Research Article

Risk for Poor Performance on a Language Screening Measure for Bilingual Preschoolers and Kindergarteners

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Purpose: This study documents the risk for language impairment in Latino children who had different levels of exposure to English and Spanish.

Method: A total of 1,029 preschool- and kindergarten-age children were screened in the domains of semantics and morphosyntax in both Spanish and English. Parent report was used to document current exposure to and use of Spanish and English, as well as year of first exposure to English. Risk for language impairment was compared for language group, year of first English exposure, age, and mother's education.

Results: While bilingual children's scores on each subtest were significantly lower compared to their functional monolingual peers, they were no more likely to fall in the at-risk range based on a combination of all 4 subtests. Maternal education and year of first English exposure were weakly associated with risk for language impairment but not with language group (via 5 levels of first and second language exposure).

Conclusions: Prevalence of risk for language impairment when both languages are tested is not related to language group.

Key Words: screening, bilingual, language, impairment, risk

There is a critical need to develop language performance measures that are appropriate for testing young bilingual children. According to a 2008 report by the U.S. Census Bureau, 21% of the U.S. school-age population speaks a language other than English at home, and this proportion is expected to double by 2030 (Davis & Bauman, 2008). Approximately one third of these children (7% of the total school enrollment) are English language learners (ELLs; U.S. Department of Education, 2006). Children who speak Spanish as a home language compose 79% of the bilingual and ELL children in the United States (Goldenberg, 2008; U.S. Department of Education, 2008).

Research demonstrates that language experience is directly related to language development in young children (e.g., Hart & Riseley, 1995). Compared to monolinguals whose input is concentrated in one language, bilingual children receive less input in each language they are learning. They also have less practice using each language compared to monolingual children, regardless of whether they learn the two languages simultaneously or successively. Because bilingual children have less in-depth experience with each language they speak, some parents and professionals believe that they are at increased risk for language delay (Kohnert, 2008; Kohnert, Yim, Nett, Kan, & Duran, 2005; Paradis, 2007). This notion has been expressed via the weaker links hypothesis (Gollan, Montoya, Cera, & Sandoval, 2008) that divided practice across two or more languages results in weaker associations between concepts and how they are expressed in each language.

In contrast, it is possible that there are developmental benefits of dual language use. That is, switching between two languages could confer developmental advantages related to advanced inhibitory control skills that help children overcome the potential disadvantage of distributed language practice and knowledge (Bialystok, Craik, & Luk, 2008a). For example, in a study comparing balanced bilinguals, partial bilinguals, and monolinguals on a grammaticality judgment task, Bialystok (1988) found that bilinguals were more accurate at making judgments requiring greater control (grammatical with semantic anomalies). Balanced bilinguals additionally demonstrated greater accuracy on items requiring analysis (ungrammatical with semantic congruity). In a replication study, Bialystok and Majumder (1998) found that bilingual children performed better on tasks requiring greater control, but there were no statistically significant differences between the two types of bilinguals on tasks requiring analysis.

It is possible that sustained use of two languages could also provide a developmental advantage to bilinguals

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(Bialystok, 2007). This advantage for longer term use has been observed in adults who showed advantages in faster reaction time and fewer errors on vocabulary tasks compared to younger bilinguals who had relatively less cumulative exposure to the two languages (Gollan et al., 2008). Similarly, Carlson and Meltzoff (2008) found that children who were bilingual from birth demonstrated advantages on executive function tasks compared to monolinguals and children newly immersed in a second language (L2). It is possible that bilingualism could have inhibitory effects on some aspects of language development while having supportive effects on other areas of language.

Socioeconomic Status and Language Performance

Socioeconomic status (SES) has been linked to language development in a number of studies (e.g., Fazio, Naremore, & Connell, 1996; Hoff, 2003). In particular, maternal education level is associated with the child's vocabulary development (Hart & Riseley, 1995), language comprehension, and narration (Cutting & Dunn, 1999; Fazio et al., 1996). For example, Dollaghan et al. (1999) collected language samples and administered vocabulary tests to 240 children age 3. Norm-referenced tests and conversational language samples varied as a function of maternal education, with a significant upward linear trend in mean scores with increasing maternal education level.

Although there are clear differences in language learning trajectories in children related to SES, the finding that children from low-SES backgrounds have an increased incidence of language impairment is equivocal (Schuele, 2001). Tomblin et al. (1997) reported that in an epidemiological sample of monolingual children, risk for language impairment was associated with both SES and with race. In contrast, a number of studies have demonstrated that the rate of language impairment is similar across different levels of SES (Nittrouer & Burton, 2005; Pruitt & Oetting, 2009; Zubrick, Taylor, Rice, & Slegers, 2007).

SES may moderate the characteristics of language impairment. For example, in a study of referral rates of speech and language impairment over a 15-month period in the United Kingdom, researchers found that SES in the community matched the referral rate (Broomfield & Dodd, 2004), demonstrating that SES did not increase risk for language impairment. The patterns of language strengths and weaknesses were different, however, with low-SES children demonstrating more comprehension deficits. These patterns are suggestive of an interaction between the nature of language impairment and the language environment.

Research on the relationship between bilingualism and the risk for language impairment must account for SES. In the United States, children who speak Spanish as their first language (L1) are more likely to come from low-SES backgrounds (Krashen & Brown, 2005). In addition, ELLs are likely to be disproportionately represented in special education. In a study of a large diverse school district, de Valenzuela, Copeland, Qi, and Park (2006) found that most of the ELL children who received special education services were disproportionally of Latino background. Among Latino students in general, ELLs were overrepresented as having language impairment, but non-ELL students were underrepresented in the language impairment category.

Test Performance in Bilingual Children

The higher representation of ELLs in special education is likely related to standardized test performance. Bilingual children perform lower than monolingual children on tests administered only in the mainstream language (Bialystok, Craik, & Luk, 2008b; Bialystok, Luk, Peets, & Yang, 2010; Pearson, Fernández, & Oller, 1993). In one of the few studies of language screening for bilingual children, Westman, Korkman, Mickos, and Byring (2008) compared the language profiles of 81 bilingual (Swedish-Finnish) and monolingual (Swedish) kindergartners. All the children who were characterized as bilingual were Swedish dominant or equally balanced in Swedish and Finnish, according to parent report. A screening test consisting of three receptive language tests and two expressive tests was administered in Swedish, the mainstream language. Children who earned composite scores on the five language screening tests that fell at or below the lowest 20th percentile were determined to be at risk for language impairment. The risk for scoring in the impairment range was greater for the bilingual group (54%) than the monolingual group (10%). But these results did not take the bilinguals' other language into account.

When bilingual children's performance on standardized language tests is compared to norms for monolingual children, bilingual children tend to perform below average, even in their stronger language. This may occur because their language experience and knowledge are distributed across two languages (Bialystok et al., 2008b; Umbel, Pearson, Fernández, & Oller, 1992). Therefore, assessment in only one language is not likely to be representative of bilingual learners' overall language ability. In the United States, a lack of understanding of these issues has resulted in disproportionate placement of Latino children in special education and related services (Artiles, Rueda, Salazar, & Higareda, 2005; de Valenzuela et al., 2006). Similar patterns of disproportionate representation of bilingual children in special education programs have been documented in the United Kingdom (Mennen & Stansfield, 2006; Stow & Dodd, 2003; Winter, 1999), Singapore (Gupta & Chandler, 1993), Australia (McLeod & McKinnon, 2007), Sweden (Berhanu, 2008; Salameh, Nettelbladt, Håkansson, & Gullberg, 2002), and Hong Kong (Cheuk, Wong, & Leung, 2005).

Studies of the relationship between bilingualism and language impairment illustrate the competing hypotheses regarding risk for language impairment in bilingual children. On one hand, Cheuk et al. (2005) found a relationship between multilingualism and language impairment in young children. These authors administered translated tests to participants in all the languages they spoke. The severity of language delay varied as a function of the number of languages that were spoken. That is, children who were exposed to three or more languages demonstrated more severe language deficits than bilinguals, suggesting that multilingualism was related to degree of impairment. On the other hand, Paradis, Crago, Genesee, and Rice (2003) compared the use of tense and nontense morphemes in French and

English in monolingual and bilingual children with language impairments. The bilingual and monolingual children demonstrated similar patterns of error, leading the authors to conclude that bilingual children were not more impaired than monolingual children. Note that Chuek et al. (2005) administered general language measures that were translated or adapted, while Paradis et al. (2003) analyzed data from grammatical measures that were specific to the tense-marking difficulties of many children with language impairments. Thus, the inconsistencies in the results of these two studies may be due, in part, to the use of different types of language measures.

The current study was designed to obtain empirical evidence of the relationships between language experience and performance on measures of semantics and syntax in English and Spanish using the Bilingual English Spanish Oral Screener (BESOS; currently in development). The BESOS is based on the Bilingual English Spanish Assessment (BESA; also currently in development), a test developed for the purpose of identifying language impairment in U.S. Spanish-English bilinguals. Because maternal education and length of exposure to two languages may be associated with language outcomes, we explored this relationship with performance on the BESOS.

The specific research questions were as follows:

1. Do children in five language experience groups (English functional monolingual, bilingual with more English experience, balanced bilingual in English and Spanish, bilingual with more Spanish experience, and Spanish functional monolingual) and two risk groups (risk vs. no risk) perform differently on measures of semantics and morphology in English and Spanish?

2. Are children in the bilingual language groups more likely to perform in the at-risk range on screening tests administered in English and Spanish?

3. Are differences in the likelihood of risk for language impairment a function of maternal education, year of first English exposure, and age?

4. Are there different patterns of failure in semantics and morphosyntax tasks in English and Spanish within the children who were at risk for language impairments?

Method

Participants

This study was conducted in 12 schools across three school districts in Central Texas and Northern Utah. The study was approved by two universities' institutional review boards. Schools were selected that served a large proportion of bilingual Latino children. Children were recruited to the study during the spring of their prekindergarten year or during kindergarten enrollment in late summer (prior to kindergarten entry in the fall). All Latino prekindergarten children in these schools who spoke Spanish, English, or both were invited to participate. Of the eligible participants, over 85% returned completed consent forms. To obtain a large representative sample, children were not excluded on the basis of any identified disability. The range of bilingual education across these school districts has been described by Bohman, Bedore, Peña, Mendez-Perez, and Gillam (2010). The districts provide English as a second language, transitional bilingual education, and English-only classrooms using several models of education. By the second or third grade, most of the children are enrolled in English-only classes. By screening before entry into kindergarten, we were able to test them before they began participation in formal bilingual education.

A total of 1,192 children, including 757 previously reported in Bohman et al. (2010), were recruited from the three districts. There were 161 children (13.5%) excluded from this study due to the following reasons: missing parent questionnaire data (94; 7.9%), missing race or ethnicity identifiers (2; 0.2%), or having non-Hispanic ethnicity (65; 5.4%). Two additional children were excluded due to the English language screening instrument tests not being completed and the daily language input questionnaire not being completed, resulting in a final sample of 1,029 children.

Measures

Parent interviews. The children's parents completed a questionnaire (Gutiérrez-Clellen & Kreiter, 2003) that was administered in the parent's preferred language in person or over the telephone. Parents answered general questions about their children's health and education history, and provided information about the mother's level of education. Maternal education was scored from 1 through 7 based on level of education (where $0 = $ *no formal education,* $1 = $ *less than seventh-grade education,* $2 = $ *ninth-grade education,* $3 = $ *partial high school,* $4 = $ *high school graduate,* $5 = $ *partial college or specialized training,* $6 = $ *college degree,* and $7 = $ *graduate degree*; based on Hollingshead, 1975). Maternal education was selected due to documented associations with child development (Dollaghan et al., 1999; Magnuson & Duncan, 2002).

Parents were also asked to report on the language their child heard and used each hour of the day across typical weekdays and weekend days. We calculated separate weekly percentages of input and output in Spanish and English, and then averaged the input and output percentages to create an experience (input plus output averaged) composite for each language.

Children were divided into five language groups based on the average proportion of English and Spanish they heard (input) and used (output) during a typical week. The five language groups were defined as follows: functional monolingual English (FME; 80% or more English input-output; $n = 227$), bilingual English dominant (BED; 60%–80% English input-output; $n = 119$), balanced bilingual (BL; 40%–60% input-output of each language; $n = 262$), bilingual Spanish dominant (BSD; 60%–80% Spanish input-output; $n = 170$), and functional monolingual Spanish (FMS; 80% or more Spanish input-output; $n = 251$). Grouping in this manner allowed comparison between groups of children with similar L1 and L2 experience.

Input percentages and output percentages yielded different configurations of groups. Kappa coefficients were used to compare the experience composite language groups with language groupings that were based on input percentages only (unweighted κ = .645) and language groupings that were based on output percentages only (unweighted κ = .664). The results show substantial agreement, indicating the contribution of both input and output scores in the composite scores.

BESOS. Four subtests (Morphosyntax and Semantics in both English and Spanish) of the BESOS were administered to all children. BESOS items were drawn from the larger item sets on the Morphosyntax and Semantics subtests of the BESA. Items for the BESOS included those that together yielded the best sensitivity and specificity for children between the ages of 4;6 (years;months) and 5;6. Because of age-related differences in item response and discrimination, slightly different item sets were selected for children who were 4 and for children ages 5 and 6. The BESOS Morphosyntax subtests consist of 16 (age 4) or 17 (age 5–6) items. The BESOS Semantics subtests contain 10 (age 4) or 12 (age 5–6) items. All four of the subtests were given in one 15–20-min session in random subtest order.

Performance on corresponding English and Spanish subtests of the BESOS correlates between .64 and .87 (Summers, Bohman, Gillam, Peña, & Bedore, 2010). Coefficient alpha was calculated for the BESOS items from the normative sample used for the BESA. Internal consistency was in the acceptable to good range with alphas ranging from .698 (English, 5-year-old version) to .765 (English, 4-year-old version). Internal consistency for the morphosynax screeners was good to very good; alphas ranged from .778 (Spanish, 4-year-old version) to .908 (English, 5-year-old version).

The cut-points for at-risk status were determined on the basis of group means and standard deviations. The normative group for each language included children whose language use included 40% or more usage in that language. Thus, children whose English use was less than 40% were excluded from the English norm, and those whose Spanish use was less than 40% were excluded from the Spanish norm. Means and standard deviations for each subtest in each language were calculated for three age groups: ≤59 months, 60–66 months, and ≥67 months. Consistent with other studies of academic risk in bilingual children (e.g., Vaughn, Linan-Thompson, & Hickman, 2003) and monolingual children (e.g., Frisk et al., 2009), we set the at-risk cut-point at or below the 25th percentile for each test and age group sample. The 25th percentile corresponds to −.68 *Z* and is commonly used in standardized language screening tests (Law, Boyle, Harris, Harkness, & Nye, 2000). This cut-point, while maximizing sensitivity, also is likely to result in increased false positives. Clinically, complete diagnostic testing would follow screening to determine true language impairment.

Children's performance on each subtest was compared to the 25th percentile cut-point regardless of their language dominance. Children were considered to be at risk for language impairment if they scored below the 25th percentile on at least three of the four subtests. We used the criterion of performance in the at-risk range on three subtests because it could be applied equally to children at all levels of English and Spanish dominance, and would necessarily involve performance in both languages and on both types of language measures (semantics and morphosyntax).

Procedure

Screening. All participants were individually administered the four subtests of the BESOS. Screening occurred prior to or at the beginning of the kindergarten year. The subtests were given in random order by bilingual speech-language pathologists and undergraduate and graduate students enrolled in communication sciences and disorders programs. Because children had varying levels of proficiency and dominance in each language, we discontinued a given subtest if children did not respond to five items in a row. As long as children were responding verbally (even if the responses were incorrect), testing continued until all items in the target age range were administered. Total scores were recorded for each child on each subtest.

Statistical analysis. Descriptive statistics were calculated for the study sample characteristics and the BESOS dependent variables. Chi-square or one-way analysis of variance was used to determine whether language group (FME, BED, BL, BSD, or FMS) varied as a function of child age, mother's education, or SES.

A multivariate analysis of variance was used to test whether there were differences between language groups, risk groups, and their interaction on a linear composite of the four BESOS scales. Follow-up univariate analysis of variance was used to identify whether overall findings were consistent across the four BESOS scales. If there was a statistically significant effect for language group, multiple comparisons were used to test which pairwise means were different using a Tukey-Kramer adjusted *p* value to control for increased Type I error due to the number of comparisons.

Risk status was explored first, comparing those children who were determined to be at risk versus those who were not at risk. Three separate multivariate logistic regression models were used to test whether age of first English exposure, maternal education, and language group predicted risk status while controlling for age in months. Separate multivariate logistic regression models included the multiplicative interaction terms. To help with interpretation of results, the logistic regression coefficient parameter estimates were exponentiated (Long, 1997). The exponentiated regression coefficients represent odds ratios. Odds ratios greater than 1 represent a positive relationship between an increase of 1 in the predictor and a corresponding increase in the conditional odds of being at risk. Odds ratios less than 1 represent a negative relationship between an increase of 1 in the predictor and a corresponding decrease in the conditional odds of being at risk.

For children who scored in the at-risk range, we explored three possible combinations of BESOS language scales on which study participants could be at risk (all four scales, both English scales and one Spanish scale at risk, or both Spanish scales and one English scale at risk). The purpose of this analysis was to understand the possible configurations of risk

by domain and language as a function of language group. As a follow-up to this analysis, a chi-square test was used to assess the association between language group and type of risk status for only those children who were at risk. To aid in interpretation of the results, individual cell chi-square values were generated and interpreted based on whether the cell chi-square was greater than 3.84 ($p < .05$) or 6.64 ($p < .01$).

Results

The primary purpose of the study was to explore the relationship between language group, experience with English, and performance in semantics and morphosyntax in both languages as related to risk for language impairment. First, we provide information about the sample, followed by results as related to the research questions.

Descriptive characteristics of the sample. Table 1 shows the breakdown of children's characteristics by language group based on the composite of weekly input and output in English and Spanish. The table displays the number of children of each sex in each of the five language groups, mother's level of education, and year of first exposure to English. A chi-square test of association showed no statistically significant relationship between language group and sex, $\chi^2(4) = 7.4$, $p = .12$. There was a statistically significant difference between the language groups' mean age in months, $F(4, 1024) = 7.94$, $p < .001$. Tukey-Kramer adjusted post hoc multiple comparison analysis demonstrated that children in the FME ($M = 64.1$ months), BED ($M = 64.8$ months), and BL ($M = 64.3$ months) groups were older than children in the FMS group ($M = 62.5$ months). There was also a statistically significant difference between maternal education across the five language groups, $F(4, 1024) = 53.2$, $p < .001$. Tukey-Kramer adjusted post hoc comparisons indicated that the mothers' education scores were higher for the FME group ($M = 4.3$) than the other groups. With respect to SES, the BED group had a higher SES score ($M = 3.2$) than the FMS group ($M = 2.6$). Finally, there was a statistically significant difference between language groups for age of first English exposure,

$F(4, 1024) = 237.5$, $p < .001$. Tukey-Kramer adjusted post hoc comparisons showed all groups were statistically significantly different from each other. As expected, the children in the FME group had the earliest exposure to English ($M = 0.09$ years), followed in order by the BED group ($M = 1.0$ year), the BL group ($M = 2.0$ years), the BSD group ($M = 3.0$ years), and the FMS group ($M = 3.9$ years).

Table 2 displays the means and standard deviations for each screening scale subdivided by language group. Note that we report raw scores for each scale, and each has slightly different numbers of items. Cross-language differences also influence patterns of performance in each language. Research shows that the developmental trajectory for English morphosyntax seems to be slower than that of children learning Spanish morphosyntax (see Bedore & Leonard, 2001, and Bedore & Peña, 2008, for further discussion). Thus, for these reasons, children may not look the same in both languages.

Subtest performance by language group and risk status. The first research question asked whether children with different levels of exposure to English and Spanish would score differently on measures of morphosyntax and semantics in English and Spanish. There were 315 children who performed in the at-risk range and 714 children who were not at risk (see Table 3 for a descriptive breakdown by language group). Multivariate analysis of variance using Wilks's lambda showed that there were statistically significant differences on language scores between risk group, $F(4, 1016) = 225.2$, $p < .001$, and language group, $F(16, 3105) = 90.3$, $p < .001$. The interaction between risk group and language group was also significant, $F(16, 3105) = 9.3$, $p < .001$. Univariate analysis of variance showed the same pattern of statistically significant results for risk group, language group, and their interaction for each BESOS scale. Figure 1 shows the pattern of means by BESOS scale risk group and language group. To interpret the interactions, post hoc multiple comparisons of language group means by risk group were conducted.

English morphosyntax. For English morphosyntax, children in the FME group scored significantly higher than

TABLE 1. Sex, age, maternal education, and year of first English exposure by language exposure group.

Participant characteristic	FME (n = 227)	BED (n = 119)	BL (n = 262)	BSD (n = 170)	FMS (n = 251)
Sex					
Female	98	58	128	95	132
Male	129	61	134	75	119
Age (months)	64.1_{ab} (4.9)	64.8_a (5.3)	64.3_{ab} (4.8)	63.1_{bc} (4.8)	62.5_c (4.1)
Maternal education	4.3_a (1.1)	3.2_b (1.6)	2.8_{bc} (1.6)	2.8_{bc} (1.6)	2.6_c (1.5)
First English exposure (year)	0.09_a (0.6)	1.0_b (1.6)	2.0_c (1.9)	3.0_d (1.7)	3.9_e (1.1)

Note. Means with different subscripts are statistically significantly different from each other at $p < .05$ using Tukey's honestly significant difference test; standard deviations in parentheses. Functionally monolingual English (FME) children have 80%–100% English input/output and 0%–20% input/output in Spanish; bilingual English dominant (BED) children have 60%–80% English input and 20%–40% input in Spanish; balanced bilingual (BL) children have 40%–60% input/output in both languages; bilingual Spanish dominant (BSD) children have 60%–80% Spanish input/output composites and 20%–40% input/output composites in English; functionally monolingual Spanish (FMS) children have 80%–100% Spanish input/output composites and 0%–20% input/output composites in English.

TABLE 2. Bilingual English Spanish Oral Screener scores by language proficiency group.

Subtest	Number of items	FME	BED	BL	BSD	FMS
English morphosyntax	17	8.9 (4.1)	7.7 (4.4)	4.9 (4.4)	3.3 (3.5)	1.3 (2.2)
English semantics	10, 11	6.8 (2.1)	6.2 (2.4)	4.9 (2.6)	4.0 (2.8)	2.2 (2.3)
Spanish morphosyntax	16	0.3 (1.1)	5.6 (5.0)	8.2 (4.5)	10.3 (4.3)	10.4 (3.8)
Spanish semantics	12	0.9 (1.8)	5.5 (3.5)	7.1 (2.7)	7.8 (2.5)	7.5 (2.3)

Note. English morphosyntax: 4- and 5-year-old children are administered a total of 17 items with 5 items in common; English semantics: 4-year-olds are administered a total of 10 items, 5-year-olds respond to 11 items, and there are 6 items in common; Spanish morphosyntax: 4- and 5-year-olds are administered 16 items, and there are 8 items in common; Spanish semantics: 4- and 5-year-old children are administered 12 items, and there are 8 items in common. Standard deviations in parentheses.

children in the three bilingual groups and the BMS group. Children in the no risk group generally scored higher than their language group counterparts with risk for language impairment. These patterns were moderated by both language and risk group. Specifically, within the no risk group, children in the FME group ($M = 10.3$) and the BED group ($M = 9.1$) differed statistically from all other groups (which also differed statistically from each other): BL ($M = 6.4$), BSD ($M = 4.2$), and FMS ($M = 0.6$) children. For children who were at risk, the FME group ($M = 5.2$) scored significantly higher than all other groups; the BED group ($M = 3.0$) scored significantly higher than BSD ($M = 1.2$) and FMS ($M = 0.6$) children. BL children ($M = 1.8$) scored significantly higher than FMS children.

Comparisons across language group are of interest clinically to better understand effects of differentiating risk among different levels of bilingualism. While the no risk FME and BED groups scored higher than all other risk and no risk groups, the post hoc comparisons demonstrated that there were no significant differences between FME, FME risk, and BL not-at-risk groups, or for the BSD not-at-risk and BED risk groups. BL and FME not-at-risk groups scored significantly higher than FMS not at risk, as well as BL, BSD, and FMS at risk. The FMS not-at-risk group did not score significantly different from the BED, BL, BSD, and FMS risk groups.

English semantics. Similarly, for semantics, the FME children scored higher than the other groups, and children with no risk for language impairment scored higher than those with risk within each language group. Specific patterns for the no risk group demonstrated that FME ($M = 7.6$) and BED ($M = 7.0$) children scored higher than the other

no risk language groups. BL ($M = 5.7$), BSD ($M = 4.8$), and FMS ($M = 2.8$) children differed significantly from each other. Following similar patterns as morphosyntax, within risk group on English semantics, FME ($M = 4.8$) children scored significantly higher than all other groups. BED ($M = 3.5$) and BL ($M = 3.1$) children scored significantly higher than BSD ($M = 2.1$) and FMS ($M = 1.2$) children.

Across language group and risk, FME and BED not-at-risk groups scored higher than all other risk and not-at-risk groups. BL and BSD not-at-risk and FME at-risk scored higher than BED, BL, BSD, FMS at-risk, and FMS not-at-risk groups. There were no significant differences between FME, FME risk, and BL and BSD not-at-risk groups. There were no differences between the FMS not-at-risk group and the BED, BL, and BSD risk groups.

Spanish morphosyntax. Again, children in the no risk groups scored higher than those in the risk group, but within risk patterns by language group were different. For the no risk group on Spanish morphosyntax, FMS ($M = 12.2$) and BSD ($M = 12.0$) scored significantly higher than BL ($M = 9.7$), BED ($M = 6.7$), and FME ($M = 0.4$). BL, BED, and FME scored significantly different from each other. For children in the risk group, FMS ($M = 7.4$) scored significantly higher than BL ($M = 4.9$). These two groups and BSD ($M = 5.23$) scored significantly higher than the risk BED ($M = 1.8$) and FME ($M = 0.8$) children.
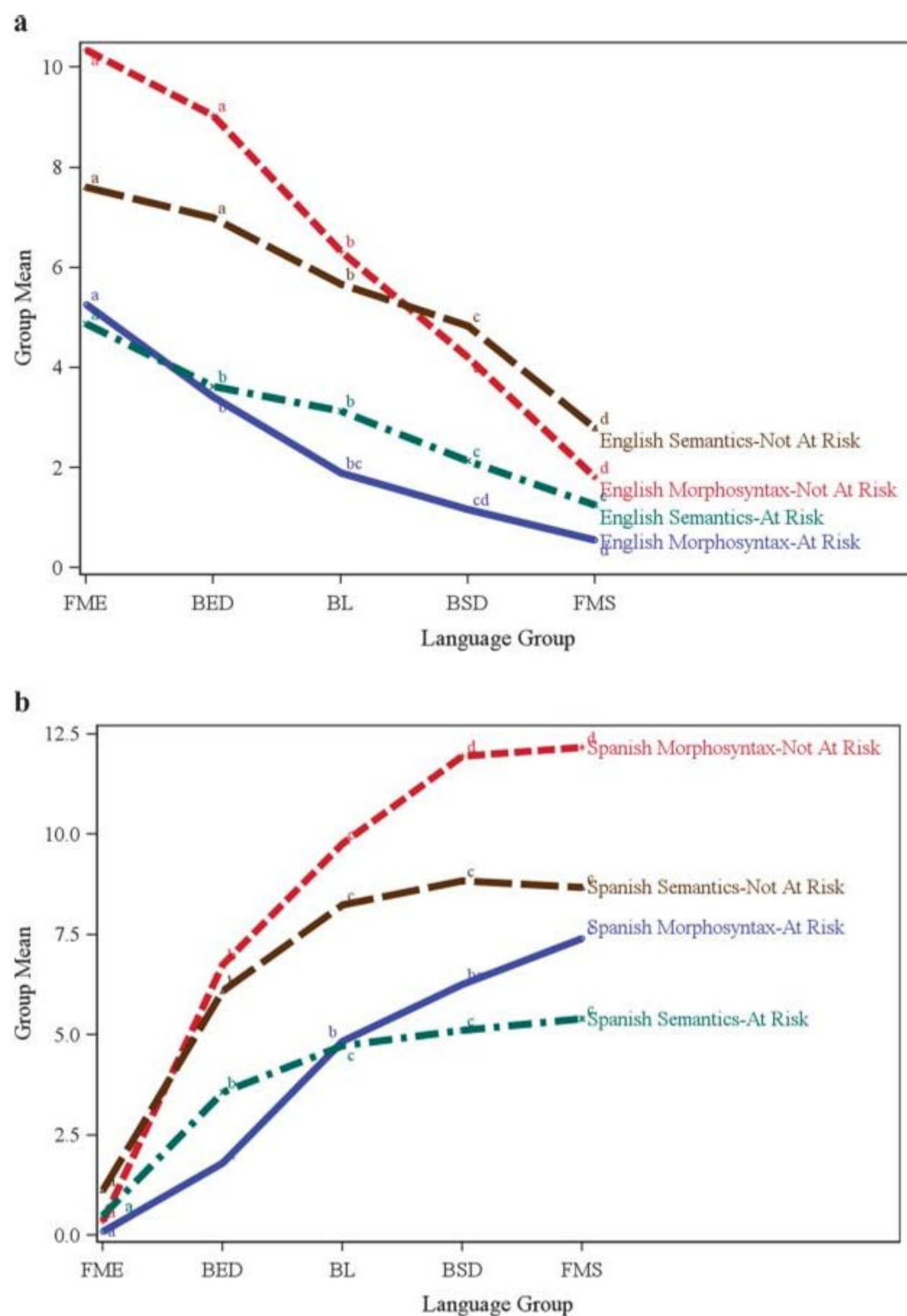
Across risk and language, FMS, BSD, and BL not-at-risk groups scored significantly higher than all other risk and not-at-risk groups. BED not-at-risk and FMS at-risk groups scored higher than BL, BED, FME at-risk, and FME not-at-risk groups. There were no significant differences between BED not-at-risk and BSD and FMS at-risk groups. FME not-at-risk, BED, and FME at-risk groups scored similarly on Spanish morphosyntax.

Spanish semantics. Similar to the previous findings, children in the no risk group scored higher on Spanish semantics compared to those in the risk group. Within risk group, patterns by language group were also similar. For the not-at-risk children on Spanish semantics, FMS ($M = 8.9$), BSD ($M = 8.7$), and BL ($M = 8.2$) scored significantly higher than the BED ($M = 6.2$) and FME ($M = 1.2$) group. BED scored significantly higher than FME. For the risk group on Spanish semantics, FMS ($M = 5.4$), BSD ($M = 5.0$), and BL ($M = 4.7$) groups scored higher than BED ($M = 3.2$)

TABLE 3. Twenty-fifth percentile risk status categorized into two groups by output and input language groups.

Risk Status	FME	BED	BL	BSD	FMS
At risk					
n	66	26	81	49	93
%	29%	22%	31%	29%	37%
Not at risk					
n	161	93	181	121	158
%	71%	78%	69%	71%	63%

FIGURE 1. Bilingual English Spanish Oral Screener (BESOS) scores by language group and risk status. (a) BESOS English subscales; (b) BESOS Spanish subscales. Means within lines with different values differ at *p* < .05 adjusted for multiple comparisons. FME = functional monolingual English; BED = bilingual English dominant; BL = balanced bilingual; BSD = bilingual Spanish dominant; FMS = functional monolingual Spanish.

and FME (*M* = 0.3), who scored significantly different from each other.

BSD, FMS, and BL not-at-risk groups scored higher than the other risk and not-at-risk groups. FMS, BSD, BL, and BED risk groups scored higher than FME not-at-risk and risk groups. Risk and language group comparisons demonstrated no differences between FME not-at-risk and FME and BED risk groups.

In general, the pattern of results indicated that balanced bilingual children who were not at risk scored lower than their functional monolingual and language dominant counterparts in *both* languages. In English, BL children with no risk scored similarly to FME children at risk. As expected,

English and Spanish dominant children who were not at risk and their functional monolingual counterparts scored similarly in the stronger language. The children who scored in the risk range scored lower on Morphosyntax and Semantics subtests compared to their not-at-risk peers within each language group. Note that at-risk and not-at-risk groups converged in performance when tested in the weaker language.

Distribution of risk. The second and third research questions related to potential differences in the likelihood of risk as a function of language group, maternal education, year of first English exposure, and age. The significantly

lower scores for the BL group compared to dominant bilinguals (BSD and BED) and functional monolinguals (FMS and FME) could suggest that there is increased risk for language impairment in BL groups. Multivariate logistic regression models were used to test whether group, age of first English exposure, and maternal education predicted risk status (risk vs. not at risk) controlling for age in months. Results indicated that there was no statistically significant relationship between language group and risk, $F(4, 1023) = 1.9$, ns.

Modeling using logistic regression indicated that independent of language group, first year of English exposure was positively related to risk, $F(1, 1026) = 5.4$, $p < .05$, with an odds ratio of 1.08. Odds ratios (ORs) can also be interpreted in terms of percentage change in odds for each one unit increase in predictor by subtracting 1 and multiplying by 100 (Allison, 1999). Using this method, for each additional year of English exposure, participants were 8% more likely to be at risk. The cumulative risk of a child being exposed at 5 years versus during the first year would be an OR of 1.48, meaning that later exposure resulted in children being 48% more likely to score at risk in preschool or kindergarten. Maternal education was negatively related to risk, $F(1, 1026) = 4.5$, $p < .05$, with higher education levels related to lower risk ($OR = 0.91$). Age in months was statistically significant, but the effect of age was relatively small ($OR = 0.96$). Higher age in months was related to lower risk, indicating that as children grow older and more experienced with language, they are somewhat less likely to score as at risk for language impairment.

We also examined whether year of first English exposure, maternal education, and language group differences depended on the child's age. None of the multiplicative interactions were significant. These results showed that there was no differential relationship due to age, suggesting that associations between mother's education, year of first English exposure, and risk were consistent between 4 and 6 years of age.

Risk status and subtest failure. The final question concerned the patterns of subtest failure in the children who were at risk for language impairments. We compared three possible configurations of subtest failure associated with risk status (at-risk performance on all four BESOS scales, at-risk performance on both English scales and one of the two Spanish scales, or at-risk performance on both Spanish scales and one of the English scales). There was a significant association between subtest failure and language group, $\chi^2(8) = 177.4$, $p < .001$ (see Table 4). FME children were less likely to show a pattern of risk on all four BESOS scales ($p < .01$). In contrast, FMS children were more likely to score in the at-risk range on all four subtests ($p < .05$). FME and BED children were less likely to show a pattern of risk ($p < .05$) via failure on both English scales plus one Spanish scale, while more of the FMS children demonstrated this pattern of performance ($p < .01$). BL and BSD patterns did not differ from those of the other groups. A similar but reversed pattern was seen in children who scored in the risk range on both Spanish scales plus one English scale. FME and BED children were more likely to show this pattern ($p < .01$), while BSD ($p < .05$) and FMS ($p < .01$) were

TABLE 4. 25th percentile risk status categorized into three groups by averaged language group.

Risk group	FME	BED	BL	BSD	FMS
All 4 scales at risk					
n	8	12	36	18	33
%	12%	46%	44%	37%	35%
Both English scales at risk					
n	0	4	29	25	60
%	0%	15%	36%	51%	65%
Both Spanish scales at risk					
n	58	10	16	6	0
%	88%	38%	20%	12%	0%

Note. Association between risk status and language group was significant, $\chi^2(8) = 177.4$, $p < .001$.

less likely to perform in the at-risk range on both Spanish scales and one English scale. Here, BL children were not significantly different from any other group.

These results highlight the associations between dominance and pattern of subtest performance. Children who were dominant in English were more likely to enter the at-risk group because they performed in the at-risk range on two Spanish subtests and one English subtest. Similarly, children who were dominant in Spanish were likely to enter the risk group because they performed in the risk range on two English subtests and one Spanish subtest. Children in the BL group showed both of the three-scale at-risk patterns.

Discussion

There are few studies comparing risk for language impairment in children who are in the process of learning more than one language. Further, there are no studies we know of that address risk for language impairment in bilingual children's two languages. Yet, well-meaning professionals, including teachers, speech-language pathologists, principals, and special educators, often tell parents that focusing on one language is best for children who have language impairments (see Bohman et al., 2010; Kohnert, 2008; Paradis, 2007, for discussion). Making these kinds of suggestions in the face of little to no evidence is ill-advised or unjustified. A large sample of Latino bilinguals and monolinguals such as that presented here can inform our understanding of the nature of language risk in these children.

The logic that bilingual children might be at greater risk of demonstrating poor performance on language measures is related to the fact that in order to use the same level of language complexity as their monolingual peers, bilingual children need to learn almost double the words and many more sentence patterns. However, bilinguals would be likely to encounter fewer words and sentence patterns in each of their languages and would have less time to practice what they are learning in each language in comparison to monolinguals. Thus, the links between meaning, lexicon, and sentence patterns might be more likely to be weaker in bilinguals than monolinguals (Mindt et al., 2008).

Despite the greater load of organizing and accessing the semantic and syntactic systems of two languages, the Latino bilingual children who participated in this study did not fall in the risk category at a higher rate than the Latino monolingual children. Thus, our results demonstrate that bilingualism, per se, was not related to increased risk for language impairment. Our explanation for this finding is that the bilingual children in our study were able to draw from experiences in English and Spanish to respond to semantics and morphosyntax questions in both languages. That is, the bilingual and monolingual children had similar levels of overall language knowledge.

Consistent with the weaker links hypothesis (Gollan et al., 2008; Mindt et al., 2008), bilinguals as a group tended to score lower than monolinguals on the Semantics and Morphosyntax subtests (see Figure 1). However, an examination of the results of the comparisons indicated that at-risk status did not differ significantly across groups (see Table 3). In terms of added risk, no group demonstrated evidence of the predicted weaker links hypothesis. This same pattern of findings also reveals that there was no group that appeared to be at an advantage relative to the other groups once we controlled for age, such as might be suggested by the work of Bialystok et al. (2008a, 2008b).

Although there were no language group differences for risk, there was a significant but weak relationship with year of first exposure to English. In this study, all children across the continuum of exposure to Spanish and English were moving toward greater English proficiency due to new experiences in a primarily English-speaking school environment (see Kohnert, Bates, & Hernandez, 1999, for another example). Children with longer term experiences with both languages were somewhat less likely to score in the at-risk range. This finding provides modest support for developmental benefits of dual language use as expressed in the inhibitory control hypotheses (Bialystok et al., 2008a). Longer exposure to both Spanish and English allowed children to stabilize their language knowledge, perhaps leading to higher scores on the BESOS subtests in both languages. While the screening tasks were not direct tests of cognitive control, the semantics and grammatical subtests required control over the selection of the correct language and analysis of the language dependent skills related to semantic organization and grammatical cloze tasks.

This pattern of language advantage for bilinguals with extended bilingual exposure is consistent with the literature on bilingualism and aging. For example, Gollan et al. (2008) found that the greater cost in reaction time and errors for naming low-frequency words in bilinguals' weaker language was moderated by longer exposure to two languages for the older participants in the study. It is possible that longer bilingual exposure was related to the more stable performance and lower risk rate observed for children who had English exposure at an early age. This notion is consistent with findings that children who were bilingual from birth demonstrated advantages on executive function tasks compared to monolinguals and children newly immersed in second language learning (Carlson & Meltzoff, 2008). A related possibility is that children who are newly exposed to English are going through a period of reorganization or weakening of the L1 as they begin to be exposed to English (Kan & Kohnert, 2005).

While there were differences in maternal education levels by language group (see Table 1), the overall effect was relatively small. This finding is somewhat in contrast to expectations that children from lower SES backgrounds would be at greater risk for language impairment, especially given known associations between vocabulary size and SES (Hart & Riseley, 1995; Hoff, 2003; Hoff & Tian, 2005). However, a number of studies demonstrate limited associations between speech and/or language impairment and SES (Nittrouer & Burton, 2005; Pruitt & Oetting, 2009; Zubrick et al., 2007). Our results are consistent with findings of weak associations between language impairment and SES (Bishop, 1997). In general, however, the weak associations of risk with maternal education and year of first exposure suggest that risk is more generally related to predisposition for language impairment rather than the language learning environment per se. It would be worthwhile to continue to explore the predictions of these models in regard to children's cumulative knowledge.

The differences between the scoring patterns of bilinguals and monolinguals are worth noting. Bilinguals' scores were generally lower, but we believe they were able to compensate for gaps in their knowledge of one language by taking advantage of knowledge in their other language. This enabled them to score above the cut-point on at least two subtests. Post hoc examination of the failure patterns for not-at-risk children who scored below the cut-point on one subtest supports this idea (see Table 5). Notice that the balanced bilinguals were fairly well distributed in terms of which one of the four subtests they failed. Children who were dominant in one language or the other tended to fail a subtest in their language of least exposure, but that was not the case 100% of the time. Thus, our results may reflect the effects of bilinguals' distributed knowledge (Pearson,

TABLE 5. Patterns of performance for children who failed only one subtest.

Scale failed	FMS	BSD	BL	BED	FME
English morphosyntax	18 (69.23%)	23 (69.70%)	17 (25.37%)	7 (31.82%)	0 (0.00%)
English semantics	6 (23.08%)	8 (24.24%)	20 (29.85%)	4 (18.18%)	0 (0.00%)
Spanish morphosyntax	2 (7.69%)	1 (3.03%)	21 (31.34%)	9 (40.91%)	6 (85.71%)
Spanish semantics	0 (0.00%)	1 (3.03%)	9 (13.43%)	2 (9.09%)	1 (14.29%)

Note. Shown are numbers of cases within risk group and, in parentheses, percentages of risk cases within language group presenting with each of three profiles.

1998; Peña & Bedore, 2009; Peña, Bedore, & Zlatic-Guinta, 2002; Windsor & Kohnert, 2004).

In contrast, monolinguals' knowledge was concentrated in the language they had available to them. We also observed these patterns in the combinations of subtests that were failed by children in the at-risk group. Of the children who failed three or more subtests, about one third failed all four. Functional monolingual children demonstrated failure rates associated with the language they did not know. Yet, the FMS speakers more often showed the pattern of failing all four subtests compared to the other groups. FMS children had the most recent exposure to English, and the same process of reorganization discussed above may be affecting these results. Another possibility is that with very recent exposure to English, these children were more actively suppressing Spanish. This idea is consistent with Linck, Kroll, and Sunderman (2009), who found that English-speaking college students studying Spanish via immersion (in Spain) scored lower on English fluency tasks compared with same-level students studying Spanish in the United States. The three bilingual groups (BED, BL, and BSD) demonstrated slightly different patterns than functional monolinguals. Children dominant in English or Spanish were more similar to their functional monolingual counterparts, but there were exceptions. Balanced bilinguals demonstrated both patterns of failure rate.

We cannot ignore the possibility that the order of test language affected the pattern of results. First, language of testing was done in random order, and we did not know what each child's level of exposure to each language was prior to or during testing. At the group level, language use and experience patterns track with performance on the subtests in each language (see Figure 1). But, at the individual level, it might be that first presentation in one language may have affected their performance on subsequent subtests when switching from a strong to a weak or from a weak to a strong language.

In summary, the goal of this study was to evaluate the risk for poor language performance in a large group of Latino children who spanned the full range of bilingual language experience. As a reflection of their divided dual language exposure, the bilingual children achieved somewhat lower scores than did their monolingual peers. However, when age differences in the samples were controlled, the rate of at-risk performance did not differ across the groups.

Clinical Implications

Few existing measures specifically target the characteristics of languages other than English, with some exceptions. Nevertheless, bilingual children are often tested exclusively in English, even if other language measures are available (Caesar & Kohler, 2007). Practitioners indicate that this is due to lack of available bilingual personnel, time pressures, and lack of training.

One approach for reducing disproportionate and/or inappropriate diagnoses of language impairments in Latino children involves prekindergarten and kindergarten screening. Early language screening's primary purposes are to provide an overview of children's language ability to help clinicians and educators determine which children may be at risk for language difficulties in the educational setting.

Language screeners for bilingual children should assess performance in children's L1 and L2. First, bilingual language learners can have skills in one language that they do not demonstrate in their other language. Our findings of distributed knowledge in L1 and L2 are consistent with findings in the domains of vocabulary knowledge (Pearson, Fernández, & Oller, 1995; Peña et al., 2002; Thordardottir, 2005) and narrative production (e.g., Fiestas & Peña, 2004; Gutiérrez-Clellen, 2002; Minami, 2008). Such results suggest that bilinguals can have skills in one language (even in the weaker language) that they may not demonstrate in their other language.

Differential L1 and L2 profiles for the bilingual children suggest that children may not show consistent dominance on all language tasks. These findings are consistent with those of Kohnert and colleagues (Kohnert & Bates, 2002; Kohnert et al., 1999). In these studies, older, sequential bilingual Spanish-English-speaking children performed faster and more accurately than younger children in both languages. There were differences, however, in relative performance between the two languages depending on modality and age. For example, in the 5–7-year-old group, children demonstrated Spanish dominance on an expressive task but relative balance between the two languages on a receptive task.

Finally, language development in L1 and/or L2 may be mediated by the age of first exposure to each language as well as the characteristics of daily input and use. Bilinguals vary in terms of when they start learning a second language, and this is further affected by schooling (Hakuta, Bialystok, & Wiley, 2003). Some children begin acquiring a second language at birth, while others have their first exposure to the majority or community language when they begin preschool (August & Shanahan, 2006; Bohman et al., 2010; De Houwer, 2007). Hammer, Lawrence, and Miccio (2008) found that ELL children who were exposed to English from birth performed better on English-language tests at the time of school entry compared to children who spoke only Spanish at home. Bohman et al. (2010) found that input over time (e.g., cumulative input) and current output were differentially important relative to semantics and morphosyntax performance in preschool-age and early kindergarten–age children. Semantic development seemed to be more strongly related to cumulative input, while morphosyntax development relied on both cumulative input and current output. Similarly, Oller, Pearson, and Cobo-Lewis (2007) found that configuration of exposure, use, and age interacted with language domains to result in differential profiles of L1 and L2.

The primary impetus for the current study was the question of whether young children who are in the process of learning two languages at once present with risk for language impairment at a higher rate than those who are exposed to one language. With respect to differences in relative language exposure to one and two languages, we found that bilingual children earned lower scores on our language measures in both languages. However, they were no more likely to score in the risk category

than any of the other children when both languages were tested. Bilingualism was not a significant risk factor for language impairment in this large sample of prekindergarten-age children.

Acknowledgments

References

Allison, P. D. (1999). *Logistic regression using the SAS system.* Cary, NC: SAS.

Artiles, A. J., Rueda, R., Salazar, J. s. J., & Higareda, I. (2005). Within-group diversity in minority disproportionate representation: English language learners in urban school districts. *Exceptional Children, 71,* 283–300.

August, D., & Shanahan, T. (2006). *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth.* Mahwah, NJ: Erlbaum.

Bedore, L.M, & Leonard, L. (2001). Grammatical morphology deficits in Spanish-speaking children with specific language impairment. *Journal of Speech, Language, and Hearing Research, 44,* 905–924.

Bedore, L., & Peña, E. (2008). Assessment of bilingual children for identification of language impairment: Current findings and implications for practice. *International Journal of Bilingual Education and Bilingualism, 11,* 1–29.

Berhanu, G. (2008). Ethnic minority pupils in Swedish schools: Some trends in over-representation of minority pupils in special educational programmes. *International Journal of Special Education, 23,* 17–29.

Bialystok, E. (1988). Levels of bilingualism and levels of linguistic awareness. *Developmental Psychology, 24,* 560–567.

Bialystok, E. (2007). Cognitive effects of bilingualism: How linguistic experience leads to cognitive change. *International Journal of Bilingual Education and Bilingualism, 10,* 210–223.

Bialystok, E., Craik, F., & Luk, G. (2008a). Cognitive control and lexical access in younger and older bilinguals. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 34,* 859–873.

Bialystok, E., Craik, F. I. M., & Luk, G. (2008b). Lexical access in bilinguals: Effects of vocabulary size and executive control. *Journal of Neurolinguistics, 21,* 522–538.

Bialystok, E., Luk, G., Peets, K., & Yang, S. (2010). Receptive vocabulary differences in monolingual and bilingual children. *Bilingualism: Language and Cognition, 13,* 525–531.

Bialystok, E., & Majumder, S. (1998). The relationship between bilingualism and the development of cognitive processes in problem solving. *Applied Psycholinguistics, 19,* 69–85.

Bishop, D. V. M. (1997). *Uncommon understanding: Development and disorders of language comprehension in children.* Hove, England: Psychology Press.

Bohman, T., Bedore, L. M., Peña, E. D., Mendez-Perez, A., & Gillam, R. B. (2010). What you hear and what you say: Language performance in Spanish English bilinguals.

International Journal of Bilingual Education and Bilingualism, 13, 325–344.

Broomfield, J., & Dodd, B. (2004). Children with speech and language disability: Caseload characteristics. *International Journal of Language & Communication Disorders, 39,* 303–324.

Caesar, L. G., & Kohler, P. (2007). The state of school-based bilingual assessment: Actual practice versus recommended guidelines. *Language, Speech, and Hearing Services in Schools, 38,* 190–200.

Carlson, S. M., & Meltzoff, A. N. (2008). Bilingual experience and executive functioning in young children. *Developmental Science, 11,* 282–298.

Cheuk, D. K. L., Wong, V., & Leung, G. M. (2005). Multilingual home environment and specific language impairment: A case-control study in Chinese children. *Paediatric and Perinatal Epidemiology, 19,* 303–314.

Cutting, A. L., & Dunn, J. (1999). Theory of mind, emotion understanding, language and family background: Individual differences and interrelations. *Child Development, 70,* 853–865.

Davis, J. W., & Bauman, K. J. (2008). *School enrollment in the United States: 2006.* Washington, DC: U.S. Census Bureau.

De Houwer, A. (2007). Parental language input patterns and children's bilingual use. *Applied Psycholinguistics, 28,* 411–424.

de Valenzuela, J. S., Copeland, S. R., Qi, C. H., & Park, M. (2006). Examining educational equity: Revisiting the disproportionate representation of minority students in special education. *Exceptional Children, 72,* 425–441.

Dollaghan, C., Campbell, T., Paradise, J., Feldman, H., Janosky, J., Pitcairn, D., & Kurs-Lasky, M. (1999). Maternal education and measures of early speech and language. *Journal of Speech, Language, and Hearing Research, 42,* 1432–1443.

Fazio, B. B., Naremore, R. C., & Connell, P. J. (1996). Tracking children from poverty at risk for specific language impairment: A 3-year longitudinal study. *Journal of Speech and Hearing Research, 39,* 611–624.

Fiestas, C. E., & Peña, E. D. (2004). Narrative discourse in bilingual children: Language and task effects. *Language, Speech, and Hearing Services in Schools, 35,* 155–168.

Frisk, V., Montgomery, L., Boychyn, E., Young, R., van Ryn, E., McLachlan, D., & Neufeld, J. (2009). Why screening Canadian preschoolers for language delays is more difficult than it should be. *Infants and Young Children, 22*(4), 290–308.

Goldenberg, C. (2008). Teaching English language learners what the research does—and does not—say. *American Educator, 32*(2), 8–44.

Gollan, T. H., Montoya, R. I., Cera, C., & Sandoval, T. C. (2008). More use almost always means a smaller frequency effect: Aging, bilingualism, and the weaker links hypothesis. *Journal of Memory and Language, 58,* 787–814.

Gupta, A. F., & Chandler, H. (1993). Paediatric speech and language therapy referral in Singapore: Implications for multilingual language disability. *European Journal of Disorders of Communication, 28,* 311–317.

Gutiérrez-Clellen, V. F. (2002). Narratives in two languages: Assessing performance of bilingual children. *Linguistics and Education, 13,* 175–197.

Gutiérrez-Clellen, V. F., & Kreiter, J. (2003). Understanding child bilingual acquisition using parent and teacher reports. *Applied Psycholinguistics, 24,* 267–288.

Hakuta, K., Bialystok, E., & Wiley, E. (2003). Critical evidence: A test of the critical-period hypothesis for second-language acquisition. *Psychological Science, 14*(1), 31–38.

Hammer, C. S., Lawrence, F. R., & Miccio, A. W. (2008). Exposure to English before and after entry to Head Start: Bilingual children's receptive language growth in Spanish and English. *International Journal of Bilingual Education and Bilingualism, 11,* 30–56.

Hart, B., & Riseley, T. (1995). *Meaningful differences in the everyday experience of young American children.* Baltimore, MD: Brookes.

Hoff, E. (2003). The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Development, 74,* 1368–1378.

Hoff, E., & Tian, C. (2005). Socioeconomic status and cultural influences on language. *Journal of Communication Disorders, 38,* 271–278.

Hollingshead, A. B. (1975). *Four factor index of social status.* Unpublished manuscript, Yale University, New Haven, CT.

Kan, P. F., & Kohnert, K. (2005). Preschoolers learning Hmong and English: Lexical-semantic skills in L1 and L2. *Journal of Speech, Language, and Hearing Research, 48,* 372–384.

Kohnert, K. (2008). *Language disorders in bilingual children and adults.* San Diego, CA: Plural.

Kohnert, K., & Bates, E. (2002). Balancing bilinguals II: Lexical comprehension and cognitive processing in children learning Spanish and English. *Journal of Speech, Language, and Hearing Research, 45,* 347–359.

Kohnert, K., Bates, E., & Hernandez, A. (1999). Balancing bilinguals: Lexical-semantic production and cognitive processing in children learning Spanish and English. *Journal of Speech, Language, and Hearing Research, 42,* 1400–1413.

Kohnert, K., Yim, D., Nett, K., Kan, P. F., & Duran, L. (2005). Intervention with linguistically diverse preschool children: A focus on developing home language(s). *Language, Speech, and Hearing Services in Schools, 36,* 251–263.

Krashen, S., & Brown, C. L. (2005). The ameliorating effects of high socioeconomic status: A secondary analysis. *Bilingual Research Journal, 29,* 185–196.

Law, J., Boyle, J., Harris, F., Harkness, A., & Nye, C. (2000). The feasibility of universal screening for primary speech and language delay: Findings from a systematic review of the literature. *Developmental Medicine and Child Neurology, 42,* 190–200.

Linck, J. A., Kroll, J. F., & Sunderman, G. (2009). Losing access to the native language while immersed in a second language: Evidence for the role of inhibition in second language learning. *Psychological Science, 20,* 1507–1515.

Long, S. J. (1997). *Regression models for categorical and limited dependent variables.* Thousand Oaks, CA: Sage.

Magnuson, K., & Duncan, G. J. (2002). Off with Hollingshead. In M. H. Bornstein & R. H. Bradley (Eds.), *Socioeconomic status, parenting, and child development* (pp. 83–106). Mahwah, NJ: Erlbaum.

McLeod, S., & McKinnon, D. H. (2007). Prevalence of communication disorders compared with other learning needs in 14,500 primary and secondary school students. *International Journal of Language & Communication Disorders, 42*(Suppl. 1), 37–59.

Mennen, I., & Stansfield, J. (2006). Speech and language therapy service delivery for bilingual children: A survey of three cities in Great Britain. *International Journal of Language & Communication Disorders, 41,* 635–652.

Minami, M. (2008). Telling good stories in different languages: Bilingual children's styles of story construction and their linguistic and educational implications. *Narrative Inquiry, 18*(1), 83–110.

Mindt, M. R., Arentoft, A., Germano, K. K., D'Aquila, E., Scheiner, D., Pizzirusso, M., ... Gollan, T. H. (2008). Neuropsychological, cognitive, and theoretical considerations for evaluation of bilingual individuals. *Neuropsychology Review, 18,* 255–268.

Nittrouer, S., & Burton, L. T. (2005). The role of early language experience in the development of speech perception and phonological processing abilities: Evidence from 5-year-olds with histories of otitis media with effusion and low socioeconomic status. *Journal of Communication Disorders, 38,* 29–63.

Oller, D. K., Pearson, B. Z., & Cobo-Lewis, A. B. (2007). Profile effects in early bilingual language and literacy. *Applied Psycholinguistics, 28,* 191–230.

Paradis, J. (2007). Bilingual children with specific language impairment: Theoretical and applied issues. *Applied Psycholinguistics, 28,* 551–564.

Paradis, J., Crago, M., Genesee, F., & Rice, M. L. (2003). French-English bilingual children with SLI: How do they compare with their monolingual peers? *Journal of Speech, Language, and Hearing Research, 46,* 113–127.

Pearson, B. Z. (1998). Assessing lexical development in bilingual babies and toddlers. *International Journal of Bilingualism, 2,* 347–372.

Pearson, B. Z., Fernández, S. C., & Oller, D. K. (1993). Lexical development in bilingual infants and toddlers: Comparison to monolingual norms. *Language Learning, 43,* 93–120.

Pearson, B. Z., Fernández, S., & Oller, D. K. (1995). Cross-language synonyms in the lexicons of bilingual infants: One language or two. *Journal of Child Language, 22,* 345–368.

Peña, E. D., & Bedore, L. M. (2009). Bilingualism and language impairment in children. In R. Schwartz (Ed.), *Handbook of child language disorders* (pp. 281–307). New York, NY: Psychology Press.

Peña, E. D., Bedore, L. M., & Zlatic-Guinta, R. (2002). Category-generation performance of bilingual children: The influence of condition, category, and language. *Journal of Speech, Language, and Hearing Research, 45,* 938–947.

Pruitt, S., & Oetting, J. (2009). Past tense marking by African American English-speaking children reared in poverty. *Journal of Speech, Language, and Hearing Research, 52,* 2–15.

Salameh, E.-K., Nettelbladt, U., Håkansson, G., & Gullberg, B. (2002). Language impairment in Swedish bilingual children: A comparison between bilingual and monolingual children in Malmö. *Acta Paediatrica, 91,* 229–234.

Schuele, C. M. (2001). Socioeconomic influences on children's language acquisition. *Journal of Speech-Language Pathology and Audiology, 25*(2), 77–88.

Stow, C., & Dodd, B. (2003). Providing an equitable service to bilingual children in the UK: A review. *International Journal of Language & Communication Disorders, 38,* 351–377.

Summers, C., Bohman, T., Gillam, R. B., Peña, E. D., & Bedore, L. M. (2010). Bilingual performance on nonword repetition in Spanish and English. *International Journal of Language & Communication Disorders, 45,* 480–493. doi:10.3109/13682820903198058.

Thordardottir, E. (2005). Early lexical and syntactic development in Quebec French and English: Implications for cross-linguistic and bilingual assessment. *International Journal of Language & Communication Disorders, 40,* 243–278.

Tomblin, J. B., Records, N. L., Buckwalter, P., Zhang, X., Smith, E., & O'Brien, M. (1997). Prevalence of specific language impairment in kindergarten children. *Journal of Speech, Language, and Hearing Research, 40,* 1245–1260.

Umbel, V., Pearson, B. Z., Fernández, M. C., & Oller, D. K. (1992). Measuring bilingual children's receptive vocabularies. *Child Development, 63,* 1012–1020.

U.S. Department of Education, National Center for Education Statistics. (2006). *English language learner students in U.S. public schools: 1994 and 2000.* Jessup, MD: Author.

U.S. Department of Education, Office of English Language Acquisition, Language Enhancement, and Academic Achievement for Limited English Proficient Students. (2008). *The Biennial Report to Congress on the Implementation of the Title III State Formula Grant Program: School Years 2004–06*. Washington, DC: Author.

Vaughn, S., Linan-Thompson, S., & Hickman, P. (2003). Response to treatment as a means for identifying students with reading/learning disabilities. *Exceptional Children, 69,* 391–410.

Westman, M., Korkman, M., Mickos, A., & Byring, R. (2008). Language profiles of monolingual and bilingual Finnish preschool children at risk for language impairment. *International Journal of Language & Communication Disorders, 43,* 699–711.

Windsor, J., & Kohnert, K. (2004). The search for common ground: Part 1. Lexical performance by linguistically diverse learners. *Journal of Speech, Language, and Hearing Research, 47,* 877–890.

Winter, K. (1999). Speech and language therapy provision for bilingual children: Aspects of the current service. *International Journal of Language & Communication Disorders, 34,* 85–98.

Zubrick, S. R., Taylor, C. L., Rice, M. L., & Slegers, D. W. (2007). Late language emergence at 24 months: An epidemiological study of prevalence, predictors, and covariates. *Journal of Speech, Language, and Hearing Research, 50,* 1562–1592.