



*When bilingualism is the common factor:  
switch reference at the junction of  
competence and performance in both  
second language and heritage language  
performance*

Article

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**Manuscript Title:** When Bilingualism is the Common Factor: Switch reference at the junction of competence and performance in both Second Language and Heritage Language Performance

**Name:** Tiffany Judy

**Affiliation:** Wake Forest University

**Full Postal Address:**

Department of Romance Languages

323 Greene Hall Wingate Road

Winston Salem, NC 27109

**Email:** [judyte@wfu.edu](mailto:judyte@wfu.edu)

**Name:** Michael T. Putnam

**Affiliation:** Penn State University

**Full Postal Address:**

Department of Germanic & Slavic Languages & Literatures

239 Burrowes

University Park, PA 16802

**Email:** [mike.putnam@psu.edu](mailto:mike.putnam@psu.edu)

**Name:** Jason Rothman

**Affiliation:** University of Reading

**Full Postal Address:**

School of Psychology & Clinical Language Sciences

University of Reading

Harry Pitt Building

Earley Gate

Reading

UK

RG6 7BE

**Email:** [j.rothman@reading.ac.uk](mailto:j.rothman@reading.ac.uk)

**Abstract** In this paper we take a closer look at the oft-touted divide between heritage language speakers and adult second language (L2) learners. Here, we explore whether some properties of language may display general effects across different populations of bilinguals, explaining, at least partially, why these two groups show some common differences when compared with monolinguals. To test this hypothesis, we adduce data from two unique populations of bilinguals: a moribund variety of heritage German spoken in southwestern Kansas (Moundridge Schweitzer German) and L2 adult learners of Spanish. Empirically, we investigate whether the confound of switch reference adds an additional cognitive burden to these bilinguals in licensing object control predicates in the former and referential subject pronouns in the latter. Our preliminary findings support the view that overarching concepts such as incomplete acquisition cannot capture the variability observed in these populations, thus further supporting approaches that interpret findings such as these to be the result of specific variables.

**Keywords:** switch reference, object control, heritage German, Spanish, second language acquisition

## 1. Introduction

Although there are many variables that distinguish Heritage Speakers (HSs) and adult second language learners (L2ers), there are important characteristics that they tend to have in common. To illustrate our point, it is useful to imagine a real world scenario in which we keep the language pairing constant, for example, the *prima facie* case of Spanish as the heritage language (HL) or L2 in the context of the United States where English is inevitably the other language. With this scenario in mind, let us highlight a few things that HSs and adult L2ers (can) have in common. First and indeed, crucially, they are both bilinguals by definition, albeit of different types. Second, the languages involved in a particular pairing might be languages in significant contact within the greater society, as is the case of Spanish and English in the U.S. In cases where the languages find themselves in significant contact at the societal level, the HL and the L2 are one and the same (Spanish) and are in a subordinate position of prestige and distribution to the dominant societal language (English). Furthermore, the competence outcomes for both HSs and L2ers is highly variable across individuals (Montrul 2008, 2016). Both HSs and L2ers often display differences from appropriately age-matched native speakers who have grown up in a monolingual environment. Some of these differences from monolingual norms, although by no means all, are of a qualitatively similar nature. Finally, the non-heritage language/L1 (English in our scenario) tends to be the dominant language regardless of whether the individual is a HS or an adult L2er.

Despite these potential similarities, it is important to recognize that not all bilinguals are the same, even when the languages are held constant. Let's keep the same language scenario of Spanish and English in mind as we further justify the above claim. HSs are a subtype of native speakers of the HL (Rothman & Treffers-Daller 2014), whereas L2ers are non-native speakers of this language. The timing of their acquisition of the HL/L2, Spanish in our scenario, is thus, by definition, different. These HSs have been exposed to Spanish as an exclusive first language (L1) or concurrently along with English as a simultaneous bilingual, whereas adult L2ers were first exposed significantly to Spanish in adulthood. This timing difference is potentially significant on

many levels; however, it is especially prudent to highlight that this means Spanish was acquired by HSs before or at the same time as English, but crucially before the HSs had another complete linguistic system in place. Conversely, the L2ers acquire Spanish after they already have a fully-acquired, specified system (English). Although English might affect Spanish in both cases, the timing difference might itself prove illustrative for differences between the two groups. In turn, HS and L2 comparisons in this regard can be lucrative in informing more generally conditions on effects of cross-linguistic influences. Although some L2ers have strong personal connections to the L2, Spanish in our scenario, this is by no means something to be taken for granted. Conversely, by virtue of their acquisition experience, a strong personal and cultural connection to the HL is more likely for HSs. Since HSs acquire the HL in a naturalistic context in early childhood, they tend to have more quantitative and qualitative experience with the language and have been exposed to a greater number of interlocutors over a longer period of time by early adulthood, when both HSs and L2ers typically take part in experimental studies. Although many L2ers have some exposure to the L2 outside of a classroom environment, not all do. The vast majority of adult L2ers have specific training in grammar and literacy skills in both languages, whereas most HSs have very little specific training in and, thus, little metalinguistic awareness of the HL.

The study of HL acquisition and L2 acquisition has been, for the most part, kept separate, each comprising its own rich literature (cf. Montrul 2008, 2012). This separation is most likely due to and is warranted by the fact that—given the mere sampling of differences highlighted above—the two bilingual groups are not directly comparable. The fact, however, that HSs and L2ers as a whole display a similar distribution of variable outcomes and some qualitatively similar divergences from matched monolingual controls for discrete domains of grammar underscores the importance of bringing them together for certain questions of larger theoretical interest to the macro-field of bilingualism. As Montrul (2008, 2016) discusses, the aforementioned similarities of HSs and L2ers is of crucial importance to the question of age of onset as a deterministic variable to explain competence outcomes in adult L2 acquisition. The fact that HSs also show differences from monolingual controls comparable to those demonstrated by L2ers already suggests that not all L1-L2 differences can be neatly explained by age of onset. Moreover, to the extent that age of onset is deterministic for some domains of grammar, understanding where and why differences between HSs and L2ers obtain might also serve to tease apart areas of grammar that are in fact vulnerable after a certain age of onset versus those that must have other explanations. After all, if HSs and L2ers have similar differences from monolinguals for a given property, then age of onset alone cannot be the sole explanatory factor since HSs are child acquirers. Alternatively, the explanation might find itself in influence from the other language, which matched HSs and L2ers share, or reflect a domain vulnerability to something else related to bilingualism. Conversely, if HSs do not differ from monolinguals, yet both differ from L2ers for a given property, then it is at least possible—although not certain—that age of onset is likely part of the explanation for the difference.

There is a sum total benefit to bringing together comparable data from HSs and adult L2ers, as we do in the present article, examining data of HSs of Moundridge Schweitzer German (MSG) and L2ers of Spanish in the Midwestern U.S. Precisely because of the characterizing similarities and indeed the differences between these types of bilinguals, revealing parallelisms in how they differ from monolinguals can offer particularly strong evidence for general

bilingualism effects, that is, candidates of linguistic/cognitive factors that explain some differences in all cases of bilingualism irrespective of age of onset. This is especially true when such parallelisms can be predicted and shown to defy specific language pairings, age of onset and/or obtain in any and all grammatical properties that share a specific underlying similarity, yet are not overtly related. Our working hypothesis is that some properties of language will show general bilingualism effects as just described, and, thus, at least partially explain why HSs and L2ers display some overlap in differences when compared to monolinguals. To the extent that this hypothesis is on the right track, a property that is a good candidate for examination is switch reference since keeping track of switched reference adds some cost to cognitive/memory systems, which is already more taxed in bilinguals due to simultaneous activation of both languages and the ensuing need to maintain balanced control (see Kroll & Bialystok 2013 for review). The notion of switch reference, also referred to as *control shift* in the generative literature (see e.g. Ružička 1983, 1999; Comrie 1985; Farkas 1988; Sag & Pollard 1991; Panther 1993), denotes a situation when “the controller of polyvalent control verbs shifts from subject to object control” (Stiebels 2015: 424).<sup>1</sup> Keeping track of switch reference applies to various linguistic properties and spans a number of grammar-internal and external interfaces, for example, anaphoric dependencies and object control. This means that both HSs and L2ers are predicted to display some difficulties with the above properties because each involves keeping track of switch reference. The fact that switch reference applies to discourse-linking dependencies (e.g. pertaining to the use of overt subjects in null subject languages) as well as grammar-internal dependencies (e.g. object control), means that our prediction is distinct from previous ones flagging switch reference as problematic when specifically involving the syntax-discourse-pragmatics interface where it was claimed that optionality (residual in the case of L2ers and emerging in that of attriters) arose as the result of “underspecification of discourse interface conditions linked to a parametric choice that differs between the L1 and the L2” (Sorace 2011: 13).

There are various proposals in the HS and L2 acquisition literatures that attempt to explain why both types of speakers differ, individually, from monolinguals in the ways that they do. Few proposals attempt, at the same time, to predict and explain points of qualitative overlap in their differences as compared to monolinguals. Such points of overlap, arguably, cross-over precisely because they reflect a consequence of the dynamic nature of bilingualism itself. Our proposal, then, is to isolate factors previously taken to be the loci for differences between monolingual controls and either HSs or L2ers (i.e. age of onset, external interface properties) in order to determine if differences in linguistic performance may be better characterized as a consequence of the cognitive load bilinguals face, a consequence which may be exacerbated in the presence of certain linguistic properties like switch reference. In doing so, it is more in line with proposals in the HL literature that reject the catch-all position that all differences between HS and monolinguals reflect a process of incomplete acquisition (Montrul 2008), favoring an approach that assigns explanatory importance to teasing out nuanced effects of specific variables from which changes to a complete path of distinct HS acquisition obtains (e.g. Rothman 2007;

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<sup>1</sup> Here we restrict ourselves to a limited domain control structures involving only a subject or an object in a matrix clause linked to a non-overt PRO argument in an infinitival clause. We did not consider local vs. non-local control, partial control, split control, or raising-to-object (Exceptional Case Marked (ECM) predicates) (see e.g. Landau 2000, 2013 for an overview of these phenomena).

Pires & Rothman 2009; Pascual y Cabo & Rothman 2012; Kupisch 2013; Putnam & Sánchez 2013; a.o.).

## 2. Control predicates in Moundridge Schweitzer German (MSG)

As noted in the introduction, a common question that arises in heritage grammar research concerns exactly which domains, and in particular, which structures are more vulnerable than others over the course of the lifespan. Although there seems to be wide spread agreement that “[...] heritage speakers may control the rules of particular modules (e.g. narrow syntax, phonology) but experience difficulties at the interfaces between modules” (Benmamoun, Montrul & Polinsky 2013: 61), there still exist empirical issues that require further investigation. One such area that has been largely under-researched to date involves raising and control structures (i.e. A-movement phenomena in the Principles & Parameters tradition). Here we report findings from field work on control predicates in Moundridge Schweitzer German (MSG), a moribund heritage German-speaking community in south central Kansas. The MSG dialect, which primarily exhibits a mixture of Eastern and Middle Western Palatinate morphosyntactic features, has been the focus of recent investigation into the morphosyntax of heritage German varieties (see e.g. Putnam 2012; Putnam & Salmons 2013; Hopp & Putnam 2015). To date approximately 40 speakers remain who possess varying degrees of proficiency in the grammar. Here we report the results of a translation task in which 16 participants took part (based on Putnam & Schwarz 2014).

### 2.1 *Control in English and German: brief overview*

The following examples in English illustrate the key properties of raising and control predicates:

(1) Raising verb:

Greg<sub>1</sub> seems [PRO<sub>1</sub> to be sick].

(2) Subject control:

Peter<sub>1</sub> promised [PRO<sub>1</sub> to paint the fence].

(3) Object control:

Bobby persuaded Jan<sub>1</sub> [PRO<sub>1</sub> to steal Marsha’s hairbrush].

The key distinction between raising and control predicates amounts to the thematic properties of the coindexed antecedent in the matrix clause with the null argument (i.e. PRO; see Reed 2014 for a detailed overview of the PRO-hypothesis). Control predicates semantically select their object arguments whereas raising predicates do not. That is, although the raising-to-object verbs license an object dependent, that dependent is not a semantic argument of the raising verb.<sup>2</sup>

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<sup>2</sup> An anonymous reviewer raises the question of how raising-to-object (i.e. ECM) predicates would fit into our treatment of switch reference. Although we do not consider these constructions in this paper, Haider (2010: Section 7.4) conclusively illustrates that unlike English, (standard) German completely lacks the structure of ECM-predicates. Therefore, including these predicates in this study would have introduced an additional confound that

Instead, the object of *seem* has “raised” from the subject position of the embedded predicate where the embedded predicate itself semantically selects the argument of the matrix predicate. Thus in (a), Greg is the person who is sick, but importantly, the raising verb *seem* does not assign any thematic properties to Greg. Here we mention raising verbs for the sake of comparison with control verbs. Raising verbs contrast with control predicates in that the antecedent and predicate receive separate thematic interpretations. For example, in (b) Peter is the agent of the painting event as well as the agent of issuing the promise to do so. Control predicates can either allow the subject in the matrix clause to exist in a coreferential relationship with PRO (as in (b)) or the matrix object to refer to PRO (as in (c)). These constructions are commonly referred to as *subject control* and *object control*, respectively (see Davies & Dubinsky 2004 for a comprehensive overview). This basic distinction between subject and object control also underlies our definition a switch reference that we employ in this paper. *Switch reference* thus refers to the situation found in object control structures where the object in the matrix clause is simultaneously the PRO-subject in the infinitival clause.<sup>3</sup>

Both standard and dialectal varieties of German license raising, subject, and object control predicates (see Schallert 2014 for examples of dialectal German)<sup>4</sup>:

(4) Raising verb:

Cindy<sub>1</sub> scheint [PRO<sub>1</sub> böse zu sein].  
 Cindy seems angry to be.INF  
 ‘Cindy seems to be angry.’

(5) Subject control:

Alice<sub>1</sub> versprach [PRO<sub>1</sub> den Boden zu wischen].  
 Alice promised the floor to mop.INF  
 ‘Alice promised to mop the floor.’

(6) Object control:

Peter überredete Cindy<sub>1</sub> dazu [PRO<sub>1</sub> einen toten Fisch zu essen].  
 Peter convinced Cindy to-it a dead fish to eat.INF  
 ‘Peter convinced Cindy to eat a dead fish.’

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would have prevented us from investigating the role of switch reference. We recognize that testing for ECM-structures in varieties of heritage German stand to reveal a great deal about the structure of infinitival syntax of these grammars, which we hope to elucidate in future research.

<sup>3</sup> In typologically-diverse languages such as those spoken in Papua New Guinea such as Usan, switch reference is indicated on serial verb constructions via morphological marking (Reesing 1987: 346; cited by Kroger 2004: 244):

i. irai eng ba-ub di-ab wuri-s-a n-unor.  
 shrimp the take-SS come.up-SS them-give-2SG.DS eat-3PL.FUT(uncertain)  
 ‘Take these shrimps, come up and give them to them and they may eat.’

In example (i) SS refers to ‘same subject’, whereas DS references to different subject. Only DS verbs are marked for subject agreement.

<sup>4</sup> We treat the phenomena of raising and control as instances of A-movement (Hornstein 1999).



## 2.2 Research question and hypothesis

Since English, standard German, and dialectal varieties of German from the Swabian and Palatinate regions all license these sorts of predicates, it is reasonable to assume that the base grammar of MSG also consists/consisted of these predicates. Based on the fact that standard German, English, and non-standard, dialectal variants of German license both subject and object control, we advance the following hypothesis:

Since all possible source grammars (e.g. English, standard German, and dialectal German) license subject and object control, we take the null hypothesis to be that the performance of the participants in this experiment should indicate that their heritage grammar also licenses subject and object control. An important caveat to this study is that it is difficult (if not impossible) to establish one-to-one correspondences between English and German with respect to lexical items and control constructions. We address these items in turn in the remainder of this section.

## 2.3 Translation task

To test this hypothesis, 16 participants from the MSG community took part in an English-to-MSG translation task. The ages of the participants ranged from 70-96.5 years old, with all reporting speaking their heritage grammar less than 1 hour a week. Furthermore, all participants acquired their L2 (American English) at approximately 5 years of age and are largely illiterate in (standard) High German. Although certain noted caveats exist with translation tasks, we opted to use a translation task based on the advanced age of our participants. Standard pen-and-paper tasks could not be carried out due to the fact that MSG is exclusively an oral language. Furthermore, with respect to possible priming effects that may have affected the results of consultants, the fact that the dominant L2 (English) has both subject and object control should result in an additive/positive transfer effect, were it to manifest itself. Table 1 shows the participants' self-reported fluency on a scale of 1-10:

Table 1: Self-reported proficiency of MSG informants

<b>Self-Reported fluency</b>	<b>Average</b>	<b>Range</b>
Comprehension (/10)	8.28	2.5-10
Reading (High German) (/10)	3.16	0-9
Production (/10)	6.00	2-10

During this task, an interviewer read English stimuli to the participant, requesting that they reply with a translated form in MSG. Four conditions were included in the stimuli; namely, (i) raising, (ii) subject control, (iii) object control, and (iv) pseudo-serial verbs (i.e. *Mike finished*

*eating the pumpkin pie*), totaling 42 tokens in all.<sup>5</sup> Informants were presented 11 stimuli for the subject control condition and 10 for object control. Sample stimuli were based on verbs shared between English and German as appears in König (1971) and Hawkins (1985); we provide examples of each of these four sets of stimuli below in (7) - (10), respectively. In our experimental design, all stimuli were counterbalanced. Here we focus on the results regarding subject and object control predicates to illustrate minimal pairs between the reference switches.

- (7) They seem to be doing well. (raising)
- (8) I tried to sleep. (subject control)
- (9) He asked his son to milk the cow. (object control)
- (10) He finished cooking dinner. (pseudo-serial verbs)

### **2.3.1 Interpretation of results**

Responses were assessed as being either target-like or non-target-like. If the speaker was prompted with, for example, a subject control construction in English and produced a subject control construction in MSG, the translation was considered target-like. Additionally, the interpretation of the results focused on the construction used rather than the lexical items.

### **2.3.2 Overall results**

Overall, participants were most successful in producing target-like constructions in the subject control condition: 71.78% of responses provided in this condition were target-like in terms of the structure produced,. Two additional comments are in order here: First, at no time did any of the participants produce ungrammatical structures; rather, the “non-target-like” responses classify those in which a non-identical structure was produced. Second, due to the fact that this group of MSG speakers represents almost half of the remaining population of this variety of heritage German, we did not run a true control group, because there is no comparable alternative group to our MSG consultants (see e.g. Hopp & Putnam 2015 for a discussion of similar points). Instead, we consulted with two native German speakers, who encountered little, if any, difficulty in producing either subject or object control target forms (subject control 21/22 = 95.5%; object control 16/20 = 80%). At first glance, the native German consultants also encountered more difficulties in producing faithful target translations for object control. Both native German consultants provided anecdotal evidence that particular lexical items may not commonly license object control. Nonetheless, this difference is clearly not as significant since our MSG participants were still much less accurate in the object control condition, with only 24.3% of responses considered target-like.

Table 2: Overall success rates<sup>6</sup>

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<sup>5</sup> For more discussion on (pseudo-)serial verbs in English, the interested reader is directed to Hawkins (1985), Jackendoff (1990) and Goldberg (2006).

<sup>6</sup> Our 16 MSG consultants provided a limited number of non-responses (i.e. they either expressed that they were not sure about a possible translation or simply skipped over a stimulus) for subject control ( $N = 13$ ) and object control ( $N = 8$ ) stimuli.

Condition	% Overall Success
Subject Control	117/163 (71.78%)
Object Control	37/152 (24.3%)

Table 3: Subject control translation task

Stimulus	% of target-like responses
He stopped smoking cigarettes.	92.85%
He stopped smoking.	87.50%
I tried sleeping.	92.85%
I tried standing up.	100.00%
I tried to stand up.	100.00%
I tried to sleep.	87.50%
He stops playing soccer.	87.50%
He stops playing.	87.50%
He expects to buy a new cow.	26.67%
They expect to sing a new song.	33.33%
They expect to win.	0.00%

Table 3 reports the results of the subject control portion of the task. Overall the participants were successful at subject control (71.8% accuracy in providing a target-like translation). As shown in Table 3, the stimuli that resulted in fewer target-like translations were those where the control verb “expect” appeared.<sup>7</sup> When our participants encountered these stimuli, they often paraphrased their responses with more high frequency verbs such as “hope” or “think” accompanied by a clausal complement. Similar to the information provided by the native

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<sup>7</sup> An anonymous reviewer takes issue with some of the lexical items used in this task; most notably, the inclusion of the predicate *expect* in these stimuli. Although admonished to remove these stimuli, we disagree with this request for two reasons: first, as we acknowledge above, it is difficult to establish one-to-one correspondences between lexical items and constructions between English and (heritage) German. Second, Haider (2010: 298-9) specifically notes that the predicate *expect* is dubious when comparing English and German infinitival constructions, given that *expect* can license either an ECM-variant or a CP.

German-speaking consultants, the markedness of subject control structures with “expect” by our MSG speakers may be due to lexical preference.

Example responses:

Stimulus: He stopped smoking.

(11) *er hat aufgehört (schmoke/rauche).*

he has stopped smoke.INF

‘He stopped smoking.’

Stimulus: He expects to buy a new cow.

(12) *er denkt er wird eine neue kuh kaufen*

he thinks he will a new cow buy.INF

‘He thinks he will buy a new cow.’

Table 4 reports the results of the object control portion of the task. Our participants were only marginally successful in producing target-like object constructions in this task. Recall that target-like refers to faithfully employing the structure prompted in English.

Table 4: Object control translation task

Stimulus	% of target-like responses
He asked his son to milk the cow.	6.25%
He convinced me to drink a beer with him.	14.29%
He convinced me to smoke a cigar.	35.71%
He told his wife to cook dinner.	0.00%
He told them to leave.	6.25%
I asked the kids to give me the book.	12.50%
She asked the kids to clean their room.	0.00%
She asked the kids to go outside.	31.25%
He let the horses run in the field.	68.75%
They allowed the boys to buy candy.	76.92%

Although participants were able to provide translations, which were always grammatical, these often involved constructions that did not require semantic information to cross clausal boundaries. The dominant trend to avoid object control structures in this translation task refutes our null hypothesis above. In other words, their translations avoided the use of null arguments completely thereby lessening the processing burden of keeping track of the reference switch. The

most common alternative construction produced were modal verbs appearing with clausal complements:

Stimulus: He asked his son to milk the cow.

(13) *er hat sein (bub/sohn) (gesagt/gefragt), er (soll/muss) die kuh melke.*  
He has his (boy/son) (said/asked), he (should/must) the cow milk.INF  
'He told his son, he has to milk the cow.'

Here the boy is the indirect object of *told*, but also the subject of the verb milk, but the boy has to be restated in the 2<sup>nd</sup> clause. This type of construction was used by 8 out of 16 participants for this particular stimulus.

Another strategy used by the participants was the use of *ob* 'if' subordinate clauses, as shown in (14):

Stimulus: I asked the kids to give me the book.

(14) *ich han die kinder gefragt, ob sie mir das buch gebe.*  
I have the children asked, if/whether they to me the book give  
'I asked the kids if they would give me the book.'

In summary, whereas our MSG informants displayed less difficulty creating target-like subject control structures in this translation task, they employed circumventing strategies that avoided null arguments in switch reference contexts, resulting in an avoidance of object control structures in MSG. As we explicate in more detail in the following section, the alternative non-target-like structures produced were also grammatical alternative structures in the MSG grammar (with occasional null responses). In the discussion of these results below, we explore and discuss what these findings mean for our analysis.

## 2.4 Discussion

The results from the translation task indicate that, with respect to the subject and object predicates, the MSG participants encountered little difficulty producing translations with subject control. With respect to object control predicates, we witness the opposite effect, with our MSG informants largely avoiding object control structures and opting for constructions with modal verbs and subordinate clauses to circumvent these predicates (with the exception of the causative *allow*-constructions), see examples (13) and (14) as empirical evidence for this claim. An anonymous reviewer poses the question as to whether or not data exists on the frequency of target object control structures in German. Although scholars such as Hawkins (1985) acknowledge that German has fewer predicates that can be classified as raising and control predicates, Stiebels (2010, 2015) maintains that German does license control shifts (i.e. switch references) quite frequently. With regard to dialectal German, extensive research by Schallert (2014) shows that these sorts of structures exist without the presence of an infinitival *zu*-marker (similar to example (11) above). Based on these observations, it is not surprising that dialectal

forms appear in the translation task data, but the high number of circumvented and avoided structures can be taken to indicate a potential avoidance strategy by the MSG speakers.

Although determining the exact reason for this dichotomy in the production of subject and object control predicates is challenging, the fact that MSG is exclusively an oral language cannot be understated. Spoken discourse has been shown to consist primarily of intonational units that consist primarily of monadic, simple events (Croft 1995; Miller & Weinert 2009; Chafe 2014). The responses provided in the translation task including modal verbs and subordinate clauses (e.g. *if/when*-clauses) are clearly not monadic; hence we cannot rule out the possibility that one of the reasons underlying the difficulty in producing object control structures may be due to a task effect. The additional complexity that accompanies non-monadic structures requires that semantic information of complex events must be maintained across intonational/clausal boundaries. The fact that our MSG consultants produced subject control predicates across intonational/clausal boundaries stands as strong counter-evidence against task effects. To provide further evidence against the argument that some sort of task effect may have played a role in these results, we invited 2 native German consultants to provide translations of our subject and object control stimuli.

The fact that our MSG HSs produce some structures with object control in less than 25% of their total responses demonstrates that such structures are still licensed in their grammar. We take this as evidence that the results we observe in this task are not due to the restructuring and simplification of the competence grammar of this variety of heritage German (e.g. Paradis 2009; Polinsky 2011; Putnam & Sánchez 2013). Rather, the motivation behind implementing alternative structures instead of instances of object control are likely related to other factors to which we return in the overall discussion. Suffice it to say for the moment, our analysis is that avoiding the object control structure allows the MSG speakers to undo an otherwise forced context of switch reference across intonational phrase/clausal boundaries. In summary, the observation that our MSG participants are able to produce target object control structures at all indicates that they are possible structures in their grammars, albeit marked ones. Their performance in the translation task also shows that they clearly understand what was expected of them based on their production of alternative structures, which were circumlocutions that offered a reasonably similar semantic message. Based on this rationale, the semantic content of our MSG consultants' non-target-like structures were faithfully translated even though the target-like syntactic structure was avoided.

## **2.5 Section summary**

In summary, the translation task with our MSG informants indicates that subject control constructions were robustly attested and seemed to present few, if any, problems whereas those exhibiting object control were predominantly avoided in our translation task. Although we acknowledge the caveats that accompany translation tasks, natural narrative data supports these experimental findings. Although subject and object control predicates are freely produced in the English spoken by our MSG participants, these individuals largely avoided creating object

control predicates in this task.<sup>8</sup> To further disambiguate these initial findings, a comprehension task has the potential to reveal whether there exists a similar degree of difficulty when our informants must parse oral stimuli containing object control predicates.

### 3. Switch reference in L2 Spanish

Across various instances of bilingualism (e.g. adult L2 acquisition, heritage language, contact situations, etc.), the literature has reported differences in RSP distribution when compared to monolinguals, particularly at earlier stages of development/lower proficiency levels. Additionally, data from child monolinguals and bilinguals shows a developmental path regarding RSPs. Grinstead (2004) and Bel (2003) reported early emergence of overt subject pronouns in Spanish and Catalan monolingual children (approximately 1.5-3 years of age), but a delay in convergence on their discourse distribution. In older Mexican Spanish-speaking children (7-15 years of age), Shin & Cairns (2012, 2009) found that while adults preferred overt RSPs in switch reference contexts (i.e. the subject of the finite verb is different from the subject of the most recent finite verb) and null RSPs in non-switch reference contexts (i.e. the subject of the finite verb is the same as the most recent finite verb), younger participants used more null RSPs in switch reference contexts and it was not until around 8-9 years of age that these participants significantly preferred overt RSPs to null RSPs in this context. This finding was echoed in the bilingual children (6-7 and 8-10 year olds) investigated in Sorace, Serratrice, Filiaci & Baldo (2009) as both Spanish-Italian and English-Italian bilingual children choose significantly fewer overt RSPs in switch reference contexts than monolingual Italian children and adults.

The connection that we wish to make with the MSG object control data presented in Section 2 and in light of the difficulties reported in many monolingual and bilingual populations is that switch reference, as a super-type, is more difficult than non-switch reference. The basis for this claim is that the former requires the ability to deal with discontinuity in processing and two possible referents whereas the latter does not. To illustrate this point in more detail, we re-examine RSP data from a translation task completed by native English speakers who are L2 learners of Spanish (Rothman 2009).

#### 3.1 Discourse distribution of referential subject pronouns (RSP) in Spanish

The discourse distribution of referential subject pronouns (RSPs) is a highly studied phenomenon in null subject languages such as Spanish (e.g. Rigau 1986, 1988; Luján 1987, 1999; Fernández-Soriano 1989, 1993; Picallo 1994, 1998; Alonso-Ovalle & D’Introno 2000; Alonso-Ovalle, Fernandez, Frazier, & Clifton 2002 and sources cited within). For reasons of economy (Chomsky 1995, 2000, 2001), null RSPs are the default as shown in example (15) below where the referent of the subject of the second sentence is the same as the first (i.e. *María* and *Hilda*). Therefore, the use of the overt RSP *ella* “she” is superfluous and the null *pro* is preferred.

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<sup>8</sup> A similar change has taken place in the Pennsylvania Dutch spoken by Old Order Amish in Waterloo, Ontario, where the youngest generation of these speakers have altered the constructions involving raising verbs (Börjars & Burridge 2011).

(15) *Null RSPs with non-switch reference*  
 María e Hilda no almorzaron hoy.  
 Mary and Hilda not eat-3.PL.PRET today  
 “Mary and Hilda did not eat lunch today.”

- a. #Ellas tendrán mucha hambre.  
 b. *pro* tendrán mucha hambre.  
 (they) have-3.PL.FUT much hunger  
 “They must be hungry.”

Still, overt RSPs are necessary to mark focus<sup>9</sup> as in example (16) or to mark a switch in reference as shown in example (17):

(16) *Overt RSPs with focus*  
 O te lo digo yo o te lo dice ella.  
 or you-DAT it-ACC tell-1.SG.PRES I or you.DAT it-ACC tell-3.SG.PRES she  
 “Either I will tell you or she will tell you.”

- a. Quiero que me lo digas vos.  
 b. #Quiero que me lo digas *pro*  
*pro* want-1-SG.PRES that me-DAT it-ACC tell-2.SG.-PRES-SUBJ (you)  
 “I want you to tell it to me [and not her].”

(17) *Overt RSPs with switch reference*  
 No almorcé hoy.  
*pro* not eat-1.SG-PRET today  
 “I did not eat lunch today.”

- a. Ellas piensan que tengo hambre ahora.  
 b. #*pro* piensan que tengo hambre ahora.  
 (they) think-3.PL-PRES that *pro* have-1.SG-PRES hunger now  
 “They must think I am hungry.”

In both (16) and (17), the overt RSP is preferred to the null RSP, although these preferences are generally not categorical.

### 3.2 Research question

While Rothman (2009) did not originally examine RSP distribution in L2 learners of Spanish with the following purpose<sup>10</sup>, we reanalyze this data in light of the claims put forth above.

<sup>9</sup> This is also true of topic questions and establishing focal stress.

<sup>10</sup> Rothman (2009) examined L2 learners’ convergence on the syntax and discourse distribution of RSPs in light of the field’s then-newfound interest in the interfaces. Specifically, Rothman examined the syntax-before-discourse



Specifically, we ask whether there is evidence that switch reference contexts are more difficult for L2 learners of Spanish than non-switch reference contexts.

### 3.3 Contextualized translation task

The translation task completed by the participants of Rothman (2009) contained five contextualized stories with four context-dependent sentences each to be translated from English to Spanish. While not originally examined in the light of switch reference, we narrow our scope to the Topic Question tokens (example (18) below) since they meet switch reference criteria (i.e. discontinuity of the referent) and thus require an overt RSP in Spanish:

#### (18) Topic Question

I tell my mom that I'm going to Antarctica for a while. She tells me to make a list of everything I need and to not forget to pack a little sunscreen since there is a hole in the ozone layer in Antarctica. Just then, my dad, who caught the very end of the conversation, walks into the room. He asks, "Who did you say is going to Antarctica?" I respond:

Translate: I'm going to Antarctica to visit Juan.

*Expected translation: Voy yo a Antártida a visitar a Juan.*

### 3.4 Results

Table 5 below shows that the native Spanish speaker participants' translations were nearly categorical: 4.8/5 translations employed an overt RSP for the switch reference tokens. A similar finding obtained for the advanced speakers in that the overt RSP was preferred in this context: 4.35/5 translations contained overt RSPs. The intermediate participants, however, showed a preference for the null RSP in that only 1.76/5 translations contained the overt RSP.

Table 5. Overt RSP production in contextualized translation task (Rothman 2009)

	# of overt RSPs produced (N=5)
Native Spanish Speakers (N=15)	4.8
Advanced Spanish Speakers (N=23)	4.35
Intermediate L2 Spanish Speakers (N=28)	1.76

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hypothesis as well as the claim that only overt subjects, but not null subjects, would be overused by L2 learners and that these differences would fossilize (Sorace 2005).

Two-sample t-tests revealed that the intermediate participants differed significantly from both the native speaker ( $p = <0.001$ ) and advanced speaker ( $p = <0.001$ ) groups and that the advanced speaker group differed significantly from the native speaker group ( $p = 0.019$ ) for the switch reference condition. While both L2 groups differ significantly from the native speaker group, we see a clear trend towards convergence on native-like performance in this condition in that the advanced L2 group produced overt RSPs in over 80% of the switch reference tokens.

### 3.5 Discussion and summary

Focusing specifically on the advanced participants, the L2 data presented above show a split picture: on the one hand, the advanced participants, at this point in their development, do not differ significantly from the native speakers for the focus or non-switch reference contexts (see Rothman 2009); however, a significant difference was found between their use of overt subjects for the switch reference condition as compared to the native speakers. Thus, switch reference translations seem to present more difficulty than the focus and non-switch reference translations completed by the participants at the same developmental stage. This finding provides some evidence that not all syntax-discourse interface properties are subject to inevitable residual optionality (i.e. underspecification resulting in differences as compared to monolingual controls) in L2 learners as the *Interface Hypothesis* claims (Sorace 2011), but rather that in these advanced participants switch reference contexts are more problematic specifically in a translation task as we saw for the MSG data presented in the previous section for switch reference in object control structures.

Additional support for these claims comes from the offline<sup>11</sup> Topic Shift data from the near-native Farsi-Spanish speakers of Judy (2015). The data from Judy (2015) resemble these findings in that, while no statistically significant difference was found between the native speaker and L2 speaker ratings of switch reference tokens with overt RSPs ( $p = .492$ ), the L2 speaker group rated significantly more switch reference tokens with null RSPs as “good” as compared to the native group ( $p = .011$ ). However, results from a complementary online self-paced reading task that measured the participants’ processing rate via reading times showed that the same L2 group distinguished between the switch reference tokens with overt RSPs and those with null RSPs to the same degree as the native speaker group did for the verb region ( $t(30) = -.155, p = .878$ ). This finding indicates, differently from the offline task in which untimed judgments were examined, that the L2 group processed overt and null RSPs in switch reference contexts like the native speaker group did. We introduce the data from Judy (2015) for two reasons. First, it includes online processing data that contradicts offline results, which suggests differences in underlying competence and outward performance (see Section 4). Second, it suggests that proficiency may be a factor in convergence. As compared to the lower proficiency speakers presented in both the data sets presented above in sections 2 and 3, the Farsi-Spanish participants are near-native speakers who currently reside in a Spanish-speaking environment that provides them with nearly constant, monolingual input of their L2.

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<sup>11</sup> The offline task did not measure response time or processing of the experimental tokens, but rather the participants’ judgments of them.

#### 4. Switch references at the intersection of competence and performance

To bring these two data sets together, we turn to the constructs of competence versus performance, the former referring to the underlying grammar representations and the latter the real-time demonstration of such knowledge in language use or judgement. Given the tasks and data presented above, it might be tempting to conclude that neither the HSs nor the L2ers have the appropriate underlying grammatical structures (i.e. the competence) necessary to converge on the properties examined (i.e. object control and topic shift, respectively). Yet, in spite of any performance-associated caveats with the translation tasks employed in each study that may, for example, increase the processing load for the participants, it cannot be the case that the task itself is (solely) responsible for the divergence found. Neither can it be the case that the participants do not have the underlying grammatical competence. Evidence against these claims is found in several forms. First, in the MSG group, the participants perform far above chance on the subject control stimuli, yet show a markedly poorer performance on the object control stimuli. Any issue inherently related to translation per se, would be equally applicable to subject and object control unless, of course, one of the linguistic structures itself is more costly for processing and, thus, more susceptible to be obscured by a translation methodology. The prediction was that object control, precisely because it requires switch reference tracking, would be more costly, a prediction that was evidenced in the data. However, one cannot claim that the MSG grammar lacks object control altogether since the participants produced—not judged correct, but actually produced it—roughly 30% of the time. The stark difference, then, between subject and object control translations must have an explanation that acknowledges the mental grammar as having object control as an operative structure. Further confirming the claim that the differential result is not a product of the erosion of the competence but rather of performance is the fact that the MSG speakers clearly understood the experimental stimuli and that they were expected to give an acceptable approximation. Although in these circumlocutions the targeted object control structure was mostly avoided, the translations provided were nonetheless relevant approximations that were largely faithful to the semantic content of the English sentence and always contained approximate MSG structures that were grammatical (e.g. structures including a subordinate clause with a modal verb).

Additional evidence against a task effect was found in the L2 Spanish speakers, who did not differ to a statistically significant degree from the control group for neither the focus nor the non-switch reference contexts in the same task for which switch reference effects were found. Despite a statistical difference in overt RSPs produced for the switch reference tokens as compared to the native speakers, the advanced participants employed marginally more overt subjects in this condition than in the focus condition (4.35 v. 4.3) demonstrating knowledge of the discourse requirement for the overt subject pronoun and, like the control group, provided overt subjects to a statistically significant degree for the switch reference versus non-switch reference conditions ( $p = <0.001$ ). Taken as a whole, we see that the task did not present insurmountable difficulties for the participants, as evidenced by the advanced speakers' native-like performance in non-switch reference conditions. Equally, there is evidence that each participant group's underlying syntactic representations—and possibly even the relevant interface conditions—are intact.

As alluded to above, we must note that both participant groups can and did produce (i.e. performance) the switch reference structures asked of them in these respective translation tasks, although the HSs did so to a much less frequent extent. This demonstrates that the switch reference confound we address here is not a problem that can be uniquely explained through changes to their underlying grammar in the case of the HSs nor to an inability to converge on external interface-conditioned properties in the case of the adult L2ers. Instead, it seems, as others have claimed, that the difficulty arises when participants are asked to perform with structures that we claim are more problematic for reasons related to the processing costs they entail (e.g. Sorace 2011, 2012). Evidence for this claim is found in the convergence on the similar, counterbalanced properties discussed in the preceding paragraph. In the case of the MSG participants, the difficulty in real-time tracking for switch reference is perhaps related to the fact that PRO, being phonologically null, is troublesome whereas in the case of the L2 Spanish speakers, what may cause difficulties is keeping track of the discourse referents and their ordering within the discourse and syntactic structure. While we acknowledge that a translation task may increase the cognitive burden on our participants, we diverge from previous claims stating that the extra burden experienced by the constant inhibition of one language and simultaneous activation of the other (Bialystok 2009; Kroll & Bialystok 2013) should affect bilinguals uniformly at the external interfaces. The data sets presented herein, although originating from diverse populations, provide evidence that bilinguals are not subject to across-the-board interface effects with respect to switch reference phenomena. As a case in point, consider the licensing of PRO in control predicates. Although these structures speak to syntax-semantics interface interpretation issues, they likely do not involve discourse properties. Given that we observe similar effects in these unique bilingual communities that converge on switch reference stands as strong evidence that our findings cannot simply be relegated to discourse-syntax interface matters. Rather, the common denominator in these distinct experiments is the notion of switch reference itself, irrespective of the interface at play.

What we must explain, then, is *why* both HSs and adult L2ers demonstrate divergent performance with switch reference properties as opposed to non-switch reference properties. As alluded to in the introduction, age of onset, while an important and formative variable to consider, cannot be the only factor at play in determining the attrition or the development of heritage and of L2 grammars, respectively. Rather, performance-based factors such as the proposed difficulty associated with switch reference and the requirement to link elements to phonological null/covert discourse items may better explain similar outcomes in distinct participant groups who are bilingual. Switch reference contexts, whether relating to grammar-internal or grammar-external interfaces, share in common the requirement of keeping track of relevant information in the course of linguistic computation. It seems that this is more costly for bilinguals and monolinguals on the whole. Thus, one prediction, to the extent this is on the right track, is that all bilinguals will show some level of divergence from monolinguals for all properties that require switch reference. If age of onset and other factors play a contributing role, we might expect that different types of bilinguals—by age of onset, proficiency and other factors—might also show differences from one another but should all diverge to some extent to monolinguals. And so, in such domains it should not be surprising that HSs and L2ers are similar to each other in that they are distinct from monolinguals. Equally, for properties where bilinguals diverge from each other in that some are different from monolinguals and others not, then we

might conclude that such properties are not good candidates for linguistic structures that should be subject to general bilingualism effects (cf. Tsimpli 2014). Linguistic theory and cognitive psychological theories of bilingualism can couple together to allow us to predict *a priori* what at least some of these structures should be and which should not, to be able to test this moving forward.

## 5. Conclusions and directions for future research

The hypothesis presented in the introduction claims that some properties of language will be subject to general bilingualism effects and that this may explain why HSs and L2s have some overlap in performance differences with monolinguals. As compared to explanations that turn to age of onset, incomplete acquisition, L1 transfer or across-the-board divergence at the external interfaces, the benefit of this proposal is that it can explain, at a minimum, two data sets from distinct instances of bilingualism (i.e. heritage speakers and adult second language speakers) using two different properties that share a common feature: switch reference. In the MSG data, we saw that participants were able to complete what may be a more cognitively-demanding task and performed well with the subject control structures, but that the object control structures proved more difficult in terms of performance. This result obtained even though L1 transfer from English would be facilitative and both subject and object control structures are robustly present in the participants' L1. Assuming that the MSG participants were able to use (i.e. perform) equally well with subject and object control structures at some stage of their development since they understand them and use them equally well in English, none of the traditional explanatory factors listed above can account fully for this difference. Similarly, differences were found between the advanced L2 speakers and native speakers for topic questions (a form of switch reference), but not for focus or non-switch reference tokens in a contextualized translation task that likely increased the cognitive burden as well. Thus, with this data set, we cannot turn to age of onset of acquisition as an explanation of specific interface difficulties since only the switch reference tokens were problematic. Rather, the combination of these two data sets allows us to reconsider the aforementioned potential sources of divergence and look to the common denominator in the difficulty seen across these groups: switch reference.

Looking forward, the preliminary conclusions gleaned from these two data sets open the doors to interesting explorations of the interface that brings together the mental representation of grammar with its use that, to date, has been couched within the terms of the *Interface Hypothesis*. Our initial discussion and these findings have the potential to shape future research in these domains of bilingualism and can aid us, as researchers, in working towards teasing apart linguistic and psychological differences across the lifespan of speakers. In summary, preliminary studies such as these emphasize the importance of research on bilingualism at the competence-performance divide (Hawkins 2004; Culicover 2013).

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