L2 Learners' and Heritage Speakers' Judgments of Code-Switching at the Auxiliary-VP Boundary

David Giancaspro

1. Introduction

Since the pioneering work of Poplack (1980), linguistic researchers from various theoretical approaches have attempted to understand what, if anything, constrains the (un)grammaticality of intrasentential code-switching (CS), defined here as the switching between languages within a single utterance (Toribio, 2001). While researchers typically agree on the grammaticality or ungrammaticality of CS utterances, such as the Spanish-English utterances in (1) and (2), the *explanation* for such grammaticality judgments remains a subject of great controversy within the literature.

(1) Los chicos saw the movie.
(2) *Los chicos habían seen the movie.

Many researchers (i.e., DiSciullo et al, 1986; Belazi et al, 1994), in an attempt to provide the most universal, non-stipulative explanation possible, have proposed CS constraints which rely on universal notions of generative syntax to make clear empirical predictions about the (un)grammaticality of CS utterances in specific language pairings. However, there has been surprisingly little empirical research conducted to put these theoretical CS constraints to the test with simultaneous and especially successive bilinguals. When researchers *have* tried to test the validity of these constraints, they often rely heavily on production data (MacSwan and McAlister, 2010) or, alternatively, test bilinguals only on those CS structures which are "non-ambiguous in the literature" (Anderson, 2006, p. 44).

The present study seeks to address these issues and contribute to the field of CS research in the following four ways. First, the study will contribute by closely examining one of these proposed CS constraints, namely the Functional Head Constraint (Belazi et al, 1994), and determining empirically the extent to which this constraint can account for bilinguals' judgments of Spanish-English CS at the auxiliary/verb phrase (VP) boundary. Second, unlike previous CS research which has almost exclusively tested unambiguously ungrammatical CS between the Spanish auxiliary, *haber* and its VP complement (although, see Dussias, 2003), the present study will also test bilinguals' judgments of CS between the Spanish auxiliary, *estar*, and its VP complement. Third, the present study will test both Spanish to English and English to Spanish auxiliary/VP switches in order to evaluate the potential role of language directionality in bilinguals' CS judgments and the FHC's ability to account for this role. Lastly, the study will contribute to the growing literature comparing the CS competence of heritage bilinguals and L2 learners (Anderson, 2006; Potowski & Bolyanatz, 2011), specifically by testing whether L2 learners of Spanish can come to have the same judgments of CS as their heritage bilingual counterparts.

The rest of the paper will be organized as follows. In section 2, I will outline the Functional Head Constraint (Belazi et al, 1994) and review previous research about L2 learners' (and heritage bilinguals') sensitivity to this and other CS constraints. In section 3, I will address some important methodological considerations when conducting research on the CS constraints while in sections 4, 5, and 6, I will present the research questions, methodology, and results of the present study. Lastly, in section 7, I will discuss the implications of the results for the FHC and present some future directions for research.

* David Giancaspro, Rutgers University, david.giancaspro@rutgers.edu

2. CS constraints

2.1. The Functional Head Constraint

As mentioned in the introduction, there have been various attempts within CS research to try to delineate specific syntactic constraints which govern the (un)grammaticality in CS across various language pairings. DiSciullo et al (1986), for example, appealed to the hierarchical notion of government in proposing the Government Constraint, which states that "a governing element and its governee must share the same language index" (Toribio, 2001, p. 208). In other words, CS between a governing syntactic element and the syntactic element that it governs should be ungrammatical. While grounded in universal generative syntactic theory, such a constraint incorrectly predicts the ungrammaticality of CS which takes place between a verb and its complement, as in (2), also taken from Toribio (2001), p. 208.

(2) The sleepy travelers boarded *el vuelo de las 5:00*.

Another, more recent attempt to capture the constraints of CS using syntactic theory is the Functional Head Constraint (FHC) (Belazi et al, 1994), which will be tested in the present paper. The FHC, unlike the Government Constraint, appeals to the formal syntactic distinction drawn between functional heads, such as Complementizer (C), Determiner (D), and Negation (Neg), and lexical heads such as Verb (V) and Noun (N). According to the FHC, which is argued to be operative in both CS and monolingual speech, switching languages between a functional head and its complement will result in an ungrammatical utterance due to a mismatch of what is proposed to be a language feature. The authors note that functional heads select the features of their complement and so, when a functional head is in one language and its complement in another, the derivation crashes, resulting in an ungrammatical sentence. Sentence (2) is correctly predicted by the FHC to be grammatical, given that the switch takes place between the lexical category, V, and its DP complement and therefore, does not violate the FHC. In addition to correctly accounting for sentences like (2), Belazi et al (1994) also effectively account for ungrammatical sentences like (3), which, according to the FHC, is ungrammatical because the language switch takes place between a functional head (in this case, Auxiliary (AUX)), had, and its lexical, VP complement, *visto.*

(3) *The students had *visto la película italiana*.

While the FHC provides an impressive range of empirical coverage, switches between a functional head and its complement are attested in the CS literature (i.e., DiSciullo et al, 1986), contra the predictions of the FHC. These attested utterances, at least one of which includes a switch between an auxiliary verb and its VP complement, may have been unlabeled performance errors (McAlister & MacSwan, 2010; Grabowski, 2011), but, if this is not the case, they may suggest that the FHC cannot sufficiently explain data across languages or even within functional categories. Additionally, and crucially to the present study, there is problematic counterevidence to the FHC within the Spanish-English CS literature. Dussias (2003) tested Spanish-English bilinguals who code-switch frequently on both their judgments and processing of switches at the auxiliary/VP junction. In her grammaticality judgment (GJT) data, she found that these English-Spanish bilinguals reject sentences such as (3), as predicted by the FHC, but, curiously, accept switches between the auxiliary, *estar* and the English present participle, as in (4) below, indicating the possibility that not all auxiliary-verb CS is represented similarly for the bilingual speaker.

(4) *Los ciudadanos están* supporting the program.

Dussias supplemented this GJT data with eye-tracking data which showed robust evidence that bilinguals process *estar* and *haber* CS differently, at least according to fixation time. While bilinguals processed switches between *estar* and an English participle in the same time that they took to process monolingual, grammatical Spanish sentences, they took significantly longer to process switches between *haber* and an English participle, suggesting once again that these two types of auxiliary/VP switches may have different underlying representations in the minds of bilingual speakers. While Dussias' study is critically important for our understanding of auxiliary/VP switching, it lacked an

audio component and therefore might have suffered from unwanted medium effects (Anderson 2006). In the present study, as will be discussed below, participants will judge sentences that they read *and* hear from a native Spanish-English bilingual. Additionally, Dussias only tested auxiliary/VP switches occurring from Spanish into English. The present study will test switches occurring from Spanish to English and from English to Spanish to determine if directionality plays a role in the acceptability of CS at the auxiliary/VP boundary.

In summary, a primary goal of the present study, following Dussias (2003), is to test the possibility that bilingual speakers' have different judgments for different types of auxiliary/VP switches. In addition, the study seeks to expand upon that critical research by adding a language direction (English to Spanish) and another bilingual group (L2 learners) to the mix to help get a more complete picture of the FHC and its ability to account for bilingual CS judgments.

2.2. Do adult L2 learners have knowledge of CS constraints?

If intra-sentential CS is constrained in native bilingual speech, is it also constrained in the speech of L2 adult learners? Toribio (2001) tested whether adult L2 learners of Spanish showed competence in judging grammatical and ungrammatical CS. Grammatical CS, under Belazi, Rubin and Toribio's Functional Head Constraint (FHC) (1994), means switches occurring between lexical categories, such as V and N. Ungrammatical CS, as outlined in the previous section, refers to CS between a functional category, such as D or T, and a lexical category, as in (1) and (2) above, which both occur between the functional head, AUX, and its VP complement.

Toribio (2001) examined beginner, intermediate, and advanced learners of Spanish and determined that on an acceptability judgment task, only the advanced group showed knowledge of the distinction between grammatical and ungrammatical CS. From these results, she concludes that learners' "strict adherence" to the FHC is "related to [their] degree of bilingualism" (p. 227). She suggests then that higher proficiency L2 learners appear to have "access to the abstract lexical properties that drive syntactic derivations and license representations of the target grammars" (p. 227). Unfortunately, because she did not give her participants a standardized proficiency test, her results are not as telling as they could be. Regardless of this methodological limitation, Toribio's groundbreaking study reveals that the proficiency of a bilingual in their L2 appears to be directly correlated to his/her ability to recognize grammatical and ungrammatical CS, an important point which we will return to in the discussion of the results.

While the aforementioned research seems to show that advanced L2 learners can in fact come to have the same abstract knowledge of CS as native bilinguals, it's important to note that other L2 CS research on functional-lexical mixing at the DP level suggests otherwise. Liceras et al (2008), in a study comparing L2 learners and simultaneous bilinguals and their preferences with mixing at the DP level, found that Spanish-dominant bilinguals performed significantly differently from English-dominant bilinguals, a result which underscorest the importance of language dominance in CS preference phenomena.

2.3. Comparing L2 learners and heritage bilinguals' knowledge of CS constraints

Much research has been done in the last decade to examine the similarities and differences between heritage speakers and L2 learners (e.g., Montrul 2010, Montrul & Bowles 2009). Only a few studies, however, have looked at the differences between L2 learners and heritage speakers' CS competence.

Anderson and Toribio (2007) used a matched guise task to indirectly assess heritage speakers' and adult L2 learners' attitudes about felicitous and infelicitous CS. Participants were presented with fairy tales in monolingual Spanish, Spanish with felicitous lexical borrowings from English, Spanish with infelicitous lexical borrowings from English, grammatical Spanish-English CS and ungrammatical Spanish-English CS. Then, they were asked to rate the "authors" of such texts on a variety of scalar characteristics such as intelligence, attractiveness, literacy, and aggressiveness. As in Toribio (2001), proficiency was not measured with a standardized test. However, the participants placed in the high proficiency group seemed to make "more fine grained distinctions" (p. 233) between the felicitous and infelicitous texts. In other words, the high proficiency group gave the highest ratings for the monolingual Spanish text, followed in preference by the two types of lexical borrowing (felicitous and

then infelicitous), and then lastly the two types of CS (grammatical and then ungrammatical). Low proficiency bilinguals, on the other hand, made no distinction between the different types of CS and borrowing. Contrary to the authors' hypothesis, there was no statistical difference between the preferences of L2 adults and heritage speakers, which seems to indicate again that CS competence can be accessed by adult L2 bilingual speakers.

Anderson (2006) replicated and expanded upon the aforementioned study in his dissertation and found shockingly different results which call into question the relationship between proficiency and CS competence. As in his previous study with Toribio, he gave his participants a matched guise task with fairy tales. This time, in order to control for medium effects (Anderson and Toribio 2007), the stories were recorded and listened to by the participants, who then evaluated the speakers on a number of personal characteristics. Additionally, the participants completed the DELE proficiency test, a commonly used proficiency test in Spanish acquisition research, and filled out extensive background and attitude questionnaires. Anderson found that the most proficient bilingual speakers gave "consistently positive evaluations" (p.88) of CS, whether the switching was grammatical or ungrammatical, while the lower proficiency groups showed greater differentiation between grammatical and ungrammatical CS. He explains these counterintuitive results by stating that perhaps the higher proficiency bilinguals identified more with CS in general, and therefore gave overly positive ratings to both grammatical and ungrammatical CS. Participants' self-rated proficiency was actually a much better predictor of ability to distinguish between grammatical and ungrammatical CS, and, as Anderson points out, this could demonstrate flaws in the proficiency test.

Most recently, Potowski and Bolyanatz (2011) compared the CS competence of L2 adults and heritage speakers, borrowing the fairy tales from Anderson's 2006 study. The participants in the study did not judge the "guise" speakers (as in Anderson 2006; Anderson and Toribio, 2007), but instead, judged CS samples pulled from the fairy tale texts by the investigators. Although Potowski and Bolyanatz acknowledge the importance of proficiency as a variable in bilingual CS competence, they chose not to test the participants for proficiency. Their results showed no statistical differences between the heritage speakers and the L2 learners in the judgment of grammatical and ungrammatical CS, in line with Anderson and Toribio's pilot study in 2007. While these three studies have all examined the CS competence of L2 learners and heritage bilinguals, none looked at auxiliary/VP switches between *estar* and its VP complement, which is a primary goal of the present study.

3. Methodological considerations
3.1. Tapping into CS competence

There is little doubt that CS is rule-governed linguistic behavior but there is still great debate about the best method of tapping into and defining the characteristics of a speaker's CS competence (e.g., Myers-Scotton, 2006). In this section, I will briefly discuss various methodological approaches that have been used in the field of CS research and the advantages and disadvantages of such approaches.

While naturalistic studies (Poplack 1980; Myers-Scotton, 2006) form the foundation of our understanding of CS, they suffer from some major limitations (Grabowski 2011; MacSwan & McAlister 2010). MacSwan and McAlister (2010) discuss three major shortcomings of relying on naturalistic data in the development of theoretical explanations of CS. First of all, there's an inherent lack of negative evidence in naturalistic data. Even the most extensive, carefully detailed naturalistic data will not be able to tell us what is *not* possible in the speaker's CS grammar. It is critical to study what is grammatical and what is ungrammatical in a speaker's grammar, and this simply cannot be done with naturalistic data alone.

Secondly, there is the problem of induction. Researchers often notice the absence of a certain structure in the naturalistic data and infer from that absence that such a structure cannot occur in the CS grammar of speakers in that community. This induction, unfortunately, often leads to overly restrictive CS constraints (MacSwan, 1999), such as the proposed universal constraint on switches between pronominal subjects and verbs (Belazi et al, 1994). Such a constraint appears to hold true in Spanish-English CS, but it does not hold up, however, in Spanish-Nahuatl CS (MacSwan, 1999). Similarly, structures that appear rarely in the input, such as switches between the Spanish auxiliary *estar* and the English present participle, tend to be excluded from research and theory building (Dussias 2003) because they are not commonly observed in CS communities. Nonetheless, rarely

produced structures (as well as illicit structures; see above) constitute part of a speaker's grammar and therefore are still critical for our understanding of a speaker's CS competence. Lastly, if a speaker produces a CS utterance that is a performance error (and not truly reflective of his/her underlying CS grammar), then the researcher will not be able to tell if this type is in fact, representative of the speaker's underlying competence or not. (See MacSwan 2010 for a discussion of single utterances being used to prove or disprove certain constraints).

Grammaticality Judgment Tasks (GJT) are by no means perfect windows into CS competence. However, they have four main advantages, as summarized by Schütze (1996). First of all, GJT's allow researchers to test sentences that are rare in natural speech, such as the *estar* + auxiliary CS examined in the present study. If researchers relied on only naturalistic data to test such rare structures, they might spend immense amounts of time sifting through input that does not even include such structures (MacSwan & McAlister, 2010). Unlike naturalistic data, grammaticality judgments can tell researchers what is not part of a speaker's grammar, which, as mentioned above, is critically important for understanding the nature of a speaker's linguistic competence. Lastly, according to Schütze (1996), grammaticality judgments can "minimize the extent to which the communicative and representational functions of language skill obscure our insight into its mental nature."

Criticisms of GJT's is extensive, especially in CS research (i.e., Myers-Scotton, 2006). Given that CS is such a context reliant phenomenon (Toribio 2001), it's questionable whether such an "artificial" task like a GJT can reliably reflect a speaker's CS competence. It's quite possible that bilingual speakers participating in a judgment task might negatively evaluate CS due to "impersonal, asynchronous...presentation of bilingual texts" (Anderson 2006). Given the prevalence of negative attitudes towards CS in school and other formal settings, it's possible that evaluation of CS on a formal, written GJT might be severely influenced by prescriptive grammatical judgments (Anderson 2006). One solution to this problem, however, is presenting participants with auditory stimuli to judge instead of (or along with) written stimuli (Aguirre 1985, Grabowski 2011). Adding auditory stimuli produced by native speakers (or in our case, native code-switchers) may help informalize the CS sentences and "reduce prescriptive attitudes towards switching" (Aguirre 1985). The GJT in the present study includes auditory stimuli, but this methodological adaptation is not without disadvantages (see Discussion section). Other tasks used to study CS include eye-tracking (Dussias 2003) and Matched Guise Tasks (Anderson 2006, Anderson and Toribio 2007), but these methods also have distinct disadvantages and will not be employed in the present study.

4. Research questions and hypotheses

(i) The FHC (Belazi et al, 1994) predicts that switches between a lexical DP subject and its predicate should be grammatical, since the DP subject is not a head which selects for a predicate complement. Do heritage bilinguals and L2 learners accept switches at this syntactic juncture where the predicate includes the auxiliary verbs *haber*, have, *estar*, and be?

Following Toribio (2001), it is hypothesized that both heritage bilinguals and L2 learners will accept these grammatical subject-predicate switches and that they will not show a language directionality preference.

(ii) The FHC also predicts that switches between the auxiliary verbs *haber*, have, *estar* and be and their participial VP complements should be ungrammatical in the grammar of Spanish-English bilinguals. Do heritage bilinguals and L2 learners accept switches between these auxiliary verbs and their participial VP complements? Do they prefer one switches between *haber*/have and the VP or switches between *estar*/be and the VP?

Following Dussias (2003), it is predicted that both groups of bilinguals will reject switches between *haber*/have and the VP complement and accept switches between *estar*/be and the VP complement, in contra the predictions of the Functional Head Constraint.

(iii) The FHC does not make specific predictions with regards to bilinguals' language directionality preferences in CS. Do heritage bilinguals and L2 language learners show a preference for Spanish to English or English to Spanish switches in the subject-predicate and auxiliary/VP switch conditions?

It is predicted that heritage bilinguals and L2 learners, in line with the FHC, will not show language directionality preference in either CS condition.

(iv) Do L2 learners arrive at the same judgments and preferences of CS as the heritage bilinguals? If so, is this convergence limited to higher proficiency L2 learners?

It is hypothesized, following Toribio (2001) and Potowski and Bolyanatz (2011), that the L2 learners will arrive at the same judgments and preferences of CS as the heritage bilinguals. It is predicted that the advanced proficiency L2 learners will most closely mirror the heritage bilinguals' judgments, but that the intermediate and low proficiency L2 learners will also show the same CS preferences as the heritage bilinguals.

5. Methodology
5.1. Participants

The participants in the present study are undergraduate and graduate students at the University of Florida, recruited from intermediate and advanced level courses within the Spanish Department. On the basis of a language background questionnaire, participants were divided into three groups. The L2 Spanish group (n=28) consisted of sequential bilinguals whose first language is English and who began learning Spanish at or around puberty. Participants' proficiency was assessed by using the DELE Proficiency Test, a standard, 50 question proficiency test commonly used in Spanish generative acquisition research (Slabakova and Montrul, 2003). As in other studies using the DELE, participants scoring between 41-50 were placed into the advanced proficiency group while participants scoring between 30-40 were placed into the intermediate proficiency group. Lastly, participants who scored below 30 were placed in the low proficiency group. Of the 28 L2 Spanish participants, four placed into the advanced proficiency group, 11 placed into the intermediate proficiency group, and 13 placed into the low proficiency group.

The Heritage Speaker group (n=19) consisted of simultaneous or early successive bilinguals who were either exposed to Spanish and English from birth, or, who were native speakers of Spanish exposed to English in an English dominant environment by the age of six. In order to be included in the Heritage Speaker group, participants had to be currently living in the United States and rate themselves as either dominant in English or equally proficient in Spanish and English (Rothman, 2009). On the basis of the DELE examination, six Heritage Speakers placed into the advanced proficiency group, nine placed into the intermediate proficiency group, and four placed into the low proficiency group.

Lastly, the L2 English group (n=5) consisted of participants whose first language was Spanish and who were exposed to English at or around puberty. Each of these five participants considered themself Spanish-dominant. Because the L2 English group was not big enough for statistical comparisons, it was not included in the statistical analyses. However, in the sections below the results for this group will be presented for contrast when relevant to the discussion.

5.2. The experimental task

The experimental task was an Acceptability Judgment Task (AJT), completed online at Surveygizmo.com. In this task, participants rated 72 Spanish-English sentences on a 4-point Likert Scale, where 1 stood for "very unnatural", 2 "unnatural," 3 "natural" and 4 "very natural." As participants read these sentences in written form, they also heard recordings of the sentences, which were read out loud by a simultaneous Spanish-English bilingual recruited from the Spanish Department at the University of Florida. Participants were instructed before the survey to turn up the volume on their headphones because the audio files played automatically as soon as participants looked at a question. Participants had the option of replaying audio files as many times as they wished to. However, once they rated a particular sentence, they were unable to go back and change that rating.

The 72 sentences consisted of 48 code-switches (6 tokens for each of 8 different types of code-switching; see tables 1a, 1b) and 24 fillers (6 tokens for each of 4 different types of lexical borrowing), all of which were read by the aforementioned bilingual code-switcher and presented in audio form for

the participants as they completed the study. The bilingual who read the sentences was asked to read the 48 code-switched sentences in a fluid, natural manner and to read the 24 filler sentences, which consisted of both core and non-core lexical borrowings, with brief pauses before each borrowed lexical item. To control for subject type, all subjects in the 48 experimental sentences were either third person singular (n=25) or third person plural (n=23). In addition, all VP's in the Subject-Predicate and auxiliary/VP switches were "core" VP's (Anderson and Toribio, 2007) to ensure that participants did not intepret these switches as lexical borrowings.

Before moving on to discuss the results, it's important to consider why each sentence type was included in the study and how examining that type helps demonstrate the bilinguals' knowledge of CS.

Table 1a: Subject/predicate code-switching

Switch Type	SVEE	SVES	SVHE	SVHS
# tokens	6	6	6	6
directionality	English → Spanish	Spanish → English	English → Spanish	Spanish → English
auxiliary	"be"	"*estar*"	"have"	"*haber*"
example	The girls están levantando la mesa.	Los estudiantes are doing the homework.	The manager había comprado el negocio.	Los hermanos had finished the job.

An aim of the present study is to determine the nature of Spanish-English bilinguals' knowledge of CS. As such, it is critical to demonstrate that these bilinguals both accept grammatical CS and reject ungrammatical CS (MacSwan, 1999, 2000). Because the Subject/Predicate sentences in Table 1a do *not* include a switch between a functional head and its complement, they are clearly predicted by the FHC to be grammatical[1]. Hence, by including these sentences, the investigator is able to assess bilinguals' acceptance of grammatical sentences.

Table 1b: Auxiliary/VP code-switching

Switch Type	EES	ESE	HES	HSE
# tokens	6	6	6	6
directionality	English → Spanish	Spanish → English	English → Spanish	Spanish → English
auxiliary	"be"	"*estar*"	"have"	"*haber*"
example	The friends are compartiendo el vino.	Las estudiantes están reading the book.	The girl had visto la película.	El hombre había bought the car.

In Table 1b, we see the auxiliary/VP switches. It is apparent from the table that the had/*haber* auxiliary/VP switches were in the "past perfect" while the be/*estar* switches were in the "present progressive," a difference in tense across CS types which may appear problematic. There are two practical reasons why these sentences were written in this way. First, the code-switched sentences for had/*haber* were written in the "past perfect" tense because the researcher feared that if the "present perfect" were used, code-switched forms such as "*ha* written" might be hastily read and accepted by participants who may have thought that they saw "had written," which is, of course, the fully

---

[1] A reviewer points out that the inclusion of these switches may be problematic because it is unclear in the experimental and theoretical literature how bilinguals judge these switches. While there is no direct treatment of such sentences in the literature, the FHC clearly predicts that they should be grammatical. Additionally, if the researcher did not include such sentences, there would be no way of knowing whether participants preferred theoretically *grammatical* Subject-Predicate switches over theoretically *ungrammatical* auxiliary-VP switches based on the syntactic juncture, as predicted by the FHC, or based on whether the switched sentence included a predicate composed of an auxiliary verb and its VP complement.

grammatical and acceptable English form. It would make sense, therefore, for the investigator to then put the be/*estar* switches in the past tense also, but this was not done for one main reason. The investigator sought to include in the study only those auxiliary/VP switches which had been experimentally examined in the literature for maximum comparability of results. Because switches with be/*estar* had only been studied in the "present progressive" (Dussias, 2003), the author chose to use the "present progressive" for these sentences[2].

6. Results

6.1. Subject/predicate code-switching

Recall that CS between a lexical DP subject and its predicate is considered grammatical by bilingual Spanish-English speakers (Belazi et al, 1994; Toribio 2001). In the current study, participants rated four different types of subject/predicate CS (see table 3), and the results, as hypothesized, indicate that both heritage bilinguals and L2 learners, regardless of proficiency level, judge such CS sentences to be grammatical. Interestingly, the L2 learners gave higher ratings to all four types of subject/predicate CS than the heritage bilingual speakers did, a curious result that will be addressed again in the discussion section. Putting this difference aside, the most important conclusion to draw here is that is that both the heritage bilinguals and successive bilinguals converged on their acceptance of these code-switches, a result which is consistent with the predictions of the FHC. So far, L2 learners in the present study appear to have a similar CS competence as heritage bilinguals. It is worth noting also that the L2 English group, which is not large enough for statistical comparisons, gave average ratings between 2.7 and 3.1 for these subject/predicate switches, showing evidence that they also seem to accept subject/predicate switches.

Table 2: Subject/predicate switches across groups

Switch	L2 (adv.)	L2 (int.)	L2 (low)	HS (adv.)	HS (int.)	HS (low)
SVEE	3.06	3.2	3.05	2.75	2.76	2.75
SVES	2.83	3.03	3.07	3.03	2.83	2.58
SVHE	3.17	3.29	3.13	2.81	2.72	2.58
SVHS	2.96	2.96	3.08	2.94	2.72	2.63

In order to test for potential directionality effects, a 6 x 4 repeated measures ANOVA test was run to compare the four types of subject/predicate switches. The results of the test (p =.922) indicate that participants did not show a preference for language directionality in their subject/predicate switches. In other words, neither Spanish to English, nor English to Spanish switches within this (felicitous) switch type were more preferred by the groups of speakers, although both types of switches were "grammatical" for these participants. Language directionality, at least in the case of subject/predicate switches, does not appear to influence the bilinguals' acceptability judgments.

6.2. Estar/be code-switching

L2 Spanish learners, regardless of proficiency, did not accept switches between the auxiliaries *estar* and be and the participial VP complements, in line with the predictions of the FHC, which predicts that such switches should be grammatical. (Once again, the L2 English learners performed in a remarkably similar manner, uniformly rejecting these switches with averages of 1.6 and 1.53). In the case of heritage bilinguals, however, the picture is far less clear, given that the advanced, intermediate and low proficiency groups each had an acceptance of 2.46 or higher for at least one of these

---

[2] One might argue that this is still problematic since tense is not controlled for and participants' preference for be/*estar* switches over have/*haber* switches could either be due to the syntactic juncture *or* the tense. However, if this were true, we would expect the participants to show a significant preference for Subject-Predicate switches with be/*estar* and this, as evidenced in Table 3, is clearly not the case. Why the participants would have a tense preference in the auxiliary-VP condition and not in the Subject-Predicate condition is unclear.

auxiliary/VP switches. Recall that Dussias (2003) found that Spanish-English bilinguals who code-switch regularly accepted switches between *estar* and the participle. In the intermediate proficiency heritage bilingual group, learners appear to borderline accept such switches, providing supporting evidence for Dussias (2003) and against the predictions of the FHC.

While the two bilingual groups appear to demonstrate differing judgments with respect to these auxiliary/VP switches, a further analysis reveals that they also share some important similarities in their judgments towards them. A 6 x 2 repeated measures ANOVA test was run in order to determine whether or not language directionality significantly affected speakers' judgments of this type of auxiliary-VP code-switching. Results of the test (p=.006) indicate that all bilingual participants, regardless of speaker type or proficiency, show a significant preference for switches from Spanish to English for this type of auxiliary-VP code-switching.

Table 3: Estar/be code-switching across groups

Switch Type	L2 Adv.	L2 Int.	L2 Low	HS Adv.	HS Int.	HS Low.
EES	1.79	2.23	1.94	2.25	**2.56**	1.75
ESE	**2.38**	2.33	2.12	**2.44**	**2.57**	**2.46**

To conclude, the FHC predicts both the EES and ESE switch types to be ungrammatical for bilingual speakers. However, heritage bilinguals appear to give higher, borderline-grammatical ratings to these sentences while L2 learners give lower ratings. Nonetheless, the two bilingual groups, regardless of proficiency, appear to share the same language directionality preferences with each group showing a significant preference for Spanish to English switches for this auxiliary/VP switch type.

6.3. Haber/have code-switching

As hypothesized and as predicted by the FHC, both groups of bilinguals, regardless of proficiency, reject CS between *haber*/have and participial VP complement. Unlike the previous sentence types which seemed to indicate some level of divergence between the judgments of the two bilingual groups, these two sentence types appeared to elicit the same judgments from both groups. The uniform rejection of these sentences by both bilingual groups---as well as the L2 English group who rated such sentences 1.83 and 1.73, respectively---supports the assertion that L2 learners and heritage bilinguals in the present study may have converged on a shared CS competence.

Table 4: Haber/have code-switching across groups

Switch	L2 Adv.	L2 Int.	L2 Low	HS Adv.	HS Int.	HS Low
HES	1.83	1.74	1.75	1.72	1.76	1.63
HSE	1.58	1.62	1.61	1.69	1.69	1.54

As in the previous two subsections, a 6 x 2 repeated measures ANOVA was run to determine whether language directionality was a significant factor in the speakers' judgment of this type of CS. Interestingly, and contrary to the hypothesis, both L2 learners and heritage bilinguals (p = .046), regardless of proficiency, showed a preference for switches from English into Spanish. Note that the preferred directionality for this type of code-switch differs from the preferred directionality examined in the previous section, despite the fact that both of these types of CS occur between an auxiliary verb and its participial VP complement. We will return to discuss potential reasons for this discrepancy in the discussion.

6.4. Estar/be vs. haber/have code-switching

The Functional Head Constraint (Belazi et al, 1994) crucially does not specifically address gradient judgments within supposedly illicit switching sites, such as the auxiliary-VP sites examined here. However, as mentioned in the review of the literature, there remains the possibility that speakers show differing judgments in regard to these two types of sentences. Dussias (2003), for example,

showed that heritage bilinguals preferred *estar*/be + present participle switches to *haber*/have + past participle switches on a grammaticality judgment task, and, additionally, that they process *estar*/be switches in about the same time that they process monolingual English sentences. (As opposed to *haber*/have switches, which they take significantly more time to process.) In this section, I will compare the participants' judgments of these two types of switches to examine whether both of these types of auxiliary-VP code-switches are equally ungrammatical for L2 learners and heritage bilinguals.

To test this, a 6 x 4 repeated measures ANOVA was run to make two crucial comparisons, controlling for language directionality, which we now know to be a factor in the CS judgments of these participants. First, the two English to Spanish auxiliary switches, be + Spanish present participle switches, and have + Spanish past participle switches, were compared. Results (p = .000) indicate that both groups of bilinguals showed a significant preference for switches with be. The same test was run to compare *estar* + English present participle and *haber* + English past participle, and similar results were found (p= .000). Once again, both groups of bilinguals, regardless of proficiency, preferred switches with *estar* over switches with *haber*, indicating that in the mind of a bilingual, not all CS at the auxiliary-VP junction is equal.

6.5. Proficiency

It was hypothesized that proficiency would come to bear on code-switching judgments. However, in sections 6.1-6.4 it was shown that speaker proficiency, as measured by the DELE proficiency exam, did not impact judgments of subject/predicate CS or auxiliary/VP CS. We will return to discuss the reasons why proficiency may not have come to bear on the results in the discussion section.

7. Discussion
7.1. Proficiency

In the present study, proficiency level, as measured by the DELE examination, is not a significant factor in participants' judgments of grammatical and ungrammatical CS, in stark contrast to Toribio (2001) and Anderson (2006) where proficiency was either a predictor of accurate (Toribio 2001) or inaccurate (Anderson 2006) judgments of CS. This outcome appears to contradict the findings of both Toribio and Anderson, but I will argue in this section, that this data in fact supports Toribio, and that apparent discrepancies are due to differences in proficiency measurement across studies.

Recall that in Toribio's 2001 study, advanced L2 Spanish speakers differentiated between grammatical and ungrammatical CS while intermediate and beginning L2 Spanish speakers did not make such a distinction, indicating that speakers of higher proficiency, and not intermediate or low proficiency, had converged on native-like CS competence. In Anderson (2006), however, higher proficiency speakers gave higher judgments for all types of CS (even ungrammatical CS) while lower proficiency speakers made more of a native-like distinction between grammatical and ungrammatical CS. Anderson argues that these unpredicted results, which seem to show no connection between proficiency level and sensitivity to CS felicitousness, stem from the inability of the DELE exam to properly quantify speaker proficiency. He then demonstrates that the self-reported proficiency of his participants more strongly correlated with their CS competence, calling into question the validity of the DELE examination.

How then can the results from the present study be reconciled with these two critical studies in CS research? First, it's important to note again that in her 2001 study, Toribio did not test participants' proficiency. Her "advanced" L2 participants were enrolled in their sixth semester of Spanish, while intermediate and low proficiency learners were enrolled in their third and first semesters, respectively. In the present study, L2 learners were divided up into advanced, intermediate, and low proficiency groups not based on classroom experience, but on the basis of their performance on the DELE examination. Further analyses of the participants' background information indicates that most, if not all, of the L2 participants in the present study have ample Spanish classroom experience and would have been classified as "advanced" speakers in Toribio's 2001 study. The fact that all groups of L2 participants in the present study showed CS competence does not, therefore, conflict with Toribio's results from 2001. On the contrary, the present study supports Toribio's conclusion that L2 learners, with high enough proficiency in the L2, can attain CS competence similar to that of heritage bilinguals.

7.2. L2ers: More competent than heritage bilinguals?

As discussed in the results section, the L2 learners showed a higher preference for all four types of grammatical, subject/predicate level switches than the heritage bilinguals. In this section, the author will consider a few possible explanations for this unusual behavior, including language attitudes and potential prosody effects. First of all, it's important to note that CS can be an extremely stigmatized manner of natural speech, and this becomes especially clear in the language background questionnaires. This prescriptively induced stigma is without question a compelling reason why Anderson (2006) chose to study CS judgments by means of indirect, Matched Guise Tasks, and not by means of an Acceptability Judgment Task, as in the present study.

Interestingly, the L2 learners in the present study, with very few exceptions, expressed great admiration for CS and the speakers that do it naturally. L2 participants called it "super cool," a sign of "great [linguistic] command" and a "gift." Given that the L2 participants were mostly drawn from upper level Spanish classes at a large public university, and that many of these students had experience in linguistic courses, these glowing commentaries are not all that surprising. The comments from the heritage bilinguals, on the other hand, typically reflected clear negative attitudes about CS. One advanced heritage bilingual noted that CS represents "a lack of understanding or fluency" while others pointed out that CS speakers simply "need more practice" as if CS was a curable, but undesirable, linguistic pattern. Most notably, some participants made implicit or explicit reference to the infelicitous nature of CS in certain formal tasks, such as one advanced heritage bilingual who noted that CS "should not be used" in the workplace or in educational settings. One intermediate heritage bilingual stated that CS "shouldn't become a habit" while another dismissed it altogether, calling it "horrible." It's impossible to know for sure, but it's certainly within reason to suppose that heritage bilinguals and L2 learners have equal underlying competence when it comes to CS at certain points in the sentence, but, due to deeply engrained negative attitudes, heritage bilinguals tend to rate CS more negatively than L2 learners on an Acceptability Judgment Task.

Lastly, it's important to note the potential role of the audio recordings of the CS sentences in the present study. The sentences were read out loud by a Spanish-English heritage bilingual, but, it's possible that the intonation of these sentences was somewhat strange to heritage bilinguals who are accustomed to hearing such sentences in specific, informal contexts and not in formal, reading situations. One L2 English participant indicated to the researcher that he had lots of CS input and experience but the formal reading style of the sentences made him reject many sentences he might have otherwise accepted in written form. Given that the heritage bilinguals had much more CS input than the L2 learners, they may be more sensitive to the prosodic patterns of CS speech, and therefore, they may have been judging sentences not only on whether or not they are syntactically licensed but also on whether or not they matched the standard prosody of such sentences in naturalistic contexts. In other words, the heritage bilinguals judge sentences with both their underlying (syntactic) competence and surface competence, while L2 learners, due to their insensitivity to the prosodic differences between natural CS and CS that is read out loud in a formal task, simply judge sentences with their underlying competence. (See Duffield, 2003 and 2005 for more on the two types of competences referenced here).

Why then do we not see this disparity between the L2 learners and the heritage speakers for their judgments of ungrammatical CS? Assuming the presence of underlying and surface competences for heritage bilinguals and second language learners, the explanation is as follows. Both groups start by evaluating a given "grammatical" sentence with their underlying competence. In the case that the sentence is syntactically licensed, the L2 learners immediately accept it as grammatical, due to their relative lack of surface competence. The heritage bilinguals' underlying competence also accepts this grammatical sentence, but, due to the increased sensitivity of their surface competence, they proceed to judge the sentence's well-formedness with regards to prosody as well as other factors such as context. Because the heritage speakers are judging these sentences on more criteria, they end up giving lower scores to the grammatical instances of CS. However, when a code-switched sentence is not syntactically licensed, both groups reject it at the underlying level, and surface competence does not come to be a factor. This leads to the lack of significant discrepancy between L2 learners and heritage bilinguals with regards to ungrammatical code-switching at the auxiliary/VP boundary.

7.3. Directionality effects and auxiliary preferences

So far, we've seen that the FHC seems to make accurate predictions about the CS judgments of heritage bilinguals and L2 learners, both of whom seem to accept grammatical subject/predicate switches and (mostly) reject auxiliary/VP switches. Nonetheless, the most theoretically interesting and telling finding of the present study is the bilinguals' subtle CS judgment preferences which are not at all predicted by the FHC.

First, both bilingual groups prefer Spanish to English CS with switches between auxiliaries *estar*/be and their VP complements while simultaneously preferring English to Spanish with switches between auxiliaries *haber*/have and their VP complements. The FHC makes no reference to language directionality preferences, since violations of the FHC are language feature mismatches which should be equally problematic regardless of their directionality. Hence, the FHC cannot account for the directionality preferences observed in the present study. Secondly, both bilingual groups show a statistically significant preference for *estar*/be switches over *haber*/have switches, another result which cannot be accounted for by the FHC, since both of these switches take place at the same point in the syntactic structure, namely between the functional head, Aux. and its lexical VP complement. As such, it is unclear if the FHC governs bilinguals' CS grammars why the learners prefer one type of auxiliary/VP switch over the other type.

While the present study does provide novel evidence from Spanish-English CS judgments against the FHC, it is not the first study to show evidence of directionality preferences in bilinguals' judgments of CS. MacSwan (1999, 2000) examined Nahuatl-Spanish CS in Mexico and found that bilinguals show differing judgments of subject/predicate CS depending on the language direction of the switch itself. When a Spanish DP pronoun precedes a Nahuatl predicate, the CS sentence is grammatical, but when the directionality is switched and a Nahuatl DP pronoun precedes a Spanish predicate, the sentence is ungrammatical. MacSwan uses these differing directionality preferences as part of his more general argument against the FHC[3] and other "constraint-based approaches" to CS research which, in their search for universality, often fail on both empirical and theoretical grounds (MacSwan, 1999, 2000). But if universal CS constraints such as the FHC cannot predict the grammaticality of CS across language pairings, what can?

In his own "constraint free" research program (MacSwan, 2000, 2010), MacSwan claims that "nothing constrains CS apart from the requirements of the mixed grammars" (MacSwan, 2000, p. 44). Therefore, in order to make predictions about the grammaticality of a given CS utterance, one must simply examine the syntax of the two languages involved and determine whether or not such a switch incurs a violation of what MacSwan calls the PF Disjunction Theorem. Essentially, the PF Disjunction Theorem states that when a given switch involves head movement, it should be ungrammatical because such movement results in a complex, multilingual head which cannot be processed at PF. MacSwan uses the PF Disjunction Theorem to explain why switches between DP pronoun subjects and predicates such as (5) are ungrammatical.

(5) *Ellos ate the pizza.

In (5), MacSwan would argue that the determiner, *ellos*, raises out of the spec, vP and undergoes head movement to T, resulting in a complex, multilingual head which crashes at PF. The result, therefore, is an ungrammatical instance of CS. Applying this reasoning to the present study, we might surmise that the directionality and auxiliary preferences observed in the bilingual participants may be attributable to differences in the underlying syntactic structure of the auxiliaries examined.

To explain the lack of directionality preferences in the lexical DP subject/predicate condition, one must simply surmise that such switches do not involve head movement. To explain the directionality preferences in the *estar*/be + auxiliary condition, one might assume that when an English auxiliary, *is*, precedes a Spanish VP participial, such a switch involves head movement and is therefore ungrammatical. On the other hand, when the Spanish auxiliary, *está*, precedes an English VP participial, there is no head movement and therefore the sentence is grammatical. Given the non-categorical nature of the subjects' preferences for the *estar*/be switches, this proposition is not entirely supported. However, it's clear that this type of language specific analysis holds more empirical promise

---

[3] MacSwan (1999) also offers various theoretical problems with the FHC which I will not address here.

than universal constraints such as the FHC which struggle to account for how language directionality impacts judgments of switches which appear the same on the surface. Similarly, we might speculate that the bilinguals' preference for *estar*/be switches switches over *haber*/have switches may be a function of a similar distinction in the syntactic representations of the auxiliaries in each language. MacSwan (2000) has appealed to the nature of restructuring auxiliary verbs in Italian as an explanation for observed switches between Italian auxiliaries and French participles and it seems reasonable to think that such an explanation for Spanish-English CS is possible in the future. Zagona (2007) provides an account of the syntactic differences between the auxiliaries *have* and *be* in English, and given that her analysis involves movement, it seems like a promising start for research in this direction.

To recapitulate, the FHC appears incapable of explaining the directionality and auxiliary preference judgments observed in the given study. It is not the place of the present paper to offer an original analysis of the syntax of auxiliaries of English and Spanish, although there is ample reason to believe that differences between them may be at the root of the observations described above.

8. Conclusion

The present study sought to test the predictions of the Functional Head Constraint which predicts that switches between the subject/predicate should be grammatical while switches between the auxiliary/VP complement should be ungrammatical, regardless of the specific auxiliary or the language directionality of the switch. It was found that, while both groups of bilinguals do share in their acceptance of grammatical subject/predicate switches and (general) rejection of auxiliary/VP switches, these bilingual groups also showed language directionality and auxiliary preferences which are not predicted by the FHC. These results, aside from confirming previous research showing that L2 learners can in fact acquire CS competence, call into question the validity of the FHC and its ability to predict subtle differences in the CS judgments of heritage bilinguals and L2 learners.

While the present study does not offer a definitive syntactic answer to the puzzling preference data, it does show novel evidence that broad, universally inclined CS constraints such as the FHC cannot account for such data. Consequently, the study provides further motivation to empirically test the predictions of the "constraint free" approach to CS. As MacSwan has argued, only a finer-grained investigation into the individual syntaxes of the languages involved in a given switch can produce the type of specific, empirical predictions which will drive CS research forward. By continuing to test syntactic junctions such as the ones examined in the present study, we can do exactly that in the future.

References

Aguirre, Adalberto. (1985). An experimental study of code alternation. *International Journal of the Sociology of Language,* 53, 59-81.

Anderson, Tyler. (2006). *Spanish-English bilinguals' attitudes toward code-switching: proficiency, grammaticality, and familiarity.* Doctoral dissertation, The Pennsylvania State University, State College, Pennsylvania.

Anderson, Tyler & Toribio, Jacqueline (2007). Attitudes towards lexical borrowing and intrasentential code-switching among Spanish-English bilinguals. *Spanish in Context*, 4, 217-240.

DiSciullo, Anne-Marie., Muysken, Pieter, & Singh, Rajendra. (1986). Code mixing and government. *Journal of Linguistics* 22, 1-24.

Duffield, Nigel (2003). Measures of competent gradience. In *The Interface between Syntax and the Lexicon in Second Language Acquisition,* R. van Hout, A. Hulk, F. Kuiken & R.Towell (eds), 98–127. Amsterdam & Philadelphia: John Benjamins.

-------------- (2005). Implications of competent gradience. *Moderne Sprachen 48(1):* 95–117.

Dussias, Paola (2003). Spanish-English code-mixing at the auxiliary phrase: Evidence from eye movement data. *Revista Internacional de Lingüística Iberoamericana,* 2, 7-34.

Grabowski, Jane (2011). *Stability of grammaticality judgments in german-english code-switching.* Arizona State University). *ProQuest Dissertations and Theses.*

Liceras, Juana M., Fernández Fuertes, Raquel, Perales, Susana, R., Pérez-Tattam, Rocío & Spradlin, Kenton Todd. (2008). Gender and gender agreement in bilingual native and non-native grammars: a view from child and adult functional-lexical mixings. *Lingua*, 118, 827-851.

MacSwan, Jeff (1999). *A minimalist approach to intrasentential code switching*. New York: Garland Press.

------------------- (2000). The architecture of the bilingual language faculty: evidence from intrasentential code-switching. *Bilingualism: Language and Cognition*

------------------- (2010). Plenary address: Unconstraining codeswitching theories. *Proceedings from the Annual Meeting of the Chicago Linguistic Society 44.* Chicago: University of Chicago Press.

MacSwan, Jeff, & McAlister, K.T. (2010). Naturalistic and Elicited Data in Grammatical Studies of Codeswitching. *Studies in Hispanic and Lusophone linguistics, 3(2), 521-532.*

Myers-Scotton, Carol (2006). Natural codeswitching knocks on the laboratory door. *Bilingualism: Language and Cognition,* 9(2), 203-212.

Potowski, Kim & Bolyanatz, Mariska. (2012). Reactions to (in)felicitous codeswitching: Heritage speakers vs. L2 learners. In *Selected proceedings of the 14th Hispanic Linguistics Symposium*, ed. Kimberly Geeslin and Manuel Díaz-Campos, 116-129. Somerville, MA: Cascadilla Proceedings Project.

Rothman, Jason. (2009). Understanding the nature and outcomes of early bilingualism: Romance languages as heritage languages . *International Journal of Bilingualism,* 13 (2), 155-163.

Schütze, C.T. (1996). *The empirical base of linguistics: Grammaticality judgments and linguistic methodology.* Chicago, Il: University of Chicago Press.

Slabakova, Roumyana & Montrul, Silvina. (2003). Genericity and Aspect in L2 Acquisition. *Language Acquisition,* 11, 165-196.

Toribio, Jacqueline (2001). On the emergence of bilingual code-switching competence. *Bilingualism: Language and Cognition,* 4, 203-231.

Zagona, Karen (2007). Some effects of aspect on tense construal. *Lingua*, 117, 464-502.

Selected Proceedings of the
16th Hispanic Linguistics Symposium

edited by Jennifer Cabrelli Amaro, Gillian Lord, Ana de Prada Pérez, and Jessi Elana Aaron

Ordering information

Orders for the library binding edition are handled by Cascadilla Press.
To place an order, go to www.lingref.com or contact:

Cascadilla Press, P.O. Box 440355, Somerville, MA 02144, USA
phone: 1-617-776-2370, fax: 1-617-776-2271, sales@cascadilla.com

Web access and citation information

This entire proceedings can also be viewed on the web at www.lingref.com. Each paper has a unique document # which can be added to citations to facilitate access. The document # should not replace the full citation.

This paper can be cited as:

Giancaspro, David. 2013. L2 Learners' and Heritage Speakers' Judgments of Code-Switching at the Auxiliary-VP Boundary. In *Selected Proceedings of the 16th Hispanic Linguistics Symposium*, ed. Jennifer Cabrelli Amaro et al., 56-69. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #2925.