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Story Retelling by Bilingual Children with Language Impairments and Typically-Developing Controls

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Abstract

Background—To date, there is limited information documenting growth patterns in the narratives of bilingual children with and without primary language impairment (PLI).

Aims—This study was designed to determine whether bilingual children with and without PLI present similar gains from kindergarten to first grade in the macro- and microstructure of stories told in Spanish and English.

Methods and Procedures—In this longitudinal study, 21 bilingual children identified with PLI were each matched to a bilingual typically-developing (TD) peer on age, sex, nonverbal IQ and language exposure. During their kindergarten and first grade years, children retold stories from wordless picture books in Spanish (L1) and English (L2).

Outcomes and Results—Overall, TD children outperformed those with PLI on measures of macrostructure and microstructure at both time points. For the macrostructure measure, the TD group made significantly larger improvements in both languages from kindergarten to first grade than the PLI group. For microstructure, the TD children made more gains on their Spanish retells than their English retells. However, the PLI children's microstructure scores did not differ from kindergarten to first grade in either language. We found that macrostructure scores in Spanish at kindergarten predicted macrostructure scores in English at first grade when English experience was held constant. However, this same relationship across languages was not evident in microstructure.

Conclusions and Implications—TD and PLI children differed in the development of narrative macrostructure and microstructure between kindergarten and first grade. The TD

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bilinguals transferred conceptually-dependent narrative skills easily, but then had to independently learn the nuances of each language to be successful using literate language. Because most children with PLI need more exposure to establish strong connections between their L1 and L2, they had more difficulty transferring their knowledge of literate language forms from one language to another.

Keywords

bilingual; narrative development; language impairment; longitudinal

Narratives are often used as a language sampling task because they provide clinicians and researchers with an efficient way to obtain information about a child's knowledge of vocabulary, grammatical structures, and story structure (Botting, 2002; Cleave, Girolametto, Chen, & Johnson, 2010; Fiestas & Peña, 2004; Iluz-Cohen & Walters, 2012). When children produce narratives, they are simultaneously integrating multiple systems of language (Miller, Heilmann, Nockerts, Iglesias, Fabiano, & Francis, 2006). Narrative retells place additional language processing demands compared with spontaneous narrative tasks (Gutiérrez-Clellen, 2002). Narratives require the use of particular vocabulary and expanded use of specific grammatical forms, which may provide information about children's mental representations of language. Recently, researchers have begun to establish norms for typically developing patterns of narrative development in bilingual children (Miller & Iglesias, 2008; Uccelli & Páez, 2007; Rojas & Iglesias, 2013). Longitudinal growth patterns of both typically developing (TD) children and those with Primary Language Impairment (PLI) have only begun to be investigated in bilingual samples (Gutiérrez-Clellen, Simón-Cereijido, & Sweet, 2012; Hammer et al., in press). Narrative retell tasks may offer a good measure of language proficiency in bilingual children because of the additional processing demands that occur with committing attentional and memory resources to processing long stretches of discourse in different languages (Gutiérrez-Clellen, 2002). The current study focuses on comparing narrative development and cross-linguistic influences in the narratives of Spanish-English bilingual children with and without PLI from kindergarten to first grade.

Narrative Development

Narratives can be described in terms of the structure of the entire story (macrostructure) and the specific types of words and sentences that make up the story (microstructure). School-age children typically create stories that include such macrostructure elements as characters, setting, an initiating event, plans developed in response to the initiating event, actions to carry out the plans, a consequence, and internal responses felt by the characters in response to the initiating event or consequence (Johnston, 1982; Stein, 1988). During the school-age years, children develop elements related to literate, decontextualized language. These include mental and linguistic verbs (Curenton & Justice, 2004; Westby, 2005) that provide information about speech acts (e.g., talk, say, shout, and whisper) and cognitive states (e.g., think, realize, and wonder), adverbs, and elaborated noun phrases containing combinations of articles, quantifiers, or possessors (Eisenberg, Ukrainetz, Hsu, Kadaravek, Justice & Gillam, 2008; Gillam & Gillam, 2009). Cohesive devices including coordinating (i.e. for, and, but, or, nor, yet, so) and subordinating (i.e. because, then, when, where) conjunctions, along with the literate language features, create the microstructural elements of narratives (Gillam, Fargo, Petersen, & Clark, 2012).

Berman (1988) assessed the types of narrative behaviors manifested by monolingual Hebrew speaking preschoolers, school-age children, and adults who created a story that corresponded to the pictures in Mercer Mayer's, *Frog Where are You?* (Mayer, 1969). Berman found that macrostructure and microstructure were very weakly developed in the

preschooler's stories. Their retelling performance was highly variable because they had not mastered complex grammatical forms and were still acquiring vocabulary and discourse organization skills necessary to tell complete and complex stories. By early school age, children had learned the basic macrostructure of stories. Yet, between the ages of 5 and 7, they still had not acquired a general sense of discourse organization, and they placed too much emphasis on specific details depicted in the pictures rather than the overarching story sequence. Although primary grade children included a basic story episode (initiating event, goal-directed actions, and a consequence), they did not yet use the literate language to create rich narratives. Adults demonstrated what Berman referred to as "end-state narrative abilities" (1988, p. 489). They began to integrate linguistic markers and abstract vocabulary in a variety of discourse structures to create complex, cohesive, and coherent narratives. According to Berman, children mastered the elements of macrostructure that characterize a basic episode before they included the complex microstructure elements related to literate language in their stories.

Across different languages, stylistic and cultural differences have been found in the information monolingual children choose to include in their narratives. General macrostructure elements that could potentially be incorporated into stories are essentially the same across different languages and cultural groups (Berman & Slobin, 1994; McCabe & Bliss, 2005; Verhoeven, 2004). However, microstructure may be more greatly influenced by the language of the story due to cross-linguistic differences in the use of specific vocabulary and grammatical forms (Berman & Slobin, 1994). For example, in describing motion events, Spanish verbs encode path of motion (e.g., salió [exited]) while English verbs more likely consist of manner (e.g., walked) and path is described via a satellite (out as in "walked out") (Talmy, 1985). Slobin (1996) noted that while monolingual English and monolingual Spanish speakers used the same number of verbs, they differed in the types of verbs they included. Monolingual English speaking children used a greater variety of manner verbs in their narrative productions than monolingual Spanish children while Spanish speakers used more path verbs. Such basic differences in verb use affect story microstructure even when macrostructure is relatively consistent across languages.

Bilingual Narrative Development

Drawing on their knowledge of each of their languages, bilingual children, like their monolingual peers, make changes in the length of their narratives and their use of macrostructure and microstructure as they progress toward the production of end state narratives. Using a story generation task with a cross-sectional sample of second and fifth grade monolingual and bilingual children, Pearson (2002) found that, on average, children's scores on macrostructure (story elements, sequencing, referencing, internal states, and engagement) were similar across English and Spanish. The macrostructure of bilingual children's stories may vary at the individual level between languages and across narrative tasks. For example, Gutiérrez-Clellen (2002) found that although TD bilingual second graders produced spontaneous narratives that were grammatical in both languages, their overall performance on story recall and comprehension tasks was higher in English than Spanish. Children's recall and comprehensions scores were more variable in Spanish than English. Macrostructure continues to change during the early elementary school years. Uccelli and Páez (2007) observed that low SES TD bilingual children made significant developmental gains in both Spanish and English macrostructure from kindergarten to first grade on a story generation task. These studies suggest that measures of macrostructure, specifically in narrative retells, can be sensitive indicators of cross-linguistic and developmental changes in bilingual narrative competence, and that performance can be highly variable across children and languages.

There have also been studies of various aspects of microstructure in stories told by bilinguals. Miller et al. (2006) observed increases in vocabulary diversity in the Spanish and English stories told by children between kindergarten and third grade. Pearson (2002) compared vocabulary use in English narrative production in bilingual Spanish-English and monolingual English speaking children at grades 2 and 5. While the bilingual children used fewer words in English to tell stories in second grade compared to their monolingual peers, their fifth grade stories were comparable to monolingual English speakers. Increases in Spanish vocabulary use were comparable although number of different words in Spanish increased more for children in two-way bilingual programs compared to those in English immersion.

In terms of changes on specific elements of microstructure, Silliman, Bahr, Hnath-Chisolm and Mahecha (2002) reported that bilingual children's use of mental state verbs in narrative retells was inconsistent. Of the children who used these verbs, children in both language proficiency groups (emerging or fluent in English) produced similar numbers of mental state verbs in their English retellings. Interestingly, the fluent English proficient students produced more than double the number of mental state verbs in Spanish compared to the emerging English fluency group. In addition, in examination of bilinguals ages 3 to 7 with and without impairment, Simón-Cereijido and Gutiérrez-Clellen (2009) found that the Spanish narratives elicited a higher number of different verb types than narratives they told in English. These studies illustrate that measures of narrative microstructure are also valid indicators of developmental change and cross-linguistic performance in bilingual children's narrative abilities, though performance on these measures may vary as a result of experience or fluency in each language.

For many bilingual children, the macrostructure of narratives told in L1 and L2 is similar, but they may show differential performance on lexical measures (microstructure) in each language (Iluz-Cohen & Walters, 2012). Specifically, bilingual children may show differences between languages in their lexical diversity (Simón-Cereijido & Gutiérrez-Clellen, 2009) and the types and amount of mental state verbs included in their narratives (Silliman, Bahr, Hnath-Chisolm, & Mahecha, 2002). It is not known whether the developmental changes in narrative macro- and microstructure follow the patterns described by Berman (1988, 2001) in which basic macrostructure is initially developed and complex microstructure follows. It is also unknown the extent to which this pattern is dependent upon cross-linguistic transfer.

Cross-linguistic Transfer

A unique feature of bilingual development is that children have the opportunity to use what they know in their first or stronger language to support development in their second language and vice versa. MacWhinney's Unified Model (2005a) provides a general framework for understanding the process of transferring knowledge of narrative macrostructure from L1 to L2 or from L2 to L1. The Unified Model, which builds on Bates and MacWhinney's Competition Model (1982), predicts that, to the extent possible, bilingual language learners will transfer concepts and forms across their languages. Learners generally attend to the strongest and most reliable cues available in their language input. In narratives, learners may share a conceptual base across both Spanish and English for macrostructure, which may facilitate transfer. For example, both Spanish and English stories contain characters, settings, events, and the other elements of macrostructure.

Recall that Berman suggested that children learn the basic macrostructure of stories before adding the microstructure elements that make a story rich and complete. We would expect that children who learned macrostructure in Spanish would transfer that knowledge to

English once they begin using English. However, the microstructure of stories is generally later developing, so we would expect children to learn the literate language supporting narrative production much later.

To the extent that there are shared semantic concepts across English and Spanish stories, transfer may also occur for some elements of microstructure. For example, knowledge of the roles that conjunctions, adverbs, and mental and linguistic verbs play in sentences could transfer between Spanish and English (Kroll, van Hell, Tokowicz & Green, 2010). Children's specific knowledge and amount of experience with each language may impact their lexical diversity. Most of the academic instruction for bilingual children who are learning English (English Language Learners) in the U.S. is provided in English. In order for children to learn microstructure elements in English, they could mediate them through their native language first, thus increasing the strength of the association between Spanish and the new concept. This means that the microstructure elements included in children's Spanish stories could be more complex than the microstructure elements in their English stories, even when children are primarily exposed to literate language in English.

Language Impairment

There is variation in the macro- and microstructure elements of narratives that are produced by children with and without language impairments. In monolingual children, the macrostructure of stories told by students with primary language impairment (PLI) is less complex than the macrostructure of stories told by TD children (Bishop & Donlan, 2005; Reilly, Losh, Bellugi, & Wulfeck, 2004), and children with PLI produce narratives that contain fewer complete story episodes than their TD peers (Merritt and Liles, 1987). The stories of children with PLI often contain fewer mental and linguistic verbs (Bishop & Donlan, 2005; Manhardt & Rescorla, 2002) and exhibit reduced lexical diversity (Fey, Catts, Proctor-Williams, Tomblin, & Zhang, 2004) indicating an immature microstructure as well. Recently, Colozzo, Gillam, Wood, Schnell, and Johnston (2011) investigated the relationship between the elaboration of content and the accuracy of form in narratives produced by TD children and children with PLI. They found that children in the TD group produced stories that were elaborated in content and accurate in form. However, children in the PLI group produced stories that were either relatively better in content or form, but not both.

The research on bilingual children with and without PLI shows some of the same patterns. With respect to language productivity, as compared to bilingual children with PLI, TD bilingual children typically include a higher number of propositions in narratives produced in both languages (Iluz-Cohen & Walters, 2012; McCabe & Bliss, 2005). However, McCabe and Bliss (2005) reported some degree of similarity in the type of macrostructure elements contained in stories produced by Spanish-English bilinguals with and without PLI. It appears that there are more differences in microstructural elements of bilingual children with and without PLI, specifically for the inclusion of specific lexical elements and the accurate use of verbs. McCabe and Bliss (2005) found that TD children included more past progressive tense clauses than children in their PLI group. Similarly, Gutiérrez-Clellen, Simón-Cereijido and Wagner (2008) reported that Spanish-English bilingual children with PLI presented with lower verb accuracy rates in their spontaneous narratives than those who were TD.

Purpose of the Study

To date, there is limited information documenting growth patterns in the narratives of bilingual children with and without PLI. In this study, we aim to determine whether bilingual children with and without PLI present similar gains from kindergarten to first grade in the macro- and microstructure of stories told in English and Spanish.

Based on the theories of bilingual language development (Kroll & Stewart, 1994; Kroll, et al, 2010; MacWhinney, 2005a) and what we know about typical monolingual narrative development (Berman, 1988), we established predictions for cross-linguistic transfer or interaction in the narrative retellings of bilingual children. We expected young, typically-developing bilinguals to exhibit transfer from one language (Spanish) to the other (English) in macrostructure due to similarities in narrative structure across languages. TD children may also demonstrate some degree of microstructure transfer based on their word knowledge in each language. We expected children with PLI to have greater difficulty transferring knowledge about narratives because of their weaknesses in the domains of language and memory, which support the development of complex skills (MacWhinney, 2005b).

The research questions were:

1. Do bilingual children with PLI and their TD peers differ on macrostructure elements of story retelling in both English and Spanish at kindergarten and first grade?
2. Do bilingual children with PLI and their TD peers differ on microstructure elements of story retelling in both English and Spanish at kindergarten and first grade?

Method

Participants

The sample was drawn from 166 children who participated in a longitudinal study of diagnostic markers of language impairment conducted in central Texas and northern Utah (Gillam, Peña, Bedore, Bohman, Méndez-Pérez, in press). These children attended 12 schools that served a large population of bilingual Latino children. To obtain a large, representative sample, all Latino prekindergarten children who spoke Spanish, English, or both were eligible to participate in the study, regardless of disability status. Eighty-five percent of eligible participants returned consent forms to be involved in the study.

The participants were tested at both kindergarten and first grade using a battery of standardized tests for descriptive purposes. These included the Test of Language Development – Primary: 3rd Edition (TOLD-P: 3; Newcomer & Hammill, 1997), the Test of Narrative Language (TNL; Gillam & Pearson, 2004), and the Bilingual English Spanish Assessment (BESA; Peña, Gutiérrez-Clellen, Iglesias, Goldstein, & Bedore, in development). The mean standard scores for the TOLD-P:3 and TNL, and the mean percentage scores for each of the BESA subtests are presented in Table 1 for each of the groups. Kindergarten children with PLI performed significantly lower than their TD peers on all descriptive language measures ($p \leq .001$). Additionally, the students were assessed with informal measures (story retellings and narrative samples).

In the absence of a gold-standard diagnostic tool for assessing language impairment in bilingual children, a reference standard was used based on the work of Tomblin, Records & Zhang (1996). Three bilingual speech language pathologist's (SLPs), each with more than 10 years of experience diagnosing and treating PLI in bilingual children, independently rated children's performance in the areas of vocabulary, morphosyntax, and narration in English and Spanish on a 6-point scale (0 = severe/profound impairment, 1 = moderate language impairment, 2 = mild impairment, 3 = low normal performance, 4 = normal performance and 5 = above normal performance). The same scale was used to assign a summary rating for each domain in English and Spanish, as well as an overall summary rating in each language. Children were identified as having a language impairment if they were assigned a

rating of 2 or below in each language by at least two of the raters. To minimize threats to validity from ascertainment bias, the diagnostic status of both affected and unaffected participants was established by the same procedures and reference standards. Additionally, only one of the three independent bilingual SLPs had any direct contact with the children.

Of the 166 children that were followed for two years, 21 were rated as having PLI by at least two certified SLPs. The overall percentage agreement among the expert bilingual clinicians was 95% (475 agreements of 498 potential agreements across all raters). An AC_1 statistic (Gwet, 2008), which corrected for chance, was used to calculate interrater agreement. The overall AC_1 statistic was .87, indicating high levels of agreement across the three raters.

To control for potential effects of a variety of variables that are known to moderate language development, the twenty-one children who were identified as PLI were each matched to a typically developing child from the larger sample based on sex, age in months at time of final testing (within 5 months; mean difference = 1.86), month of birth (within 4 months; mean difference = 1.31), IQ (within 1 SD; mean difference = 9.05) score on the Universal Non-verbal Intelligence Test (Bracken & McCallum, 1998) and language exposure. To determine the amount of language exposure, we used information about percent of exposure and use of Spanish and English at kindergarten and first grade, as well as age of first English exposure. This information was collected during parent and teacher interviews (Bohman, Bedore, Peña, Mendez-Perez, & Gillam, 2010; Gutiérrez-Clellen & Kreiter, 2003; Restrepo, 1998). For percent of exposure and use of Spanish and English, parents were asked to provide hour by hour information about which language their children heard and used during a typical day of the week and weekend. Information about a typical school day was collected from teacher interviews. The average percent of input and output in English and Spanish for each week during the school year was calculated by merging the parent and teacher input.

Between kindergarten and first grade, the percentage of Spanish input/output decreased as the percentage of English input/output increased at school. For the purpose of matching, the percentages of language input and output data collected during kindergarten and first grade were averaged. Matches were selected to be within 20% English and Spanish input and output (on average matches were within 7.58%) at both kindergarten and first grade. To the extent possible, we selected TD and PLI children with similar ages of first exposure to English. For 14 of the TD-PLI pairs, the difference was between 0 and 1 year; and for 7 pairs, the difference was between 1 and 2 years. At the group level, average age of first exposure for the PLI group was 2.2 years and 2.2 years for both the TD and PLI groups. The groups were highly similar on age of first exposure to English as demonstrated by 99% overlap in the distributions of the two groups in the age of first exposure to English.

Table 2 displays means for matching variables for PLI and TD groups. There were no significant differences among the means on any of the matching variables ($p > .05$). As is evident by Cohen's d values and the percentage of overlap in the distributions, the two groups were highly similar on all variables except nonverbal IQ, where there were moderate differences. Eight children (38%) in each group were receiving dual language instruction at school with Spanish instruction ranging from 16% to 83% of the day as reported by teachers. The other 13 participants (62%) in each group were enrolled in English only educational programs.

Procedures

Participants were asked to retell one of two wordless picture books, *Frog on His Own* (Mayer, 1973) or *One Frog Too Many* (Mayer, 1975), in both English and Spanish during their kindergarten and first grade years. Stories were collected at the children's schools in a quiet room over two sessions, the first pair in Spanish and the second pair in English. The

scripts for these stories are available on the SALT Software website ("Frog Story Scripts"). An examiner provided a model story and then asked each child to retell the same story. The examiner showed the children the pictures as they told the story and allowed children to review the pictures during retelling. Examiners were bilingual SLPs and trained bilingual graduate students. To limit code-switching, we counterbalanced the language of testing and testing sessions across children. Even though examiners were bilingual, all testing during a given data collection session was done in one language.

Story language was counterbalanced across children so that the same number of children retold each story in English and Spanish. From kindergarten to first grade, each child retold the same stories in the same language. The samples were recorded using digital audio recorders (Sony MS-515 or ICDP320) with an external microphone (ECM 115) and transcribed using Sony digital voice editor version 2.4.04 similar to the procedure followed in Bedore, Peña, Gillam, and Ho (2010). Two trained research assistants transcribed all stories into Systematic Analysis of Language Transcripts (SALT) (Miller & Iglesias, 2008). All complete and intelligible utterances were included in the analysis. Individual words that were code switched to the non-target language were mazed out. Responses were coded only for the words produced in the target language so as to not inflate the scores.

Coding—Macro- and microstructure elements were coded with an adaptation of the Monitoring Indicators of Scholarly Language (MISL; Gillam, Gillam, & Reece, 2012) tool. Specific rubrics for scoring retells of the Mercer Mayer wordless picture books *Frog on His Own* and *One Frog Too Many* were developed in both English and Spanish. Seven macrostructure elements (character, setting, initiating event, plan, action, consequence, internal response) and five microstructure elements (coordinating conjunctions, subordinating conjunctions, mental and linguistic verbs, adverbs, and elaborated noun phrases) were each scored on a scale from 0 to 3, with higher scores reflecting more complex narrative structures, yielding a total macrostructure score (with a possible score of 21) and a total microstructure score (with a possible score of 15). Appendix A contains a scoring rubric for *Frog On His Own* and the precise words the child had to include in his or her retell to receive credit for each category. Similar rubrics with Spanish examples were also used. Cronbach's alpha for both the macro and microstructure portions of the adapted version of the MISL indicate it has high internal consistency. For the macrostructure portion, Cronbach's alpha was .81 for both English and Spanish. For the microstructure, Cronbach's alpha was .77 for English and .83 for Spanish. It also has high construct validity with oral narration scores of the Test of Narrative Language in kindergarten (r = .76 for macro/micro) and first grade (r = .65 for macro/micro).

Reliability—The first author trained 3 undergraduate and 2 graduate research assistants who were pursuing degrees in speech-language pathology to score the story retells. The Spanish retells were transcribed and scored by students who were fluent Spanish bilinguals; the English retells were transcribed and scored by native English speakers. Nearly thirty percent of the stories at each phase (24 of the 84 kindergarten and 24 of the 84 first grade retells) were randomly selected and scored by a second research assistant. Half of the stories that were rescored were English and half were Spanish. Inter-rater agreement was calculated by dividing the number of item agreements by the total number of possible items in each scale and for the total number of items. Inter-rater reliability for scoring was high with all values above 95.2%, and an average reliability of 96%.

Results

Using a multivariate approach to Repeated Measures ANOVA to control for correlations between and among the independent and dependent variables, we compared the children

with primary language impairments (PLI) to the matched children who were typically-developing (TD) on their macrostructure and microstructure scores from both English and Spanish retells produced at kindergarten and first grade. The between-subjects factor was Group (PLI, TD). The within-subjects factors were Language (English, Spanish) and Time (Kindergarten, First grade). To control for the effects of English language experience, the average input and output percentages in English was entered as a covariate. Preliminary tests of the homogeneity of slopes assumption were not significant, indicating that group differences on the macrostructure and microstructure measures did not vary as a function of English language experience.

Macrostructure

For the macrostructure score, there were significant main effects for Group, with the TD group outperforming the PLI group, ($F(1,39) = 20.88$, $p < .001$, $\eta^2p = .349$), and for Time, with first graders performing higher than kindergarteners [Wilk's Λ, $F(1,39) = 4.865$, $p = .03$, $\eta^2_p = .111$]. The main effects were subsumed by a significant Time x Group interaction [Wilk's Λ, $F(1,39) = 6.26$, $p = .017$, $\eta^2_p = .138$] and a significant interaction between Language and the experience covariate [Wilk's Λ, $F(1,39) = 4.0$, $p = .05$, $\eta^2_p = .093$]. The three-way Time x Group x Language interaction was not significant.

The significant Time x Group interaction indicates that the macrostructure scores for the two groups improved at different rates. Follow-up tests were conducted to evaluate the pairwise differences among the means for children in the PLI and TD groups. Tests of simple main effects using the estimated marginal means procedure in SPSS (Green & Salkind, 2011) revealed that the children in the TD group earned higher macrostructure scores than the children in the PLI group at kindergarten [$p = .002$] and at first grade [$p < .001$]. However, an interaction comparison using univariate ANOVA on the difference scores revealed that the TD group made significantly larger improvements in the macrostructure scores from kindergarten to first grade than the PLI group [$F(1, 40) = 6.19$, $p = .017$, $\eta^2_p = .134$].

The significant interaction between Language and the language experience covariate indicated that experience with English affected English and Spanish macrostructure differently. Students who had the most experience in English tended to earn higher English macrostructure scores and lower Spanish macrostructure scores. There were moderate correlations between English experience and English macrostructure scores at kindergarten ($r=.355$) and at first grade ($r=.204$). However, English experience was not related to Spanish macrostructure scores at kindergarten ($r= -.118$) or at first grade ($r = -.022$).

As seen in Table 3, for both groups, the macrostructure scores improved from kindergarten to first grade for stories told in English and Spanish. Across the two languages, the macrostructure scores for the TD group were significantly higher than the scores for the bilingual children with PLI. However, it is clear that the children in the TD group had greater gains from kindergarten to first grade than the children in the PLI group. This was true for both the English stories as well as the Spanish stories.

Microstructure

For this dependent variable, there was a significant Group main effect [$F(1,39) = 20.51$, $p<.001$, $\eta^2_p = .345$] favoring the TD group over the PLI group. There was also a significant main effect for Language [Wilk's Λ, $F(1,39) = 5.33$, $p = .026$, $\eta^2_p = .120$] favoring Spanish over English. As with the macrostructure analysis, these significant main effects were subsumed by a significant interaction between Language and the experience covariate [Wilk's Λ, $F(1,39) = 4.23$, $p = .047$, $\eta^2_p = .098$]. Those students in both the TD and PLI groups who had the most experience in English tended to earn higher English microstructure

scores and lower Spanish microstructure scores. Similar to the macrostructure results, Pearson correlations revealed that English experience related positively to English microstructure scores at kindergarten (r=.345) and at first grade (r=.193) but negatively to Spanish microstructure scores at kindergarten (r= −.100) and at first grade (r = −.137).

Finally, there was a significant 3-way Group x Time x Language interaction [Wilk's Λ, $F(1,40) = 4.73$ $p = .036$, $\eta^2_p = .108$]. As seen in Table 3, the bilingual TD children had a large improvement in the microstructure scores from kindergarten to first grade for the stories told in Spanish, but the microstructure scores for their English stories decreased slightly from kindergarten to first grade.

Post-hoc tests of simple main effects using the estimated marginal means procedure in SPSS revealed that there were significant changes in the Spanish microstructure scores from kindergarten to first grade for the TD children (p = .01) There were no significant changes in the microstructure scores from kindergarten to first grade for the stories told by the TD children in English (p = .354). Likewise, for the PLI children, there were no significant differences in the microstructure scores from kindergarten to first grade for the English or Spanish stories (p = .354 and p = .661, respectively).

Cross-language Relationships

We were interested in exploring the extent of the relationship between the English and Spanish measures at kindergarten and first grade. Partial correlations, which are indices of effect size, were calculated to assess the degree to which the English and Spanish scores were linearly related. We controlled for experience in English by partialing out average English input and output. Partial correlation coefficients were computed for the four possible cross-language relationships (English kindergarten and first grade to Spanish kindergarten and first grade) between the macrostructure scores and the microstructure scores (see Tables 4 and 5).

For macrostructure, two of the four partial correlations were significant and moderately large in magnitude. In addition to the English and Spanish macrostructure scores being correlated at first grade, when language influence was held constant, the Spanish kindergarten macrostructure scores also predicted the English first grade macrostructure scores.

For microstructure, none of the partial correlations were significant. English and Spanish microstructure scores were not related across languages at either point in time.

Discussion

The primary purpose of this study was to determine if bilingual children with language impairments differed from their typically developing peers on macrostructure and microstructure elements of stories retold in English and Spanish in kindergarten and first grade. A secondary purpose of the study was to determine if Spanish macro- and microstructure scores predicted English macro- and microstructure scores over and above the influence of language experience in English. Within a sample of 166 bilingual children, 21 were identified as evidencing language impairment in both languages. These children were matched with 21 typical children on age, gender, nonverbal IQ, and language exposure. This multiple variable approach to matching ensured that the two groups had similar timing and proportion of exposure to English and Spanish. This degree of matching was performed to disambiguate the role of language experience and language ability in narrative development. By controlling for sex, age, nonverbal IQ and language exposure we hoped to better examine the nature of the dissociation between general aspects of bilingual language

development and specific aspects of narrative development. The PLI group earned lower scores than their TD peers on all language measures in English and Spanish (Table 1). The findings suggest that our approach was successful in identifying the hypothesized effects.

Macrostructure

The interaction between language and experience revealed a relationship between the language of the retells and the average amount of English experience. This finding is consistent with other studies examining the role of input and narrative production (Gutiérrez-Clellen, 2002). In this case, more experience in English as a result of formal schooling translated to higher growth on English macrostructure scores, but more modest growth on Spanish macrostructure scores between kindergarten and first grade. The shift to better performance in English after a year of formal schooling is consistent with cross-sectional studies of vocabulary growth in U.S. Spanish-English bilinguals (Kohnert, Bates & Hernandez, 1999).

The significant Time x Group interaction indicated that the macrostructure scores for the TD group and the PLI group improved at different rates. The TD children demonstrated greater gains in their macrostructure scores from kindergarten to first grade than the children in the PLI group. This finding held for both languages. Even though the macrostructure of the English and Spanish retells by children in the PLI group improved, their English and Spanish retells at first grade were lower than the retells that were produced in both languages by the children in the TD group at kindergarten.

Across the two groups, the general increase in story grammar elements from kindergarten to first grade is consistent with the common pattern of narrative development seen in monolingual and bilingual children as reported by Berman (1998, 2001). That is, over time, children first learn a general framework for telling stories. As their storytelling ability develops, children start providing more details in their stories, which requires the use of more complex and explicit microstructure elements. Bilingual children, whether PLI or TD, increased their use of macrostructure elements over time. These findings suggest that bilingual children follow the general pattern of narrative development seen in monolingual children.

Our findings are also consistent with prior research showing that the macrostructure of stories told by monolingual students with PLI is less complex than the macrostructure of stories told by their TD peers (Bishop & Donlan, 2005; Reilly, Losh, Bellugi, & Wulfeck, 2004). Qualitative analyses of the retells suggested that the TD children improved their use of characters, initiating events, and internal responses in the Spanish retells at first grade. For their first-grade English retells, the TD children appeared to improve their use of characters, settings, actions, initiating events, and internal responses. There were fewer improvements in the retells produced by children with PLI. Their improvements were limited to including more actions in their first grade Spanish retells and more characters and internal responses in their English retells.

Microstructure

Recall that we found a significant three-way Group x Time x Language interaction for the microstructure scores. This occurred because the TD children increased their use of microstructure elements from kindergarten to first grade in their Spanish retells, but their use of microstructure elements in their English retells decreased slightly. Specifically for the TD group, the majority of children increased their use of coordinating conjunctions and subordinating conjunctions in the Spanish retells from kindergarten to first grade. However, these same microstructure elements decreased or remained stable over time in the English

retells. The PLI group made minimal improvements from kindergarten to first grade in both languages, with the majority of scores remaining stable over time. Elaborated noun phrases in the English retells were the only microstructure element that increased over time for the PLI group.

Parent and teacher questionnaire data suggested that the amount of Spanish input and output decreased from kindergarten to first grade. Despite the fact that the TD children were hearing and using less Spanish over time, their Spanish microstructure scores still increased. It may be that these bilingual TD children mediated the literate language they were exposed to in English through their knowledge of Spanish. That is, the students' longer-term access to Spanish and their greater knowledge of Spanish may have helped them produce longer and more elaborate Spanish retells, even though the instruction they were receiving was in English. This cross-language mediation may have strengthened their knowledge of literate language (microstructure) due to a stronger connection between Spanish and their conceptual base (Kroll, et al., 2011). It is likely that the connections between microstructure and lexical knowledge were less refined in children with PLI (as demonstrated by their lower performance), hence, they were not able to progress as quickly as their TD peers in using literate language to elaborate on individual events in the stories they told.

Post-hoc analyses of the significant Time x Group x Language interaction led us to examine the differences between the English and Spanish stories told at first grade. Silliman et al., (2002) found that students who were fluent in their English language proficiency produced more than twice the number of mental state verbs in their Spanish retellings, while students who were in the earlier stages of English acquisition included similar number of mental state verbs in stories told in English as well as Spanish. We saw similar numbers of mental and linguistic verbs in the TD childrens' Spanish and English retellings at first grade. However, stories retold in Spanish by the TD group contained more of the other four elements of microstructure (coordinating and subordinating conjunctions, adverbs, and elaborated noun phrases) than the stories retold in English at first grade.

At kindergarten the English retellings by the children in the TD group contained more microstructure elements in every category: subordinating conjunctions, coordinating conjunctions, mental and linguistic verbs, adverbs, and elaborated noun phrases than the retells by their PLI matches. The Spanish retells yielded similar results. With the exception of mental and linguistic verbs, frequency counts revealed more advanced use of microstructure elements for the stories told in Spanish by the children in the TD group at kindergarten compared to the stories told in Spanish by the children in the PLI group. The developmental model proposed by Berman suggests that as children mature, they begin to include advanced lexical forms to describe individual events. In this case, it may be that the children in the TD group had reached the stage of narrative development in which they were beginning to focus on literate language structures in their retells. Since the children in the PLI group had less knowledge of narrative structure, as demonstrated by their lower macrostructure scores, they were not yet in a position to be able to focus on including more advanced literate language forms in their retellings.

Cross-language Influences

The Unified Model (MacWhinney, 2005a; 2005b) provides a general framework for understanding the process of transfer of skills from one language to another. This model considers the amount of input children receive in their first language and hypothesizes that children will attend to the strongest and most reliable cues that they have received in that language. Concepts and connections may be more readily available in the L1, and children can transfer that knowledge into their L2.

We estimated the relationships between the English and Spanish measures (at first and second grade) while holding average English input and output constant. Two of the four partial correlations for macrostructure were significant and moderately large in magnitude. In addition to the first-grade scores being correlated in English and Spanish, we found that the macrostructure scores in Spanish at kindergarten predicted the macrostructure scores in English at first grade. The fact that children's macrostructure scores for Spanish retells at kindergarten were correlated with macrostructure scores for English retells at first grade supports the notion that macrostructure is readily transferable between languages. Most children received schooling in English between kindergarten and first grade, and we saw corresponding increases in both Spanish and English retells for both groups of children. The Unified Model explains this bidirectional relationship between English and Spanish for macrostructure. Because macrostructure is similar across languages, children were able to easily transfer their knowledge from their L1 to their L2 and vice versa.

We did not observe the same effects of transfer for Spanish to English microstructure. In fact, there were no significant correlations between languages at the microstructure level. We hypothesize that this occurred because the majority of instruction in literate language occurred in English. MacWhinney (2005b) emphasized that speakers transfer as much as they can. There may be differences between ways that microstructure is expressed in Spanish and English that potentially interfere with direct transfer. Indeed, Berman's developmental model suggests that increases in microstructure should only occur after basic story structure is firmly established. We may not have seen transfer from Spanish to English microstructure because these children were at the early stages of mastering story structure..

The fact that macrostructure was more highly associated across languages than microstructure informs the hierarchy of transfer. Tighter associations between macrostructure than microstructure are consistent with the notion of underlying conceptual knowledge supporting the development of both languages (Kroll, et al., 2011). This finding can further refine the proposed hierarchy whereby comparable schema (i.e., the macrostructure measure) transfer more readily than specific literate language forms (i.e., the microstructure measure). Note that greater associations between English and Spanish macrostructure than English and Spanish microstructure were already evident by kindergarten.

Conclusions

The story retelling abilities of children with and without PLI improved from kindergarten to first grade. However, bilingual children with PLI performed significantly lower that their TD peers on measures of macrostructure and microstructure at both points in time. We predicted that there would be cross-linguistic transfer in narratives, as suggested by MacWhinney's Unified Model. Indeed, we found that Spanish macrostructure scores at kindergarten predicted English macrostructure scores at first grade when English experience was held constant. However, this same relationship across languages was not evident in microstructure, suggesting that bilinguals transferred conceptually-dependent narrative skills easily, but then had to independently learn the nuances of each language to be successful using literate language. During that process, usage of some aspects of the sentences contained in L1 stories (in this case, mental and linguistic verbs in Spanish) exceeded usage of these same language structures in L2 stories, even when children begin to have more school-like storytelling experience in L2. Because most children with PLI need repeated exposure to establish strong connections between their L1 and L2, they may have had more difficulty transferring their knowledge from one language to another. This may interfere with their ability to make cross-linguistic connections of linguistic forms to the same degree as their TD peers.

Finally, the results of this study support the use of narrative retells for assessing language performance in two languages. Our story retelling metric (the adapted MISL) was sensitive to developmental changes in macrostructure and microstructure in English and Spanish. The analysis of narrative retells in L1 and L2 could be useful for monitoring intervention progress in bilingual students who have deficits in narratives.

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Appendix – One Frog Too Many

Element	0	1	2	3
Character	• Pronouns only (e.g., he, it, she, they)	**Must include 3 of the following:** • A boy • A big frog • A little frog • A turtle	**3 characters plus:** • The/a dog	**3 characters plus:** • The pets
			Count only the highest value for total points	
Setting	• No reference to time or place (e.g., A boy walked with his frog.)	**Must include 1 of the following:** • 0ne day • a pond • home • outside • his room	**Must include 2 of the following:** • 0ne day • a pond • home • outside • his room	**Must include 3 of th following:** • 0ne day • a pond • home • outside • his room
Initiating Event	• No problem or "starting" event	**Must include 1 of the following:** • The boy saw a box/present. • The big frog said, "I don't like you." • The boy wouldn't let the big frog get on the raft. • The boy was shocked at what he saw, how did the big frog get there and where was the little frog.	**Must include 2 of the following:** • The boy saw a box/present. • The big frog said, "I don't like you." • The boy wouldn't let the big frog get on the raft. • The boy was shocked at what he saw, how did the big frog get there and where was the little frog.	**Must include 3 of th following:** • The boy box/pres • The big f said, "I d like you. • The boy wouldn't big frog the raft. • The boy shocked he saw, h the big fr there and was the l frog.
Internal Response	0 Character feelings, desires or thoughts	**Must include 1 of the following:** • boy/everyone was excited • they were angry • big frog didn't like being told that he couldn't come with them. • frog/everyone was happy • boy/pets were sad • frog felt sorry	**Must include 2 of the following:** • boy/everyone was excited • they were angry • big frog didn't like being told that he couldn't come with them. • frog/everyone was happy • boy/pets were sad • frog felt sorry	**Must include 4 of th following:** • boy/ever was exci • they wer • big frog like bein that he c come wi • frog/ever was happ • boy/pets sad • frog felt

Element	0	1	2	3
Plan	No statements provided about the character's plan to solve the problem.	**Child includes nonspecific plans:** • Frog/boy was gonna…… • Frog/boy wanna…..	**Must include 1 of the following:** • The frog thought nobody was looking. • The big frog decided to be nice.	**Must include 2 of th following:** • The frog nobody v looking. • The big f decided t nice.
Actions	None of the actions Child must use the listed verbs but any tense will be accepted.	**Must include 2 of the following:** • He opened the box • big frog bit the little frog's leg • the boy scolded the big frog • big frog jumped on the raft • big frog kicked the little frog • big frog stuck his tongue out • turtle tapped the boy • boy and pets searched • little frog landed	**Must include 4 of the following:** • He opened the box • big frog bit the little frog's leg • the boy scolded the big frog • big frog jumped on the raft • big frog kicked the little frog • big frog stuck his tongue out • turtle tapped the boy • boy and pets searched • little frog landed	**Must include 7 of th following:** • He opene box • big frog l little frog • the boy s the big fr • big frog j on the ra • big frog l the little • big frog s tongue o • turtle tap boy • boy and p searched • little frog
Consequence	None of the consequences. Child must use the listed verbs but any tense will be accepted.	**Must include 1 of the following:** • the little frog was inside the box. • big frog still didn't like the little frog. • now he was the only frog • big frog was nice to the little frog	**Must include 2 of the following:** • the little frog was inside the box. • big frog still didn't like the little frog. • now he was the only frog • big frog was nice to the little frog	**Must include 3 of th following:** • the little was insid box. • big frog s didn't lik little frog • now he w only frog • big frog t to the litt
Macro Total				**Total Macrostructu**
Microstructure				
Coordinating Conjunctions	No coordinating conjunctions	**Must include 1 of the following:** • so • but • and • for	**Must include 2 of the following:** • so • but • and • for	**Must include 3 of th following:** • so • but • and • for

Element	0	1	2	3
Subordinating Conjunctions	No subordinating conjunctions	**Must include 1 of the following:** • who had three pets/who was dressed • when he saw what was in it/ when the boy got home/when the boy turned around • as it was leaving the shore/as he walked home • where he had a raft that the big frog had jumped	**Must include 2 of the following:** • who had three pets/who was dressed • when he saw what was in it/ when the boy got home/when the boy turned around • as it was leaving the shore/as he walked home • where he had a raft that the big frog had jumped	**Must include 3 of th following:** • who had pets/who dressed • when he what was when the home/wh boy turn around • as it was the shore walked h • where he raft that frog had
Mental and Linguistic Verbs	No mental or linguistic verbs	**Must include 1 of the following:** • said, “I don’t like you.” • cried, “ouch ouch!” • scolded the big frog, “That was a mean thing to do.” • thought nobody was looking • knew what had happened • felt sorry for what he had done	**Must include 2 of the following:** • said, “I don’t like you.” • cried, “ouch ouch!” • scolded the big frog, “That was a mean thing to do.” • thought nobody was looking • knew what had happened • felt sorry for what he had done	**Must include 3 of th following:** • said, “I d like you. • cried, “o ouch!” • scolded t frog, “Th mean thi do.” • thought was look • knew wh happened • felt sorry what he done
Adverbs	No adverbs	**Must include 1 of the following:** • all of a sudden • just as it was leaving • from now on • very excited/ very mean • being mean again • still didn’t like • all around	**Must include 2 of the following:** • all of a sudden • just as it was leaving • from now on • very excited/ very mean • being mean again • still didn’t like • all around	**Must include 3 of th following:** • all of a s • just as it leaving • from now • very exc mean • being me again • still didn • all aroun
Elaborated noun phrase	No determiners or adjectives	**Must include 1 of the following:** • the/a/an + noun (e.g., the boy, a frog, a pond, the raft)	**Must include:** • 2 modifiers + noun (e.g., the big frog, the open window, the little frog,	**Must include:** • 3 modifi noun (e.g big frog’

Element	0	1	2	3
		• adjective + noun (e.g., large box, three pets, big frog, little frog)	the boy's pets, the two frogs,	
Total Microstructure				**Total Microstructu**
Total Score				**Total Score**

Appendix B. Examples of English Retelling and Scoring of "One Frog Too Many" by a TD child at Kindergarten and First Grade

English Kindergarten Story

That's the little boy. He found the present. There's a big frog and a little frog in there. Then he opened it and he was excited. The little frog came out. They lift it up. The big frog didn't like the little frog. The big frog was growling at the little frog. The big frog bit the little frog's leg. The boy picked them up. He got all mad at him. They were riding the turtle's back. He was dressed just like a pirate. He kicked him off. He hear them cry. He got mad. They told him to stay. He can't go up then. And then he jumped on a raft. The little frog noticed the big frog was coming. The big frog kicked him off. The turtle looked. He sticked his tongue under him. The turtle tapped the little kid's leg and tried to get him to touch him. When he turned around the big frog was only on there. They didn't find the little frog. He cried when he got home. He sat. He cried when he got in his rom and he was sorry. He was sorry again. The little frog jumped in and landed on the big frog's head. They were being nice to each other.

Story Element	Points Awarded	Examples from story
Character	1	a boy, a big frog, a little frog, a turtle
Setting	2	home, his room
Initiating Event	0	
Internal Response	2	boy was excited, frog felt sorry
Plan	0	
Actions	2	he opened the box; big frog bit the little frog's leg; big frog jumped on the raft; big frog kicked the little frog; turtle tapped the boy; little frog landed
Consequence	0	
Coordinating Conjunctions	1	And
Subordinating Conjunctions	1	when the boy turned around
Mental and Linguistic Verbs	0	
Adverbs	0	
Elaborated Noun Phrase	3	The big frog's head

English First Grade Story

Once upon a time there was a boy and three pets: a turtle, a dog, and a frog. One day the boy saw a box with his name on it. It was for him. He opened it and there was a little frog. The

big frog did not like the little frog. The kid laid the little frog on the floor. The big frog said “I don’t like you”. The big frog bit the little frog’s leg. The boy picked the little frog up. He said, “No biting other people’s leg.” The little boy he was dressed up like a pirate. The little frog and the big frog rode together on the turtle’s back. The little frog cried. Everyone was mad at the big frog. The kid said, “You won’t go. You will stay right there.” They left. The big frog jumped right when they was leaving. Nobody noticed except the little frog. The big frog looked at the little frog. The turtle was sleeping. The big frog kicked the little frog off and sticked his tongue out. The turtle got the boy and said, “How did the big frog get on here?” They searched and searched and searched. They couldn’t find the little frog. The boy cried when he got home. The other pets were mad at the frog. The boy is crying on this bed. The pets were sad too, but the boy heard something outside. The little frog jumped in. He landed on the big frog’s head. They got friends again.

Story Element	Points Awarded	Examples from story
Character	3	a boy, a big frog, a little frog, a turtle, a dog, the pets
Setting	3	one day, home, outside
Initiating Event	2	the boy saw a box, the big frog said, “I don’t like you”
Internal Response	1	pets were sad
Plan	0	
Actions	3	he opened the box; big frog bit the little frog’s leg; big frog jumped on the raft; big frog kicked the little frog; big frog stuck his tongue out; boy and pets searched; little frog landed
Consequence	0	
Coordinating Conjunctions	2	And, but
Subordinating Conjunctions	1	When the boy got home
Mental and Linguistic Verbs	1	said, “I don’t like you”
Adverbs	0	
Elaborated Noun Phrase	3	The little frog’s leg

Table 1

Mean Scores for Descriptive Language Measures by Group at Kindergarten

Measure	PLI Mean (SD)	Z score	TD Mean (SD)	Z score
BESA Spanish Semantics	30.30 (15.8)	−1.99	47.9 (21.4)	−.77
BESA Spanish Morphosyntax	26.25 (17.0)	−2.38	57.72 (26.5)	−.45
BESA English Semantics	32.7 (14.4)	−2.18	53.2 (12.75)	−.71
BESA English Morphosyntax	15.9 (14.6)	−3.32	47.1 (25.4)	−1.43
TOLD Spoken Language Quotient	64 (6.41)	−2.4	79.75 (10.72)	−1.35
TNL Narrative Ability Index	58.71 (6.77)	−2.75	77.50 (13.54)	−1.5

Note: BESA scores are percentage scores based on the normative group of children in their dominant language in the kindergarten age range. Average scores for each subgroup were Spanish Semantics *M* =59.04%, *SD* =14.36%; Spanish Morphosyntax *M* =65.14%, *SD* =16.29% English Semantics *M* = 63.04%, *SD* =13.91%; English Morphosyntax *M* =70.69%, *SD* =16.46%. The TOLD and TNL scores are standard scores (*M* = 100, *SD* = 15).

Table 2

Group Means, Cohen's d effect sizes and % of overlapping data for the matching variables.

Matching Criteria	PLI	TD	Effect size	Percentage of Overlapping Data
Age in Months – Kindergarten	68.38 (4.80)	68.67 (3.81)	.06	99.5
Age in Months – First Grade	81.00 (4.43)	81.10 (4.81)	.02	99.8
Percentage of Input/Output English – Kindergarten	54.31 (20.97)	54.80 (22.18)	.02	99.8
Percentage of Input/Output English – First Grade	62.44 (24.08)	59.55 (19.50)	.13	99.0
Year of First Exposure to English	2.23 (1.32)	2.17 (1.33)	.06	99.5
Nonverbal IQ (UNIT) Standard Score	88.57 (11.77)	93.52 (12.62)	.40	72.6

Table 3

Mean Values for English and Spanish Scores for PLI and TD Participants at Kindergarten and First Grade.

	English				Spanish			
	PLI		TD		PLI		TD	
Grade Level	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***
KINDERGARTEN								
Macrostructure	2.38	(2.18)	4.90	(2.97)	2.67	(2.06)	3.81	(2.50)
Microstructure	2.43	(1.08)	4.38	(2.11)	2.86	(1.88)	4.33	(2.54)
FIRST GRADE								
Macrostructure	4.05	(2.50)	7.67	(3.27)	3.29	(2.17)	5.90	(3.11)
Microstructure	2.81	(1.67)	4.00	(1.90)	3.05	(1.72)	5.38	(2.71)

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Table 4

Partial Correlations between Macrostructure Scores in English and Spanish at Kindergarten and First Grade Controlling for Average Input and Output in English at Kindergarten and First Grade.

Macrostructure Scores	Spanish Kindergarten	Spanish First Grade
English Kindergarten	.149	.107
English First Grade	.369*	.317*

Table 5

Partial Correlations between Microstructure Scores in English and Spanish at Kindergarten and First Grade Controlling for Average Input and Output in English at Kindergarten and First Grade.

Microstructure Scores	Spanish Kindergarten	Spanish First Grade
English Kindergarten	.083	.155
English First Grade	.117	.210