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Abstracts
Bilingualism changes linguistic, cognitive, and neural function

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The majority of the world population is bilingual or multilingual. In this talk, I will review evidence showing that learning another language results in profound changes to the human linguistic, cognitive and neural architectures. I will show that a bilingual's two languages constantly interact and influence each other. Bilinguals' experience managing two languages translates to changes not only in the domain of language (such as novel language learning), but also in other domains (such as executive control and visual search), and influences brain activation. Using eye-tracking, mouse-tracking, EEG, and fMRI data, I will suggest that the highly interactive and dynamic nature of bilingualism changes cognition and the brain.
Mind and Context Interactions In the Lab, and *in the Wild*

Cristina Sanz  
Georgetown University

As a complex phenomenon, second language development deserves a complex approach. In the last 20 years, more and more SLA scholars have chosen to investigate language development by looking at the interaction between learners’ individual characteristics and external conditions. These studies are becoming more precise about the specific internal and external variables that may influence outcomes. Likewise, there has been a call in recent years to develop more robust designs that include multiple measures to address changes in language ability; a growing number of studies now employ novel techniques borrowed from cognitive psychology, such as eye-tracking and event-related potentials (ERPs), to collect data that can help researchers make inferences about changes in language processing in addition to language accuracy. This keynote presents an overview of two strands of research that reflect the changes detailed above, one strand that manipulates the amount and timing of different types of input to study its effects on L2 development among students of different ages and cognitive capacities, and another strand that looks at the importance of psychosocial variables such as identity in language development in immersive contexts. Whether cognitive or psychosocial, individual differences have the potential to affect not only the amount of input, interaction, and output the learner is going to seek *in the wild*, but, as important, the way the input is going to be processed, regardless of context, given the role that working memory and attentional control have in explicit processing of the language.
Frequency and Semantic Prototypicality in L2 Spanish Dative Constructions: A Corpus Study

David Abugaber
University of Illinois at Chicago

Usage-based models of language acquisition and use posit that linguistic knowledge comprises a network of thousands of form-meaning pairings called constructions, which may involve fixed, semi-fixed, or completely abstract elements that carry certain conventionalized meanings (Bybee, 2010; Goldberg, 1995; Trousdale & Hoffmann, 2013). Under this approach, the acquisition of such constructions is highly sensitive to usage frequency and prototypicality, such that the first exemplars of a given construction that are acquired typically occur in the linguistic input with high frequency and involve the meanings that are most semantically prototypical for that construction (e.g., give for the English VERB-NOU-NOU ditransitive construction). Only later does the learner move away from over-relying on these entrenched exemplars and towards acquiring more abstract schemas that encompass a wider variety of types with less prototypical meanings (e.g., write somebody a letter, bake somebody a cake, etc.) (Ellis, 2002).

Previous research has supported this model both through online psycholinguistic experiments (e.g., Ellis, 2016) as well as corpus-based analyses (e.g., Ellis & Ferreira-Junior, 2009). However, to date such research has primarily focused on the acquisition of English constructions. This study seeks to extend this line of inquiry to the acquisition of L2 Spanish. Our analysis focuses in particular on the dative construction involving indirect object pronoun clitics followed by a verb (e.g., le digo ‘I say to them,’ te dan ‘they give you,’ etc.).

Our research questions are as follows:

1) When compared to native speakers, do Spanish-L2 writers rely to a larger extent on the highest-frequency exemplars of the dative construction?

2) When compared to native speakers, do Spanish-L2 writers rely to a larger extent on the most semantically-prototypical meanings of the dative construction?

Using automatic concordance software (AntConc, Anthony, 2018), all instances of indirect object pronoun clitic use were extracted from a corpus of written essays in Spanish (CEDEL2; Lozano, 2009), yielding 3,231 tokens from 796 Spanish native speakers and 6,079 tokens from 1,605 English-L1 Spanish-L2 learners. Although the project is ongoing, preliminary results suggest that second language learners of Spanish show a higher reliance on more semantically-prototypical, high-frequency exemplars of the construction (e.g., darle ‘to give,’ decirle ‘to say,’ gustarle ‘to please’), whereas native speakers use a wider variety of types, oftentimes with less-prototypical meanings (e.g., apostarle ‘to bet,’ informarle ‘to inform,’ apetecerle ‘to appeal’) as well as several highly idiomatic uses involving indirect object clitic pronouns (e.g., darse cuenta ‘realize,’ hacérsele ADJECTIVE ‘to seem ADJECTIVE to someone’).

In addition to providing evidence for linguistic theories that emphasize frequency and semantic prototypicality as primary drivers in the acquisition of constructions, such findings also have implications for second language pedagogy, e.g., in suggesting ways that educators can
strategically shape language learners’ input and opportunities for output so as to best facilitate language acquisition (e.g., Madlener, 2015).

References


Overview
In this talk I present data from Turkish German Code Switching: Plurals are marked twice, first using a German plural ending, then attaching the Turkish default plural. The analysis supports the analysis of German -s as default plural (Wiese 1999) while also showing that within the Code Switching context, the Turkish default plural checks for specificity, triggering the need for multiple plural marking.

Research area
Code Switching Data as the basis of grammatical analyses opens up a new and emerging research area, that can account for phenomena by visualizing constructions that remain unseen in a monolingual environment. There has been work on DP-phases (van Gelderen/MacSwan 2008) and linearization (Gonzalez-Vilbazo/Lopez 2012) using CS data. The research results already indicate broader consequences on our understanding of multilingualism and the architecture of the Language Faculty, supporting in a broad sense the notion of UG and in a narrower one the constraint-free approach to Code Switching in the sense of MacSwan 1999. Code Switching research also opens up new perspectives on the cognitive model of language, in line with recent neurolinguistic findings suggesting that early bilinguals use similar brain areas with their respective L1s. (Frenk-Mestre et al. 2005) This leads us to believe that there must be only one syntactic path, with different lexical items entering the derivation.
Timing phenomena in particular might easily be shown through Code Switching data, especially because some sequences might be uttered following one pattern, but not the other (Linearization).

Data
Turkish uses the default -ler/lar as a plural marker, whereas German consists of four different lexical markers (0, e, er, en), three of which can also undergo Umlaut and one marker -s which has been analyzed as default (Marcus et al. 1995, Wiese 2009). In Turkish German Code Switching, Plurals can be marked either by using the singular root and adding only the default plural as in

(1)a. hareket- s
   move. PlGE. (‘moves’) or by adding both the German and the Turkish plural markers to the German root resulting in structures like the following:
   (2) Wohnung- en- ler- i gör-dü-m.
      flat. PlGE PlTR specificity see.past.1.SG. (‘I saw the flats’)

However, combining both default markers leads to ungrammatical constructions as in

   park. PlGE. PlTR .LOC sit.past.3.PL (‘We sat at the parks’)

b. *hareket- ler- s
   move. Tr.Pl Ge.Pl (‘moves’)

The Turkish-German Code Switching data exhibit multiple marking on plurals, while strictly
prohibiting the use of two defaults, in this case the German -s and Turkish -lar, in one utterance regardless of which L1 the root belongs to, illustrated in the following: *kitaplars (‘books’) *Pizzaslar (‘pizzas’) *pizzalars. Competition between two defaults leads to a crashed derivation, due to failure in selecting for a marked form, both plurals being underspecified. In the CS environment the plurals result in eight different possible forms in, one being ungrammatical:

<table>
<thead>
<tr>
<th>rootGE</th>
<th>PlGE</th>
<th>PlTR</th>
<th>Multiply marked Plurals</th>
<th>CS result</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frau</td>
<td>-(e)n</td>
<td>-ler/-lar</td>
<td>(e)n + lAr</td>
<td>Frauenlar</td>
<td>women</td>
</tr>
<tr>
<td>Hund</td>
<td>-e</td>
<td>-ler</td>
<td>e + lAr</td>
<td>Hundeler</td>
<td>dogs</td>
</tr>
<tr>
<td>KÜh</td>
<td>-e + U</td>
<td>-lar</td>
<td>e + U + lAr</td>
<td>Küheler</td>
<td>cows</td>
</tr>
<tr>
<td>Kind</td>
<td>-er</td>
<td>-ler</td>
<td>er + lAr</td>
<td>Kinderlar</td>
<td>children</td>
</tr>
<tr>
<td>WÄld</td>
<td>-er + U</td>
<td>-lar</td>
<td>er + U + lAr</td>
<td>Wälderlar</td>
<td>forests</td>
</tr>
<tr>
<td>Daumen</td>
<td>-Æ</td>
<td>-ler</td>
<td>Æ + lAr</td>
<td>Daumenler</td>
<td>thumbs</td>
</tr>
<tr>
<td>MÜtter</td>
<td>-Æ + U</td>
<td>-lar</td>
<td>Æ + U + lAr</td>
<td>Mütterlar</td>
<td>mothers</td>
</tr>
<tr>
<td>Park</td>
<td>-s</td>
<td>-lar</td>
<td>*s + lAr</td>
<td>*Parkslar</td>
<td>*Parks</td>
</tr>
</tbody>
</table>

Table 1. German Turkish Code Switching following the Pattern rootGE-PlGE-PlTR

Adding the Turkish default allows for seven grammatical constructions, the eighth being the disallowed combination of the two defaults.

At first glance, German plural seems already multiply marked, when Umlaut and -e, or -er endings are combined. However, it would make sense to analyse Umlaut as a phonological readjustment rule within the framework of Distributed Morphology. Interestingly enough, some German varieties already produce forms like ‘Kinders’ (children, marked both -er and -s) or ‘Weibers’ (broad). The plural form in the bilingual environment can optionally be marked twice:

(4) BÜch-er-lar
Root. er-lAr
book. PlGE PlTR (‘books’)

The Turkish default standing between the German root and marked plural is ungrammatical: *Frau-ler-en (woman-PlTR-PlGE) I assume, that the German plurals other than default -s exhibit a higher Markedness. The data also shows that the root must be merged with a marked plural before a default can be applied, resulting in this pattern: M D,*D M, *D D,

M M :
  a. M D
  b. *D M
  BÜch-er-lar (‘books’) *Frau-ler-en (‘women’)
  c. *D D
  d. M M
  *Park-s-lar (‘parks’) BÜch-er (‘books’)

When it comes to the difference between a i.e. Singular German root plus Turkish plural (NP bears plural meaning) ending Buch-lar-i [book-PlTR-ACC] and a German plural plus Turkish plural (also plural meaning) BÜch-er-lar-i [book-PlGE-PlTR-ACC], prima facie, both utterances show no difference in plural. They do, however, exhibit a difference in specificity. If combined
with a determiner and ACC marking, an example like \( O \) Buchları (Det Sg
GE + Pl TR) if not completely ungrammatical, is at least odd, triggering a need for specificity, whereas \( O \) Bücherlari (Det Pl GE + Pl TR) seems to be completely well-formed. This seems to be, because the Turkish plural checks for some kind of semantic specificity, which the German non-default plural endings seem to carry.

**Implications** Due to the overall lack of Code Switching data in comparison to monolingual corpora, the data I use stem from spontaneous utterances only. It is the first time that Turkish - German switches are being explored and analyzed within a generative framework, but seeing that this research has implications on not only the analyses of switches, but on the semantics and syntax of each L1, the notion of timing (Linearization) and the distinction between post-syntactic and pre-syntactic operations.

**References:**
Frenck-Mestre, Cheryl, Jean Luc Anton, Muriel Roth, Jyotsna Vaid, und François Viallet.
Gelderen, Elly van, und Jeff MacSwan. „Interface Conditions and Code-Switching: Pronouns, Lexical DPs, and Checking Theory“. *Lingua* 118, Nr. 6 (Juni 2008): 765-76.
Attraction-based interference in the comprehension of Spanish gender agreement

Yvette A. Bandin and Gregory D. Keating
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Sentence comprehension requires readers/listeners to compute syntactic dependencies between nonadjacent words. For example, the English sentence *The key to the cabinet is on the table* requires number agreement between *key*, the head of the subject NP and controller of the agreement relation, and the nonadjacent verb *is*. Agreement attraction in comprehension occurs when a perceiver mistakenly chooses a syntactically unlicensed but feature-matching noun—i.e., the ‘attractor’ noun *cabinet*—to be the controller of an agreement relation. Agreement attraction in comprehension makes ungrammatical sentences easier to process. That is, readers experience less difficulty reading (1b) compared to (1a), even though both are ungrammatical (for review, see Tanner et al., 2014).

1a. *The key to the cabinet are on the table.

1b. *The key to the cabinets are on the table.

Cue-based models of sentence comprehension (e.g., Lewis et al., 2006) posit that linguistic dependencies involve a memory retrieval mechanism that is susceptible to inference. Upon encountering the verb *are* in (1), a search ensues for an item in memory that matches the number features of the verb. The syntactically licensed NP, *key*, does not match, which should make both sentences equally difficult to process. However, in (1b), the intervening NP *cabinets* provides a feature match leading to interference in the agreement relation. Interference leads to erroneous retrievals of *cabinets* as the licensor of the verb.

The bulk of the existing research on agreement attraction in comprehension focuses on (a) monolingual speakers; (b) speakers of English; and (c) subject-verb number agreement. This study makes three novel contributions to this database. First, it tests Cunnings’s (2017) recent claim that bilinguals are more susceptible than monolinguals to retrieval interference by testing a group of Spanish heritage bilinguals. Second, this study includes a control group of Spanish speakers raised monolingually, who have only been the focus of a small handful of studies on agreement attraction (Acuña-Fariña et al., 2014; Lago et al., 2015; Martin et al., 2012, 2014). Third, this study examines whether noun-adjective gender agreement leads to interference effects of the type attested for subject-verb number agreement, which has thus far been limited to one study (Acuña-Fariña et al., 2014).

In the current study, Spanish speakers raised monolingually and Spanish heritage bilinguals took part in a sentence comprehension task with eyetracking that examined whether sensitivity to violations of N-ADJ gender agreement is subject to attraction interference. The critical items were quadruplets that crossed gender of an intervening NP (match vs. non-match with a head NP) and gender of the modifying ADJ (grammatical vs. *ungrammatical), as in (2).

2a. La hija de la tía estaba pálida porque había tenido una infección grave. (M - G)

2b. *La hija de la tía estaba pálido porque había tenido una infección grave. (M - UG)
2c. La hija del tío estaba pálida porque había tenido una infección grave. (NM - G)
2d. *La hija del tío estaba pálido porque había tenido una infección grave. (NM - UG)

‘The daughter of the aunt/uncle was pale because (she) had had a bad infection’

The critical region of interest was the modifying adjective (pálido/a ‘pale’). ANOVAs conducted by participants and by items with 32 participants (15 advanced heritage bilinguals and 17 monolingually raised controls) yielded interesting findings:

• Both groups were sensitive to gender violations on ADJs in later measures of reading, including re-reading time, total time and regressions back into ADJs. Neither group showed sensitivity to violations during early reading (e.g., gaze durations and first pass regressions out of ADJs).

• The intervening NP did not affect agreement processing in the control group; that is, the presence of an attractor noun that matched the features of an ungrammatical ADJ did not make ungrammatical sentences easier to process (contra what is usually found for subject-verb agreement in English and Spanish). In contrast, there were notable trends toward facilitation in the heritage data, which emerged in both early and later measures: gaze durations: ($F_1, p = .072; F_2, p = .040$); total times: ($F_1, p = .076; F_2, p = .096$).

The results are interesting in a number of ways. First, the findings from the control group suggest that gender may not interfere with agreement processes to same extent as number (cf. Acuña-Fariña et al., 2014). Second, in line with Cunnings’s (2017) claim, the results suggest that heritage bilinguals might be more susceptible to interference during memory retrieval than their monolingually-raised counterparts, despite scoring in the advanced range on a proficiency test.

References

and Language, 135, 42-51.

1 Data collection for this study is still in progress. These analyses only include data collected through end of March.
Bimodal bilingualism and lexical access:  
Investigating semantic inference in Brazilian sign language and Portuguese interpreters  

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Previous studies have shown that semantic information from one language can have an impact on the lexical processing of the other language of the bilingual (Kroll & Stewart, 1994; Duyck & Brysbaert, 2008; Dijkstra & Van Heuven, 2002; Kroll et al., 2010). However, research generally focuses on the investigation of lexical access in spoken languages and little is known about whether lexical representation is mapped to the same semantic representation when the two languages of the bilingual are from distinct modalities.

To fill out this empirical gap, the present study aimed at investigating semantic interference in bimodal bilingual lexical access in a group of Brazilian sign language and Portuguese simultaneous interpreters. Sixty-eight participants answered a Translation Recognition Task, in which they were asked to observe sequences of signs in video followed by a word in Portuguese and answer whether the word could be considered the correct translation of the sign. Three experimental conditions for the Portuguese items were built: (a) correct translation, that is, when the Portuguese word was semantically related to the target sign in Brazilian Sign Language (prime), (b) semantic-related incorrect translation, when the sign in Brazilian Sign Language (prime) was semantically close to the Portuguese word but cannot be considered a possible translation, and (c) non-semantic-related incorrect translation, when the Portuguese word is not related or could be considered a possible translation of the sign in Brazilian Sign Language (prime). The hypotheses were that the participants of the study would be faster at identifying the items on the correct translation condition than the other two conditions and that reaction times would be slower in the semantic-related incorrect translation condition in comparison to the non-semantic-related incorrect translation condition, as a result of the semantic interference effect.

The overall analysis revealed that both hypotheses were confirmed ($F(2,88) = 104,2, p < 0,01$). Participants were faster in the recognition of correct translation in comparison to the items in the other two conditions ((M = 1196,36; DP = 321,43) ($t(44) = -12,3, p < 01$). Also, they were slower to reject the wrong translation when the words were semantically related to the prime ((M = 1.196,35; DP = 321,43), $t(44) = -9,2, p < 01$). These results suggest that it is more difficult to
recognise words that are not the correct translation when they are semantically related to the sign. This means that when users of sign language and Portuguese recognize a sign, they are also activating the translation of that sign in their spoken language. Such an evidence is consistent with the previous literature which investigated semantic interference in spoken languages and confirm the linguistic status of sign languages, suggesting that meaning representation is shared by languages from different modalities. In other words, the results confirm the semantic interference effect and show that a sign language has the same impact as a spoken language in terms of language architecture in the mental lexicon.

References:


How does non-native language input impact children’s language skills?

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It has been well established that the quality of language input plays an instrumental role in children’s language development. This is equally true for children in monolingual\(^2,3,5,7\) and in bilingual environments.\(^1,6,9\) However, children in bilingual environments are likely to be exposed to more variability in their language input.\(^5,13,17\) One such source of variability related to the quality of language input is whether the input is provided by a native or a non-native speaker. Non-native speech has been shown to be less supportive of language acquisition compared to native input.\(^7\) However, the evidence for the role of non-native input in language acquisition has been rather limited, and the specific factors associated with non-native input (e.g., number of non-native speakers vs. the strength of their accent) have not been separately examined. Here, our aim was to examine the impact of non-native language input on bilingual English-Spanish children’s language skills.

In the first study, participants were 32 bilingual school-age children, 7 to 12 years of age. The Clinical Evaluation of Language Fundamentals- 4th Edition (CELF-4)\(^8\) was used to assess children’s English language skills while the CELF-4 Spanish Edition\(^10\) was used to assess children’s Spanish language skills. The Visual Matrices subtest of the Kaufman Brief Intelligence Test- 2nd Edition (KBIT-2)\(^4\) was used to assess children’s non-verbal intelligence skills. Please refer to Table 1 for participant characteristics. Parents were asked to list everyone with whom their child interacts with frequently, indicate the languages that individual speaks, how long they have spoken that language for, and the strength of accent in each language. The questionnaire data was used to derive the following variables: 1). the number of native English speakers; 2). the number of non-native English speakers; 3). the average strength of accent in English that the child is exposed to in their environment. The strength of accent was measured on a scale from 1 (none) to 5 (very strong). The same variables were also derived for Spanish.

Linear regression models were constructed using the lme4 package in \(R\). The models included receptive and expressive language skills as the outcome variable (separate model for each language domain). Children’s non-verbal intelligence skills and percent exposure to English (and Spanish for the models assessing bilinguals’ Spanish language skills) served as control variables. Three different models were constructed to assess whether 1). the number of native English speakers, 2). the number of non-native English speakers, and 3). the average strength of accent in English impacts children’s receptive and expressive English language skills. The same models were constructed for the bilinguals’ receptive and expressive Spanish language skills. The results did not reveal any significant relationships between non-native input and children’s language outcomes in English or in Spanish.

In the second study, participants were 48 preschool-age Spanish-English bilingual children, 4 to 5 years of age. The Preschool Language Scales 5th Edition, Spanish Edition (PLS-5 Spanish)\(^11\) was used to assess children’s language skills. The PLS-5 Spanish assess both English and Spanish language skills using conceptual scoring. Due to lack of variability in children’s exposure to non-native speakers of Spanish, we only considered native and non-native speakers in English. The same analysis plan was used in the follow-up study as in the first study.
Results revealed that the number of non-native English speakers was inversely associated with children’s receptive ($\beta = -3.26, p = .03$) and expressive ($\beta = -3.60, p = .02$) language skills. The total strength of accent in English was inversely associated with children’s expressive ($\beta = -3.49, p = .01$), but not receptive language skills ($\beta = -1.71, p = .18$).

In summary, results revealed that presence of non-native input is associated with lower language skills in younger, pre-school age children, but not in older school-age children. This is likely because older bilingual children have accommodated to this aspect of their input with time, and therefore non-native input no longer serves a predictive function in shaping older bilinguals’ language performance. Theoretical implications of these findings are that children’s ability to acquire language from non-native input may depend on their age and/or their linguistic experience such that older bilingual children may experience more exposure to native language input outside of home.

Table 1. Participant Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>32</td>
<td>48</td>
</tr>
<tr>
<td>Age (years)</td>
<td>8.88 (1.3)</td>
<td>4.84 (0.59)</td>
</tr>
<tr>
<td>Non-verbal IQ (Standard Score)</td>
<td>104.97 (13.07)</td>
<td>103.04 (6.84)</td>
</tr>
<tr>
<td>Receptive Language (Standard Score)</td>
<td>English: 96.25 (12.94)</td>
<td>111.94 (14.36)</td>
</tr>
<tr>
<td></td>
<td>Spanish: 95.81 (13.86)</td>
<td></td>
</tr>
<tr>
<td>Expressive Language (Standard Score)</td>
<td>English: 89.52 (17.16)</td>
<td>108.10 (14.35)</td>
</tr>
<tr>
<td></td>
<td>Spanish: 83.66 (16.15)</td>
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<tr>
<td>Percent Weekly English Exposure</td>
<td>50% (23.00)</td>
<td>46.23% (15.62)</td>
</tr>
<tr>
<td>Percent Weekly Spanish Exposure</td>
<td>50% (24.00)</td>
<td>53.76% (15.62)</td>
</tr>
<tr>
<td>Number Native Speakers</td>
<td>English: 1.42 (1.29)</td>
<td>1.04 (1.14)</td>
</tr>
<tr>
<td></td>
<td>Spanish: 2.55 (1.39)</td>
<td></td>
</tr>
<tr>
<td>Number Non-Native Speakers</td>
<td>English: 2.07 (1.10)</td>
<td>1.86 (1.27)</td>
</tr>
<tr>
<td></td>
<td>Spanish: 0.81 (0.87)</td>
<td></td>
</tr>
<tr>
<td>Total Strength of Accent</td>
<td>English: 2.33 (0.83)</td>
<td>3.81 (2.55)</td>
</tr>
<tr>
<td></td>
<td>Spanish: 1.53 (0.61)</td>
<td></td>
</tr>
</tbody>
</table>

References


Examining the metalinguistic awareness of fourth-graders in a low-income Spanish-English two-way immersion program

Eurydice Bauer and Melissa Bowles
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Research studies on early bilinguals have investigated metalinguistic awareness through a series of experiments, which revealed “how well individuals think about, talk about, or analyze language” (Garcia, 1999, p. 2). These studies show that bilinguals are significantly better than monolinguals at explaining how words work (Goncz & Kodzopejic, 1991), sentence grammaticality (Galambos & Goldin-Meadow, 1990), and beginning reading tasks (Bialystok, 1997).

In the case of two-way immersion (TWI) classrooms, researchers continue to find that students who participate in TWI programs have higher test scores (Christian, Lindholm, Montone, & Carranza, 1997; Lindholm-Leary, 2001; Pérez, 2004; Thomas & Collier, 2002), higher rates of high school graduation and college attendance (Lindholm-Leary & Borsato, 2001), and more positive attitudes toward other cultures and languages (Cazabon, Lambert, & Hall, 1993; Lindholm-Leary, 2001) when compared with children involved in other types of school programs (i.e., English-only). Additionally, students in bilingual settings develop stronger levels of self-competence, one of the strongest predictors of future performance (López, 2010). Most studies of TWI classrooms to date have focused on middle-class Latino and white children, with limited research on children at lower income levels and other races.

Research has shown that low SES is significantly and positively correlated with lower educational outcomes. Economic disparities are widening at an accelerating pace in the United States, and the income–achievement gap has reached an all-time high (Stanford Center for Education Policy Analysis, 2012). Children from low-SES families acquire language skills more slowly, exhibit delayed letter recognition and phonological awareness, and are at increased risk for reading difficulties and learning disabilities than high-SES children (Aikens & Barbarin, 2008; Coley, 2002; Palardy, 2008). These disparities increase over time, with students from low-SES schools entering high school 3.3 grade levels behind high-SES students and graduating 4.3 grade levels behind their high-SES peers (Palardy, 2008), if they graduate at all. The dropout rate for low-SES students is 16.7%, five times higher than for high-SES students (National Center of Education Statistics, 2008). Low-SES families are often racially and ethnically diverse. With African American and Latino children projected to reach 44% of the U.S. preK-12 school population by 2024 (NCES, 2014), finding ways to mitigate the effects of low SES on learning and academic achievement becomes increasingly critical for our society as a whole. Some lab-based research (Carlson & Meltzoff, 2008) has suggested that emergent bilingualism through TWI may reduce disparities and level the playing field for this understudied, disadvantaged group, providing social, cognitive, and linguistic advantages.

The present study followed 18 randomly selected students (9 Latino L1-Spanish speakers and 9 African American L1-English speakers) who were in a TWI program in downstate Illinois (grades K and 1) when it was founded and were tracked as they matriculated through the DL program. The school is unlike many that have TWI programs in that its population is low-income and predominantly African American. In particular, its student population (n=469) is 50.3% African American, 19.2% Latino, 18.1% white, 8.5% mixed race, and 1.1% Asian. More than 90% of students qualify for free and reduced-price lunch. All students who live within the
boundaries of the school who wish to participate in the TWI program are given priority over those who are not in the school’s boundaries and petition to join the program. Students are not required to meet any special criteria to participate in the program. This process ensures that low-income students are not pushed out of the TWI program by middle- and upper middle-class families wishing to participate in the program. Latinos in the school district who are eligible for English-language support are enrolled in the TWI program. The students who join the program from English-speaking homes are predominantly African American from the neighborhood. In total, about 60% of students in the TWI program are Latino L1-Spanish speakers and 40% are African-American L1-English speakers.

The 18 focal students described in the study were interviewed at the end of fourth grade (their fourth year in the TWI program) based on a series of questions designed to elicit metalinguistic awareness in their two languages. The interviews were transcribed by a Spanish/English bilingual and coded qualitatively based on emergent themes. Data analysis is still underway but preliminary results show that the children have a sophisticated understanding of both the majority language (English) and the minority language (Spanish). Specifically, TWI students are able to capitalize on their resources in both languages, engage in extensive language play, and have a keen understanding that translating concepts, and not words, is what they do. Despite the fact that the TWI classrooms do not tend to be form-focused, students also demonstrated that they understood important semantic distinctions in the two languages, such as how genericity is encoded (example 1, where a student explains that bare plurals are possible in English but not in Spanish). Without using metalinguistic terms, these fourth-graders were also able to make astute comparisons between the two languages, as in example 2, where a student asserts that in Spanish you have to “add words” for things to make sense. He is referring to the fact that a Spanish sentence, with its rich clitic system, tends to have about 25% more words than an English equivalent.

Preliminary results therefore suggest that low-income African-American and Latino children in this TWI program have developed advanced metalinguistic skills in their two languages in just four short years. Whether their enrollment in a TWI program will confer benefits that offset the race-income gap is still an open question, and part of our larger study, but their strong metalinguistic skills would appear to be on par with what has been shown in more privileged groups. TWI may prove to be the great equalizer in US education.

Examples

(1) [Student]: Because in English, you don’t always have to put “the” in front of the sentence but sometimes in Spanish like if you’re gonna say like an animal or a person, you have to put “los” or “las.” Los…so tigers have stripes in English and los tigres tienen rayas …

(2) [Student]: That sometimes they, you need to add words to like make it sound better? [Interviewer]: In what language? [Student]: In Spanish. Because like, it’s, sometimes it doesn’t make sense. So you just have to add words. [Interviewer]: You have to add more words to say what you want to say. [Student]: So you can’t just translate it straight like just translate every word.
Exploring the role of feature reassembly and input: A study on aspectual development in L2 English

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Much research shows L2 learners experience difficulties acquiring aspectual tense morphology (Dominguez et al., 2017). However, the extent and nature of cross-linguistic influence is unclear. This paper presents an experimental study examining the role of the L1 and input in the development of aspectual tense morphology in the English present tense by native speakers (NSs) of French and Chinese, within a feature-based contrastive framework. The fact that English differentiates between progressive and habitual aspect using the present progressive and the present simple respectively, but French and Chinese do not, generates distinct and testable predictions relating to the remapping and reassembly of formal features. In addition to the aforementioned interpretations, we examine the less commonly studied reportive interpretation of the present simple (see Table 1).

Lardiere’s (2009) Feature Reassembly Hypothesis (FRH) predicts success in L2 acquisition depending on learners’ ability to successfully reassemble existing (semantic and syntactic) feature bundles into new (L2) feature configurations. Based on the FRH and Slabakova’s (2009) cline of feature difficulty, the habitual/generic interpretation of the present simple is predicted to generate greater difficulty for Chinese speakers, given the need to reassemble semantic features expressed covertly in L1 but overtly in L2. French speakers, however, can directly map the equivalent L1 form onto the L2 form. The present progressive is hypothesised to be challenging for both learner groups, but for different reasons: Chinese-speaking learners must reassemble target feature bundles given the equivalent L1 form’s s(semantic)-selection properties, whereas French-speaking learners must remap the many-to-one (form–meaning) L1 correspondence to a one-to-one L2 mapping. Finally, both learner groups may find the reportive present simple challenging, since such an interpretation is not grammaticalised in either language, meaning learners must reassemble covertly expressed L1 feature bundles.

We test these predictions by drawing on data from an aspectual interpretation task (Slabakova, 2003; Al-Thubaiti, 2015) and an elicited oral production task (OPT) (Liszka, 2015) with NSs of English (N=15) and upper-intermediate/advanced L2 learners of English with L1 Chinese (N=15) and French (N=15). In the former, participants read 48 short stories (see 1-3) and then selected one of four sentences based on its contextual appropriateness. In the latter, participants simultaneously watched and described events from a 9-minute video clip.

Chi-squared tests of independence on interpretation data did not reveal significant differences in aspectual choices between groups in progressive and habitual conditions regardless of L1 (Figs.1-2). Conversely, we found a significant difference ($p > .01$) between NSs and Chinese-speaking learners for the reportive condition (Fig.3). OPT findings were mixed (Fig.4). Liszka (2015) claims L2 use of the present simple to describe on-going events is erroneous. However, our NSs allowed both forms. Chi-squared tests revealed significant differences in aspectual choices ($p > .01$) between NSs and all L2 groups, with the latter favouring the present simple.
In conclusion, this study partially supports initial predictions, suggesting L2 learners can eventually acquire aspectual tense morphosyntax involving the reassembly of features expressed covertly in L1 but overtly in L2; however, complete mastery is not guaranteed. We further argue that inconsistent and ambiguous input (i.e., NSs’ variable aspectual choices in production) complicates the acquisition task. The role of priming, as well as theoretical and pedagogical implications will be discussed.

Table 1: Meanings and forms under investigation

<table>
<thead>
<tr>
<th>Semantic interpretation</th>
<th>Morphosyntax</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>English</td>
</tr>
<tr>
<td>Progressive</td>
<td>Present progressive, e.g. <em>He is singing right now.</em></td>
</tr>
<tr>
<td>Habitual</td>
<td>Present simple, e.g. <em>He sings every day.</em></td>
</tr>
<tr>
<td>Reportive, i.e. marked use of progressive-like semantics in oral commentaries</td>
<td>Present simple, e.g. <em>He runs, he scores!</em></td>
</tr>
</tbody>
</table>

N.B. Following Arche (2014), this study assumes that the syntactic structures underlying the semantic interpretations of aspect are universal across languages, but the locus of variation lies in how languages express and map the semantic interpretations onto specific morphosyntax forms.

Test items (excluding distractors):

1. HABITUAL: Every time Beth’s family go out, they have to take two cars. It’s usually Beth and her dad who drive. Beth hates driving behind her dad on the motorway. He drives so slowly. Beth always tries to drive in front of her dad even if he starts off in front.
   A. Beth is overtaking her dad.
   B. Beth overtakes her dad.
   C. Both sentences in A and B are true descriptions.
   D. Don’t know.

2. PROGRESSIVE: Tom is at the lake with his friends. Tom decides to take a dip in the lake. There are lots of boats. Tom decides to swim to the other side of the lake because he doesn’t like boats. Tom sees one approaching him right now. Tom has decided to turn around.

3. REPORTIVE: Fred loves watching the Grand Prix. This week, it’s the Monaco Grand Prix. Fred is in his living room watching it on TV. The commentator is excitedly saying: “And Button is just behind Schumacher. Button accelerates around the bend…
References


Capturing Bilingualism as a Continuous Variable

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Research on developing bilinguals in the United States has typically taken a group approach, casting bilingualism as a dichotomous variable and comparing groups of children learning one language to those learning two (Kaushanskaya & Prior, 2014). But this approach does not reflect reality. Not all children who are exposed to two or more languages will ultimately develop fluency in both languages, becoming “categorically bilingual”. The absence of balanced, fluent language skills in two languages does not make children monolingual; instead, relative language proficiency is variable across individuals, time, and topics (Grosjean, 1989; Kohnert, Bates & Hernandez, 1998).

Views that define bilingualism according to use, exposure, and social need for a language suggest that bilingualism may be better cast as a continuous variable. But there are numerous possible variables that could continuously index the “degree” of bilingualism. Past work has considered aspects of the environment as possible drivers of bilingual proficiency (e.g., the length of exposure to a second language, the choice of language for output, and the relative amounts of input in each language; Bedore, Peña, Griffin, & Hixon, 2016; Ribot, Hoff, & Burridge, 2017). Another possible continuous index of bilingualism in children is proficiency itself, or measured skill in each language. But this approach is complicated by the fact that language learning ability is unequal across children. In particular, studies on children with Developmental Language Disorder (DLD, Bishop et al. 2017) cannot rely entirely on proficiency measures of bilingualism.

This presentation explores methods of measuring bilingualism in research that includes children with and without DLD. We will discuss possible ways to measure bilingualism within a sample of 167 children that includes both English-only monolinguals and Spanish-English bilinguals, and both children with DLD and children with typical language development. The goal of the presentation is to engage attendees in discussion about how best to define and measure bilingualism in research.

The data for this presentation come from a study exploring aspects of attention in bilingual and monolingual children with and without DLD. Children aged 6 to 8 years with exposure to English only or both Spanish and English were recruited. All parents completed a parent interview that included questions regarding child language exposure. For parents who reported that their child heard or spoke Spanish frequently, the Alberta Language Environment Questionnaire (ALEQ, Paradis, 2010) was used. This tool asks parents to estimate the proportion of input and output in the home language with each family member and caretaker; length of exposure to the community language as well as language in the educational environment are also reported. For parents who reported that their child heard or spoke only English, an informal questionnaire was used to verify the absence of other languages in the child’s home and school environments.

Children’s language skills were also directly assessed using the Clinical Evaluation of Language Fundamentals – 4th Edition, English (CELF-4E, Semel, Wiig, & Secord, 2003) and, if appropriate, the Clinical Evaluation of Language Fundamentals – 4th Edition, Spanish (CELF-4S, Wiig, Semel, & Secord, 2006). The Spanish test was attempted with children whose parents reported significant Spanish exposure, although in 12 cases it could not be completed because
the child’s Spanish proficiency was extremely limited.

These assessments generate a number of possible continuous measures of bilingualism: length of exposure to English vs. the home language; reported input from various caregivers and family members; reported output to those caregivers and family members; and proficiency (CELF) scores in English and Spanish. We will discuss advantages and disadvantages to each of these in the current dataset, and consider the relations among these possible variables in the entire dataset as well as in the subset of children with typical language development.

References


The perception of Japanese lexical contrasts by L2 learners: the role of the lexicon

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Introduction: The Speech Learning Model (SLM [1]) and the Perception Assimilation Model (PAM, [2]) are two prominent models that address the acquisition of L2 sounds. While their predictions differ, both models agree that sound categories/gestures that exist in a learner's L1 will influence their perception of L2 sounds. This study aims to examine how L2 learners native speakers of English (L2 learners) perceive three different types of lexical contrast in Japanese: voiceless vs. voiced stops (e.g. [kakko:] ‘outfit’ vs. [gakko:] ‘school’), long vs. short vowels (e.g. [biru] ‘building’ vs [bi:ru] ‘beer’), and words with lexical pitch accent on their first syllable vs. last syllable (e.g. [áme] ‘candy’ vs [amé] ‘rain’). Studies on the perception of L2 contrasts focused mainly on the perception of phonetic differences ([3]) and less attention has been given to whether L2 learners can encode contrastive L2 categories in their mental lexicon (but see [4] and [5]). This study takes previous research further by employing an ABX discrimination task and a lexical assignment task, and by testing both segments and supra-segmental features.

Methods: Seven advanced L2 learners and six native speakers (NS) participated in an ABX task and in a lexical assignment task. They heard 60 words (ten minimal pairs for each type of contrast) recorded by a NS. The ABX included 120 tokens (60 items * 4 orders) and the lexical task had 60. In the latter task, participants were asked the meaning in English of the Japanese word, choosing between two options.

Hypothesis: If the assumptions of SLM and PAM can be extended to lexical encoding, it is possible to hypothesize that L2 learners can discriminate L2 words based on phonological distinctions that are relevant in the language. For instance, advanced learners of Japanese should be able to distinguish short from long vowels and initial accent from final accent.

Analysis/results: Linear mixed effects regressions were performed on accuracy and reaction times from both tasks. In the ABX both L1 and L2 speakers performed at ceiling in all three contrasts. Contrastively, in the lexical task, the two groups performed differently. Whereas for NS accuracy in all three contrast was above 98%, L2 speakers’ accuracy was much lower for vowel length, 76% and especially for accentual contrasts, where they performed at chance (51%). Generally, L2 speakers had longer reaction times in the lexical decision task, especially for accent contrasts.

Conclusion: Results showed that L2 learners can accurately discriminate tokens based on the three L2 phonological features tested. However, they find it difficult to identify members of minimal pairs differing in vowel length and especially accent. SLM and PAM should be developed in order to explain lexical encoding. The fact that only 14% of the Japanese lexicon can be contrasted through pitch accent [6] may explain why L2 learners do not appear to encode accentual patterns in their mental representations of words. These results are consistent with [4] and SLM: Even if they have learned to attend to L2 contrasts that do not exist in their L1, L2 speakers may still fail to fully use that distinction in their mental lexicon.
References

The narrative abilities of an English-Spanish bilingual with Prader-Willi Syndrome: Is there a bilingual cost?

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The goal of this study is to analyze the narrative abilities of a 33-year-old English (majority language)-Spanish (heritage language) bilingual with Prader-Willi Syndrome (PWS). PWS is a congenital rare neurodevelopmental disorder that tends to present deficiencies with speech (poor speech-sound development, reduced oral motor skills) and language development (grammar, morphology, narrative abilities and pragmatics) (Lewis 2006). The study of the linguistic capacities of individuals with PWS remains practically unexplored and restricted to monolingual speakers. Previous studies on monolinguals with PWS have primarily focused on their narrative abilities and have shown that narrating is an especially demanding task for this population (it implies integrating information from different linguistic and non-linguistic domains) and improves over the lifespan (adults with PWS produce more elaborated narratives than younger individuals) (Lewis et al. 2002). Individuals with developmental disabilities (DDs), as is the case of PWS, are often discouraged to become bilingual or to have access to an L2 under the assumption that to do this will have a negative impact on their first language development (Paradis et al. 2011). However, previous research has questioned this extended practice by showing that bilingual individuals with DDs, such as Down syndrome or William syndrome do not differ much from their monolingual peers (Kay-Raining Bird et al. 2016, Perovic & Lochet 2016). Following this line of research, this study represents the first attempt to analyze the narrative abilities of an English-Spanish bilingual individual with PWS. Being more specific, we intend to answer the following three research questions: (1) Does an English-Spanish bilingual with PWS show poor narrative abilities in terms of structure and coherence, process and complexity and content and multiplicity as previous research has revealed in the case of Spanish monolingual individuals with PWS?; (2) Are the narrative abilities of an English-Spanish bilingual with PWS comparable in both languages? and (3) How are the narrative abilities of an English-Spanish bilingual with PWS compared to a typically developing (TD) English-Spanish bilingual?

Two wordless picture books (A boy, a dog and a frog and Frog where are you?) (Mayer 1967,1969, respectively) were used as the data elicitation method. The PWS participant produced four oral narratives (two in English and two in Spanish over two different experimental sessions), which were compared to four analogous narrative texts produced by a 25-year-old English-Spanish TD bilingual with comparable linguistic background and proficiency level in both languages. In the first experimental session both participants were asked to narrate A boy, a dog and a frog in English and Frog, where are you? in Spanish. During the second session, the narration languages were reversed. That is A boy, a dog and a frog was asked to be narrated in Spanish and Frog, where are you? in English. Between these two sessions there was an average of two-and-a-half-month gap. Following Gonçalves and collaborators’ narrative evaluation protocol (see Garayzábal-Heinze et al. 2012 for details), the narratives were analyzed according to three dimensions: structure and coherence, process and complexity and content and multiplicity.
Overall (Figure 1) the results revealed that the PWS bilingual, different from the TD bilingual, but in line with Garayzábal-Heinze et al. (2012) results for monolingual speakers with PWS, showed a poor narration quality in the three narrative dimensions under analysis. Both participants showed better performance, –which is evidenced by richer narratives– during the second session of data collection. However, this improved performance did not go in the same direction for both participants. While the TD bilingual showed better lexical richness in session two than in session one, the bilingual with PWS exhibited, independently of the language variable, more extensive narratives in session two, greater MLU and a better control of the narrative abilities in the three analyzed dimensions.

Figure 1. Holistic scores for Yves and Olivias’ narrative performance.

As shown in figures 2 and 3, the narrative abilities of the bilingual with PWS, when compared with the TD Heritage speaker, could be described according to the following gradation scale in both English and Spanish: *narrative content and multiplicity > narrative structure and coherence > narrative process and complexity*.

Figure 2. Yves’ global scores by dimensions Figure 3. Olivia’s global scores by dimensions

These findings lead us to conclude that, for this individual with PWS, bilingualism does not seem to have a negative effect, which, in turn, leads us to suggest that, rather than being discouraged, it could be encouraged and special attention should be given to the development of narrative abilities in the PWS’ school curriculum, particularly with regard to discourse coherence and complexity.

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Recovery effects in L1 attrition: a study on anaphora resolution in Italian

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After many years in a second language (L2)-environment, speakers may experience problems in their native language (L1): this phenomenon is known as attrition. Our question is whether these speakers show recovery effects after a re-immersion to their country of origin. In order to address this question, we investigated whether L1 attrition effects on anaphora resolution decrease with L1 re-immersion, by testing twice two groups of Italian native speakers, one functionally monolingual (21 participants), and the other one made up of late bilingual speakers of Swedish (20 participants). The group of late bilinguals consisted of adult native speakers of Italian who had left Italy after puberty and had lived in Sweden for at least seven years. The group of monolinguals consisted of adult native speakers of Italian who grew up in Italy, where they are currently living. Both groups had to identify the antecedents of overt and null pronouns in Italian sentences in an offline comprehension experiment. The material consisted of 20 target sentences (10 with a null pronoun and 10 with an overt pronoun) and 70 fillers. Each sentence was followed by a comprehension question, where participants had to choose between either a subject antecedent or an object antecedent, by pressing button “1” or “2” on the keyboard. We measured preferences, response times and reading times. According to the “Position of Antecedent Strategy” (Carminati, 2002), when interpreting intra-sentential anaphora, Italian null pronouns are generally assigned to the antecedent in the highest SpecIP, usually the subject, whereas overt pronouns are generally assigned to an antecedent in the lower syntactic position, usually the object (1). In Swedish, on the contrary, null pronouns in finite clauses do not exist, and this gives raise to ambiguity with respect to the antecedent of the pronoun (2).

The bilinguals were re-immersed to their L1: we tested them once before their summer holidays in Italy and once directly after. Additionally, the control group was also tested twice. We hypothesize that, if attrition effects are temporary rather than permanent (i.e., Chamorro, Sorace, & Sturt, 2015), the bilinguals will show an improvement in terms of antecedent assignment and response times in the second session, while the control group will not. Our results show that the bilinguals differ significantly from the monolinguals in terms of overall preferences (p= 0.014). Figure 1 shows a difference between bilinguals and

Figure 1: Response proportions.

(1) Monica ha discusso molto con Antonella, da quando lei è tornata da Parigi.
   ‘Monica has discussed a lot with Antonella since she came back from Paris.’
(2) Andreas, lärde känna Jonas, när han arbetade på en privatklinik.
   ‘Andreas met Jonas when he was working in a private clinic.’
monolinguals in the antecedent assignment for the overt pronoun in the first session. This difference almost disappears in the second session, after the L1 re-immersion.

Compared to monolinguals, we found larger variability in both sessions of the bilinguals’ data for the null pronoun condition (Fig. 2), a result that is not consistent with previous findings that attrition effects are limited to overt pronouns (i.e., Tsimpli, Sorace, Heycock, & Filiaci, 2004).

In terms of response times Figure 3 suggests that, in session 1, the bilinguals are faster in the null pronoun condition, compared to the overt pronoun condition. However, in session 2, this pattern is completely the opposite. On the other hand, the monolinguals are always faster in the overt pronoun condition rather than in the null pronoun condition. Finally, for reading times, data show no difference between sentences containing null pronouns and sentences containing overt pronouns, for both groups (Fig. 3). This element is important to demonstrate that sentences have the same level of difficulty.

We found an unexpected change in the second session in the control group: the monolinguals improve in terms of preferences only in the null pronoun condition (Fig. 1), and, in terms of RT, they become faster in the second session (Fig. 3). Taken together, these findings suggest that, in anaphora resolution, L1 attrition effects are observable especially on overt pronouns, but attrition has an impact on null pronouns too. These attrition effects seem to decrease with L1 re-immersion but the training effect found in the control group do not allow us to make a strong conclusion.
References
English language learners’ participation in classroom discussion as a function of motivation and bi-literacy

Holly Griskell and Perla Gámez

Introduction. The English literacy skills gap between English Language Learners (ELLs; children receiving English language services at school) and their English-proficient peers persists and grows throughout elementary school (Gándara, Rumberger, Maxwell-Jolly, & Callahan, 2003; Kieffer, 2008; NCES, 2016a; NCES, 2016b). Research suggests that bi-literacy (i.e., receiving instruction and being literate in both the native and English language) is a protective factor against English literacy difficulties for ELLs (August & Shanahan, 2006; Melby-Lervåg & Lervåg, 2011). For example, bi-literate ELLs demonstrate better English reading comprehension if they have better Spanish vocabulary knowledge than if they have lower Spanish vocabulary performance (Proctor, August, Carlo, & Snow, 2006). Additionally, research suggests that ELLs’ language skills can be promoted through opportunities to practice using language (Bohman, Bedore, Peña, Mendez-Perez & Gillam, 2010; Gámez & Shimpi, 2016), for example, by participating in oral discussions in their classrooms. Yet, participation in classroom discussion varies by student (Rocca, 2010), in part because students’ motivation determines why they choose to participate (or not participate) in certain activities (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2007). Thus, in the present study, we investigate whether ELLs’ motivation relates to their participation in classroom discussion. Moreover, we investigate whether this relation between motivation and classroom participation varies as a function of bi-literacy.

Method. ELLs’ motivation was assessed using a researcher-developed survey called the Motivation for Classroom Discussion Questionnaire (MCDQ; Authors, in prep). ELLs, who self-identified as bi-literate or not, were also audio recorded during their English Language Arts class period using a novel language processing technology, the Language Environment Analysis (LENA) Digital Language Processors (DLPs; LENA Foundation). Based on the LENA system’s counts of talk (i.e. vocalizations), ELLs were classified as having either a high or low level of talk and their level of talk was compared to their MCD-Q motivation scores.

The participants included 149 sixth-grade students (M age = 12.12 years old; SD = 0.348; male = 68; female = 81) from six middle schools in a predominately Spanish-speaking Latino community near Chicago. The majority of students self-identified as Spanish-English bilinguals (n = 143). Of these students, 41 students reported having been in sustained bilingual education (i.e., having three or more years of bilingual education). The remaining students (n = 102), reported having two or fewer years of bilingual education (n = 31) or never having been enrolled in a bilingual program (n = 71).

Results. Simple regression and mixed-effects logistic regression models were used to investigate the relations between motivation, bi-literacy, and level of talk. Results demonstrated that there was a significant and positive relationship between bi-literacy and motivation (B = 0.102, p < 0.05), indicating that bi-literate students reported having greater motivation to participate in discussion than their less bi-literate peers. While separate logistic regression models demonstrated that bi-literacy and motivation were not directly related to level of talk (p’s > 0.05), there was a significant and positive interaction between bi-literacy and motivation. That is, students who reported having a higher level of bi-literacy and higher motivation to participate in discussion were more likely to have higher levels of talk (B = 0.637, p < 0.05).
Conclusions. Our findings converge with work suggesting that supporting ELLs’ native language provides language benefits for these learners (Linholm-Leary & Block, 2010; Lindholm-Leary, 2014; Proctor et al., 2006). The results of our study further suggest that we should consider ELLs’ motivation in addition to supporting their native language as a means of encouraging ELLs’ to participate in their own language learning through classroom discussion.
The processing of non-local subject-verb number agreement in L2 Spanish:
A critical role for lexical access

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The question of whether second language learners can be similar to native speakers is fundamental in the study of adult second language acquisition and, more specifically, in research on non-native sentence processing. The last decade has seen the emergence of different theories that seek to explain how sentences are processed in a non-native language, with particular attention to identifying areas of difficulty. On the one hand, some theories have suggested that an age-related deficit in syntactic and morphosyntactic representations and a failure to integrate these during real-time language comprehension can best characterize second language sentence processing [1,2,3], and a substantial amount of research has sought to test this hypothesis. On the other hand, one alternative theoretical stance proposes that underdeveloped lexical knowledge and the resulting difficulty in lexical access can give the appearance of higher level structural deficits in sentence processing [4,5], but very few studies have begun to examine this claim (e.g., [5,6]). To address this gap in previous research, the present study examined the role of lexical access in the processing of verbal number agreement in L2 Spanish.

Thirty-two L1 and 20 very advanced L2 Spanish users (L1 English) read 32 subject-verb agreement stimuli as in (1) and (2) below while their eye movements were tracked. The stimuli appeared in grammatical and ungrammatical conditions, distributed across two counterbalanced lists with 96 fillers each, and a meaningful comprehension question followed each item. As an indirect manipulation of lexical knowledge, half the stimuli contained a critical verb in the main clause that was high frequency (e.g., llegar “arrive”, ganar “win”) and in the other half it was low frequency (e.g., deparar “offer”, ceñir “tighten”). In addition, subjective knowledge of the verbs used in the stimuli was also assessed via an offline vocabulary test administered after the eyetracking study, along with a Spanish proficiency test and a background questionnaire.

Analysis of the eye movement data via linear mixed effects models revealed significant online sensitivity to agreement in both participant groups for the stimuli with high frequency verbs, including longer total dwell time on the critical verb and on the post-critical word in the ungrammatical stimulus condition. With low frequency verbs, however, neither group showed any effect of grammaticality while reading the stimuli. These results suggest that apparent difficulty in processing grammatical agreement is not necessarily due to deficient morphosyntax, as it can also occur as a result of low word frequency, which is likely associated with weaker representations and less efficient lexical access. Crucially, the effect of lexical access on agreement processing was not merely additive, meaning that it might have caused agreement processes to just be slower in general, to allow extra time to access low frequency verbs. Rather,
there was a critical interaction between lexical and morphosyntactic processes, in which difficulty with lexical access was associated with a complete absence of evidence of successful agreement processing. This outcome is thus consistent with the theoretical proposal that slower lexical access can mimic morphosyntactic deficiency during real-time sentence comprehension [4,5,6]. Interestingly, although the theory was proposed for L2 learners because they tend to have less robust lexical representations than L1 users, here the impact on agreement was also observed with native speakers, which further suggests that L2 processing difficulty is not necessarily due to limitations on adult second language acquisition. Finally, although the two participant groups in the present study were similarly affected by the experimental manipulation of lexical access, we leave open the possibility that between-group differences might be observed in future research with verbs of more moderate frequency (i.e., in between our low and high frequency categories), consistent with the frequency pattern observed by Hopp [6] for the non-native processing of cleft sentences.

Examples of Eyetracking Stimuli
(Critical verbs appear in bold here for the reader, but were not enhanced in the experiment.)

(1)  **High frequency verb (Grammatical, Ungrammatical)**
    a. El paquete que pidió la secretaria *llegó* esta tarde a las cinco.
    b. *Los paquetes que pidió la secretaria* llegó esta tarde a las cinco.
    “The package/*packages that the secretary ordered arrived this afternoon at five.”

(2)  **Low frequency verb (Grammatical, Ungrammatical)**
    a. El carrito que empujó el niño *abolló* el vehículo de la policía.
    b. *Los carritos que empujó el niño* abolló el vehículo de la policía.
    “The little car/*cars that the boy pushed dented the police officer’s vehicle.”

References
Processing difficulty in heritage bilingual sentence comprehension: A comparison of self-paced reading and eyetracking

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In experimental research on heritage language bilingualism, one important concern is that heritage speakers tend to have underdeveloped literacy, metalinguistic skills, and formal register, as compared to their own language skills in English and relative to native speakers raised in a language majority context with more opportunities for formal study (Carreira & Kagan, 2011). This difference between populations of language users raises the question of whether heritage speakers may respond differently to experimental measures than other participant groups to which they are frequently compared, leading several researchers to advocate for a shift away from traditional metalinguistic judgment measures in heritage language research (Benmamoun, Montrul, & Polinsky, 2010) and towards real-time psycholinguistic methods like self-paced reading, eyetracking, and ERPs (Bolger & Zapata, 2011; Jegerski, In Press). Thus far, only a handful of studies have responded to this limitation in the literature. The present study addresses this gap by exploring the potential of two real-time measures of sentence comprehension, self-paced reading and eyetracking, in the empirical study of heritage language bilingualism.

More specifically, the present study examined what processing strategies are employed in response to difficulty that arises during meaningful sentence comprehension. The focus was a processing effect that occurs when a noun phrase (NP) appears after an intransitive verb, as in While Anna slept the baby played in the crib (Mitchell, 1987). In stimuli like this one, signs of processing difficulty are usually observed on the postverbal NP (i.e., the baby in this example), relative to a comparison condition in which the first verb in the stimulus is transitive (e.g., While Anna dressed the baby played in the crib). Such processing difficulty presumably occurs because of a conflict between Late Closure, a structural preference to incorporate each subsequent word into the existing phrase or clause rather than to initiate a new phrase (Frazier & Fodor, 1978) and the lexical subcategorization of the verb, which in this case does not allow for the post-verbal NP to be so incorporated. The present study examined how this conflict affects the processing of heritage Spanish speakers using two online techniques: self-paced reading (Experiment 1) and eyetracking (Experiment 2). The experiments took place at different universities with different participants but tested almost identical sentences that appeared in two conditions. Condition (a) contained a transitive verb and condition (b) an intransitive verb, as in (1) below (the critical NP is bolded here for the reader but was not enhanced in the actual experiments).

1a. Cuando el escultor acabó la obra tenía tres metros de altura. TRANSITIVE
1b. Cuando el escultor volvió la obra tenía tres metros de altura. INTRANSITIVE
“When the sculptor finished/came back the piece was three meters tall.”

In Experiment 1, 60 heritage speakers and 16 native speakers raised in Spanish-speaking countries read 20 critical stimuli and 140 distractors in the moving window format of self-paced reading. Preliminary analyses show increased reading times on the critical NP (la obra “the piece”) following intransitive versus transitive verbs (acabó “finished” vs. volvió “came back”) for both participant groups. In addition, only the heritage speakers showed a spillover effect on the post-critical region with the second verb (tenía “had”). Thus, at this point
it seemed that the heritage bilinguals may have struggled more to resolve the processing conflict than the comparison group, but it was not clear to what extent the observed effects were related to the self-paced reading format, which does not allow rereading, a potentially important recovery strategy. Therefore, we conducted a second experiment using eyetracking, which not only allows participants to go back and reread earlier words in a sentence, but also records such regressive eye movements as experimental data.

In Experiment 2, 78 heritage speakers and 40 native speakers raised monolingually read the stimulus sentences while their eye movements were recorded. For the purpose of analysis, the sentences were segmented identically to those in Experiment 1. The results largely converged with those of Experiment 1, as both groups had longer go-past times and total reading times on the critical NP following intransitive versus transitive verbs. In addition, both groups also made more regressive eye movements out of the spillover region and back to the pre-critical verb when it was intransitive. Thus, both groups appeared to have comparable levels of processing difficulty as measured by eyetracking and they both utilized rereading as a recovery strategy when the experimental task allowed them to do so.

Taken together, the outcomes of these two experiments suggest that 1) heritage speakers may be more reliant on the ability to go back and reread that is possible with eyetracking and in normal reading but not during self-paced reading, since they showed greater processing difficulty than the comparison group in Experiment 1, where rereading was not possible and 2) self-paced reading and eyetracking can each be uniquely revealing when it comes to bilingual sentence processing, which underscores the importance of research using a variety of experimental tools and measures with bilinguals in general and especially with heritage speakers.

References


Interpreting diminutives in compounding: L1 and L2 perspectives on Brazilian Portuguese

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Examining the interpretation of morphology in compounding offers insight into the distinct representation of headedness in L1 and L2 grammars. While inflectional morphology in Noun-Noun (NN) compounding has received considerable attention in L1 and L2 research (e.g. Liceras, Díaz & Salomaa-Robertson 2002), only one previous study has examined derivational morphology in NN compounds, focusing on L2 speakers’ interpretation of the derivational affix -ito (‘little’) in Spanish (Liceras & Klassen 2017). These authors found that L2 Spanish speakers interpreted -ito as only affecting the noun to which it is attached – regardless of whether it is the head or the modifier – while the L1 Spanish speakers attributed a privileged status to the head such that the attachment of -ito to the left-most noun (head) affected the whole compound. Extending this work, in this study we investigate the interpretation of the derivational affix -inho (‘little’) in NN compounds by L1 and L2 Brazilian Portuguese (BP) speakers.

Similar to Spanish, most BP NN compounds are left-headed (Río-Torto & Ribeiro 2012). Though it is clear that inflectional morphology (such as the plural affix) can only be attached to the head (2 vs 3), whether the diminutive (dim) -inho is considered grammatical when it is attached to the modifier (5) or to both nouns (6) is unclear, as is the interpretation of such compounds.

(1) cartão-jovem (2) cartões-jovem (3) *cartão-jove
‘youth card’ ‘youth cards’ *‘youths cards’

(4) cadeirinha bar (5) cadeira barzinho (6) cadeirinha barzinho
‘little bar stool’ ‘little bar stool’ ‘little bar stool’

In this study, 66 L1 speakers of BP and 47 intermediate-advanced L2 learners completed a picture selection task in which the attachment of -inho in the NN compound was manipulated to form four conditions (NN, D[dim]N, ND[dim] and D[dim]D[dim]). Results show that all speakers had significantly different interpretations of the compounds according to the attachment of the diminutive (p<.001) (Figure 1). The L1 BP speakers systematically interpreted the diminutive as only affecting the noun to which it was attached, not allowing the diminutive on the head to have scope over the whole compound. While the L2 BP speakers’ interpretations generally patterned with the L1 speakers, there was significantly more variation in the L2 data (p<.001).

The L1 BP findings are surprising given that previous work has shown that L1 Spanish speakers assign a privileged status to the head. In contrast to L1 Spanish speakers, L1 BP speakers individualize the attachment of -inho which suggests that diminutives in Spanish behave more like inflection (where attachment to the head clearly affects the whole compound).
than those in BP. The fact that the L2 speakers display significantly more variation in their interpretations is consistent with previous findings in L2 Spanish illustrating that the representation ofheadedness is different in L1 and L2 grammars.

![Diagram showing the proportion of pictures selected by L1 and L2 Brazilian Portuguese speakers in each condition for animate (left) and inanimate (right) compounds.](image)

**Animate Compounds**  
**Inanimate Compounds**

**Figure 1.** Proportion of pictures\(^1\) selected by L1 and L2 Brazilian Portuguese speakers in each condition\(^2\) for animate (left) and inanimate (right) compounds.

\(^1\)**Pictures:** base=no manipulations; smbase=small version of base; smhead=small head noun; smmod=small modifier noun

\(^2\)**Conditions:** DD as in cadeirinha barzinho; DN as in cadeirinha bar; ND as in cadeira barzinho; NN as in cadeira bar

**References:**


The syntactic structure of the Basque pronoun bera:
Evidence from code-switching

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Basque, unlike Spanish, has been generally assumed to lack a true third-person pronoun. In its place, Basque uses the demonstrative hura ‘that’ or the quasi pronoun bera, a form morphologically comprised by the morpheme ber- ‘self’ and the article -a ‘that’ (Rijk, 2008; Hualde & Ortiz de Urbina, 2011). Based on preliminary code-switching (CS) data from Spanish-Basque bilinguals we claim that bera is in fact a true third-person pronoun, and that it should be categorized as a weak pronoun along with the remainder of the pronominal paradigm in Basque.

With regards to pronoun categorization, Cardinaletti and Starke (1999) divide pronouns into three different categories based on syntactic structure: strong pronouns, weak pronouns, and clitics. The authors argue that the distinction between strong and weak pronouns is the existence of a maximal Determiner Phrase (DP) projection in the former and not the latter. Therefore, the question becomes whether bera behaves syntactically like Basque first- and second-person pronouns (i.e., weak pronouns), or if it is DP-like in nature (i.e., a strong pronoun), as in literally that self.

A restriction against pronouns in CS has been known for quite some time (Gumperz, 1977; Lipski, 1978; Timm, 1975; among others). Note the variation in acceptability among the Spanish-English code-switched sentences in (1):

(1) a. * Él works too much.
   he
   ‘He works too much.’

b. Juan y él work too much.
   Juan and he
   ‘Juan and he/him work too much.’

c. Ese hombre works too much.
   that man
   ‘That man works too much.’

Following a Minimalist approach to CS (MacSwan, 1999, 2004), Koronkiewicz (2014) and González-Vilbazo & Koronkiewicz (2016) argue that the (un)acceptability of switching a pronoun with a finite verb is due to differences in syntactic structure. Weak pronouns lack a full Determiner Phrase (DP), and are unable to be switched (1a). However, strong pronouns, such as those that are coordinated, behave exactly like lexical DPs due to their full DP structure, and are acceptably switched (1b-c).

Given the pattern of (un)acceptability for strong and weak pronouns reported in the CS examples in (1), we can make concrete predictions regarding the categorization of third-person pronouns in Basque. If bera is a weak pronoun, it is expected to receive acceptability ratings similar to (1a); whereas if it is a strong pronoun, it is expected to pattern like (1b).

This experiment tests the status of bera through a comparison between first-person pronoun, third-person pronoun, and third-person lexical DP switches in Spanish-Basque CS. The data presented in (2) are gathered from the acceptability judgments (1-7 Likert scale) of highly proficient bilinguals (N = 30) who learned Basque and Spanish from a young age and were from the northwest region of the Basque Country, Spain.
In the examples in (2) we have three different Basque elements switched with a finite verb in Spanish: a third-person pronoun (2a), a first-person pronoun (2b), and a lexical DP (2c). Preliminary data analysis suggests that the Basque third-person pronoun *bera* is a weak pronoun. Participants rated the third-person pronoun switches in (2b) as unacceptable, in the exact same manner they did with the first-person pronoun switches in (2a). The lexical DP switches in (2c), on the other hand, were found to be acceptable. The CS results in (2) lead us to reassess the unavailability of third-person pronouns in Basque. We claim that *bera* is in fact a true third-person pronoun and that, just like the remainder of the Basque pronominal paradigm, it should be categorized as a weak pronoun.

**References**


Gramatical gender in atypical language development:
Inferences from a case study of a heritage speaker

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The Minimalist Program (MP) and Distributed Morphology (DM) have provided theoretical frameworks for analyzing gender in spontaneous and experimental code-switched data produced by and elicited from both unimodal bilinguals (i.a. Licerias et al. 2008; Klassen 2016) and bimodal bilinguals (i.a. Chen Pichler et al. 2016). However, to the best of our knowledge, code-switched data from bilinguals with developmental disabilities have not been analyzed, even though such data can offer important information as to how language in general and formal features in particular are represented in the mind of these bilinguals. In this study we focus on a 34-year-old English-Spanish bilingual (with Spanish as the Heritage language) who has Prader-Willi Syndrome (PWS), a genetic disorder that besides behavioral disturbances also presents intellectual and linguistic disabilities. While extensive research has been conducted on the intellectual disabilities and behavioural disturbances of individuals with PWS (i.a. Ho & Dimitropoulos, 2010), their language development remains almost entirely unexplored, as the little linguistic research that has been carried out to date has mainly focused on monolingual speakers and their narrative abilities.

Code-switched structures provide insight into the representation of gender in the mind of the bilingual in that they make it possible to determine whether bilinguals whose dominant language does not classify Nouns according to grammatical gender do, in fact, assign these Nouns the gender of their ‘translation equivalents’ in the gender-marked language. Previous research (Licerias et al. 2008) has shown that Spanish-dominant English-Spanish bilinguals significantly prefer gender-matching switched concord structures (as in (1) and (3)) over non-matching ones (as in (2) and (4)), in other words, they abide by the so-called ‘analogical criterion’ (Otheguy & Lapidus 2003).

—Concord: Determiner Phrase (DP)
(1a) La [theF] house [casaF] [matching] / (1b) El [theM] book [libroM] [matching]
(2a) El [theM] house [casaF] [non-matching] / (2b) La [theF] book [libroM] [non-matching]

—Agreement: Adjectival Phrase (AdjP)
(3a) The house [la casaF] es roja [is redF] [matching]. / (3b) The book [el libroM] es rojo [is rojoM] [matching]
(4a) The house [la casaF] es rojo [is redM] [non-matching] / (4b) The book [el libroM] es rojo [is rojoF] [non-matching]

However, while Spanish-dominant bilinguals adhere to the ‘analogical criterion’ regardless of the structure and type of task (Liceras et al. 2008; Liceras 2017), English-dominant bilinguals (specifically Spanish Heritage speakers) and L2 Spanish learners behave significantly more like Spanish-dominant bilinguals with Agreement structures than Concord structures when
performing an acceptability judgement task (AJT), while their behaviour in a written production task (WPT) is more similar to Spanish-dominant bilinguals with Concord than Agreement.

In order to determine whether the representation of gender in the mind of the English-dominant English-Spanish bilingual with PWS is shaped by the ‘analogical criterion’ in the same way as typically developing (TD) Spanish Heritage speakers, our participant performed an AJT in which he rated switched DPs and AdjPs (5a and 6a), and a WPT in which he completed switched DPs and AdjPs (5b and 6b).

(5a) Where is the milk? - La leche está en el glass. [MM matching]


(6a) Why do you like the castle? – The castle es preciosa. [MF non-matching]

(6b) The table is __________.  Response: negra [FF matching] / negro [FM non-matching]

The results show that, in the AJT, the English-Spanish bilingual with PWS rates both matching and non-matching structures high but has a stronger preference for all structures that abide by the ‘analogical criterion’. In other words, this participant gives a higher rating to (1) vs. (2) and (3) vs. (4). However, in the WPT, our participant unambiguously abided by the ‘analogical criterion’ when producing both types of structures, thus performing at ceiling like TD Spanish-dominant bilinguals. This divide between the two tasks shows that, rather than sensitivity to the directionality of the valuation mechanisms, to the right and to the left in (7) versus only to the left in (8), or issues with the number of lexical categories to be accessed in each construction (the Noun in (9) vs. the Noun and the Adjective in (10)), it is the actual task (the AJT) that is problematic for the PWS individual.

—Directionality of the Double Feature Valuation in Concord

(7) D N

—Directionality of the Double Feature Valuation in Agreement

(8) DP Adj.

The house es roja [Gen: fem.+ (Φ)]

La mesa [fem.] black [fem.] black [masc.]
We would like to suggest that acceptability judgments may present special problems for this population given that their opinions are usually categorical (nuances or flexibility are not their strength) and also because such judgments may involve abstract thinking, which is also difficult for PWS individuals. These results, albeit it is only a case study, constitute a first step towards investigating which cognitive capacities may be compromised in the case of the PWS population and provide evidence that bilingualism does not have a negative effect on the activation of formal features in their grammars.

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Reconsidering modality, text difficulty and assessment in studies of attention to form and meaning

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Simultaneous attention to form and meaning in the second language (L2) has played a major role in L2 research (SLA) during the past thirty years, since the seminal publication of VanPatten (1990), which today is one of the ten most cited studies in Studies in Second Language Acquisition’s history. Indeed, the study has inspired multiple conceptual replication studies (Greenslade, Bouden & Sanz, 1999; Leow, Hsieh & Moreno, 2008; Morgan-Short, Heil, Botero-Moriarty & Ebert, 2012; Wong, 2001), most recent of which was a large-scale international multi-site replication (Morgan-Short et al., in press). This line of investigation frames its research questions on the limited resources available within working memory (cf. McLaughlin, 1987): when these emergent bilinguals attend to grammatical form, the resources available to attend to meaning are fewer and therefore, comprehension is expected to suffer. This hypothesis was upheld by VanPatten’s (1990) study on aural comprehension: participants’ comprehension in the less meaningful conditions (those attending to grammatical items) suffered compared to that of the lexical or control condition, whose attention was directed only at listening for meaning. Early replications extended the original study design to the written mode and/or to a different language while keeping the key elements in the original protocol intact; i.e., form (the important lexical item, the functor, verbal morphology) and meaning (the original text, recall tests) (Greenslate, Bouden & Sanz, 1999; Wong, 2001). These results coincided, at least partially, with VanPatten’s (1990) own conclusions: Greenslade et al.’s (1999) study of written comprehension and Wong’s (2001) study of aural comprehension found that attention to form interrupted attention to meaning, although Wong’s (2001) study did not find any significant differences between groups in the written modality. Since then, further replications have yielded evidence incompatible with the conclusions drawn by VanPatten, suggesting that learners can consciously process any form, regardless of how salient or meaning-bearing it may be, without detrimental effects on comprehension (Leow, Hsieh & Moreno, 2008; Morgan-Short, Heil, Botero-Moriarty & Ebert, 2012; Morgan-Short et al., in press). However, these more recent replication studies have followed a new protocol, changing substantial aspects of the original, including the text and the way comprehension is measured. The current ‘replication of replications’ is a layered study: a between-subjects component compares comprehension in the written and aural modalities, while a within-subjects component aims to disambiguate previous findings by comparing the different texts and assessments used to operationalize comprehension, the dependent variable. Comprehension data was collected from 120 learners of Spanish in their fourth semester of study. We complement it with data on prior knowledge and on perceptions of task difficulty, following work on comprehension in educational psychology (cf. Kintsch & Kintsch, 2005). Preliminary results suggest that prior knowledge and text difficulty play an important role in comprehension and therefore complicate comparisons between two series of studies that share a common research interest but differ in their protocols. While the focus is mostly methodological, the discussion revisits the important question on the role of consciousness in input processing in early L2 learning.
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Verb Placement in the Initial Stages of Swedish as a Third Language

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Various models of third language (L3) acquisition attempt to explain what the new language’s initial state is. The L2 Status Factor model (L2SF, Bardel & Falk, 2007) claims that the L2 is primary and blocks transfer from the L1. The Typological Primacy Model, or TPM, (Rothman, 2015) predicts that the parser subconsciously transfers whichever language seems closer to the available L3 input. The parser compares them using a cue hierarchy with the L3 lexicon at the top, followed by phonology, morphology, and syntax. The TPM is supported by an increasing amount of empirical evidence; however, much of it involves languages in which typological closeness is obvious, like English/Spanish/L3 Portuguese (for example, Rothman & Cabrelli Amaro, 2010).

Swedish is V2 like German, meaning the inflected verb is the second element, while English does not fix the verb’s position. When a modal and infinitive are used in German, the infinitive is at the end of the sentence, but both English and Swedish place it right after the modal. Swedish aligns with German in one way and English in the other. Seeing where participants place the L3 Swedish verbs shows if German or English is the initial state.

This study tests both models and the TPM’s cue hierarchy. English, German, and Swedish are all Germanic, so typological closeness is not clear. The L2SF predicts that the L2 will transfer no matter what Swedish input participants receive, meaning both groups should perform similarly, while the TPM predicts an asymmetry if they receive input more like English or German, and argues that the lexicon will determine which transfers.

L1 English/L2 German participants (N=10) were taught Swedish nouns and verbs in one session via PowerPoint, either English-like or German-like cognates like knife/kniv/Messer or read/läsa/lesen, using syntax consistent with all languages. There was no auditory input. Then participants created modal and V2 sentences in Swedish.

Participants given German-like input followed German-like verb placement 86% of the time, while those given English-like input followed English-like placement 48.5% of the time; this behavior was significantly different (p = 0.0001). When the two types of sentences are run separately, the same two-tailed Fisher’s exact test shows that the modal results have the same result as the total (p = 0.0001), while the V2 results are only just statistically significant (p = 0.0463).

Results support the TPM over the L2SF and the TPM’s claim that the parser uses the lexicon to choose between L1/L2. The stronger German effect might be an L2 factor or could reflect the relative strength of the cognates. Future work with an L1 German/L2 English group will either confirm or rule out an L2 effect in the stronger German-like results.
Gender in Spanish-Basque mixed DPs: evidence from a “forced” elicitation task

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This paper aims at identifying the strategies involved in gender assignment in Basque-Spanish mixed nominal constructions with a Spanish determiner (Det) and a Basque noun (N):

(1) a. la/el etxe(a) ‘the house’  
   b. la/el liburu(a) ‘the book’.

Basque and Spanish differ in various grammatical features. As such, a number of grammatical conflict sites can be identified, namely points at which the two grammars differ.

Table 1: Nominal constructions in Basque and Spanish

<table>
<thead>
<tr>
<th>Feature</th>
<th>Basque</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determiner placement</td>
<td>N-Det</td>
<td>Det N</td>
</tr>
<tr>
<td>Grammatical gender</td>
<td>N/A</td>
<td>MASC (-o), FEM (-a) (canonical)</td>
</tr>
</tbody>
</table>

As we observe in table 1, Spanish and Basque have the opposite head-complement directionality (Basque=head-final vs. Spanish=head-initial. See these DPs: liburu-a vs. el libro ‘the book’). Second, Basque is a genderless language, whereas Spanish has grammatical gender, and nouns and their accompanying articles and adjectives agree in gender (la\(_F\) casa\(_F\) roja\(_F\) ‘the red house’ vs. el\(_M\) libro\(_M\) rojo\(_M\) ‘the red book’). Moreover, the optionality of CS is asymmetric: CS is an option for every Basque speaker, but it is not for every Spanish speaker living in the same community. These asymmetries may affect the patterns of mixed DPs in Spanish vs. Basque conversations taking place in the bilingual Basque-Spanish community.

Our goal is to discover how “conflict” situations are solved in the production of mixed DP phrases involving elements (Spanish Det + Basque N) of these two languages with distinct feature specifications. Previous research on acceptability judgment studies on Spanish-Basque mixed DPs have revealed mixed results regarding the determining factor affecting gender assignment, namely, phonological ending vs. analogical gender (Parafita Couto et al., 2015, Iriondo, 2017, Badiola & Sande, in press). Note that discrepancies in these studies could arise from several methodological differences, such as the participants’ linguistic background or the data gathering methods and materials, as already proposed for Spanish-English CS (Liceras et al. 2008; Valdes Kroff, 2016) and Spanish-Purepecha CS (Bellamy, Parafita Couto & Stadthagen-González, in press).

Given these apparently contradictory findings, we designed a forced-switch director-matcher task (also commonly referred to in the literature as the ‘toy task’; see Gullberg et al., 2009) to elicit mixed DPs from Spanish-Basque bilingual participants with different bilingual profiles and sociolinguistic background. In this task, one participant, the director, has to instruct the other, the matcher, where to locate certain objects on a board. In order to elicit mixed DPs, participants were asked to speak in Spanish but to name the objects in Basque. Extralinguistic data collected via a questionnaire allowed us to see whether bilingualism type and extra-linguistic factors affect gender assignment in the mixed DPs under study.

The objects chosen for the task were inanimate items corresponding to high frequency nouns in Basque. The objects were selected so that the nouns were controlled for analogical gender (16 fem vs. 16 masc) and phonological ending (8 –a prototypically feminine, 8 –o prototypically masculine, 8 –n unmarked phonological ending, and –i very infrequent phonological ending in
Spanish, although prototypically masculine) according to the frequency study by Teschner and Russel (1984).

So far, data from 10 participants has been collected. These participants are highly proficient early sequential (and simultaneous) bilinguals living in a Spanish-dominant sociolinguistic area. The total number of mixed DPs with Spanish determiner and Basque nouns produced by the 10 participants was 308. The analyses of the factors influencing the determiner produced in these mixed DPs revealed different gender assignment patterns. 7 out of 10 participants followed clearly the analogical criterion (> 80% of the productions), that is, they preferred the gender option corresponding to the Spanish translation equivalent over the one corresponding to the phonological ending (2). Interestingly, two participants resorted to either masculine (3) or feminine (4) determiner in most of the cases (72.4% and 78.1% respectively), regardless of the analogical gender or the phonological ending of the word. Besides, the majority of the participants inserted the Basque nouns with the Basque –a determiner suffixed to it (2a, 2, 4) (80% of the mixed DPs).

Data analysis is ongoing; however our preliminary results suggest that analogical gender is a robust strategy that most of the Spanish-Basque bilinguals tested so far resort to when producing mixed DPs. This is in line with results observed in some judgment studies (cf. Parafita Couto et al. 2015; Iriondo, 2017). Our results will help to show how far constructions like those in (2–4) are produced by all types of speakers, or whether the language learned first or most widely used in the community makes a difference.

References


Two-way immersion (TWI) education has been found to be highly effective at fostering academic and majority language development for both heritage speakers and second language (L2) learners. In addition, L2 learners show much greater progress with the minority language than typical students in world-language classes (Lindholm-Leary, 2001). Nonetheless, minority language outcomes have been found to be consistently lagging (Lindholm-Leary, 2001; Montrul & Potowski, 2007; Potowski, 2007; Tedick & Young, 2014). The current study contributes to prior research exploring this phenomenon in terms of teachers’ existing beliefs and practices (Harley et al., 1987; Walker & Tedick, 2000; Lindholm-Leary, 2001; Lyster, 2007; Fortune et al., 2008; Hernández, 2011; Cammarata & Tedick, 2012). In particular, it uses data from interviews, questionnaires, and classroom observations to look directly at the TWI setting and at how the three teachers in the study approach minority language development in both heritage speakers and L2 learners. Qualitative and quantitative analyses of the data corroborate prior findings of the need for increased teacher support and training, as well as for greater education regarding heritage language development. These needs are evidenced by direct testimony from the teachers, as well as by specific misconceptions and missed opportunities that the teachers in the study demonstrate, even when they are well intentioned about balancing language and content. The current presentation highlights identified beliefs and practices. It provides specific suggestions for how teacher training and support may address current needs, including through education on implementing a counterbalanced approach (Lyster, 2007). The findings have implications for the growing fields of TWI language instruction (Tedick & Young, 2014; Young, 2016) and heritage language instruction (Montrul & Bowles, 2017).

References


Bilingualism Decreases Semantic Distance Between Concepts

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Northwestern University

The language one speaks can influence cognition, in domains as varied as temporal processing, lexical categorization, and color perception. The interaction between language and thought can be explored using connectionist models of language (e.g., Dell, 1986), which separate language and concepts into interconnected lexical and semantic levels. Different types of language experience may influence conceptual processing via changes in lexical-semantic connections. Bilingualism has distinct consequences for the language network, as each concept is linked to two different sets of lexical and phonological representations, one in each language. The present study examines whether bilinguals’ distinct pattern of connectivity between words and meanings can change how strongly different concepts are associated with each other.

Three experiments were conducted to compare the strength of bilinguals’ and monolinguals’ semantic associations. In each experiment, monolinguals and bilinguals were asked to rate how related in meaning two concepts were on a Likert scale. Participants’ language and cognitive backgrounds were assessed using the Language Experience and Proficiency Questionnaire (LEAP-Q; Marian et al., 2007) and a battery of cognitive tasks such as the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999) and the NIH Toolbox Cognition Battery (NTCB, Weintraub, et al., 2013).

In Experiment 1, 20 high-proficiency Spanish-English bilinguals and 28 English monolinguals rated the semantic relatedness of 15 low similarity picture pairs (e.g., cast-hanger) on a scale of 1-9. A significant effect of group was found ($p = .034$), with bilinguals ($M = 3.02$) rating the pairs as more related in meaning than English monolinguals ($M = 2.54$). Experiments 2 and 3 tested the strength and reliability of this finding by sampling different bilingual populations with new sets of stimuli and task conditions. In Experiment 2, 22 high-proficiency Korean-English bilinguals and 24 English monolinguals rated the semantic relatedness of 392 written word pairs on a scale of 0-7, with 168 low-similarity (e.g., pencil-lake) and 224 high-similarity items (e.g., nurse-doctor). Replicating Experiment 1, bilinguals rated low-similarity pairs as more related than English monolinguals, $z = 3.90, p < .001$. No difference was found between groups for high-similarity pairs, $z = 1.05, p = .30$. To test the effect of L2 proficiency, Experiment 3 tested 11 high-proficiency Spanish-English bilinguals, 7 low-proficiency Spanish-English bilinguals, and 18 English monolinguals with 100 low-similarity and 20 high-similarity picture pairs. High-proficiency bilinguals rated low-similarity picture pairs as significantly more related than low-proficiency bilinguals, $z = 3.01, p = .007$, and marginally more related than monolinguals, $z = 2.20, p = .072$, with no significant differences between the latter two groups. High-proficiency bilinguals also rated high-similarity pairs marginally higher in semantic relatedness than monolinguals, $z = 2.07, p = .097$.

Together, these three experiments show that extensive bilingual experience can change the strength of semantic associations. This finding is consistent with the connectionist view of language, where conceptual level processing can be influenced by the structure of the lexical level (Ritter & Kohonen, 1989). We propose that bilinguals’ denser and more interconnected lexical network may affect the semantic level by providing shorter paths to link distant concepts. Notably, we observed more robust effects of bilingualism on semantic associations
for pairs of concepts that have low inherent similarity, like *pencil-lake* or *cast-hanger*. Bilinguals’ tendency to identify relationships between seemingly unrelated items may also reflect greater creativity and divergent thinking. While bilinguals have been found to outperform monolinguals on creative thinking assessments (Ricciardelli, 1992), including visual and verbal tests of divergent thinking and structured imagination, it remains unclear whether greater creativity increases the perceived similarity of concepts or whether more densely connected concepts enhance creativity. We conclude that bilingualism has consequences for the structure of the language system at the level of lexical-semantic connections.

**References**


Generally, heritage speakers and second language learners of a language are seen as fundamentally and linguistically different groups of bilingual speakers. Certainly, this may be the case for older students; however, in early childhood when the first language is still in development, the line between these groups may not be as rigid. This paper presents unique data from a Spanish immersion preschool that is taught entirely in Spanish but attended by two groups of bilingual students: heritage language learners (HLLs) who speak Spanish at home and second language (L2) learners of Spanish who speak English as a first language. Although these groups differ in their Spanish background, the majority of the students are English dominant. We investigate the effect of exposure to Spanish in early childhood on children’s language choice and use. Specifically, we explore the following research questions: (1) what language choices do children make when the language of the school and dominant language differ? (2) what factors contribute to language choice and use? Fifty-seven children (41 HLLs, 16 L2 learners) ages 2 to 7 were recruited for the study. Data was collected through 12 months of observation during children’s free play periods in school where they interacted with each other and with the teachers. Data was also collected through an elicitation task in which children were asked to describe sequences of pictures that told a short story in Spanish. Observational findings revealed that during spontaneous play interactions with their peers, children overwhelmingly used English with each other regardless of language background, language dominance, or length of enrollment in the program. In contrast, when interacting with teachers, up to half of the children used Spanish to communicate. The elicitation task corroborated this result. Code-mixing to English was only utilized for lexical retrieval, but the majority of participants completed the task using mainly Spanish. This indicates a clear divide between the language of social play and the language of school, and demonstrates students’ proficiency in both languages and their keen awareness of this distinction. Secondly, HLLs chose to use more Spanish ($M = .71, SD = 0.33$) than L2 learners ($M = .16, SD = 0.12$) during the elicitation task even when the task was conducted in Spanish; independent samples t-test showed a significant difference in production of Spanish between groups, $t(14.480) = 5.849, p< .001$. However, when multiple linear regression was run to explore factors predicting Spanish use, findings revealed that language dominance ($p = .012$) and amount of exposure to Spanish (and $p = .019$) were significant predictors of Spanish use, whereas language background—whether the student is an HLL or L2 learner—was not significant ($p = .151$). The results suggest that while HLLs and L2 learners may differ in language choice and use, for these young students non-demographic factors such as dominance and exposure to Spanish serve as better predictors of Spanish use; in other words, language experience—regardless of whether exposure is from home or school—are more indicative of students’ language choice and use than which group they belong to. Implications for early and consistent L2 exposure through immersion or dual-language educational contexts for promoting bilingualism will be discussed.
Clitic-doubled Left Dislocation in Heritage Spanish: Judgment and Production Data

Jose Sequeros-Valle, Bradley Hoot and Jennifer Cabrelli Amaro
University of Illinois at Chicago, DePaul University

This project examines whether heritage speakers (HS) distinguish when Spanish Clitic-doubled Left Dislocation (CLLD) is discursively appropriate, both in an acceptability judgment task and a speeded production task.

A CLLD-ed constituent moves to the left periphery and is duplicated with a clitic pronoun (1a). Focus Fronted (1d) or Clefted (1f) constituents also move to the left periphery, but without clitic-doubling. The presence/absence of clitic-doubling is related to presence/absence of anaphoric relation to previous discourse (López, 2009) (1a-f).

Evidence from bilinguals (Sorace & Filiaci, 2006) predicts divergent competence at the syntax-discourse interface (e.g. CLLD) (Benmamoun et al., 2013, for HSs). However, Leal Mendez et al. (2015) find that HSs converge with Spanish-dominant L1 Spanish/L2 English speakers on a judgment task. Such a task may mask the true cause of divergence for bilingual populations, though, which are processing limitations according to Sorace (2011) (Montrul & Polinsky, 2011, for HSs).

Twenty-six English-dominant Spanish HSs and eighteen L1 Spanish controls completed two tasks. To test hypotheses about HS competence, participants completed Leal Mendez et al.’s (2015) judgment task, in which they judged two possible responses to a question - CLLD (2a) vs. Focus-Fronting (2b). To test hypotheses about processing, a speeded production task was used given that processing burdens can be induced by production (Grüter et al., 2012) and time constraints (Sorace, 2011). Participants were given a context and responded orally to 24 questions that required either CLLD (3) or Focus-Fronting/clefts (4).

Judgment results show that 93% of the HSs distinguish when CLLD is appropriate, which contradicts the hypothesis of HS’ divergent competence. Of these, only 43% converge in production, though, suggesting processing limitations may play a role. Nonetheless, the successful 43% show convergence is possible, even under a processing burden.

Examples

(1) CONTEXT: Where do you see [ANTECEDENT Pedro]?

   ACC[+hum] Pedro María Cl.acc see.3rd in the park
   Pedro, Maria sees him in the park.

   ACC[+hum] Luis María Cl.acc see.3rd in the park
   Luis, Maria sees him in the park.

c. [#FF A PEDRO] María [NO clitic-doubling] ve en el parque. (# [+anaphor] FF)
   ACC[+hum] Pedro María see.3rd in the park
   PEDRO Maria sees in the park.

d. [#FF A LUIS] María [NO clitic-doubling] ve en el parque. ( [-anaphor] FF)
   ACC[+hum] Luis María see.3rd in the park
   LUIS Maria sees in the park.
e.  #[pre-verbal object A Pedro] es a quien Maria [NO clitic-doubling] ve en el parque.  
   (#[+anaphor] Cleft)  
   ACC[+hum] Pedro is to whom Maria see.3rd in the park  
   Pedro is the one that Maria sees in the park.

f.  [pre-verbal object A Luis] es a quien Maria [NO clitic-doubling] ve en el parque.  
   (-anaphor) Cleft)  
   ACC[+hum] Luis is to whom Maria see.3rd in the park  
   Luis is the one that Maria sees in the park.

(2) CONTEXTO: ¿Te compraste uno de [ANTECEDENT los perros] que miramos anteayer?  
   CONTEXT: Did you end up buying one of the dogs we were looking at the other day?  
   a. [El chihuahua] compré, está lindo.  
      (#[+anaphor] FF)  
      The chihuahua I-bought, it-is cute  
   b. [El chihuahua] lo compré, está lindo.  
      ( [+anaphor] CLLD)  
      The chihuahua CL. I-bought, it-is cute

(3) CONTEXTO: Visitas a tu viejo amigo de Salamanca, Manuel, la próxima semana.  
   CONTEXT: You will visit your old friend from Salamanca, Manuel, next week.  
   - Juan: ¿Cuándo ves [ANTECEDENT a nuestros amigos de Salamanca]?  
     Juan: When do you see our friends from Salamanca?  
   - Tu: [CLLD A Manuel]…  
     You: Manuel…

(4) CONTEXTO: No vas al trabajo para llevar a tu hijo Luis al doctor. Juan hace una pregunta, pero quieres decirle que llevas al doctor a Luis y no a Pablo:  
   CONTEXT: You do not go to work in order to take your son Luis to the doctor.  
   Juan asks a question, but you want to tell him that you are taking Luis to the doctor, not Pablo.  
   - Juan: ¿Por qué llevas al doctor [NOT-ANTECEDENT a tu hijo Pablo]?  
     Juan: Why are you taking you son Pablo to the doctor?  
   - Tu: ¡No! [FF/pre-verbal object A Luis]…  
     You: No! Luis…

References


L3-sentence processing: language-specific or phenomenon-sensitive?

Marina Sokolova and Roumyana Slabakova
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The attachment resolution of the ambiguous relative clause (RC) varies cross-linguistically, as shown in (1) (Fodor, 1998). The subordinate clause that was drinking coffee may refer to either the mother or the woman, as a possible answer to the comprehension question in (2). In (2a), the RC modifies the higher noun in the syntactic tree, the mother, which is known as high attachment (HA). In (2b), the RC modifies the lower noun in the syntactic tree, the woman, which is an example of low attachment (LA). Native speakers (NS) of English prefer LA; NSs of Russian prefer HA (Fodor, 1998).

(1) Bill arrested [the mother [of the woman that was drinking coffee]].
   Both LA and HA are grammatically possible.
(2) Who was drinking coffee?
   a) the mother b) the woman

Within each language RC, resolution can also depend on the matrix verb. A perception verb in (3) enables a third, event-oriented interpretation, known as the Pseudo-Relative (PR) reading (Grillo & Costa, 2014).

(3) Bill saw (what?) [the mother of the woman drinking coffee].
   Bill saw the event of drinking coffee performed by the mother of the woman.

Compared to the restrictive RC in (1), the perception verb see triggers an overt change of structure in English; the same happens in Russian. The Small Clause (SC) the mother of the woman drinking coffee modifies the matrix verb. In languages like French, Italian and Spanish, the PR-interpretation can be inferred from the RC surface string and the change of syntactic modification is covert.

(4) Mary a écouté [SC la mère de la femme qui parlait de cosmétiques]. (French, PR-reading).
   Mary heard the mother of the woman who talked about cosmetics.


To expand upon the existing research, the current study compares two groups of trilingual participants that share the same L1 and L3 but differ in their L2s. Experimental Group 1 is L1Russian / L2German / L3English, while experimental Group 2 is L1Russian / L2French / L3English.

The L1 and the L2s of the subjects, French and German, belong to the HA-language group. The experiment is aimed at checking RC attachment resolution in L3-English, a LA-
language, when the previously learnt languages facilitate HA. However, there is a distinction as below.

In PR-formation, German patterns with Russian and English and requires an overt change of structure for an event-oriented interpretation, as in (3). French allows the PR-reading with just a covert change of structure (4). In this respect, the study predicts different influences of the L2s on processing the sentences with the perception verb in the matrix clause. Group 2 has the PR-reading as a default interpretation option in their L2-French. Group 2 should show a stronger verb effect on RC attachment in English and be faster in making interpretation decisions than Group 1.

In a self-paced reading experiment (Linger), the respondents read a set of sentences and answered a comprehension question after each sentence. The stimuli manipulated perception and non-perception matrix verbs as well as a pragmatically-based gender bias (Table 3).

The preliminary data analysis suggests that the perception verb facilitates HA in both experimental groups and its effect is significant. Still, Group 2 shows a stronger tendency to preserve HA in their LA-L3 than Group 1. In cross-linguistic variation between the L1 and L3, the analysis indicates that multilingual speakers show target-language-like RC-attachment preferences. The comparison of L3-speakers of English to Russian monolinguals and Russian-English and English-Russian bilinguals shows that English remains an LA-language with all predicates; in Russian, the perception verb facilitates but does not exhaustively explain HA. We will discuss these results in terms of universal and language specific processing strategies.

Table 1. Participant background information

<table>
<thead>
<tr>
<th>Group characteristic</th>
<th>NE (NSs of English)</th>
<th>NR (NSs of Russian)</th>
<th>E-&gt;R (L1-English, L2-Russian)</th>
<th>R-&gt;E (L1-Russian, L2-English)</th>
<th>R&gt;F&amp;E (L1-Russian, L2-French)</th>
<th>R&gt;G&amp;E (L1-Russian, L2-German)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native language</td>
<td>English</td>
<td>Russian</td>
<td>English</td>
<td>Russian</td>
<td>Russian</td>
<td>Russian</td>
</tr>
<tr>
<td>C-test, % correct</td>
<td>---</td>
<td>---</td>
<td>37%, range</td>
<td>45%, range</td>
<td>54%, range</td>
<td>56%, range</td>
</tr>
<tr>
<td>Length of exposure</td>
<td>life-time</td>
<td>life-time</td>
<td>2 years: 4/week</td>
<td>4 years: 2/week</td>
<td>6,7 years</td>
<td>5,4 years</td>
</tr>
<tr>
<td>Mean age</td>
<td>40</td>
<td>29</td>
<td>21</td>
<td>30</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>No of participants</td>
<td>10</td>
<td>9</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>11</td>
</tr>
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</table>

Table 2a. Overall preference for HA with both verb types

<table>
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<tr>
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<tbody>
<tr>
<td>27%</td>
<td>67%</td>
<td>50%</td>
<td>57%</td>
<td>60%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>range: 0%</td>
<td>range: 5%</td>
<td>range: 10%</td>
<td>range: 25%</td>
<td>range: 28%</td>
<td>range: 33%</td>
<td></td>
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</table>

Table 2b. Preference for HA by verb type: perception verb vs. non-perception verb (perception verb effect, p < .03)

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>HA %</td>
<td>30% / 23%</td>
<td>68% / 66%</td>
<td>52% / 48%</td>
<td>61% / 54%</td>
<td>65% / 54%</td>
<td>54% / 48%</td>
</tr>
</tbody>
</table>
Table 3. Sample stimuli quadruple

<table>
<thead>
<tr>
<th>Perception verb / no gender bias</th>
<th>Bill saw the mother of the woman that was drinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-perception verb/ no gender bias</td>
<td>Bill arrested the mother of the woman that was drinking</td>
</tr>
<tr>
<td>Perception verb/ gender biased towards</td>
<td>Bill saw the mother of the boy that was talking about</td>
</tr>
<tr>
<td>Non-perception verb/ gender bias</td>
<td>Bill arrested the son of the woman that was talking</td>
</tr>
</tbody>
</table>

References:

Lexical and agreement errors in the L2 acquisition of grammatical gender

Patti Spinner1 and Rebecca Foote2
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Recent second language research on grammatical gender has focused on whether learners’ errors are lexical or grammatical/morphosyntactic in nature (e.g., Grüter et al., 2012; Hopp, 2016). It is difficult to tease apart these sources of error. One approach is to examine errors in determiners versus adjectives, as in (1) (Montrul et al., 2008).

(1) *El mariposa *bueno
    The(masc) butterfly(fem) good(masc)

Determiners may reflect lexical gender assignment—that is, the gender associated with the noun in the lexicon. However, errors on adjectives may reflect difficulties with agreement.

The current study examines this issue with 33 English-speaking learners of Spanish, in a lower proficiency group (n = 19; M age 20.1, SD 0.8, M LexTALE score 56.7, SD 4.8) and a higher proficiency group (n = 14; M age 20.8, SD 1.5; M LexTALE score 69.2, SD 3.1). 24 native speakers of Spanish (M age 27.9, SD 7.4) served as a control.

Participants completed an eye-tracking task with three different kinds of errors in the noun phrase, as in (2).

(2) (a) En mi opinión el barco inmenso que está en el puerto no es muy moderno.
(b) *la barco inmenso
(c) el barco *inmensa
(d) *la barco *inmensa

Nouns and adjectives were controlled for length in syllables and letters, and frequency. Included were ten masculine transparent (i.e., ending in –o), ten feminine transparent (i.e., ending in –a), ten masculine opaque and ten feminine opaque (ending in a consonant or –e) nouns. There were 80 fillers. Half the sentences were followed by a comprehension question.

Additionally, learners completed an oral picture description task with a subset of these nouns (five from each category above). There were three conditions: Det N (e.g., la cama), Det N Adj (e.g., la cama bonita), and Det Adj (e.g., la bonita). The nouns appeared in all of these contexts; the purpose of this task was to determine to what extent gender assignment and agreement are stable in learners’ production.

Eye-tracking results for native speakers demonstrated longer reading times in all ungrammatical conditions, with increased reading times on the element that was incorrect; highest reading times on the noun phrase were found when both determiner and adjective were incorrect. This pattern held for both opaque and transparent nouns (repeated measures ANOVA, all ps ≤ .01). Non-natives showed a different pattern. They showed increased reading times when there was a mismatch between the determiner and the adjective (p = .04), but not when the determiner and adjective agreed, but were incorrect. This pattern was particularly striking in the lower proficiency group and with opaque nouns. This result may indicate that learners have
weak or unstable associations between nouns and their gender, particularly with opaque nouns. See Figure 1.

Oral production results showed that learners demonstrated lower accuracy marking gender on determiners when an adjective was present, as found in earlier research (e.g., Montrul et al., 2008). Interestingly, however, accuracy was even further reduced in cases in which the noun was omitted, indicating that learners may fail to access a noun. Additionally, accuracy was lower on adjectives than determiners in the Det N Adj condition. See Table 1. Together, these findings provide some support for the interpretation that determiners more closely reflect learners’ knowledge of gender assignment, but they also demonstrate that knowledge is unstable and that processing issues may disrupt the access to that knowledge. Implications for the storage and processing of Spanish grammatical gender are discussed.

Figure 1. Total reading times on NPs by native and non-native speakers of Spanish. High & low proficiency groups are collapsed. A = grammatical; B = incorrect determiner; C = incorrect adjective; D = incorrect determiner and adjective. X indicates a statistical difference from baseline (condition A).

Table 1. Percentage accuracy on oral picture description task in three conditions (SD). High and low proficiency groups are collapsed.

<table>
<thead>
<tr>
<th></th>
<th>Determiner</th>
<th>Adjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Det Adj: la roja</td>
<td>.682 (.271)</td>
<td>.665 (.261)</td>
</tr>
<tr>
<td>Det N: la manzana</td>
<td>.849 (.146)</td>
<td></td>
</tr>
<tr>
<td>Det N Adj: la manzana roja</td>
<td>.800 (.164)</td>
<td>.702 (.207)</td>
</tr>
</tbody>
</table>
References

Spanish/English word internal code-switching: The case of /ɪ/ and /θ/

Sara Stefanich and Jennifer Cabrelli Amaro
University of Illinois at Chicago

This study tests the claim that a code-switched word (a word with morphological elements from two languages) cannot contain phonological elements from two languages (MacSwan & Colina, 2014). In an Spanish/English production task in which bilinguals produced morphologically mixed words composed of English-like roots containing /z/ and Spanish affixes (specifically, progressive morphology, e.g., zerteando), Authors (in press) found preliminary evidence of strict application of Spanish phonology. Specifically, English /z/ was produced as a Spanish-like [s] in the English root of the mixed word by 50% of the bilinguals. Remaining participants produced [z], though analysis of their monolingual Spanish production of /s/ in a voicing assimilation context revealed production of [z] in this context. The authors concluded that, for these participants, [z] is a part of the Spanish phonetic inventory and thus these data cannot serve as evidence of intraword phonological code-switching. The question that follows is, what happens with English phonemes that lack a corresponding allophone in Spanish (here, /ɪ/ and /θ/)?

Herein, we investigate this question via production of morphologically mixed words with English-like roots containing /ɪ/ or /θ/ and Spanish affixes. The prediction is that, if a code-switched word with this morphological composition is produced using Spanish phonology (the language of the affixes), bilinguals will not produce /ɪ/ or /θ/ in the English root. Instead, based upon existing literature on loanwords and L2 English acquisition (e.g. Morrison, 2008; Soler Costa, 2009), /ɪ/ is expected to surface in Spanish as [i], and /θ/ as [t] or [s].

Twenty Spanish/English code-switchers participated in a code-switching session and monolingual English and Spanish sessions. Monolingual sessions served to establish a baseline for /ɪ/ and /θ/ in English, as well as their counterparts /i/, /t/, /s/ in English and Spanish. Each session contained an elicited production task where speakers were auditorily presented with nonsense verbs and prompted to produce them with progressive morphology. English stimuli were verbs with /θ/ and /t/ in onset position (n=20) and /ɪ/ and /i/ in word medial position (n=20). Spanish stimuli included verbs with /t/ in onset position (n=10) and /i/ in word-medial position (n=10). Bilingual stimuli were English-like verbs with /θ/ in onset position (n=10) and /ɪ/ in word-medial position (n=10). The code-switching task elicited morphologically switched verbs with an English-like verbal root and Spanish progressive morphology (see sample trial in (1)). To determine the phonology of the critical segment in the root, the following acoustic indices were used to compare critical segments from the code-switching task with their English and Spanish counterparts: /ɪ/: F1, F2, duration; /θ/: 1) visual cues [+/- continuant] were used to determine whether the segment was a stop ([t]) or fricative; 2) in the case of fricative production, center of gravity was used to distinguish between [s] and [θ]. Productions were coded as [θ] or ‘other’ ([s] or [t]). Continuous data were fit to linear mixed models and binary data were fit to a logistic regression.

Preliminary results indicate that the participants produce /θ/ as [t] or [s] and /ɪ/ as [i] in the code-switching task, indicating application of Spanish phonology and providing support for the posited ban on word-internal phonological switches. We discuss this production outcome in relation to the second phase of this project, which tests the acceptability of phonologically code-switched words. Determining whether bilinguals can accept these constructions even if they do
not produce them will serve to confirm whether phonologically code-switched words are illicit in a bilingual grammar.

(1) Slide 1: “Repite por favor. To ‘bick’”
   ‘Repeat please. To ‘bick’”

Slide 2: “To bick es cuando bailas to your favorite song in an empty room. Angela lives in a studio apartment and she bicks every night. Qué está haciendo en la foto?
   ‘To bick is when you dance to your favorite song in an empty room. Angela lives in a studio apartment and she bicks every night. What is she doing in the picture?’

References:


Code-switching could aid prediction of the unexpected

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**Introduction:** Code-switching (CS), or the use of several codes in the same conversation (Gardner-Chloros, 2009), is fairly frequent in bilingual discourse (Beatty-Martinez & Dussias, 2017), despite the costs associated with its processing (Altarriba et al., 1996; Meuter & Allport, 1999). This seeming contradiction has not found a clear explanation in the current psycholinguistic research on the online processing of CS.

Nevertheless, offline psycholinguistic studies and sociolinguistic observations offer converging socio-pragmatic and information-organizational motivations for CS. Myslín and Levy (2015) showed that code-switching to the more marked, i.e. less used, language can be used to signal a more information-rich (i.e., unexpected) portion of speech, both in their corpus analysis and the offline experiment, where bilinguals assumed a less frequent word followed a first- to second-language (L1-L2) CS. Another attested motivation for switching to the more marked language is speaking about emotional, predominantly taboo topics (Bentahila, 1983). CS to the more salient code could thus alert to increased emotionality as well, which is another type of information. These observations suggest that code-switching could offer online-processing benefits by alerting to and thus aiding the prediction of highly informative portions of speech.

Disfluencies, or irregularities in fluent speech, such as “uh”, “um”, pauses, etc, seem to aid prediction in a similar way. Disfluencies aid the prediction of unexpected, new (Arnold, Fagnano, & Tanenhaus, 2003; Arnold, Tanenhaus, Altmann, & Fagnano, 2004; Arnold, Kam, Hudson, & Tanenhaus, 2007) or low-frequency words (Bosker, Quené, Sanders, & de Jong, 2014). In these visual world paradigm studies (eye-tracking while looking at images and listening), disfluent instructions to select an image caused participants to start looking at the unexpected item earlier. Given the parallels between CS and disfluencies, we propose to test whether CS can serve a similar function in online-processing.

**Present Study:** The present study will employ a visual world paradigm to investigate the effect of CS on the frequency of the predicted, i.e. fixated, words. The study thus constitutes a follow-up to Myslin and Levy (2015) using an online psycholinguistic method. We hypothesize that instructions containing a CS would cause a higher number of looks to the images representing low-frequency words. In other words, listeners would interpret the function of CS as signaling unexpected, lower frequency information.

**Methodology:** Spanish-dominant Spanish-English bilinguals who report regular CS will listen to instructions while looking at a panel of images, and select the picture representing the target object as quickly as possible. The images will represent high and low frequency words. The instructions will either contain an L1-L2 (Spanish-English) switch preceding the target word, or not (Spanish only; Exp 1). An additional control condition is included, the L1-L2-L1 condition, where the target word is also presented in Spanish. This condition is included to avoid comparing looks to targets across two languages, as we expect that the less frequent target will have a higher proportion of looks when instructions contain a CS regardless of the language of the target. The presentation of the images will be time-locked to the onset of the audio-recording of instructions. The target image will be low-frequency half of the time to limit any experiment-related prediction patterns.
Example 1

Instructions with CS: Elige el drawing of a truck.
‘Choose the drawing of a truck.’

Instructions without CS: Elige el dibujo de un camion.
‘Choose the drawing of a truck.’

Instructions with CS and Sp target: Elige el drawing of a camion.
‘Choose the drawing of a truck.’

Spanish-English or L1-L2 direction is used as the main experimental condition, since L1-L2 is the attested direction used to signal novel information (Myslín & Levy, 2015), with Spanish-dominant bilingual participants in mind. Further studies could explore whether the switch itself, regardless of direction, could signal less expected content in continuation, particularly in balanced bilinguals.

As the effect we obtain is likely to be dependent on language dominance, age of acquisition, rate of CS use, etc., Language History Questionnaire, Michigan English Language Institute College English Test (MELICET), Diplomas of Spanish as a Foreign Language (DELE), as well as semantic fluency tests will be administered to determine these variables.

Analysis: The effect of the presence vs. absence of a CS in the instructions on the eye-fixations on the low vs. high frequency words will be evaluated using a mixed-effects logistic regression model, in the lme4 package (Bates, Maechler, Bolker, & Walker, 2015) in R (R Core Team, 2017). The primary time frame for analysis comprises the area from the start of the sentence until the target word onset (pre-target frame; Example 2). The post-target time frame with an additional 200 ms will also be analyzed to examine whether the presence of a CS causes a faster convergence on the target when the target is low-frequency.

Example 2

Elige el drawing of a truck. + 200 ms

Conclusion: The hypothesis that CS could help bilinguals anticipate low frequency words finds support in several sociolinguistic and psycholinguistic studies. The potential experimental confirmation that CS can aid online processing in this way would account for the fact that it is relatively frequent in bilingual discourse, despite the processing costs (Meuter & Allport, 1999).

References:


“I don’t fit in here and I don’t fit in there”: Understanding 1.5ers’ identity feelings in relation to L1 attrition

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The present study analyses four adult Russian-Australian 1.5ers, heritage sequential bilinguals, belonging to the so-called ‘generation 1.5’ (Rumbaut & Ima, 1988), i.e. people whose first language was Russian and who migrated to Australia or New Zealand during primary school years, and consequently learned their L2 through immersion in an L2 environment.

Research on immigrant children usually focuses on their L2 acquisition, especially in English-speaking countries (Kenner & Ruby, 2012; Lo Bianco, 2000). However, for 1.5ers, the labels ‘L1’ and ‘L2’, normally considered in language acquisition studies in terms of order of acquisition, may be less pertinent than the distinction between primary and secondary language, which considers the functional dimension of these languages, the former used more commonly than the latter (Benmamoun et al., 2013; Montrul, 2012).

This study presents the results of some of the data collected as part of a more extensive project conducted for my PhD and it focuses on four participants, chosen as case studies. The data were elicited in semi-structured interviews held with a group of 1.5ers in Melbourne, Russian-English bilinguals born in a Russian-speaking country, who migrated to Australia or New Zealand between the age of 6 and 12. These speakers, now aged between 18 and 40, have lived in Australia for many years and completed all or part of their schooling and higher education there. The interviews aimed at seizing the participants’ very personal relationship with their L1, often secondary language – Russian – and L2, mainly primary language – English. These interviews explored participant schooling history, self-reported language use, attrition, perceived language proficiency and dominance, and feelings of identity. The ultimate goal was to understand the connections between language, and particularly L1 attrition, and identity for this speaker cohorts, 1.5ers, as well as the factors, which may influence their identity perception.

From these data, it emerges that, on the one hand, feelings of identity are fragmented, conflictual and varying:

I don't have a whole identity anywhere. That's kind of, actually, that's probably how to describe it, I don't really fit in here, and I don't really fit in there, if I get back there either.

(Oleg, 33, arrived in Australia at 8 years old)

On the other hand, they shed light on different ways to interpret the relationship between identity and language:
it doesn't feel as unnatural when I talk to, you know, those two guys in Russian [at university], I just feel like my language skills are not up to the standard to converse with them, on the same level.

(Vladimir, 25, arrived in New Zealand at 9 years old).

The results emerging from these data confirm that identity construction, a complex process on its own for any migrant, is even more conflicting for 1.5ers, as shown by other studies on this group of speakers (Rumbaut, 1994, 1997, 2004; Rumbaut & Ima, 1988; Fielding, 2015). They also shed light on a particular way to interpret the relationship between language and identity, especially for 1.5ers. They show, in fact, how L1 attrition might cause identity conflicts and trigger the desire to ‘return to one’s roots’, reconfirming the role played by language in identity construction.

References

The so-called Basque partitive case -(r)ik is a suffix attached to a noun phrase that meets the conditions for absolutive case (Laka, 1996). This particular suffix has an additional restriction: it can only be licensed in non-veridical contexts, i.e., negation, yes/no questions and conditionals. Basque absolutive case is assumed to be the default and as such, “does not require case assignment of any sort” (Arregi & Nevins, 2008:53). Based on preliminary data from bilinguals’ \( N = 10 \) acceptability judgments on negative sentences in Spanish/Basque code-switching (CS), I propose that \( v \) is the absolutive case assigner in Basque and that partitive case is the overt instantiation of “marked absolutive case” in non-veridical contexts.

Basque is an ergative/absolutive language, where the external argument (EA) of a transitive verb is marked as ergative by the suffix -ek. On the contrary, the absolutive case is not marked by any visible case suffix on the internal argument (IA). The relevant ergative/absolutive contrast is illustrated in (1).

(1) Jon-ek liburua- Ø ekarri du  
Jon-ERG book-ABS bring AUX-3SG.PRES  
‘Jon has brought the book’

In non-veridical contexts such as negation, the absolutive case may optionally take the form of the partitive case suffix -(r)ik. In these contexts, the distribution of the partitive is akin to that of Negative Polarity Items (NPIs) of the any-type, which mark polar indefiniteness. Compare the negated example with absolutive case in (2a) to the one with partitive case in (2b).

(2) a. Jon-ek ez du liburua- Ø irakurri  
Jon-ERG NEG AUX-3SG.PRES book-ABS read  
‘Jon didn’t read a/the book’

b. Jon-ek ez du liburu-rik irakurri  
Jon-ERG NEG AUX-3SG.PRES book-PART read  
‘Jon didn’t read any book’

Spanish, on the other hand, is a nominative/accusative language. In this language, noun phrases do not bear any case morphology and case is assigned in a purely configurational way, see (3).

(3) Juan- Ø trajo el libro-Ø  
Juan-NOM bring-3SG.PAST the book-ACC  
‘Juan brought the book’

Contrary to Basque, polar indefiniteness in Spanish is conveyed through the NPI ningún ‘any’+ noun and does not depend on any case assignment in particular. As shown in (4), ningún is allowed before a noun in the accusative and the dative case.

(4) Juan- Ø no le dio ningún libro- Ø a ningún estudiante- Ø
Juan-NOM NEG Cl-DAT give any book-ACC to any student-DAT

‘Juan didn’t give any book to any student’

Previous work on case assignment in Basque (Hualde, 1986, Oyharçabal, 1992, Arregi & Nevins 2008; among others) assumes that absolutive is the default case in this language and does not require any case assignment. This leaves non-veridicality as the sole requirement for licensing partitive case in Basque and makes the following prediction for Spanish/Basque CS: a negated verb in Spanish should be compatible with a Basque nominal complement in the partitive case. However, the Spanish/Basque CS datum in (5) does not support this prediction.

(5) *El estudiante no trajo libro
the student NEG bring-3SG.PAST book

The unacceptability of (5) shows that the Basque partitive case cannot be assigned to the complement of a negated verb in Spanish. This is surprising because the presence of negation should suffice to license the partitive case. At first glance, the unavailability of the partitive case in (5) could be attributed to a licensing problem, i.e., Spanish negation has an inherent property that prevents it from licensing the Basque partitive. However, consider the CS datum in (6).

(6) Ikasleak ez dakar libro
Student-ERG NEG bring-3SG.PAST any book

The CS sentence in (6) suggests that Basque negation can license Spanish NPI constructions such as ningún + noun. If we assume that Spanish and Basque negation are instances of the same feature—roughly [neg]—and that both occupy the same syntactic position in the syntactic structure—the head of PolP above TP (see Vergara & López, 2017)—there is no reason to conclude that the unavailability of the partitive case in (5) is due to a licensing problem.

Following Baker’s (2015) proposal on case assignment, which states that a clause has a high case assigner, i.e., T, and a lower case assigner, i.e., v. I assume that v is the absolutive case assigner in Basque and the accusative one in Spanish. In addition, I propose the following feature composition for the Basque partitive case suffix:

(7) -(r)ik: uCase[ABS], uPol[non-veridical]

As shown in (7) the partitive case suffix is decomposed into two distinct features: (i) an unvalued case feature, which is valued as absolutive by a v with the relevant case feature; and (ii) an unvalued polarity feature which is valued as non-veridical by negation. Thus, under this proposal Basque partitive case is analyzed as an instance of “marked absolutive case”. The unavailability of CS examples like (5) follows from the fact that although the relevant unvalued polarity feature is valued as non-veridical by negation, Spanish v still assigns accusative case to its complement. This blocks the insertion of the Basque partitive, which is specified for absolutive case.

Finally, the CS data in (5)-(6) contributes to the discussion on whether partitive case assignment in Basque is structural or inherent and suggest that an structural analysis, such as the one presented here, might be on the right track.

References

restrictions, 49-86.
Studies investigating syntactic transfer in third language acquisition (TLA) have proposed various models to account for the influence of first language (L1) or second language (L2) on third language (L3) acquisition (i.e. language transfer), among which are Cumulative Enhancement Model (CEM) (Flynn et al, 2004) in support of a facilitative-based transfer, the L2 Status Factor (Bardel & Falk, 2007) in favor of the primary role of L2, and the Typological Primacy Model (TPM) (Rothman, 2010) advocating the dominant role of typological closeness. However, these models were generated based on investigation of transfer that occurs to a single structure, limiting the applicability of these models. Also, previous studies supporting these models lack a systematic evaluation of L3 learners’ L2 proficiency to ensure the homogeneity of the subjects.

The purpose of this study is to conduct a multidimensional investigation of the syntactic transfer in L3 acquisition, with systematic control for learners’ L2 proficiency. We examined L1-Cantonese, L2-English bilinguals’ acquisition of four different syntactic structures in Korean: verb inflection (specifically past-tense inflection), case marking, null subject and SOV word order. For this combination, although L1 is more similar to L3 overall, the similarity among these three languages varies from structure to structure. Verb inflection is shared by L2 and L3; null subject is shared by L1 and L3; both L1 and L2 are SVO languages, while L3 is considered a SOV language; case-marking is unique to L3. Such combination allows the testing of both facilitative L1 or L2 transfer and non-facilitative transfer (i.e., null and negative transfer) at once.

The experimental method was a grammaticality judgement task of 100 Korean sentences with a rating scale from -2 to 2 with 0 being the response of “I CANNOT judge”. In addition, we applied both perception tasks (grammaticality judgement) and production (elicited production and storytelling) to measure L3 learners’ L2 proficiency. The results of the L2 proficiency tasks showed that our learners developed the target knowledge of the tested structures. The subjects were L1-Cantonese, L2-English, L3-Korean learners who had just finished two introductory Korean courses in two consecutive semesters with a total of 72 instruction hours. Native Korean speakers were recruited from the Korean Student Community at a University in Hong Kong. All subjects were undergraduate students (18-22 years old).

We collected data from 9 learners and 5 native speakers. The within-structure ANOVA analysis shows that learners distinguished the grammatical (G) and ungrammatical (UG) items for case marking [$F(1,16) = 6.03, p = .26$], verb inflection [$F(1,16) = 294.78, p < .001$] and word order [$F(1,16) = 39.309, p < .001$] (see Figure 1), resembling native speakers (see Figure 2). This result suggests that there is no negative transfer from L1 or L2. However, the cross-structure ANOVA analysis shows that learners performed on verb inflection significantly better than on case marking [$F(1,16) = 19.26, p < .001$]. This result indicates that, comparing the
null transfer and the facilitative transfer outcomes, there is a salient effect of facilitative transfer. For the null-subject structure, both the G (with subject) and UG (without subject) forms are grammatical in Korean, and learners, similar to native speakers, accepted both forms equally [$F(1,16) = 0.24, p = .63$], indicating positive transfer from L1. Taken together, the results show that syntactic transfer occurs structure by structure without negative transfer.

\[\text{References:}\]


The impact of explicit instruction on heritage-speakers’ use of written accent marks in two modalities

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According to the United States census bureau, Spanish speakers will represent 13% of the United States population ages five and above by the year 2020 (US Census Bureau, 2011), comprising an important part of the nation’s school-aged population. The Spanish-language proficiency of children from Spanish-speaking families who are raised in the United States - that is, heritage speakers of Spanish - can range along a continuum of receptive and productive skills that will change throughout their lives (e.g., Mikulski, 2006). Thanks to the efforts of educators, researchers, community advocates, and policy-makers, Spanish courses specifically designed for heritage speakers are becoming more common. Despite the existence of these programs, however, language teachers note a lack of preparation in methods for teaching Spanish to heritage speakers (e.g., Moreno, 2009; Potowski, 2003; note that efforts have been made to improve this situation, e.g., Beaudrie, Ducar, & Potowski, 2014). Many stake-holders agree that the development of “formal” Spanish skills is important for heritage speakers to take full advantage of their bilingualism in the work force and in society. One aspect of formal Spanish, which has been reported by heritage learners’ as important for both their language goals and personal identity is the ability to use written accent marks (Mikulski, 2006).

For the present study, we recruited 22 high school students from the first course in a two-course Spanish for Spanish Speakers sequence at a public high school in the Chicago suburbs. The first research question asked whether the learners would improve in their ability to recognize and produce written accent marks after receiving explicit instruction and completing practice activities in their Spanish class. In order to explore the importance of “understanding” written accent marks rules in a modern society with access to computers and spell-check, the second research question asked whether these learners would produce more accurate written accent marks when they had access to a Spanish spell-check (writing using a computer) as compared to their handwritten work. The learners completed three tasks before and after instruction and practice: (a) a 20-word quiz that asked learners to add accent marks, if needed, to a list of words that appeared without accent marks, (b) a handwritten paragraph writing sample addressing a societal question, and (c) a computer-written paragraph writing sample responding
to a question about an assigned reading from the course. The time between pre- and post-testing was seven instruction days.

Results revealed (a) a substantial improvement from pre- to post-instruction on the 20-word quiz, but not on either of the writing samples, and (b) no difference in written accent mark accuracy between the handwritten and computer-written writing samples either before or after instruction. Detailed analyses into the distribution of error types indicate that learner systems are still developing, and suggest that the seven-day time period may not be sufficient to observe gains in productive skills. Further data are being collected to examine the longer-term development of written accent mark use and accuracy. This study recognized that heritage speaker language maintenance and development are a critical aspect of bilingual students’ educational process and presents a preliminary step in examining the role of explicit instruction in secondary-level heritage language classrooms.

References