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Codeswitching in Bilingual Children with Specific Language Impairment

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Abstract

Children with specific language impairment (SLI) exhibit limited grammatical skills compared to their peers with typical language. These difficulties may be revealed when alternating their two languages (i.e., codeswitching) within sentences. Fifty-eight Spanish-English speaking children with and without SLI produced narratives using wordless picture books and conversational samples. The results indicated no significant differences in the proportion of utterances with codeswitching (CS) across age groups or contexts of elicitation. There were significant effects for language dominance, language of testing, and a significant dominance by language of testing interaction. The English-dominant children demonstrated more CS when tested in their nondominant language (Spanish) compared to the Spanish-dominant children tested in their weaker English. The children with SLI did not display more CS or more instances of atypical CS patterns compared to their typical peers. The findings indicate that children with SLI are capable of using grammatical CS, in spite of their language difficulties. In addition, the analyses suggest that CS is sensitive to sociolinguistic variables such as when the home language is not socially supported in the larger sociocultural context. In these cases, children may refrain from switching to the home language, even if that is their dominant language.

Keywords

children; codeswitching; language impairment

In recent years there has been a growing body of research examining the dual language acquisition of bilingual children with typical language development. This research has shown that the acquisition of a second language does not appear to slow language learning, in spite of individual differences in their rates of language growth and achievements (for a review, see Genesee, Paradis, & Crago, 2004). These individual differences depend on a number of sociolinguistic and educational factors such as amount and quality of the input across sociolinguistic contexts as well as exposure to the languages. A large number of studies have focused on the effect of these variables on first language attrition and second language proficiency. However, available research has given limited attention to the effects of language impairment on the acquisition of the two languages.

About 7% of 5 year old children have specific language impairments (SLI) that are not related to pervasive developmental delay, neurological damage, psychological or socioemotional deficits, or hearing problems (Leonard, 1998). Although their specific difficulties may vary across languages, most children with SLI exhibit limited grammatical skills compared to their peers. Recent studies with Spanish-English bilingual children with SLI have shown that their grammatical performance in each of the languages is significantly lower than that of children with typical language development, and that their deficits are not different from those of monolingual children with SLI (Gutiérrez-Clellen, Restrepo, & Simon-Cereijido, 2006; Gutierrez-Clellen & Simon-Cereijido, 2007; Gutierrez-Clellen, Simon-Cereijido, & Wagner, 2008). These findings have been reported in studies with other language pairs as well (Genesee, Paradis, & Crago, 2004).

The grammatical difficulties of bilingual children with SLI may also be revealed in contexts where the two languages are used within the discourse or specifically, when children codeswitch within utterances as in “*Se fue el BALLOON para arriba*” (The balloon went up). Here, the noun “balloon” was switched from Spanish to English while maintaining the flow and grammar of both languages. For the present paper, the term codeswitching (CS) is used to indicate the alternation of two languages within the discourse. CS does not include “borrowed” words that are adapted phonologically and morpho-syntactically (e.g., “*aparquear/aparcar*” borrowed from “to park”). Borrowing is subject to different constraints and conditions (Sankoff, Poplack, & Vanniarajan, 1990).

Codeswitching is considered a rule-governed system with social and grammatical constraints. For example, use of CS may vary depending on the context of elicitation. Zentella (1990) found that bilingual speakers were more likely to codeswitch when narrating (27 codeswitches per hour) and telling jokes (14 per hour), as opposed to making purchases (1 per hour) or answering interview questions (2 per hour). In narrating a story, bilingual speakers may switch to the language that best represents or invokes language specific concepts (Pavlenko, 2003). CS may also serve specific pragmatic functions within speech communities (Huerta, 1980; Zentella, 1982; Zentella, 1997). Speakers may codeswitch to facilitate expression and/or comprehension, avoid miscommunication, establish themselves as members of a particular group, change discourse to convey a certain effect or attitude, or alert listeners to a shift of emphasis, among other functions (Hughes, Shaunnassy, Brice, Ratliff, & McHatton, 2006; Skiba, 1997). In school settings, CS may also be used to facilitate comprehension, to establish and maintain solidarity or group membership, to give procedures and directions, or to clarify concepts (Hughes *et al.*, 2006).

Studies of CS based on spontaneous language data with speakers without language disorders indicate that CS requires grammatical proficiency in the two languages. For example, CS complies with a Free Morpheme Constraint and an Equivalence Constraint (Poplack, 1980). The Free Morpheme Constraint does not allow a switch between a word and its ending such as “I AM EAT*iendo*” or “[Yo] *estoy com*ING” (I am eating) (Cook, 1991). The Equivalence Constraint allows switches at points in a sentence where they do not violate the grammar of either language (Cook, 1991). It would license a switch at points where the two grammars coincide, not where they diverge. For example, switching would not be allowed in “Yo lo ATE” (I ate it) because the phrase structure rules of the two languages are not equivalent. Bilingual speakers typically codeswitch according to these rules, although the universality of these constraints has been challenged as counter examples with different language pairs were made available (MacSwan, 1999; MacSwan, 2000). See Appendix for a list of examples of atypical CS as described in early research studies with adult speakers.

The interpretation of these patterns of CS has been subject to debate (Jake, Myers-Scotton, & Gross, 2005; MacSwan, 2005). For example, within the Matrix Language Frame proposed

by (Myers-Scotton, 1997), CS complies with the grammatical frame of the source language or matrix language. Once the matrix language is identified, one can determine if a CS is well formed by examining how the embedded language is inserted within the syntactic frame of the matrix language. In contrast, within a Minimalist Program, the grammaticality of CS is governed by the grammatical rules of each language (MacSwan, 1999). Within this framework, the acceptability of an utterance would depend on whether the features of the two grammars comply with their language-specific constraints. For example, typical Spanish-English CS would preserve Spanish features of gender and number for articles because a switched Spanish noun requires that the determiner maintain those agreement features. Thus, the bilingual speaker would be more likely to say and judge as acceptable “*e/ CAR*” but not “*THE carro*”. Others have indicated that a Spanish Determiner is preferred because Spanish Determiners have a greater number of uninterpretable features (i.e., Gender, Number) than English Determiners (i.e., Number only) (Liceras, Spradlin, & Fernández Fuertes, 2005). In Spanish, the Gender and Number features of Nouns are activated in the Determiner via Agreement. Licera and her colleagues suggested that in Determiner + Noun functional-lexical CS, the Spanish Determiner has an Agreement relationship with the English Noun. The prevalence of Spanish Determiner + English Noun CS in their data did not appear to be related to the language dominance or proficiency of the bilingual children studied (i.e., the Spanish Determiner + English Noun switches were also prevalent in children who were not Spanish Dominant).

In spite of differences across theoretical models, researchers agree that CS reflects knowledge of the two languages. Children who are considered imbalanced bilinguals may be less likely to switch within sentences compared to fluent bilinguals (Meisel, 1994; Vihman, 1998). The frequency and grammaticality of CS may also vary depending on the level of proficiency or language development of the child (McClure, 1977). CS may be more prevalent in children who show distinct differences in proficiency across the languages compared to children who reached a high level of proficiency in the two languages (e.g., Cantone & Muller, 2005). Children may also show more CS when they speak their non-dominant language (e.g., Lanza, 1997). Thus, one may also predict differences in CS use across dominant and non-dominant languages. Furthermore, children may switch in order to fill lexical gaps (Deuchar & Quay, 2000). Elicitation contexts that are more cognitive demanding such as narrating stories from picture books may require greater linguistic complexity than conversational contexts in which the child may select the topic of conversation (Berman & Slobin, 1994). As a result, one may predict greater rates of CS in narratives than in conversation. Increased use of atypical CS may also be found if they have limited grammatical competence in the languages (Genesee *et al.*, 2004).

To our knowledge, there is almost no research available examining the extent to which children with SLI codeswitch or how they apply their grammatical skills when they switch the two languages within sentences. Studies of their grammatical performance are typically based on the analysis of their monolingual speech (i.e., excluding utterances with CS) (Gutiérrez-Clellen, Restrepo, Bedore, Peña, & Anderson, 2000; Gutierrez-Clellen *et al.*, 2008; Simon-Cerejido & Gutierrez-Clellen, 2007). These children may use CS to facilitate word retrieval and as a result, they may exhibit a greater frequency of CS in their spontaneous utterances. Researchers have suggested that children may switch languages to avoid searching for the respective equivalent if the target word is rarely used. For example, the bilingual toddler described by Lanvers (2001) switched to German, even though she knew the equivalent word in English: “*the train is KAPUTT*” (“the train is broken”, adapted from Lanvers, 2001).

Children with SLI may also demonstrate a greater use of atypical CS. This may be expected since they are expected to show grammatical difficulties in each language. A study with

bilingual children with language impairment of Pakistani heritage found that these children employed CS as frequently as their peers with typical language development (Pert, Stow, & Letts, 2004). However, some unusual patterns of CS reflecting difficulties with the semantics and grammars were also observed. For example, Mirpuri-speaking children omitted mandatory auxiliary verbs and morphemes in sentences with CS and combined Mirpuri “dummy do” verbs with English nouns in place of Mirpuri or English lexical verbs. If children need sufficient knowledge about the grammatical properties of the two grammars in order to comply with CS grammatical constraints, one may predict that children with SLI would exhibit more unacceptable or anomalous codeswitches than children with typical language. Developmentally, children initially may switch languages without evidence of adult CS constraints (McClure, 1981). This has been referred to as a “code mixing stage” (Meisel, 1994). Later, as they learn specific grammatical categories, their switches would follow the CS patterns of adult speech. These qualitative changes may occur as early as at ages two to three years. Thus, children with SLI may show instances of CS that resemble the CS of developmentally younger children. It is important to note however, that these differences have not been observed in other studies with young children. For example, Lanza (1997) did not find qualitative differences in the switching patterns of young children before and after the emergence of grammatical categories, although she found that bilingual toddlers were less competent at producing acceptable CS compared to older bilinguals.

The present study was designed to explore these issues by examining the patterns of CS of Spanish-English bilingual children with and without SLI. First, it was important to establish the extent to which CS varied within typical learners (i.e., children with typical language development) depending on the context of elicitation, the child's language dominance, and the language of elicitation. As was discussed earlier, previous research suggested differences in CS use related to the context of elicitation or the child's dominant language. Second, we examined the use of CS in children with SLI. Since these children are expected to have vocabulary and grammatical limitations, we predicted that they might rely more on CS to fill lexical gaps and to facilitate sentence production during the flow of the discourse. As a result, they would show a greater use of CS than their peers with TLD. In addition, they would exhibit a greater proportion of anomalous or unacceptable instances of CS.

Method

Participants

The participants were sampled from a larger study of 122 Latino children. A preliminary analysis of the language samples of these children indicated that only 58 children evidenced CS in their spontaneous language. At the time of the study, the 58 participants attended Head Start programs and public elementary schools in Southern California. All children were attending classrooms with English and Spanish as the languages of instruction. The majority of the children were of Mexican-American descent. Eighteen of these children had specific language impairment (SLI) (*mean* age: 5;11 years, *SD* = 9 months) and forty had typical language development (TLD) (*mean* age: 6;1 years, *SD* = 10 months). Age was not significantly different across groups, $t(56) = .905$, $p = .370$, $d = .26$. Table 1 shows the combined parental education and income profiles for both groups. School lunch program status was used as a metric for income level. Each school independently determined lunch program qualification status, which was determined by family income and the number of occupants in the household. The income level of the families was comparable between groups, $\chi^2(2, N = 52) = 3.22$, $p = .200$, as was the education level in the home, $\chi^2(2, N = 52) = 3.22$, $p = .200$.

The 18 children with SLI were identified based on (1) evidence of parent concern and/or teacher concern; (2) clinical judgment based on observations of trained bilingual speech-

language pathologists (e.g., reported evidence of limited responsiveness in conversational samples, modifiability, etc); and (3) below cutoff scores on the Spanish Morphosyntax Test (SMT) and English Morphosyntax Test (EMT) of the Bilingual English Spanish Assessment (BESA) (Peña, Gutiérrez-Clellen, Iglesias, Goldstein, & Bedore, n.d.) as determined by previous research with these measures (Gutiérrez-Clellen *et al.*, 2006; Gutierrez-Clellen & Simon-Cerejido, 2007). The 40 children with TLD met criteria based on the same measures as the children with SLI. The children with TLD had significantly higher BESA Morphosyntax scores ($Mean = 85$, $SD = 15$) than the children with SLI ($Mean = 49$, $SD = 17$), $t(56) = 7.920$, $p < .001$, $d = 2.30$. Both groups were recruited from the same classrooms and schools. None of the participants had a history of hearing loss, developmental delays, and/or significant health problems, based on school records. The sections below provide a description of the language characteristics of the participants.

Procedures for establishing English exposure and use—English exposure and use was determined using parent and teacher reports based on previous research with these measures (Gutiérrez-Clellen & Kreiter, 2003). Parents or guardians were interviewed using a parent questionnaire that addressed the children's general language use across settings and interlocutors as well as history of developmental delay, hearing loss, or any concerns about speech or language skills. The parent questionnaire also served as a measure of exposure to English at home based on the number of hours the child interacted with each member of the household and the language spoken during those interactions. Parents were also asked to rate the child's English proficiency using a 5-point rating scale (0 representing no proficiency and 4 representing native-like proficiency (i.e., based on the judgment of the parents, the child receiving a rating of 4 was considered to speak with few grammatical errors, good vocabulary, and good listening comprehension)). Parents also rated the child's use of the English language using a 5-point scale (0 = Never speaks or hears English; 4 = Speaks and hears English all of the time). The teachers were also given a questionnaire to rate the participants' use and proficiency of English using the same 5-point scale. In addition, they provided an estimate of the percentage of time that the child was exposed to English and Spanish as a measure of input in school, including both instructional and non-instructional time.

Table 2 describes the language profiles of the participants based on the parent and teacher questionnaires. Both groups (the 40 children with TLD and the 18 children with SLI) had about two years of exposure to English. For most children, English exposure began when children first started preschool. We conceptualized the ratings of language use and proficiency as continuously distributed variables, and thus parametric *t*-tests were used to compare groups. *T* tests indicated no significant group differences for the amount of Spanish input ($t(54) = .474$, $p = .64$, $d = .14$) or English input at home ($t(54) = .010$, $p = .99$, $d = .00$), or parents' ratings of Spanish use ($t(53) = .420$, $p = .67$, $d = .11$), English use ($t(53) = .561$, $p = .58$, $d = .17$), Spanish proficiency ($t(53) = .200$, $p = .84$, $d = .05$), or English proficiency ($t(53) = 1.509$, $p = .14$, $d = .44$). There were no significant group differences in the teachers' rating of Spanish or English use (Spanish use: $t(43) = .031$, $p = .97$, $d = .01$; English use: $t(43) = 1.126$, $p = .27$, $d = .38$), Spanish proficiency or English proficiency (Spanish proficiency: $t(33) = .166$, $p = .87$, $d = .06$; English use: $t(39) = .583$, $p = .56$, $d = .21$), or in the amount of input to Spanish ($t(41) = .098$, $p = .92$, $d = .03$) or English at school ($t(41) = .417$, $p = .68$, $d = .15$). The small to moderate effect sizes observed for English proficiency and use based on parental and teacher report may reflect the increased language ability of the group with typical development.

Since ratings of use and proficiency could also be conceived as discrete categories, group comparisons were also made using nonparametric statistics. Mann-Whitney U tests between the TLD and SLI group on the parent and teacher ratings of English and Spanish use and

proficiency scores showed no statistically significant differences between the groups on any of the scores. Results for group differences in parent ratings were as follows: Spanish use, $U = 291.50$, $p = .224$; English use, $U = 293.00$, $p = .419$; Spanish proficiency, $U = 325.50$, $p = .840$; English proficiency, $U = 259.00$, $p = .143$. Results for group differences in teacher ratings were as follows: Spanish use, $U = 193.50$, $p = .907$; English use, $U = 145.00$, $p = .165$; Spanish proficiency, $U = 109.50$, $p = .375$; English proficiency, $U = 146.00$, $p = .554$. There were no significant differences between the mean ranks of the TLD group compared to the mean ranks of the SLI group across ratings.

To examine the effect of language dominance, the 40 children with TLD were also classified as Spanish or English dominant based on the parent and teacher questionnaires as well as on their relative scores on the morphosyntax subtests (i.e., >10 point difference between the scores in each language). There were 4 children whose questionnaires did not favor a specific language because their morphosyntax scores were less than 10 points apart. These children were considered to have a balanced dominance and were excluded from this comparison. There were 18 Spanish dominant children and 18 English dominant children.

Language sampling procedures

For each child, two narrative samples were obtained using two wordless picture books. Since young children may be reluctant to provide detailed narrative information that has been already given in previous recounts (Gutiérrez-Clellen & Quinn, 1993), the books were not the same for each language. This narrative sampling approach was assumed to elicit a representative sample of the child's language skills in each language. In addition, many young Latino children may not be able to spontaneously tell a detailed story from a book if they have limited literacy experiences at home. Thus, for each language, the examiner first read aloud one story to the child and then asked the child to retell it. This procedure provided a model and was assumed to facilitate narrative production. The narrative retell was followed by a spontaneous narrative elicited with a second storybook. For the second narrative the examiner asked the child to look at the pictures and tell what was happening in the book. For English, *Frog, where are you?* (Mayer, 1969) was used for the narrative retell and *One Frog Too Many* (Mayer, 1975) for the spontaneous narrative. For Spanish, *Frog on his own* (Mayer, 1973) was used to elicit the narrative retell and *Frog goes to dinner* (Mayer, 1974) was used for the spontaneous narrative. These narrative contexts were judged to be constrained as children were asked to talk about specific events in the storybooks. Additional conversational language samples were obtained through play using a birthday party toy set and a farmhouse setting. This conversational context was judged to be less constrained as children were not restricted to talk about the toys but encouraged to initiate spontaneous conversation with the examiner. Both narrative and conversation tasks were considered developmentally appropriate contexts for the observation of child CS.

Language testing was conducted by bilingual research assistants in the schools where the children attended. Each child was tested in both languages. One examiner administered the Spanish testing and another examiner administered the English testing on different days. Children were not told that the examiner was bilingual. However, they did not appear to refrain from using both languages during testing.

The narratives and language samples were audio-taped, transcribed word by word, and coded for instances of CS in each language by bilingual research assistants using the Systematic Analysis of Language Transcripts (SALT) computer program (Miller & Chapman, 2000). Transcription reliability was obtained with two bilingual transcribers who independently transcribed and coded 20% of the audiotapes in each language. Word transcription reliability was above 90%.

Codeswitching Analysis

The analysis was conducted in two phases. First, all utterances with codeswitches from the language sample, the narrative retell, and the spontaneous narrative were identified. “Borrowed” words were not considered codeswitched words. These are words that are integrated into the language of the community phonologically, morphologically, and syntactically and that have been repeated enough to be regarded as habitualized (e.g., hot dog, cookies, picnic, bye-bye, happy birthday, tacos, tortillas). Also, proper names and place names (e.g., Spiderman, El Cajón) were not included, based on Poplack's methods (1980). Once all utterances with CS were identified, a proportion of utterances with codeswitches was calculated based on the total number of utterances from the child's spontaneous language. For the present study, the analysis focused on intra-sentential switches (i.e., switches that occurred within a sentence). For example, “AND *la rana* WENT” (and *the frog* went). These switches were later examined in terms of their compliance to the grammatical constraints reported in the literature (see Appendix). For example, switches were considered atypical if the language of the clause was switched after a conjunction (e.g., and), auxiliary verb, modal (e.g., HE WAS READING A BOOK AND *ella estaba trabajando*); between to and the infinitive (e.g., TO *comer*); or within a bound morpheme (e.g., COME*ing*). Switches between a subject pronoun and a verb (e.g., *Yo* WENT), or between a verb and an object pronoun (e.g., *Mira* HIM) were also considered atypical based on these studies. Adjective switches were coded as atypical since Spanish and English do not share Adjective-Noun word order (e.g., THE WHITE HOUSE, *la casa blanca*). As reported in these studies, switches between determiner and noun are atypical if the switch goes from English to Spanish (e.g., THE *cama*). This type of switch does not allow for the agreement features that Spanish nouns require, and therefore, it is not acceptable in adult CS (Moro, 2001). Similarly, noun switches in which the features of gender and agreement in the article and noun did not match were not acceptable (e.g., “*e/* GIRL” for *la* GIRL). The word for girl in Spanish is *niña*, which is a singular, feminine noun; therefore, it does not allow a Spanish singular, masculine determiner “*e/*”. In order for this switch to be considered acceptable, the child would have had to produce, “*e/* BOY” or “*la* GIRL” so the gender and number agreement features matched. In sum, noun switches were acceptable if they had a Spanish determiner and an English noun and if the Spanish article agreed with the gender and number of the noun. Switches from an English determiner to a Spanish noun (e.g., “THE *pastel*,” the cake) were coded as atypical.

Results

Overall, the proportion of utterances with CS was low, regardless of context of elicitation, language dominance or language ability. The mean CS proportion for the whole sample was .065; that is, only 6.5% of the utterances included a codeswitch. This low percentage is similar to the CS frequency of 7-year old Mexican-American children from California studied by Reyes (2004). These children had an average of 13% and 10% of turns with codeswitches for social talk and during a science activity, respectively. Thus, the comparisons to be reported below are based on a limited sample of mixed utterances.

The first question that was addressed was whether children were more likely to codeswitch depending on the context of elicitation. To elucidate this issue, the proportion of utterances with CS of 23 children with TLD who provided samples in both languages was compared across conversation and narrative tasks (see Table 3). For this analysis the sample of TLD children was reduced to 23 children because only 23 children had complete language samples in the two contexts of elicitation. For English, the proportion of utterances with CS was identical across tasks, and for Spanish, there were no significant differences between narrative and conversational samples, $t(22) = .59$, $p = .55$. However, a closer look at the percentage of participants who codeswitched at least once on each task indicated that only

47% of the children showed any CS on the narrative retell task, followed by the spontaneous narrative task (67% of the children), and the conversation task (81% of the children). Children were more likely to codeswitch in conversation than in narrative tasks.

The effects of language dominance and language of elicitation were examined directly by comparing the proportion of utterances with CS in the TLD group. As explained in the Participants section, there were 36 children who could be identified as having a dominant language (18 children who were dominant in English, 18 who were Spanish dominant). The remaining four TLD children did not demonstrate dominance in one language and therefore were excluded from this analysis. Table 4 shows the means and standard deviations of the two bilingual groups when tested in their dominant and non-dominant languages. A 2 (language dominance) by 2 (language of elicitation) ANOVA was used to evaluate main effects and dominance by language of elicitation interaction effects. The model indicated significant main effects for language dominance, $F(1,68) = 6.00$, $p = .017$, *partial eta squared* = .08; language of elicitation, $F(1,68) = 13.34$, $p = .001$, *partial eta squared* = 1.64; and for the dominance by language of elicitation interaction, $F(1,68) = 9.83$, $p = .003$, *partial eta squared* = .12. English-dominant children tended to produce more codeswitches when the sample was elicited in their nondominant language (Spanish) compared to the Spanish-dominant children tested in their nondominant language, $t(18.497) = 3.124$, $p = .006$, $d = 1.04$. There were very few instances of CS when Spanish-dominant children had to produce samples in English. Children appeared to refrain from using CS when tested in their dominant languages.

Table 5 indicates the proportion of utterances with CS of 18 children with SLI and 18 children with TLD matched by age and language dominance. The children with SLI did not appear to use a greater proportion of CS compared to their peers with typical language, $t(34) = .64$, $p = .52$, $d = .31$. For both groups of children, the majority of codeswitches involved nouns, (49% for TLD children, 52% for SLI children), followed by conjunction switches (17% and 14%, respectively). Based on these observations, the groups did not seem to differ in the types of codeswitches used. The next step was to evaluate the acceptability of the codeswitches observed based on their compliance to grammatical constraints as reported in the adult language literature (see Appendix).

Poplack's Free Morpheme Constraint

Both groups conformed to Poplack's Free Morpheme Constraint. This constraint states that codes may be switched between two constituents, provided one of them is not bound. For example, a switch would not be allowed to occur between a main verb and its –ing bound morpheme. Poplack offers the following example of an unacceptable switch: “EAT-*iendo*” (Poplack, 1980). In this case, the verb root “EAT” is in English and the progressive –ing morpheme –*iendo* is switched to Spanish. The children with TLD produced 0 switches at the bound morpheme level and only one child with SLI produced a switch at the bound morpheme level, “BALLOON_{es}.” In this example, the child said the noun “BALLOON” in English and switched to the Spanish morpheme, –*es* to mark plurality. The switch was determined to be a Spanish insertion because the plural morpheme was produced using Spanish phonology. Based on this finding, it appeared that the children with SLI did not differ from the children with TLD in their compliance to the Free Morpheme Constraint.

Poplack's Equivalency Constraint

There were 20 and 16 instances of switched conjunctions in children with TLD and SLI, respectively. Early research indicated that switching between the conjunction and the complementizer phrase violated a grammatical constraint (Gumperz, 1982). However, since the conjunctions are structurally equivalent in Spanish and in English, switching at these

points should be allowed based upon Poplack's Equivalency Constraint. This states that codeswitches will occur at points in discourse where the juxtaposition of L1 and L2 elements does not violate a syntactic rule of either language (Poplack, 1980). Thus, switched conjunctions could not be considered unacceptable codeswitches. These instances of CS were used by both typical and impaired groups. There were no examples from Spanish dominant children with TLD.

Examples

1. English dominant child with TLD

AND THEN (a) *los CAREBEARS agarraron (una) una escalera de RAINBOW*

And then (a) the carebears grabbed (a) a ladder of rainbow

'and then the carebears grabbed a rainbow ladder'

2. Spanish dominant child with SLI

AND *bomberos vinieron*

And firefighters came

'and the firefighters came'

AND *estaban echando agua*

And (they) were throwing water

'and they were throwing water'

3. English dominant child with SLI

AND THEN *niño en el perro en THE (xx um xx) quiero*

And then (the) boy in the dog in the (unintelligible) (I) want

jugar, WALK AND caminar

play, walk and walk

'and then the boy, the dog in the (unintelligible) want to play and walk'

Pronoun + Verb Constraint

This constraint does not allow a switch between a pronominal subject or object and the finite verbs to which they belong (Gumperz, 1982; Lipski, 1978; Timm, 1975). There was only one child with TLD who switched between the pronoun and the verb and only two children with SLI who omitted the copula "es/is" in four codeswitched utterances. However, since these copula verbs were omitted we do not have evidence that the children would have codeswitched these verb forms.

Examples

1. English dominant child with TLD

Él COULDN'T FIND THE BIG FROG

He couldn't find the big frog

'He couldn't find the big frog'

2. Spanish dominant child with SLI

Mi mamá A GIRL

My mom a girl

'My mom is a girl'

While there were few switched productions within the verb phrase, there was a greater quantity of switches within the noun phrase. The two noun phrase constraints that were violated and thus need to be addressed are the Adjective + Noun constraint and the Determiner + Noun constraint.

Adjective + Noun Constraint

The adjective + noun constraint states that the switch can only occur between an adjective and a noun if the adjective is placed in accordance with the rule for the language of the adjective. There were no violations of this constraint by the children with TLD and only one instance of incompletion in the children with SLI: "*bonita DOGGY*" (Pretty doggy). Because Spanish is a noun + adjective language and English is an adjective + noun language, the previous example does not follow the word order of the language of the adjective, which in this case is Spanish. However, MacSwan (2000) disputed the existence of this constraint with his data of Spanish-Náhuatl bilinguals. He found that his subjects allowed for Náhuatl nouns to either precede or follow Spanish adjectives. Given that there was only one example of this CS in the children with SLI and the fact that this constraint has been disputed, one cannot conclude that the children with SLI differ greatly on their grammatical switches between adjectives and nouns.

Determiner + Noun Constraint

Codeswitches between a determiner and a noun were the most common type of intra-sentential CS. We speculated that if children with SLI have difficulties in their use of CS, these difficulties would be reflected in their switches between determiners and nouns because of two reasons: (a) there are distinct differences in the way the two languages mark the articles (both languages mark definiteness but Spanish articles must agree in gender and number with their nouns) which may make difficult to select the appropriate language for a specific switch; and (b) Spanish-speaking children with language impairments have significant difficulties with articles (Restrepo & Gutiérrez-Clellen, 2001). Thus, if SLI children differed in the quality of their CS, determiner + noun switches should have been problematic.

The analysis showed that children with TLD switched from a Spanish article to an English noun 93% of the time, and the children with SLI followed the same trend with 92% of determiner + noun switches from a Spanish article to an English noun.

Examples

1. English dominant child with TLD

Y creía que era una FROG

And (he) thought that (it) was a frog

'and he thought it was a frog'

2. Spanish dominant child with TLD

está bien suave porque es dos películas en una sola MOVIE

(it) is really good because (it) is two films in one only movie

'it is really good because there are two films in only one movie'

3. Spanish dominant child with SLI

Pues (cuando) cuando me pusieron (la) la CAST (no) yo estaba dormida

So (when) when (they) me put (the) the cast (no) I was sleeping

'So when they put the cast on me, I was sleeping'

4. English dominant child with SLI

no es (una xx) una BUTTERFLY

(it) not is (a xx) a butterfly

'It is not a butterfly'

Both groups appeared to avoid switches from English determiners to Spanish nouns. The children with TLD switched from English articles to Spanish nouns only 7% of the time and children with SLI produced these switches 8% of the time.

Examples

1. English dominant child with TLD

BUT BECAUSE I DON'T HAVE A *tele* THERE

But because I don't have a TV there

'But because I don't have a television there'

2. English dominant child with SLI

THE *cucarachas* (um) SHE EAT (THE THE BOYS THE GO*) THE BIG BOYS

The cockroaches (um) she eat (the the boys the go*) the big boys

'the cockroaches eat the big boys'

As it will be discussed later, these trends are consistent with the CS literature. The grammatical problems of the children with SLI were evidenced in their greater number of article omissions, not in their use of atypical determiner + noun switches. These difficulties are illustrated by one of the children with SLI as follows:

"THEN *el niño* TAKE IT TO A GIRL." (Then the boy took it to a girl.)

"THEN *niño* HE GET OUT." (Then [the] boy got out.)

"THEN *niño* SAD." (Then [the] boy was sad.)

In the first utterance, the child produced the appropriate Spanish determiner, *el*, with the noun, *niño*. Yet then in the next two utterances, he omitted the Spanish definite article, a typical pattern described in previous research with Spanish speakers with language impairments (Restrepo & Gutiérrez-Clellen, 2001).

Discussion

The present study was designed to examine several variables that were predicted to potentially have an effect on the use of CS in young Spanish-English bilingual children. Our first question of interest was to evaluate potential differences related to the context of elicitation of the spontaneous language samples. The results indicated no differences in the frequency of use of CS across narrative and conversation tasks. However, there were more children who codeswitched in conversation than when the language samples were elicited

with the storybooks. These trends suggest that children's use of CS is sensitive to contextual constraints. The most constrained tasks may not be as useful to elicit CS samples as the use of more naturalistic methods such as conversation. In fact, previous research found that children tend to codeswitch while changing topics (Reyes, 2004). The majority (24%) of the utterances with CS produced by 10-year old children were observed when children shifted conversation topics.

Based on these results, we did not find any evidence that children are using CS to fill language gaps. Children did not show more CS when they were required to talk about specific stories using specific vocabulary compared to spontaneous conversation contexts. Future research examining CS use in interactions with peers across naturalistic settings as well as alternative approaches to gather CS data (e.g., Toribio, 2001) would be needed to study this issue further.

Use of CS was found to vary depending on whether the child was tested in their dominant or non-dominant language. However, one could not directly attribute CS to limited proficiency in the language tested. Only English-dominant children switched to English when they were tested in their nondominant Spanish. Spanish-dominant children showed a very low frequency of CS when tested in their nondominant English. These findings suggest that CS use may be regulated by these children's awareness of the language prescribed by the majority culture in the school environment (i.e., English), regardless of their level of proficiency in that language. As a result, they may be reluctant to switch to Spanish, a language that is disfavored in typical American classrooms within a sociopolitical context that does not support maintenance of the home language. Codeswitching (to Spanish) in children's English discourse appears to decrease as children become acculturated to the language of the school whereas switching (to English) in Spanish discourse appears to remain constant across grade levels (Garcia, Maez, & Gonzalez, 1983).

These sociolinguistic factors may explain why English dominant children may find it more acceptable to switch to English, even when they are tested in Spanish. A second plausible explanation is that these children have not reached sufficient levels of bilingual proficiency (i.e., competence in both languages) that would allow them to alternate languages fluently regardless of what dominant language they speak. Poplack found that frequency of CS increased with improved competence in the two languages.

Overall, the children with language impairment did not appear to show differences in use of CS compared to their peers with typical language. This is consistent with research suggesting that CS varies depending on the linguistic environments these children are exposed to, rather than to differences in overall development (Comeau, Genesee, & Lapquette, 2003). The analysis of the acceptability of the CS exhibited by the children indicated that both TLD and SLI groups complied with the same general CS patterns found in the adult literature, including Poplack's constraints. The majority of the switches fell into the intra-sentential category within the noun phrase for both children with TLD and children with SLI. These observations corroborate previous research indicating that the majority of switches are intra-sentential within the noun phrase (Bader, 1998; Berk-Seligson, 1986; Stephens, 1986; Vihman, 1998). Stephens (1986) found that of 357 switches observed in a sample of bilingual school-aged children, 112 were single nouns, 54 were sentences and 27 were phrases. McClure (1977) also reported that children tended to favor single noun switches over other types and this is consistent with other studies (Bader, 1998; Berk-Seligson, 1986; Stephens, 1986; Vihman, 1998). Most recently, Myers-Scotton and Jake (2001) reported singly occurring nouns as the most frequently occurring categories in their Arabic/English data set, with 35.4% of the total number of switches. They also found a similar trend in a Spanish/English corpus in which 63 out of 67 determiner + noun phrases

consisted of English nouns with Spanish determiners (i.e., 94% of the switches) (Myers-Scotton & Jake, 2001).

Children also demonstrated very few switches in the verb phrase. Only 9% and 6% of all intra-sentential switches were within the verb phrase for children with TLD and SLI, respectively. This may be related to cross-linguistic differences between Spanish and English. In English, the subject position must have either a pronoun or noun and thus may never remain empty, whereas in Spanish, the subject position may remain empty of a pronominal subject. “It may be this fundamental difference in the obligatory versus optional status of the subject pronoun between Spanish and English that accounts for the reluctance to codeswitch between subject pronoun and finite verb” (Lipski, 1978, p. 253).

Conclusions

In summary, the children with SLI in the present research did not exhibit CS patterns that were quantitatively different from their peers with TLD. When the acceptability of their switches was compared to the patterns described in the adult literature, we found no evidence of disordered CS in this group. The SLI children were able to mix their two languages with typical CS behavior and did not demonstrate a deficit in their knowledge of CS constraints, in spite of their apparent grammatical problems in each language. This is consistent with previous research with young children that found that even in the earliest uses of CS constraints may not be violated (Lanza, 1997; Meisel, 1994).

These findings have several practical implications. First, clinicians and teachers should not view CS as a symptom of a language disorder in bilinguals. The patterns observed in children with SLI resembled those of their typical peers and those of adult bilinguals with high competence in the two languages. Poplack (1980) found that the frequency of CS increased with improved competence in both languages and Berk-Seligson (1986) observed greater CS use with higher bilingual fluency. In fact, the ability to codeswitch has been proposed to be a possible indicator of giftedness among bilingual and limited English proficient students (Hughes *et al.*, 2006). Second, given the fact that even children with SLI are capable of using typical CS, there is no support for the recommendation to avoid or prevent mixing the languages in communication with these children at home, at school, or in a clinical setting. Indeed, use of CS in these children may provide invaluable information about their bilingual development.

Appendix

Examples of Atypical Codeswitching (adapted from MacSwan (1999), p. 54)

Descriptive Boundaries for Atypical CS	Examples of Atypical Codeswitches	Sources
conjunction + Complementizer Phrase	HE WAS READING A BOOK AND <i>ella estaba trabajando</i> .	Gumperz (1982)
that + Inflection Phrase	<i>Espero que</i> YOU'RE NOT GOING TO WEAR THAT. I HOPE THAT <i>no vayas a llevar eso</i> .	Belazi, Rubin, & Toribio (1994)
have/modal + Verb Phrase	I HAVE <i>comido</i> ALL THE APPLES.	Belazi, Rubin & Toribio (1994)
to + Verb	THEY WANT TO <i>venir</i> . <i>Quieren</i> TO COME. <i>Voy a</i> DECIDE.	Timm (1975)

Descriptive Boundaries for Atypical CS	Examples of Atypical Codeswitches	Sources
Auxiliary + Verb	HE HAS <i>visto</i> . <i>Debo</i> WAIT. <i>Ha</i> SEEN. I MUST <i>esperar</i> . Exceptions made for “borrowed” verbs such as in “HE WAS <i>wachando</i> ”.	Timm (1975)
Negation + Verb	I DON'T <i>quiero</i> . I DO <i>no</i> WANT. I NOT <i>quiero</i> .	Timm (1975)
Determiner + Noun Phrase	THERE IS <i>una</i> cup ON THE TABLE.	Belazi, Rubin & Toribio (1994)
English Determiner + Spanish Noun	THE <i>barco</i> .	Moro (2001)
Noun + Adjective (Adjective from Spanish, Noun from English)	MY MOTHER WANTS TO BUY A CAR <i>grande</i> .	Gumperz (1982); Lipski (1978); Belazi, Rubin & Toribio (1994)
Adjective + Noun (Adjective from Spanish, Noun from English)	I WANT A <i>verde</i> MOTORCYCLE.	Belazi, Rubin & Toribio (1994)
Subject pronoun + Verb	<i>Yo</i> WENT. I <i>fui</i> .	Timm (1975); Gumperz (1982); Lipski (1978)
Verb + Object pronoun	<i>Mira</i> HIM.	Timm (1975); Gumperz (1982); Lipski (1978)
Clitic + Verb	<i>Les</i> SAID. SHE SEES <i>lo</i> .	Timm (1975)
A switch involving a bound morpheme	I WANT THE BALLOON <i>es</i> . <i>Durmi</i> NG.	Poplack (1981); Sankoff & Poplack (1981)

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Table 1

Percentage of Families of the Children With Typical Language Development (TLD) And Language Impairment (LI) In Each Category Of Educational Level, Eligibility To Lunch Program, And Dialect Spoken.

Characteristic	TDL <i>n</i> = 40	LI <i>n</i> = 18
Age in years		
Education level in the home		
Primary and Some Secondary	17.1%	23.5%
High School Grad	40.0%	58.8%
Some College and College Grad	42.9%	17.6%
Eligibility to Lunch Program		
Free & Reduced	49%	80%
Regular	51%	20%
Regional Dialect		
Mexican Spanish	100%	100%
American English	100%	100%

Note: 7 TDL & 3 LI have incomplete questionnaires

Table 2

Means and Standard Deviations of Amount of Language Input, and Ratings of Use and Proficiency for the Participants (N = 58).

Characteristic	Language Ability			
	TLD <i>n</i> = 40	LI <i>n</i> = 18	<i>p</i>	<i>d</i>
Age in years				
Proportion of Spanish input at home	57.91(21.23)	60.60(16.29)	.64	.14
Proportion of English input at home	39.45(20.02)	39.40(16.29)	.99	.00
Parents' rating of use of Spanish	3.76(0.60)	3.83(0.71)	.67	.11
Parents' rating of use of English	3.38(0.98)	3.22(0.94)	.58	.17
Parents' rating of proficiency in Spanish	3.81(0.40)	3.83(0.38)	.84	.05
Parents' rating of proficiency in English	3.43(0.80)	3.05(1.00)	.14	.44
Teachers' rating of use of Spanish	2.38(1.53)	2.39(1.35)	.97	.01
Teachers' rating of use of English	2.90(1.28)	2.42(1.26)	.27	.38
Teachers' rating of proficiency in Spanish	3.25(1.22)	3.18(0.87)	.87	.06
Teachers' rating of proficiency in English	3.10(0.92)	2.91(.94)	.56	.21
Proportion of input at school in Spanish	39.28(32.40)	38.19(31.56)	.92	.03
Proportion of input at school in English	57.59(33.30)	52.73(33.79)	.68	.15

Table 3

Means and standard deviations of the proportion of utterances with codeswitching across narrative and conversational contexts.

Elicitation Language	Narrative samples		Conversational samples		
	<i>n</i>	<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>
English	23	.012	.02	.012	.02
Spanish	23	.114	.21	.159	.16

Table 4

Means and standard deviations of the proportion of utterances with codeswitching by dominant language and language of elicitation in the children with typical language development.

Language dominance	Elicitation in English		Elicitation in Spanish		
	<i>n</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
English	18	.002	.004	.194	.229
Spanish	18	.022	.048	.036	.051

Table 5

Means and standard deviations of the proportion of utterances with codeswitching across language ability groups of children matched by age and language dominance.

Language ability	Proportion of codeswitching		
	<i>n</i>	<i>Mean</i>	<i>SD</i>
Typical Language	18	.062	.074
Language Impaired	18	.079	.083