuestras comunidades, y nuestra madre tierra” = our land, our air, our waters, our communities and our mother earth”)

As you can see, constituents from both English and Spanish find their way into the structure of the clause. For deep bilingual speakers, code-switching should be regarded

as an integral component of their linguistic competence. Consequently, there are rule-governed instances of code-switching and unacceptable instances and deep bilingual speakers can provide acceptability judgments on code-switched sentences just like they do with monolingual sentences.

Many linguists who focus on code-switching assume the *No Third Grammar Approach* (MacSwan 1999). Under the No Third Grammar approach, any unacceptability that arises in code-switching is due to restrictions inherent to the two languages themselves rather than a separate, code-switching-specific rule system. We fully endorse this assumption, which is foundational in our code-switching work.

In light of the previous discussion, consider the following fabricated code-switching sentences:

- |                   |                         |                                |
|-------------------|-------------------------|--------------------------------|
| 6. I believe John | <i>ser inteligente.</i> | Eng/Span                       |
|                   | be.INF intelligent      |                                |
| 7. Creo           | <i>a</i>                | <i>Juan</i> to be intelligent. |
| believe.1         | acc                     |                                |

In the first sentence, the matrix predicate is in English while the subordinate clause is in Spanish. In the second sentence, it is the other way around. Will these sentences be acceptable to Spanish/English bilingual code-switchers? The No Third Grammar Approach informs our understanding of RtoObj and, therefore, we expect that certain combinations will be acceptable to code-switchers, whereas others will not be only on the basis of the features that appear in the structure (4). If a property of the matrix predicate licenses RtoObj, (6) should be acceptable because the matrix clause is in English and, therefore, so is the matrix *v*. On the other hand, if a property of the subordinate clause licenses RtoObj, then (7) should be acceptable, because the subordinate clause is in English.

In this article, we present data that support the second option: English/Spanish bilinguals accept (7) and reject (6). We find that early Spanish/English bilinguals overwhelmingly prefer code-switched RtoObj samples when the infinitival complement is in English and they reject RtoObj when the complement is a Spanish infinitival. Consequently, English T<sub>def</sub>P is linked to the licensing of RtoObj. This suggests that Spanish T<sub>def</sub> is either different or altogether missing as a grammatical ingredient.

The paper is organized as follows. In Section 2, we discuss RtoObj more formally, and we introduce two related phenomena: Raising to Subject and Object Control. Section 3 discusses code-switching as a means of analyzing the nature of RtoObj and introduces our research questions. Section 4 presents the study, including methods, and results. The discussion and conclusions appear in Sections 5 and 6, respectively.

## 2. Raising

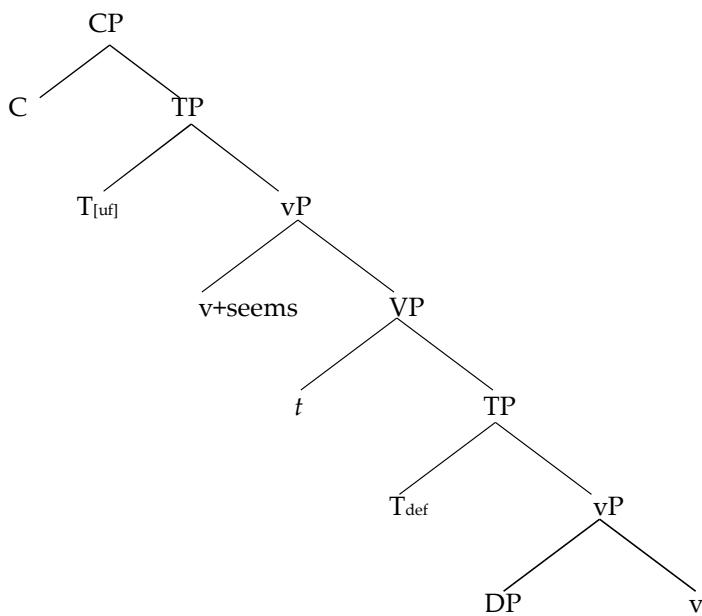
Raising to Subject (RtoSubj) (8) and RtoObj (9) are characterized by having a non-finite complement and a DP that is simultaneously in a thematic relationship with a predicate in the subordinate clause and in a grammatical dependency with a predicate in the matrix clause.

- 8. Raising to Subject  
Ludwig seems to be talented.
- 9. Raising to Object  
Wolfgang believes Ludwig to be talented.

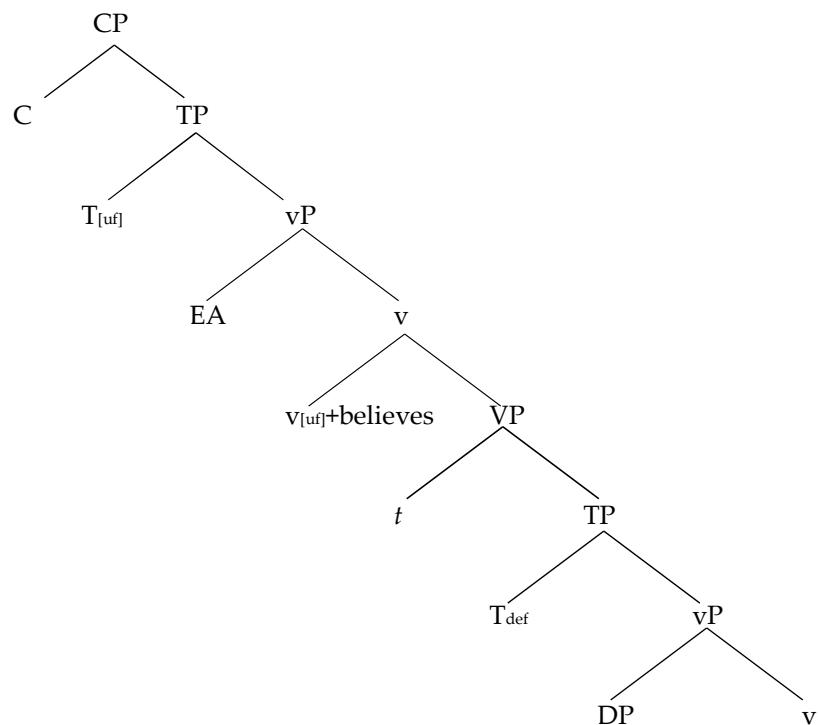
In both the RtoSubj (8) and RtoObj (9) examples above, the DP in a dual-clausal relationship is *Ludwig*, which receives its θ-role from the adjective in the small clause that belongs to the non-finite complement. In this way, the proposition of the complement in both (8) and (9) is that *Ludwig* is talented.

What differs for the DP between (8) and (9) is its relationship with the matrix clause. To make our discussion more explicit, we adopt a fairly standard view on clause structure, the one in Chomsky (2000) and represented in (10) and (11):

10.



11.



That is, we assume two relevant functional categories in the clause, *T* and *v*. Both of them can establish dependencies with a DP argument. In Case Theory terms, we say that *T* assigns nominative case and *v* accusative case. Additionally, we adopt the broad outlines of the Agree (p,g) framework of Chomsky (2000). The idea is that syntactic dependencies are established when a functional category with a bundle of unvalued features (the probe) finds in its c-command domain a constituent with matching valued features (the goal). If the probe bears an EPP feature, it can attract the goal and form a spec position.

Both examples in (8) and (9) have in common that the non-finite *T* of the subordinate clause does not have any  $\phi$ -features that would establish a dependency with the DP argument in the subordinate clause. This is what we called *T<sub>def</sub>* above. This lack of  $\phi$ -features on *T<sub>def</sub>* makes the DP available to a higher probe. Examples (10) and (12) represent a RtoSubj structure. The *v* in the matrix predicate is an intransitive *v* without  $\phi$ -features. The DP eventually establishes a dependency with the  $\phi$ -features of the matrix

T. If Case Theory is assumed, the DP receives the nominative case. Examples (9) and (13) represent RtoObj. Here, the  $v$  of the matrix clause is a transitive  $v$  in full possession of  $\phi$ -features, which are valued against the  $\phi$ -features of the DP: it is said that the DP receives accusative case.

English clearly has an EPP feature in T acting in conjunction with Agree. As a result, the DP of the subordinate clause in a RtoSubj structure raises and merges with T, forming a spec. This is shown in (10) and again in (12). As for RtoObj, we are not certain that *v* triggers movement of the DP (despite some arguments in Bowers 1993) and, therefore, we provide two choices, (13a) and (13b). In (13a), *Ludwig* has raised out of the subordinate clause; in (13b), it stays in situ. The assumption that the argument in RtoObj constructions stays, in fact, in the subordinate clause was predominant in the 1980s and led to the alternative moniker, Exceptional Case Marking (ECM). For our purposes, the decision between (13a) and (13b) is not crucial.

12. Raising to Subject  
Ludwig<sub>i</sub> seems [T<sub>defP</sub> t<sub>i</sub> to be talented]

13. Raising to Object with (13a) and without (13b) movement

  - a. Wolfgang believes Ludwig<sub>i</sub> [T<sub>defP</sub> t<sub>i</sub> to be talented]
  - b. Wolfgang believes [T<sub>defP</sub> Ludwig to be talented] "ECM"

As mentioned, RtoObj is not possible in Spanish (15). However, RtoSubj is fine (14).

14. Ludwig; parece ser talentoso.  
Ludwig seems be.INF talented

15. \*Wolfgang cree a Ludwig ser talentoso.  
Wolfgang believes ACC Ludwig to be talented

The unacceptability of (15) poses an interesting puzzle for syntactic theory. What is the property or properties that leads to the difference between (9) and (15)? Now we have the tools to pose this question a little more formally than in the introduction. One possibility is that matrix  $v$  has different properties in English and Spanish: the English  $v$  can establish a dependency long distance, while Spanish  $v$  cannot. The other possibility is that the subordinate T has different properties. The complement of epistemic verbs in Spanish does not select a  $T_{def}$ : the non-finite T projects a minimality barrier that prevents an outside probe to reach inside the TP. Notice that this second solution leads to another question: why is (14) grammatical? Is the absence of a  $T_{def}$  a property of epistemic verbs only or is it a general property of Spanish? If the second, should the Spanish lack of  $T_{def}$  also not prevent RtoSubj? There is in fact a proposal along these lines in Ausín (2001). He argues that RtoSubj in Spanish involves, in fact, raising out of a vP and not out of a  $TP_{def}$ . If so, then  $T_{def}$  simply does not exist in Spanish and verbs such as *creer* ‘believe’ select a CP, like regular attitude verbs. We leave the question open at this point and go back to it in Section 5.

### **3. Code-Switching as a Tool**

One way to learn about languages is to study speakers' I-languages via elicited judgments of acceptability. The intuitions used in the study of I-languages are typically monolingual intuitions on the consultants' native language, but deep bilinguals can also provide consistent acceptability judgments about code-switched stimuli (see [González-Vilbazo et al. 2013](#) for further discussion). We assume that code-switching judgments reflect the I-language of bilinguals in the same way that monolingual intuitions reflect the I-language of monolinguals.

Additionally, we assume a No Third Grammar approach (González-Vilbazo and López 2012; MacSwan 1999; Woolford 1983), which states that there is no code-switching-specific rules and restrictions. Instead, code-switching restrictions emerge as a result of the interaction of the properties of the participating languages as well as common universal properties.

This article is meant as a contribution to the larger research project of using code-switching to create laboratory conditions to test theoretical hypotheses. For example: [González-Vilbazo and Koronkiewicz \(2016\)](#) and [Koronkiewicz \(2014\)](#) used code-switching to test competing theories of pronouns. [Ebert \(2014\)](#) and [Sande \(2014\)](#) used it to reduce the

possibilities of explanation in *wh*-questions and pro-drop, respectively. Code-switching has been used in similar ways to investigate a host of phenomena (e.g.,  $v^0$  and Causatives: German/Spanish ([González-Vilbazo and López 2012](#)), Tegulu/English ([Bandi-Rao and Dikken 2014](#)); Sluicing: German/Spanish ([González-Vilbazo and Ramos 2018](#)); *Wh*-questions: ASL/English mode-switching ([Lillo-Martin et al. 2012](#)); Gender in DPs: German/Spanish ([González-Vilbazo 2005](#)), Spanish/English ([Alonso del Rio 2014](#))).

In this article, we expand the use of code-switching to better understand RtoObj as well. Recall the fundamental question that we posed above: What property or set of properties allows RtoObj in English, and how is it disallowed in Spanish? Recall also that we proposed two possible accounts: either a property of the matrix  $v$  or a property of the T in the subordinate clause teases the two languages apart. In code-switching contexts, the two options lead to distinct predictions. Consider the following two sentences:

- 16. I believe John *ser inteligente*. Eng/Span
- 17. *Creo a Juan* to be intelligent. Eng/Span

In sentence (16), the matrix  $v$  is English while the subordinate T is Spanish. In sentence (17), the reverse is the case:  $v$  is Spanish and non-finite T is English. These yield the following two predictions, which we now state formally:

- 18. Prediction 1: English Matrix Clause Preferred  
If RtoObj is licensed by a property of the matrix clause, code-switched RtoObj with an English matrix clause should be preferred. Example (16) should be judged as better than (17).
- 19. Prediction 2: English Complement Preferred  
If RtoObj is licensed by a property of the non-finite complement, code-switched RtoObj with an English complement (17) should be judged as better than (16).

Notice that the predictions in (18) and (19) arise due to the impossibility of RtoObj in Spanish.

In order to tighten up our argument, we included Object Control (ObjC) sentences in our study. ObjC sentences are superficially similar or identical to RtoObj sentences, but their underlying syntax is very different. ObjC structures are available in Spanish as well as English. Example (20) is an ObjC in English, (21) in Spanish, and (22) represents the syntax of an ObjC sentence:

- 20. Mary persuaded John to be honest.
- 21. Maria persuadió a Juan de ser honesto.  
Maria persuaded ACC Juan of be.inf honest
- 22. Mary persuaded John [PRO to be honest]

As indicated in (20), the object of an ObjC verb is in fact a member of the  $\theta$ -structure of the matrix predicate; this is the major difference with RtoObj, where the DP that plays the role of the object receives no  $\theta$ -role from the matrix predicate. By hypothesis, the non-finite T of ObjC sentences includes a silent subject whose reference is dependent on the controlling object. This realization is what led to the analysis of ObjC as in (22), where the subordinate predicate has a silent argument referred to as PRO.<sup>2</sup>

We decided to include ObjC in our study as a necessary contrast with RtoObj. Since ObjC is possible in both English and Spanish, no code-switching configuration is predicted to result in unacceptability—*mutatis mutandis*. Thus, switches with English matrix clauses and English infinitival complements should provide equivalent acceptability judgments. Both English matrix (23) and English complement (24) are expected to be equally acceptable.

- 23. I persuade John *ser honesto*.
- 24. *Persuado a Juan* to be honest.

Switches with English matrix clauses and English infinitival complements should provide equivalent acceptability judgments for (23) and (24). Thus, testing the acceptability of ObjC in code-switching grounds our analysis and provides additional evidence that

the methodology employed here is on the right track. In sum, we propose the following research question (25) and hypotheses (26) and (27) with regard to the whether the matrix clause or the complement is in English.

25. Research Question

Do deep Spanish/English bilinguals rate code-switched sentences differently by whether the English clause is matrix (CP1) or embedded (CP2) for RtoObj or ObjC?

26. Hypothesis 1—Raising to Object

There will be a difference in rating between English CP1 and English CP2 because RtoObj exists in only one of the languages, resulting in lacking some property or properties in one or more combinations.

27. Hypothesis 2—Object Control

There will be no difference in rating between English CP1 and English CP2 because Object Control exists in both languages, allowing its necessary properties to be available in all combinations.

#### 4. A Code-Switching Experiment Using Raising to Object

##### 4.1. Methods

For the experiment, we followed the methodological considerations in [González-Vilbazo et al. \(2013\)](#), including the design of a background questionnaire to identify deep bilinguals by age of acquisition and daily usage.<sup>3</sup> A group of 15 deep Spanish/English bilinguals were recruited at a large Midwestern public institution. All bilinguals had learned Spanish in the home and English either upon entering school or before, resulting in an age of acquisition of 6 or younger for both languages. The bilinguals used both languages every day and had at least some college education due to being recruited from an undergraduate population at a large Midwestern university.

Stimuli in both the RtoObj and ObjC conditions were varied with regard to English CP1/2 (English CP1, English CP2). We also made sure that we included the language of the raising or controlling DP as an independent variable and, consequently, the examples included an equal number of DPs in Spanish and English. Why should we do this? The possibility that the language of the DP could prevent RtoObj is not regarded as a viable hypothesis because DPs in both languages enter all kinds of dependencies. However, we could really not be sure that the language of the DP was not going to play a role for extraneous reasons. Thus, we wanted to make sure that the language of the DP did not intrude as an unwelcome confounding variable. For the same reason, we also included Spanish DPs with and without accusative *a*. Participants saw two of each remaining combination of factors (28)–(31).<sup>4</sup>

28. Raising to Object—English CP1

- |  |                               |                     |            |
|--|-------------------------------|---------------------|------------|
| a. The teacher believes the student          | <i>ser</i><br>be. INF         | <i>responsable.</i> | English DP |
| b. The teacher believes <i>al estudiante</i> | <i>ser</i><br>acc.def student | <i>responsable.</i> | Spanish DP |

29. Raising to Object—English CP2

- |                      |              |   |            |
|----------------------|--------------|---|------------|
| a. <i>El maestro</i> | <i>cree.</i> | the student to be responsible.          | English DP |
| The teacher          | believes     |   |            |
| b. <i>El maestro</i> | <i>cree</i>  | <i>al estudiante</i> to be responsible. | Spanish DP |
| The teacher          | believes     | acc.def student                         |            |

30. Object Control—English CP1

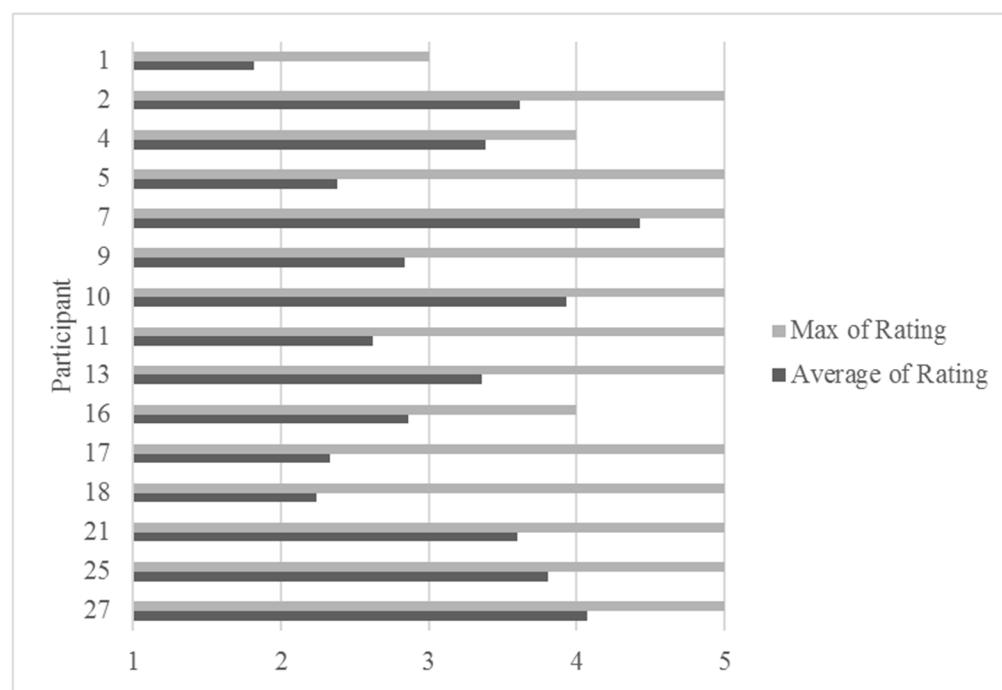
- |                                      |  |  |            |
|--------------------------------------|--|--|------------|
| a. The teacher persuades the student | <i>a editar el ensayo.</i><br>to edit. INF the essay | English DP                                     |            |
| b. The teacher persuades             | <i>al estudiante</i><br>acc.def student              | <i>a editar el ensayo</i><br>to edit the essay | Spanish DP |

31. Object Control—English CP2
- a. *El maestro*      *persuade* the student to edit the essay.      English DP  
     The teacher      persuades  
 b. *El maestro*      *persuade*      *al estudiante* to edit the essay      Spanish DP  
     The teacher      persuades      acc.def student

All participants completed the background questionnaire followed by the six blocks of code-switched ratings. In total, participants saw 28 items related to the current study in addition to 239 other distractor items as part of a six-block Latin Square design. Participants were asked to rate each item on a 1–5 Likert scale. Appendix A includes a full list of items.

Due to stigma issues inherent to studying code-switching (González-Vilbazo et al. 2013), the analysis of Likert judgments presents a unique statistical problem. Badiola et al. (2018) found that participants' perception of code-switching had a relationship with the maximum rating given to any item. Whereas participants with a positive perception of code-switching used an entire 1–7 Likert scale, those with a negative perception used only the lower part of the scale. However, the authors found that all participants rated some types of switches higher than others regardless of whether they used all or part of the rating scale. As a result, they concluded that bilinguals distinguish between "good" and "bad" switches regardless of the amplitude of difference between the ratings of the two categories.

Upon initial analysis of the current study's dataset, the problem of compression of judgments was also found. Figure 1 shows the average and maximum ratings for each participant across all subtypes.



**Figure 1.** Average and maximum Likert scale ratings by participant for all stimuli.

Whereas most participants used the entire scale, three (1, 4, 16) did not. Participants' average ratings also differed for more than two points.

To statistically analyze existing Likert data with clear differences in use of the scale, there are at least three options. The first is to normalize the distributions. It is unclear, however, whether it is truly the case that one participant's maximum rating is equivalent to another's. Another option is to use repeated methods to compare bilinguals directly to themselves. Although participants' categorical acceptance can be inferred in this way, it still assumes that there are equal numbers of good and bad items. In a code-switching

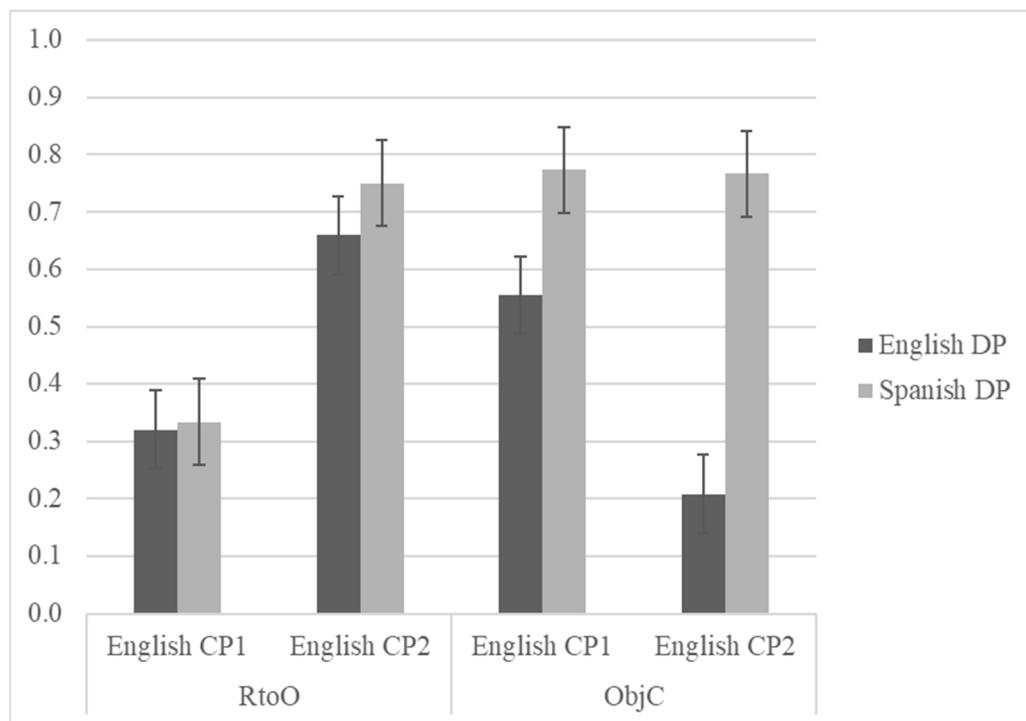
study where ratings are impossible to anticipate, a correct/violation paradigm is untenable, and thus, an assumption of equal numbers of good and bad items is unwarranted.

We adopt a third strategy, which is to recode the 1–5 Likert ratings as a binary rating. This normalizes the data and affords us the possibility that more than half of the items are good or bad. Binary ratings reflect acceptability as a scalar proportion of acceptance out of 1, which takes the place of average ratings. A binary coding also allows us to use a binary logistic regression model, which indicates the strength of each input factor in predicting the outcome rating. We chose to remove ratings of 3 because it is unclear whether 3 indicates acceptance or non-acceptance among participants. Ratings of 1–2 were then coded as 0 (not accepted) and 4–5 as 1 (accepted).

For the analysis, we ran a Binary Logistic Regressions with input variables Type (Raising to Object, Object Control), English CP1/2<sup>5</sup> (English CP1, English CP2), and Language of DP (English, Spanish). In step one of the model, we analyzed only the predictors, and we added the interaction CP1\*DP in step two. The step with the better fit as measured by the -2 Log Likelihood is reported in the results.

#### 4.2. Results

Figure 2 shows that potential asymmetries in the bilinguals' acceptance rate were found both in the Raising to Object and the Object Control conditions. The Raising to Object switches differed by English CP1/2 (English CP2 > English CP1), whereas the baseline Object Control condition did not.



**Figure 2.** Average binary rating by sentence type, English CP1/2, and Object Language.

The results of the Binary Logistic Regression appear in Table 1. The only categorical predictor with a main effect was English CP1/2. Inspection of the data reveals that English CP2 was preferred to English CP1 overall. However, type of sentence (Raising to Object, Object Control) significantly interacted with English CP1/2, driven by the difference between the acceptance of English CP2 and English CP1 in RtoObj (0.707 and 0.329, respectively) rather than in Object Control (0.629 and 0.700). Given these results, we return to the research question regarding an effect for English CP1/2. We accept both

hypotheses: there is a difference between Spanish and English matrix clauses for RtoObj but not Object Control.

**Table 1.** Binary logistic regression analysis.

Independent Variable	Estimate	Standard Error	z-Value	df	p
Intercept	1.075	0.406	2.647	1	0.008
1. Type	0.023	0.106	0.221	1	0.825
2. CP1 Language	-2.249	0.556	-4.041	1	0.000
3. DP Language	0.085	0.573	0.149	1	0.882
4. Type*CP1	0.457	0.153	2.985	1	0.003
5. Type*DP	-0.522	0.181	-2.880	1	0.004
6. CP1*DP	0.090	0.878	0.103	1	0.918
7. Type*CP1*DP	0.286	0.257	1.114	1	0.265

Interestingly, there was an unexpected interaction between type of sentence and DP language, revealing a preference for Spanish DPs in Object Control but not RtoObj. Importantly, there was no interaction between English CP1/2 and language of the DP and no interaction between type, English CP1/2, and language of the DP. The relationship between language of the DP and Object Control is a notable datum that is beyond the scope of the present analysis.<sup>6</sup>

## 5. Discussion

It is not surprising that an effect for English CP1/2 was only found for Raising to Object. We put forth two predictions, repeated as (32) and (33) below.

- 32. Prediction 1: English Matrix Clause Preferred  
If Raising to Object is licensed by a property of the matrix clause, code-switched Raising to Object with an English matrix clause should be preferred.
- 33. Prediction 2: English Complement Preferred  
If Raising to Object is licensed by a property of the non-finite complement, code-switched Raising to Object with an English complement should be preferred.

Prediction 2 (33) was corroborated: structures with a Spanish matrix and an English non-finite complement were accepted more than twice as often ( $M = 0.707$ ) as the structures with an English matrix complement ( $M = 0.329$ ) and a Spanish subordinate clause. The same is not true of ObjC, with similar acceptance rates for English complement ( $M = 0.629$ ) and English matrix clause ( $M = 0.700$ ). The OC data confirm that the difference in acceptability between an English subordinate clause and a Spanish subordinate clause in RtoObj is indeed linked to a property of T that is specific to raising constructions and not of control constructions.

As we see above, RtoObj in code-switching contexts is very much preferred when the non-finite T is English. We take it then that the property that makes RtoObj grammatical in English and ungrammatical in Spanish resides in the complement clause and not in the matrix *v*. This result is consistent with Chomsky's (1981) proposal that RtoObj should be analyzed as resulting from transparency of the non-finite T to external government, what he called Exceptional Case Marking, which became reanalyzed as the  $T_{def}$  property of Chomsky (1995). However, this result leads to another puzzle. As shown in Example (14), Spanish allows what appear to be RtoSubj sentences. It is commonly assumed that RtoSubj sentences should require a  $T_{def}$  in the subordinate clause as well. If  $T_{def}$  is part of the repertoire of Spanish grammar, we need to explain why  $T_{def}$  is not available with epistemic predicates to form RtoObj sentences.

Here, are the options. Option 1 would be to stipulate this property of verbs such as *creer* 'believe', *considerar* 'consider', *esperar* 'expect': they simply cannot select for  $T_{def}$ . Option 2 is the more intriguing one: despite appearances, there is no  $T_{def}$  in Spanish at all. What appear to be instances of RtoSubj in Spanish actually do not involve a TP at all but a

Small Clause structure consisting only of a vP, as in (34). Epistemic verbs select a regular complement clause (TP or CP).

34. María parece [<sub>vP</sub> t ser lista]  
 ‘Maria seems to be clever.’

To our knowledge, the only proposal that assumes no  $T_{def}$  in Spanish is Ausín (2001), and Ausín’s proposal is controversial (see, e.g., Gallego 2007). The evidence against  $T_{def}$  in Ausín is due to his analysis of RtoSubj verb *parecer*. In particular, he argues that *parecer* + infinitive is a modal construction.

Ausín analyzes *parecer* with infinitivals, such as (30), as a modal verb based on observations from Fernández-Laboranz (1999). First, neither *parecer* nor typical modals such as *deber* ('should') and *poder* ('can') can pseudo-cleft (31–32).

35. \*Lo que {puede, debe, parece} Juan, es saber la noticia.  
 ‘What Juan {can, must, seems to}, is to know the news.’  
 36. Lo que {pretende, desea} Juan, es saber la noticia.  
 ‘What Juan {hopes (for), desires}, is to know the news.’ (Ausín (2001): (98))

Further, modals cannot be the only verb in simple matrix questions (33–34).

37. \*¿Qué parece/puede/debe Juan?  
 what can/must Juan  
 (Ausín (2001): (99))  
 38. ¿Qué pretende /desea Juan?  
 What hopes for/desires Juan?  
 ‘What does Juan hope (for)/desire?’

Based on the evidence in (35)–(38), Ausín concludes that *parecer* + infinitive is a modal verb, and he proposes that its complement is a VP/vP in examples such as (34).<sup>7</sup> We can adopt Ausín’s insights to account for the results found in this investigation: The reason why there is no RtoObj in Spanish is because there is no Tdef in this language. Epistemic verbs select a regular clause structure.

## 6. Conclusions

This study has shown that code-switching can be used to provide evidence for or against existing theoretical proposals. This particular study investigated the possible grammatical factors that give rise to RtoObj. We pointed out that the crux could be found either in a feature of the matrix clause—by hypothesis, associated with little *v*—or with a feature of the subordinate clause—a feature in *T* that makes it transparent for external probes. By using code-switching, we were able to limit the scope of our search for the necessary properties that give rise to RtoObj, a search that now is restricted to the infinitival complement. At this point, two options were presented: one that requires a stipulation that epistemic verbs such as ‘think’ and ‘consider’ do not select for Tdef and one that proposes an absence of  $T_{def}$  in Spanish altogether, following Ausín’s (2001) analysis of the RtoSubj verb *parecer*. We tentatively adopt the second option because it seems to provide a more parsimonious understanding of Spanish syntax. Further study is needed to corroborate this analysis, including a potential avenue via a code-switching study of Raising to Subject.

The subjects that participated in the study were described as “deep bilinguals”, that is, people who acquired both languages since birth or early childhood and who have been able to develop both languages into adulthood. A reviewer for *Languages* wonders about the generalizability of our results, given that the participants are heritage speakers. The grammars of heritage speakers indeed diverge from those of monolingual speakers in all kinds of interesting ways (see Polinsky and Scontras 2020 for an overview), which can indeed pose challenges for generalizability. However, we think that our result can be generalized beyond this particular group of subjects on the grounds of existing asymmetries between English and Spanish with respect to Raising. As mentioned above, we have argued that the code-switching experiment shows that the feature that is responsible for the absence of RtoObj in the Spanish of our bilingual subjects must be found in the subordinate clause—

be it a TdefP or a *vP*. It could be the case that the rejection of RtoObj among monolingual speakers is due to something else—such as the matrix *v*. Or it could also be that both the matrix *v* and the subordinate TdefP or *vP* contribute to the rejection of RtoObj among monolingual Spanish speakers but not among the bilingual ones. However, a sensible application of the Ockam’s Razor heuristic leads us to think that these scenarios are less plausible than the one presented in these pages.

**Author Contributions:** Conceptualization, J.H. and L.L.; methodology, J.H.; formal analysis, J.H. and L.L.; investigation, J.H. and L.L.; data curation, J.H.; writing—original draft preparation, J.H. and L.L.; writing—review and editing, J.H. and L.L.; visualization, J.H. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Institutional Review Board of the University of Illinois at Chicago (Protocol #2009-0121).

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author.

**Acknowledgments:** Thanks to Laura Bartlett for her work in design and administration on previous stages of this project. Thanks is also due to the undergrad research assistants in the University of Illinois at Chicago’s Bilingualism Research Laboratory for their help in administering the study.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A

### Appendix A.1. RtoO

Everyone	a	los	Bebés ser	inocentes.
considers	acc	the babies	be.INF	innocent
Everyone considers babies ser inocentes.				
Everyone considers los bebés ser inocentes.				
We believe	a	los niños	ser	amables.
	acc	the children	be.INF	kind
We believe los niños ser amables.				
We believe the kids ser amables.				
Los empleados consideran a		their boss to be too strict.		
the employees consider	acc			
Los empleados consideran their boss to be too strict.				
Los	niños	consideran	a	su mamá to be beautiful.
the	children	consider	acc	their mom
Los niños consideran su mamá to be beautiful				
Mamá cree	a	my brother to be ready.		
Mon	thinks	acc		
Mamá cree my brother to be ready				
La	niñera cree	a	la niña to be mischievous.	
the	nanny thinks	acc		
La niñera cree la niña to be mischievous				

## *Appendix A.2. ObjC*

The school persuades a acc cada each	los estudiantes the student Semester. semester	graduados graduate	tomar take.INF	4 clases 4 classes
The school persuades los estudiantes graduados tomar 4 clases cada semestre				
The school persuades the graduate students tomar 4 clases cada semester.				
The boss orders a acc		sus empleados trabajar her employees work.INF	más duro. more hard	
The boss orders her employees trabajar más duro.				
The boss orders sus empleados trabajar más duro.				
El the	dependiente assistant	persuade persuades	a acc	the client to buy the most expensive shoes.
El dependiente persuade the client to buy the most expensive shoes				
El entrenador manda al atleta to run a mile.				
La the	reina queen	persuade persuades	al acc.def	artista to paint her portrait. artist
La reina persuade el artista to paint her portrait.				
El the	entrenador coach	atleta orders the		to run a mile. athlete
La enfermera the nurse	manda a orders ACC	la the patient		paciente to wear a brace.
La enfermera manda la paciente to wear a brace.				

## Notes

- <sup>1</sup> Spanish does have what used to be called Clause Union, where the complements of the causative verb *hacer* ‘make’ and perception verbs such as *ver* ‘see’ allow for a configuration reminiscent of RtoObj. However, causative and perception verbs in Spanish do not select for a non-finite T, as is the case in canonical RtoObj, and so the generalization that Spanish has no RtoObj holds (see López 2001; Raffaella and Harley 2007).

<sup>2</sup> Alternative analysis of Control suggest that it derives from movement rather than relying on PRO (e.g., see Hornstein 1999, the seminal paper) in a syntactic theory in which an argument is allowed to adopt two θ-roles from two different predicates. We set aside this analysis based on evidence such as in Bobaljik and Landau (2009) and Wood (2012). However, we would like to add that were we to accept the movement analysis of Control, we would have to conclude that Spanish allows RtoObj only for arguments that take on a second θ-role.

<sup>3</sup> Additional information elicited by the background questionnaire included percentage of use of English and Spanish by situation, including at home and at school as well as who they used the two languages with. Participants who indicated using both languages at least some of the time in more than one context were considered to be using both languages daily.

<sup>4</sup> Italics added to (28–31) for ease of reading but not used in the study materials.

<sup>5</sup> Here, we use the term CP1 to refer to the matrix clause to distinguish from the concept of “matrix language” as it is used in the Matrix Language Frame Model (Myers-Scotton 1993, et seq).

<sup>6</sup> The effect of language of DP is independent of the presence of the *a* personal discussed in the materials, with participants rating the *a* personal slightly higher ( $M = 0.815$ ) than Spanish DPs without it ( $M = 0.721$ ). We can conclude that presence or absence of personal *a* plays no role in the preference for Spanish DP.

<sup>7</sup> Gallego (2007) shows that *parecer* does not behave like a modal with respect to restructuring. Whereas typical Spanish modals allow clitic climbing, *parecer* does not.

- |      |              |                |
|------|--------------|----------------|
| (i)  | (*Lo) parece | besar(lo)      |
|      | him seems    | kiss-INF (him) |
| (ii) | (Lo) puede   | besar(lo)      |
|      | (him) can    | kiss-INF (him) |

(Gallego (2007): (92))

Luján (1980) proposes that clitic climbing is not possible if the matrix verb can take an indicative complement. This claim predicts correctly that *parecer* as well as *lamentar* (regret) and *deplorar* (deplore) do not allow clitic climbing.

## References

- Alonso del Rio, Edurne. 2014. Gender Concord in English/Spanish Code-Mixed Determiner Phrases. Master's dissertation, University of Valladolid, Valladolid, Spain.
- Ausín, Adolfo. 2001. On A-Movement. Ph.D. dissertation, University of Connecticut, Storrs, CT, USA.
- Badiola, Lucia, Rodrigo Delgado, Ariane Sande, and Sara Stefanich. 2018. Code-switching attitudes and their effects on acceptability judgment tasks. *Linguistic Approaches to Bilingualism* 8: 5–24. [\[CrossRef\]](#)
- Bandi-Rao, Shoba, and Marcel Den Dikken. 2014. Light switches: On v as a pivot in codeswitching, and the nature of the ban on word-internal switches. In *Grammatical Theory and Bilingual Codeswitching*. Cambridge: MIT Press, pp. 161–83.
- Bobaljik, Jonathan David, and Idan Landau. 2009. Icelandic control is not A-movement: The case from case. *Linguistic Inquiry* 40: 113–32. [\[CrossRef\]](#)
- Bowers, John. 1993. The syntax of predication. *Linguistic Inquiry* 24: 591–656.
- Chomsky, Noam. 1981. *Government and Binding*. Dordrecht: Foris.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge: MIT Press.
- Chomsky, Noam. 2000. Minimalist inquiries: the framework. In *Step by Step*. Edited by Roger Martin, David Michaels and Juan Uriagereka. Cambridge: MIT Press.
- Ebert, Shane. 2014. The Morphosyntax of Wh-questions: Evidence from Spanish-English Code-Switching. Ph.D. dissertation, University of Illinois at Chicago, Chicago, IL, USA.
- Fernández-Laboranz, María Jesús. 1999. La predicación: las oraciones copulativas. In *Gramática Descriptiva de la Lengua Española*. Edited by Ignacio Bosque and Violeta Demonte. Madrid: Gredos, pp. 2357–460.
- Raffaella, Folli, and Heidi Harley. 2007. Causation, obligation, and argument structure: On the nature of little v. *Linguistic Inquiry* 38: 197–238.
- Gallego, Ángel J. 2007. Phase Theory and Parametric Variation. Ph.D. dissertation, Universitat Autònoma de Barcelona, Barcelona, Spain.
- González-Vilbazo, Kay. 2005. Die Syntax des Code-Switching. Esplugisch: Sprachwechsel an der Deutschen schule Barcelona. Ph.D. dissertation, Universität zu Köln, Cologne, Germany; p. 76.
- González-Vilbazo, Kay, Laura Bartlett, Sarah Downey, Shane Ebert, Jeanne Heil, Brad Hoot, Bryan Koronkiewicz, and Sergio Ramos. 2013. Methodological considerations in code-switching research. *Studies in Hispanic and Lusophone Linguistics* 6: 119–38. [\[CrossRef\]](#)
- González-Vilbazo, Kay, and Bryan Koronkiewicz. 2016. Tú y yo can codeswitch, nosotros cannot. In *Spanish-English Codeswitching in the Caribbean and the US*. Philadelphia: John Benjamins Publishing Company, vol. 11, p. 237.
- González-Vilbazo, Kay, and Luis López. 2012. Little v and parametric variation. *Natural Language and Linguistic Theory* 30: 33–77. [\[CrossRef\]](#)
- González-Vilbazo, Kay, and Sergio E. Ramos. 2018. Codeswitching. In *The Oxford Handbook of Ellipsis*. Edited by Jeroen van Craenenbroeck and Tanja Temmerman. Oxford: Oxford University Press, pp. 458–78.
- Heil, Jeanne. 2015. Infinitivals at the End-state: Evidence for L2 Acquisition of English Non-Finite Complementation. Ph.D. dissertation, University of Illinois at Chicago, Chicago, IL, USA.
- Hornstein, Norbert. 1999. Movement and control. *Linguistic Inquiry* 30: 69–96. [\[CrossRef\]](#)
- Koronkiewicz, Bryan. 2014. Pronoun Categorization: Evidence from Spanish/English Code-Switching. Ph.D. dissertation, University of Illinois at Chicago, Chicago, IL, USA.
- Lillo-Martin, Diane, Helen Koulidobrova, Ronice Müller de Quadros, and Deborah Chen Pichler. 2012. Bilingual language synthesis: Evidence from WH-questions in bimodal bilinguals. Paper presented at 36th Annual Boston University Conference on Language Development, Somerville, MA, USA, November 4–6; vol. 302, p. 314.
- López, Luis. 2001. On the (non)Complementarity of Theta Theory and Checking Theory. *Linguistic Inquiry* 32: 694–716. [\[CrossRef\]](#)
- López, Luis. 2020. *Bilingual Grammar: Toward an Integrated Model*. Cambridge: Cambridge University Press.
- Luján, María. 1980. Clitic promotion and mood in Spanish verbal complements. *Linguistics* 18: 381–484. [\[CrossRef\]](#)
- MacSwan, Jeff. 1999. *A Minimalist Approach to Intra-Sentential Code-Switching*. New York: Garland Press.
- Myers-Scotton, Carol. 1993. *Dueling Languages: Grammatical Structure in Code-Switching*. Oxford: Oxford University Press.
- Polinsky, Maria, and Gregory Scontras. 2020. Understanding heritage languages. *Bilingualism: Language and Cognition* 23: 4–20. [\[CrossRef\]](#)
- Sande, Ariane. 2014. How to Drop the Pro: Evidence from Code-switching. Paper presented at In-Between Conference, University of Illinois at Chicago, Chicago, IL, USA, February 27.
- Wood, Jim. 2012. Against the movement theory of control: Another argument from Icelandic. *Linguistic Inquiry* 43: 322–30. [\[CrossRef\]](#)
- Woolford, Ellen. 1983. Bilingual code-switching and syntactic theory. *Linguistic Inquiry* 14: 520–36.