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Where Spanish and English Come Together: A Two Dimensional Bilingual Approach to Clinical Decision Making

Jissel B. Anaya,
Department of Communication Sciences & Disorders, University of Texas at Austin Austin, TX

Elizabeth D. Peña, and
Department of Communication Sciences & Disorders, University of Texas at Austin Austin, TX

Lisa M. Bedore
Department of Communication Sciences & Disorders, University of Texas at Austin Austin, TX

Abstract

An increasing number of United States school children are from culturally and linguistically diverse (CLD) backgrounds and speak multiple languages. Speech-language pathologists (SLPs) are often challenged with differentiating the performance of bilingual children with language impairment from those who may display a language difference. While there is consensus that we should consider both languages of a bilingual child in formal and informal assessments, there is no agreed way to interpret results of testing in both languages. The aim of this article is to propose a framework for conducting and interpreting the results from comprehensive and unbiased evaluations that incorporate language samples, parent and teacher reports, and standardized testing. We will illustrate the use of this bilingual coordinate approach via a pair of case studies.

There is an ongoing need for development of guidelines related to assessment for English language learning (ELL) populations (Caesar & Kohler, 2007; Kimble, 2013; Kritikos, 2003). In the United States, more than two-thirds (84%) of speech-language pathologists (SLPs) provide services in preschools, elementary, and secondary schools combined (ASHA, 2014). According to the 2014 Schools Survey, school-based SLPs serve individuals with language impairments (92%), cognitive communication abilities (61%), and reading and writing needs (36%). Sixty-four percent of school-based SLPs serve children ELLs with communication disorders (ASHA, 2012). Current recommendations are to test in both languages (Bedore & Peña, 2008; Kohnert 2010). But only 9% of SLPs indicate that they are very qualified, 25% report feeling qualified, and 44% indicate that they are somewhat qualified to serve a multicultural population (ASHA, 2014).

Speech-language pathologists (SLPs) recognize that in the vocabulary or semantics domain, bilingual school-aged children will use each language for different purposes and in different contexts leading to distributed knowledge. That is, bilinguals may know words for specific

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functions in only one of their languages because they have no need for that word in their other language. They may know home-related words (e.g., names of furniture, foods, kitchen utensils, and kinship terms) in the home language, and academically related words (science terms, literary terms, etc.) in the second language. This distributed knowledge means that bilinguals may appear to have gaps in their vocabulary knowledge if they are tested in only one of their languages, even in the dominant language.

In the area of morphosyntax, different aspects of grammar are difficult for children with primary language impairment (PLI) who speak different languages. Thus, bilingual children with PLI are likely to make different kinds of errors in each of their languages. At the same time, a typically developing bilingual child in the process of learning a second language is likely to make many of the same errors in that language as children with PLI. Typically developing bilingual children may also make errors in their first language as they start to have fewer opportunities to hear and use that language. For this reason, it is important to look at markers of PLI in their first and second languages. A systematic evaluation should provide enough opportunities for observation of patterns to determine the types of errors and if they are persistent across contexts. Finally, it is important to emphasize that bilingual children with PLI will have difficulties in both of their languages. When children make errors in English acquisition only, it is often because the child's English is still developing rather than because of language impairment. Addressing English language acquisition skills falls in the domain of English as a Second Language Services.

Interpretation of children's vocabulary, semantics, and grammatical errors across languages need to be considered in making a diagnosis of PLI in a bilingual child. Error patterns, however, are difficult to interpret in the context of distributed input. It can be difficult to know if errors are due to incomplete acquisition, lack of exposure, or if they are true indicators of impairment. In the next section, we briefly review approaches for assessment of bilinguals described in the literature that focus on differentiating between a language difference or disorder.

Approaches for Assessment of Bilinguals

There are several approaches for assessment of bilingual children including informal and formal assessment. Parent and teacher report, observation, and language sampling are typically thought of as informal assessment. Use of standardized or criterion-referenced tests are considered formal assessments. These approaches are best used together to form a complete diagnostic picture of a given child and to provide the basis for recommendations. When assessing a bilingual child, informal and formal assessment needs to further consider both languages together.

Parent and Teacher Report

Both parents and teachers can be excellent, reliable sources of information about a child's language use and parental language history. For bilingual children, parent and teacher report includes information about the child's language and dialect history, exposure to and frequency of use of each language, and emerging literacy skills. In addition, parents and

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teachers can make some judgments about children's language comprehension and production.

In order to interpret bilingual children's language performance, it is important to understand the context in which children are using each language and the extent to which children hear and use each language. The amount of current and cumulative exposure that children have to a given language is related to grammaticality and productivity (De Houwer, 2007; Gutiérrez-Clellen & Kreiter, 2003; Unsworth, 2015), vocabulary knowledge (Pearson, Fernández, Lewedeg, & Oller, 1997), as well as semantic and morphosyntactic accuracy (Bohman, Bedore, Peña, Mendez-Perez, & Gillam, 2010). Whereas both cumulative and current exposure are related to language production, current exposure seems to be more strongly associated with grammar and semantic performance in preschool age children (Bedore et al., 2012). In older (first and third grade) bilingual children, these factors interact in complex ways. For English morphosyntax and semantics composite, age of English exposure and current exposure together accounted for more (29.4%) of the variance for first grade compared to 11.3% of the variance in third grade (Bedore, Peña, Griffin, & Hixon, 2016). But for Spanish morphosyntax and semantics composite, current exposure accounted for more of the variance than did age of first English exposure in both first- and third- grades. Specifically, current exposure accounted for 59.1% (first grade) and 55.1% (third grade) of the variance by itself. Age of first English exposure accounted 37.7% of the variance (first grade) and 26.8% (third grade) by itself.

Speech and language assessment protocols frequently include information from children's caregivers that is incorporated into a diagnostic report. There are some formal checklists available such as the Children's Communication Checklist-2 (CCM–2; Bishop, 2003), which has been validated for use by parents (Norbury, Nash, Baird, & Bishop, 2004). For bilinguals, it is important to seek information from caregivers and teachers especially if the SLP does not speak the child's language. Toward this effort, Restrepo (1998) developed a questionnaire to ask parents about children's speech and language proficiency. Combined with data from children's language samples, Restrepo accurately classified children into impaired and nonimpaired groups. Gutiérrez-Clellen and Kreiter (2003) developed a questionnaire incorporating many of Restrepo's questions with questions about Spanish-English speaking children's literacy activities, age of exposure, and current exposure to each language. They found that parent ratings of second-grade children's Spanish were more highly correlated with their Spanish grammaticality, while teacher ratings of English were more highly associated with children's English grammaticality. Bedore, Peña, Joyner, and Macken (2011) used this same questionnaire with teachers and parents of 549 Spanish-English speaking children between the ages of 4;0 and 5;11. Teacher ratings of language ability were significantly associated with English morphosyntax performance on a standardized test (Bilingual English Spanish Assessment). Parent ratings of ability were significantly correlated with children's semantic and morphosyntactic language performance across both languages. Paradis, Emmerzael, and Duncan (2010) developed and validated a questionnaire asking parents of ELLs to report on children's developmental milestones, first language abilities, family history, and behavior patterns and activity preferences. A total of twelve different home languages were represented in Paradis et. al.'s (2010) study on 168 children with a mean age of 69 months. Results indicate excellent specificity but poor

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sensitivity as a whole for the language questionnaire. The authors reported that the early milestones section (producing a first word, using word combinations/sentences, and possibly starting to walk unassisted) by itself best separated children with and without PLI. In a follow-up study, Paradis, Schneider, and Duncan (2013) found that with combined measures of children's performance plus parent report, it is possible to more accurately classify ELLs with and without PLI.

Clinical Observation

Speech language pathologists (SLPs) can use their knowledge of typical development and of PLI to help parents interpret their concerns and to make direct observations of children's language abilities. The Parents' Evaluation of Developmental Status (Glascoe, 1988) is a standardized questionnaire designed to elicit concern across developmental areas (receptive and expressive language, fine and gross motor, behavior, socialization, self-care, and learning). When parents have an area of concern, follow-up questions help to determine whether the concern is valid (Glascoe, 1991). Clinical judgment is also used during teaching tasks such as dynamic assessment. Across several studies, clinician observation of children's behavior during a learning task was strongly predictive of PLI (Hasson & Joffe, 2007; Kapantzoglou, Restrepo, & Thompson, 2012; Peña et al., 2006; Peña, Iglesias, & Lidz, 2001; Ukrainetz, Harpell, Walsh, & Coyle, 2000). Peña, Reséndiz, and Gillam (2007) reported that observation of forty children's (25 with normal language ability and 15 with language impairment) flexibility and metacognitive skill during mediated learning experience sessions classified impaired and nonimpaired children with 93% accuracy. A recent study of kindergarten-age ELLs demonstrates that these ratings of modifiability, during a task completed in English, contributed significantly to accurate classification of children with and without PLI (Peña, Gillam, & Bedore, 2014).

Language Sampling

Language sampling is often suggested as a nonbiased alternative to standardized assessment (Stockman, 1996) and also considered to be ecologically valid (Hewitt, Hammer, Yont, & Tomblin, 2005). An advantage of language sampling is that it can allow clinicians to observe how children select and use vocabulary and grammar in conversational or narrative contexts. Several measures of children's productivity and accuracy can be derived from a language sample including mean length of utterance, number of words, and number of different words. Accuracy measures might include those examining number and type of grammatical errors or omissions. Social use of language can be gleaned from a conversational language sample with focus on indicators such as turn-taking, number and duration of speaker turns, etc. Narrative samples can provide information about macrostructure (e.g., story grammar) and microstructure (e.g., sentence structure, lexical diversity; Justice et al., 2006; Squires et al., 2014).

Work on language sampling in Spanish-English bilingual children demonstrates its utility and its challenges (Gutiérrez-Clellen, Restrepo, Bedore, Peña, & Anderson, 2000; Gutiérrez-Clellen & Simon-Cereijido, 2009). Overall, bilingual children with PLI make many of the same kinds of errors as do their monolingual counterparts (Paradis, Crago, Genesee, & Rice, 2003). Gutiérrez-Clellen, Simon-Cereijido, and Wagner (2008) compared 71 children

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between the ages of 4 years, 5 months and 6 years, 5 months, with different levels of English fluency, and children with PLI on use of finiteness and subject use in English, as assessed by performance on narrative samples. Monolingual English and bilingual Spanish-English children with PLI had difficulty with these forms compared to their typical controls. Typical bilingual children who were still in the process of learning English had difficulty with finiteness but not with subject use. Further, Jacobson and Schwartz (2005), in a study of English past tense use in 27 bilingual children aged 7;0 to 9;0 with and without PLI, demonstrated different patterns of error. Children with PLI were less accurate in their use of past tense. In this study, when children with typical development made errors, they tended to make those that were productive (e.g., overregularization of irregular past) compared to children with PLI who made more nonproductive errors (e.g., bare stem verbs).

In Spanish, children with and without PLI use verb morphology with a high degree of accuracy. Instead, noun morphology is a better indicator of PLI when examining Spanish. Patterns of difficulty in Spanish include articles and clitic pronouns (Bedore & Leonard, 2005). A study of bilingual Spanish-English and monolingual Spanish speakers with and without PLI indicated three models: (a) MLU and ungrammaticality together; (b) morphological model (composite of clitic, verb, and article use); and (c) a semantic-syntactic model (composite of MLU, use of theme arguments, and ditransitive verbs), were fair to good indicators of PLI (Simon-Cereijido & Gutiérrez-Clellen, 2007). Children who were correctly identified as PLI by only the morphology model had higher MLU than those correctly identified by only the semantic-syntactic model. A challenge, however, is in differentiating errors due to language loss compared to those indicative of PLI. Anderson (1999) presents a 2-year longitudinal case study of a typically developing Spanish-English bilingual child in the process of learning English. Between ages 4 and 6, the child's MLU in Spanish decreased. Some errors, such as omission of clitics and articles, were consistent with characteristics of PLI. Yet, syntactic errors, such as word order, appeared to be influenced by English. Anderson proposes that for errors that are consistent with PLI, the persistence or frequency of such errors may help to distinguish typical from atypical learners.

Systematic analyses of language samples in bilingual Spanish-English demonstrate the qualitative differences between children with and without PLI in each language. For example, Restrepo and Kruth (2000) illustrate patterns of errors in a bilingual child compared to an age- and language-matched peer. The child with PLI used shorter sentences and made more grammatical errors in both languages compared to the child with typical development. The errors made in each language, however, were different. In English, the child with PLI had more difficulty with regular and irregular past, auxiliary, and third person. She had difficulty with tense marking including present, past, and progressive tenses. In Spanish, the child with PLI had more difficulty with prepositions, articles, and pronouns. These patterns are consistent with those described for English (Bedore & Leonard, 2001) and for Spanish (Bedore & Leonard, 2005) monolinguals.

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Standardized Tests

Standardized assessments have many advantages. These are relatively easy to administer and interpret compared to more informal measures and observations. They provide consistency in administration so that every child is given the same materials and opportunity to respond. Standardized tests are objective measures and, in this way, are free from observational bias; that is, bias associated with inadequate record interpretations, especially compared to using informal approaches. Finally, standardized tests by way of standard scores can be used to compare individual performance to a norm, facilitating diagnostic decision making. At the same time, standardized tests may not be equally appropriate for children whose language and/or culture or educational exposure does not match the norm represented by a given test.

One approach to addressing language differences has been to translate tests. However, translated tests are likely to have serious limitations. Even when translated appropriately, they are not often validated for use in another language. Translation can affect difficulty level (Restrepo & Silverman, 2001) or intended meaning and content (Peña, 2007).

There are a few standardized tests of language that have been translated or adapted for Spanish, and virtually no available tests for other languages. These standardized tests in the area of child language include the Expressive One Word Picture Vocabulary Test-4: Spanish Bilingual Edition (EOWPVT-SBE; Brownell, 2001; Martin, 2011); the Clinical Evaluation of Language Fundamentals-4 Spanish (CELF-4S; Semel, Wiig, & Secord, 2006); the Preschool Language Scales, Fifth Edition Spanish (PLS-5S; Zimmerman, Steiner, & Pond, 2012); and the Bilingual English Spanish Assessment (BESA; Peña, Gutiérrez-Clellen, Iglesias, Goldstein, & Bedore, 2014). The EOWPVT-SBE, CELF-4S, and PLS-5S have English versions that form the basis for the Spanish versions. The BESA includes Spanish and English subtests incorporated into a comprehensive assessment.

The 2001 version of the EOWPVT-SBE was translated from English as was the earlier version of the PLS. Both of these tests have since been further adapted to better reflect the developmental order of Spanish. Beyond availability, it is important that standardized tests used in making a diagnosis of PLI be those that have good sensitivity and specificity (Plante & Vance, 1994). Of these four tests, the CELF-4S, PLS-5S, and BESA have good classification accuracy for Spanish-dominant and/or Spanish-English bilingual children. The English versions of these tests also meet classification accuracy criteria.

A challenge for testing bilingual children, however, is that they should be tested in two languages. To date, there is not one standard way of combining data from both languages so we will review current approaches and the pros and cons of these approaches.

In academic settings, there is a long tradition of using information about language dominance to inform decisions about language of testing. Language dominance is a measure of relative proficiency in a language, capturing how much one knows about one language relative to the other. Dominance can be established by measures of language input and output and this information is typically obtained via parent and/or teacher questionnaires in work with children. When parents or teachers are asked to report on current information and performance, their responses are generally found to correlate highly with behavioral

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measures of language knowledge. Language dominance is also established using behavioral measures of vocabulary or syntax. Measures of dominance, especially when established using measures of language input or output, are informative regarding expectations about children's performance. Children are more likely to respond to items assessing vocabulary or grammar knowledge in the language they hear or use the most, especially at the earliest stages of bilingual language development (Bohman et al., 2010; Hoff, 2006).

Using information about language dominance to make decisions about performance on language measures is problematic for several reasons. First, the rate at which children's language performance changes as a function of dominance varies by domain (Bedore et al., 2012; Kohnert, Bates, & Hernandez, 1999). For example, dominance in the semantic domains shifts earlier relative to the amount of English input and output (Bedore et al., 2012). However, at the individual level, all combinations of language dominance can be observed (Bedore, Peña, Gillam, & Ho, 2010). This means that if we chose to test in the dominant language, or to weigh decision making based on language dominance, it is likely that we are underestimating children's language knowledge. An additional challenge is that not all measures of language dominance yield the same decision. When decisions about language dominance were made based on reports of language input and output, dominance decisions were congruent in 82% of cases. But, when decisions were made based only on language performance, decisions were congruent only 48% of the time. These findings show that while information about dominance provides us with reliable information about general expectations for the child's language knowledge, it may not result in our assessing a child's responses in the language in which they will demonstrate their highest level of knowledge across the board. An alternative to this use of language dominance data to guide decision making is to employ a method that credits knowledge regardless of the language in which the child provides the response.

Conceptual scoring provides such an alternative to making a priori decisions about language of testing (Bedore, Peña, García, & Cortez, 2005; Peña, Bedore, & Kester, 2016; Pearson, Fernández, & Oller, 1993). In conceptual scoring, the child's correct response to a test item is credited regardless of the language in which it was provided; thus the child is given an opportunity on an item-by-item basis to respond in either language. For example, if a child is asked to name pictures of a dog, a cat, and a cow, he or she can obtain the same score by naming them all in their first language, second language, or any combination of the two. In this way, the child is not penalized if he or she does not know a word in one language versus the other. When compared to other ways of combining test scores across languages, this approach holds promise of most closely approximating the amount of vocabulary that monolingual children have, the standard against which we have the most information for making clinical decisions (Bedore, Peña, García, & Cortez, 2005).

This approach has been incorporated into standardized tests such as the bilingual versions of the PLS and the EOWPVT. In these tests, children are first asked to respond to the test items in one language and then in the other. Regardless of the language in which the child responds, the score is credited and then standard scores are generated. This approach works especially well for vocabulary-based items since the same underlying concepts can be expressed in both languages. For items tapping into morphosyntax, this approach is more

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difficult to apply—recall that, across languages, grammatical forms are most challenging for children with language impairment and thus, are the most effective markers of language impairment. For example, in English, difficulty with past tense is a reliable marker of language impairment but in Spanish, difficulty with articles or direct object clitics is a much more reliable marker. Thus, in a conceptual scoring approach, it is possible to probe if children can produce shared forms in either language. However, the test that is designed to maximize sensitivity in one language will load up on different sets of items in each of the child's languages.

Other suggestions in the literature for reducing assessment bias include deriving a Minimal Competence Core (MCC), which is a criterion-referenced approach to identifying speech and language delays by identifying the smallest set of shared speech/language patterns among the typical speakers of a given language group for a specified age and context of use (Stockman, 2006). Processing dependent measures, such as nonsense word repetition (NWR) tasks, have also been implemented to minimize biases associated with traditional language tests. These have demonstrated promising clinical utility as a screening measure for language impairment, given the shared mechanism underlying NWR and language learning (Dollaghan & Campbell, 1998; Summers, Bohman, Gillam, Peña, & Bedore, 2010).

Another approach that builds on the best of these approaches is what we have referred to as a two dimensional bilingual coordinate score (bilingual coordinate) approach to decision-making (Peña et al., 2016). In this approach, testing tasks are administered in each of a child's languages. Scores can be given in any domain tested (e.g., semantics, morphosyntax, etc.) for each of the child's languages and plotted on a bilingual coordinate graph. The best scores, domain-by-domain, can then be used to inform clinical decisions. When multiple domains are tested, this approach capitalizes on a child's better score in either language. Only children whose scores fall in the lower left quadrant in both of their languages would be considered to have communication impairment (see Figure 1). Scores in Quadrant 1 are within the typical range in both L1 and L2 while scores in Quadrant 2 and Quadrant 4 are characteristic of a language difference rather than language impairment. This empirically tested procedure for combining results of two languages is employed by the BESA.

This approach has also been shown to be informative both in regard to development and disorder. Uccelli and Páez (2007) elicited short narratives in a group of Spanish English bilingual children at kindergarten and first grade. They plotted children's growth on measures of vocabulary and story quality based on children's performance in Spanish and English. Using this approach, Uccelli and Páez were able to show that children made significant gains in vocabulary growth between kindergarten and first grade even though, on average, the children's performance was below the monolingual norm. In Spanish, children's gains were in the domain of story quality.

Next, we demonstrate the bilingual coordinate approach of interpreting formal and informal measures across two languages through paired case studies matched for age, gender, and language use. These cases illustrate how data from two languages can be put together to make diagnostic decisions. They are presented together to allow for direct comparison

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between a bilingual child who presents with PLI, and one who presents with age-appropriate language skills.

Case Studies

These two case studies are drawn from a longitudinal study (see Gillam, Peña, Bedore, Bohman, & Mendez-Perez, 2013) of diagnostic markers in bilingual children. Pseudonyms are used in presenting both cases. Samuel is a 5-year, 1-month-old male with language impairment. Adrian is a 5-year, 3-month-old male with typical development.

Current Language Use: Bilingual Input Output Survey (BIOS)

Current language exposure and use was assessed through the, Bilingual Input Output Survey (BIOS; Peña et al., 2014). The BIOS surveys address the child's language exposure history and current use of Spanish and English in the home (BIOS home) and at school (BIOS school). Parent and teacher independently reported the frequency of use (combined input and output) in each language on an hourly basis in a typical day during the week and on the weekend (home). Use and exposure in each language is measured across communicative contexts including as reported by the parent and teacher. For example, if they report literacy-based activities, the clinician can ask, "In what language(s) does he read?" If the parent reports TV watching, the clinician can ask, "In what language(s) are his cartoons?" Figure 2 illustrates results of teacher and parent report on the BIOS. These are presented as a coordinate score to visually represent both languages. If the child's use and exposure score falls in the shaded area, recommendations are to test in both languages.

Samuel—Samuel used Spanish 80% of the time and English 20% of the time while at home, and 67% Spanish and 33% English while at public school within a dual-language program (see Figure 2). His combined input and output averages indicate that testing is required in both languages because he uses each language more than 30% of the time.

Adrian—Adrian used Spanish at home 67% of the time and English 33% of the time. Additionally, he was exposed to Spanish 60% of the time and English 40% of the time. Adrian used Spanish at public school within a dual-language program 89% of the time and English 11% of the time. Additionally, he was exposed to Spanish 78% of the time and English 22% of the time at school. Based on these percentage data, testing in both languages is recommended.

Parent and Teacher Report: (ITALK)

Parent and teacher concern was assessed through the Instrument to Assess Language Knowledge (ITALK; Peña et al., 2014). One parent and one teacher independently rated each domain (vocabulary, speech, sentence production, grammaticality, and comprehension proficiency), in both languages, on separate 5-point scales (where 1 = minimal proficiency and 5 = high proficiency). The five scores in each language were averaged to yield Spanish and English scores based on parent and teacher report. Summary scores are illustrated in Figure 3 and represented as a coordinate score. Scores falling in the shaded lower left hand

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area of the graph are those averaging below 4.18 in both languages and are an indication of concern (consistent with the BESA manual; Peña et al., 2014).

Samuel—Samuel's parent and teacher rated his proficiency low in Spanish (3.8 and 2.4, respectively) and English (1.4 and 1.6 respectively) thereby indicating concern. His sentence production and grammar proficiency were rated as the least proficient areas.

Adrian—Adrian's teacher reported higher proficiency in Spanish (4.2) than English (2.8). Similarly, his mother reported higher proficiency in Spanish (4.6) than English (3.4). In Spanish, strengths were reported in the areas of vocabulary, speech, sentence production, and comprehension in Spanish. Both scores were above 4.18 and not indicative of concerns when taking into account the highest average. Adrian's ITALK scores are consistent with his BIOS scores, which indicated higher use and proficiency in Spanish than English.

Standardized Test: BESA

The BESA subtests (Peña et al., 2014) were developed following the developmental patterns of each language and are not direct translations. The semantic subtests use conceptual scoring which is more effective for bilingual children (Bedore et al., 2005). The morphosyntax subtest includes targets that are difficult for children with PLI who speak English and/or Spanish. Thus, the items are not translations but reflect the grammatical morphology of each language. Standard scores using a coordinate score for each subtest in both languages are displayed in Figure 4. Scores falling in the shaded area indicate performance consistent with language impairment.

Samuel—Samuel scored below 1 standard deviation on the semantics subtest in English (80), and below 2 standard deviations in Spanish (68). Interestingly, he scored higher in English than Spanish despite reported higher use and exposure of Spanish at home and school. Morphosyntax subtests on the BESA focus on structures that are difficult for bilingual children with PLI (Bedore & Leonard, 2001; Gutiérrez-Clellen, Restrepo, Simón-Cereijido, 2006; Muñoz, Gillam, Peña, & Gulley-Faehnle, 2003). Samuel scored below 1 standard deviation on the morphosyntax subtest in Spanish (73) and below 3 standard deviations in English; however, unlike the semantics subtest, Samuel earned a higher standard score in Spanish than English (see Figure 4). This mixed dominance profile illustrates the clear need for testing in both languages.

Adrian—Adrian scored within normal limits on the morphosyntax subtest in Spanish (105) but below 1 standard deviation in English (73). On the semantics subtest, Adrian scored within normal limits in Spanish and English (105, 93, respectively). The semantics subtest on the BESA allows for conceptual scoring while the morphosyntax subtest does not, which accounted for the discrepancy between his English scores on these subtests. Overall, Adrian's scores on the BESA were higher in Spanish and are consistent with parent and teacher report on his BIOS and ITALK questionnaire.

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Language Sampling

Samuel—Samuel's language abilities were assessed informally using language samples in a narrative context in both languages. In Spanish, his mean length of utterance (MLU) consisted of 2.81 words and 15.38% of his utterances were considered grammatical in Spanish. In English, Samuel did not provide a complete narrative, rather he reverted back to Spanish; thus, grammaticality was not assessed in English. A child Samuel's age (5:1) is expected to have an MLU consisting of more than 5–6 words. Consistent with the literature, Samuel often omitted articles and used few clitics (Bedore & Leonard, 2005; Simon-Cereijido & Gutiérrez-Clellen, 2007). Performance on the narrative tasks was consistent with performance on formal testing, parent report, and teacher report.

Samuel's language sample was also analyzed for story grammar elements, including information about characters, setting, events, attempts, and resolution. In his sample, Samuel included nonspecific characters and described events in the story in a noncohesive manner. He did not describe internal responses or motivations of the characters, describe the initiating event, discuss attempts to solve the problem in the story, describe the outcome of the attempts to solve problems, or provide an ending. His use of story grammar components is below that of same-age peers. Performance on the narrative tasks was consistent with performance on formal and informal testing, parent report, and teacher report.

Adrian—In Spanish, Adrian's MLU was 4.78 words and 70% of his utterances were grammatical. In English, MLU was 4.91 words and 36% of his utterances were grammatical. Performance on the narrative tasks was consistent with performance on formal testing, parent report, and teacher report. Unlike Samuel, Adrian's used articles and pronouns in both languages and clitics in Spanish. Many of Samuel's errors in English included Spanish influenced word order errors (i.e., "She open it and get a box little."), which are consistent with errors made by children in the process of acquiring English.

Adrian's language sample was also analyzed for story grammar elements, including information about characters, setting, events, attempts, and resolution. In his sample, Adrian included nonspecific characters and described events in the story in a cohesive manner. He described internal responses or motivations of the characters (i.e., "él estaba llorando" ["he was crying"]), described the initiating event (i.e., "la avispa le picó la lengua a la rana" ["the bee stung the frog's tongue"]), discussed attempts to solve the problem in the story, described the outcome of the attempts to solve problems (i.e., "Primero saco la mano rapidamente" ["First, [he] quickly pulled out [his] hand"), and provided an ending (i.e., "She was so feliz/happy"). His use of story grammar components is appropriate to that of same-age peers with similar language backgrounds. Performance on the narrative tasks was consistent with performance on formal and informal testing, parent report, and teacher report.

Impressions

Samuel—Upon assessment, Samuel exhibited impaired receptive and expressive language skills. Results from formal testing were consistent with parent and teacher report. His mother and teacher both reported concern in both languages specifically in the areas of

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grammar and sentence productivity, which was observed in his narrative language samples and his performance on the BESA.

Adrian—Adrian exhibited receptive and expressive language skills within normal limits for his age and language background. Errors observed in formal and informal testing were consistent with English language learning and were not indicative of PLI. Adrian performed within normal limits on standardized testing and neither his teacher, nor parent reported concern in Spanish. However, they rated his English proficiency to be lower than Spanish and this was confirmed through his language sampling and performance on the BESA.

Summary of Case Studies

As these case studies illustrate, evidence-based assessment of bilingual populations involve careful consideration of formal and informal data in both of a child's languages, sound clinical judgment, and the integration of the client's and their caregiver's values and cultural differences. Samuel's mixed dominance profile underscored the importance of integrating results from both languages to inform diagnostic decisions. Adrian's case highlighted the importance of considering grammatical errors within the context of the literature regarding reliable markers of language impairment. Both cases demonstrated how an evidence-based bilingual coordinate approach is used when evaluating clients from culturally and linguistically diverse backgrounds.

Although progress has been made in designing diagnostic tools that account for bilingual language experiences and knowledge, a challenge that remains is how to employ information obtained from each of the languages to inform clinical decision making. Because children's language knowledge is distributed across each of their languages, it is critical to consider how the child's language experiences impact the results of assessments to appropriately interpret scores. In making diagnostic decisions about communication impairments in bilingual children, it is important to keep in mind that we need to make clinical decisions about children's best possible performance.

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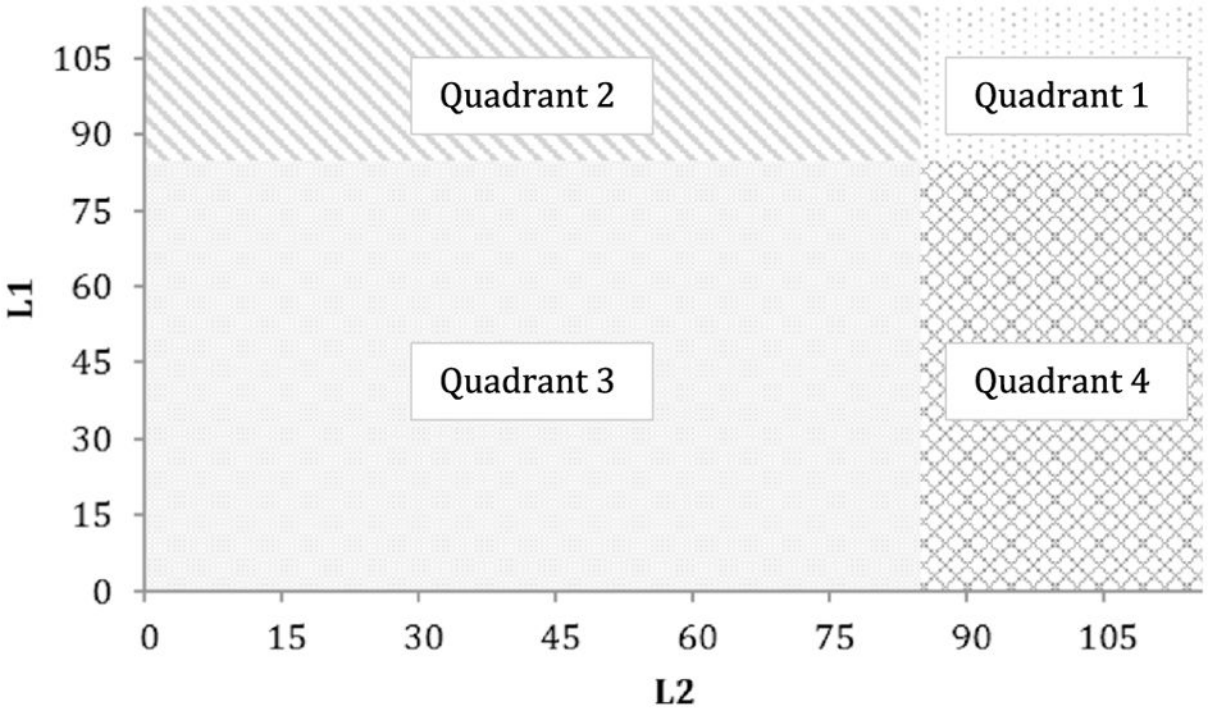

Figure 1.
Schematic for Two Dimensional Bilingual Coordinate Scoring.

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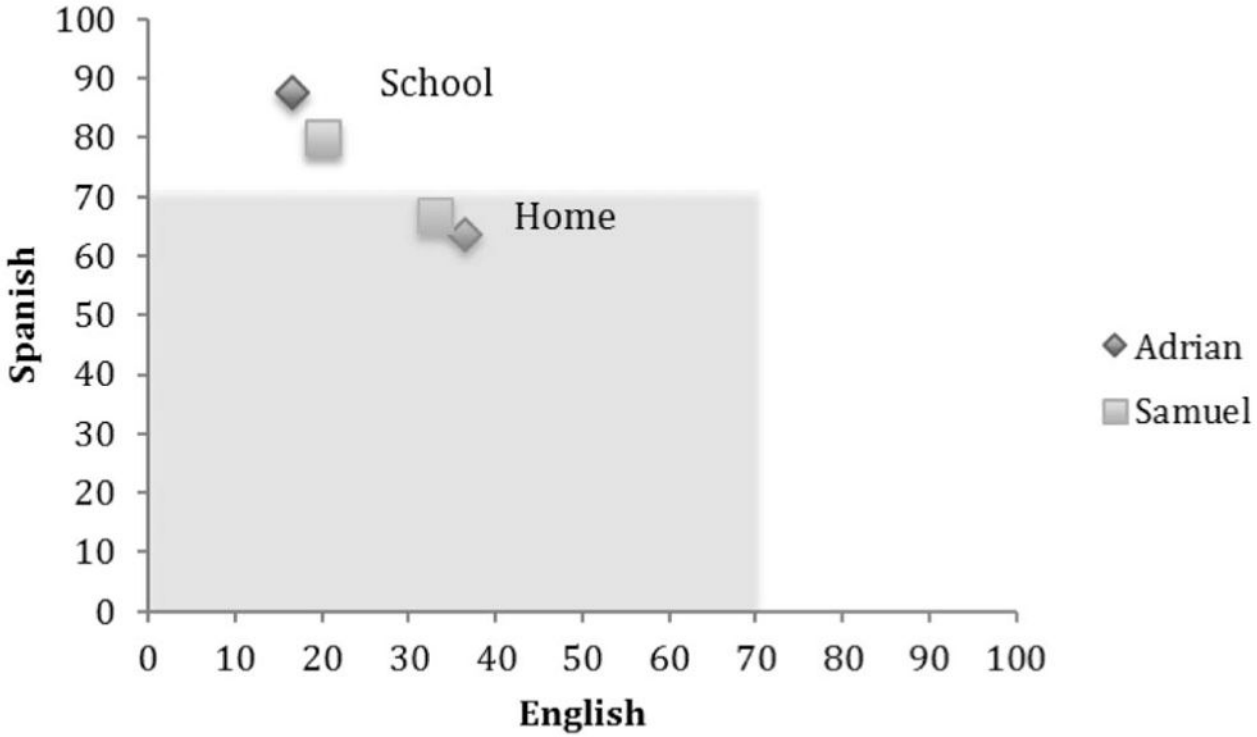

Figure 2.
BIOS Results.

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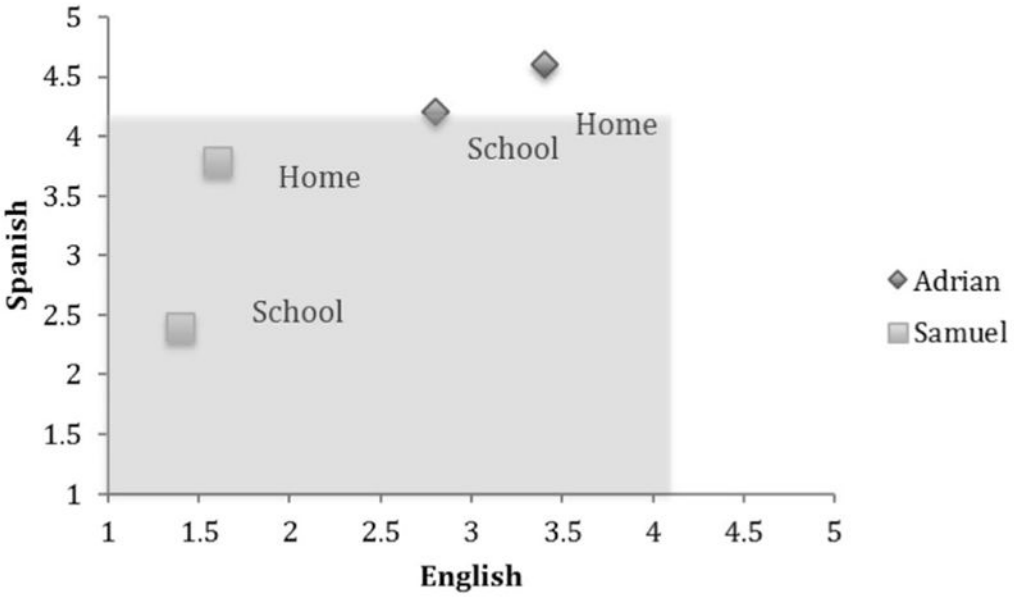

Figure 3.
ITALK Results.

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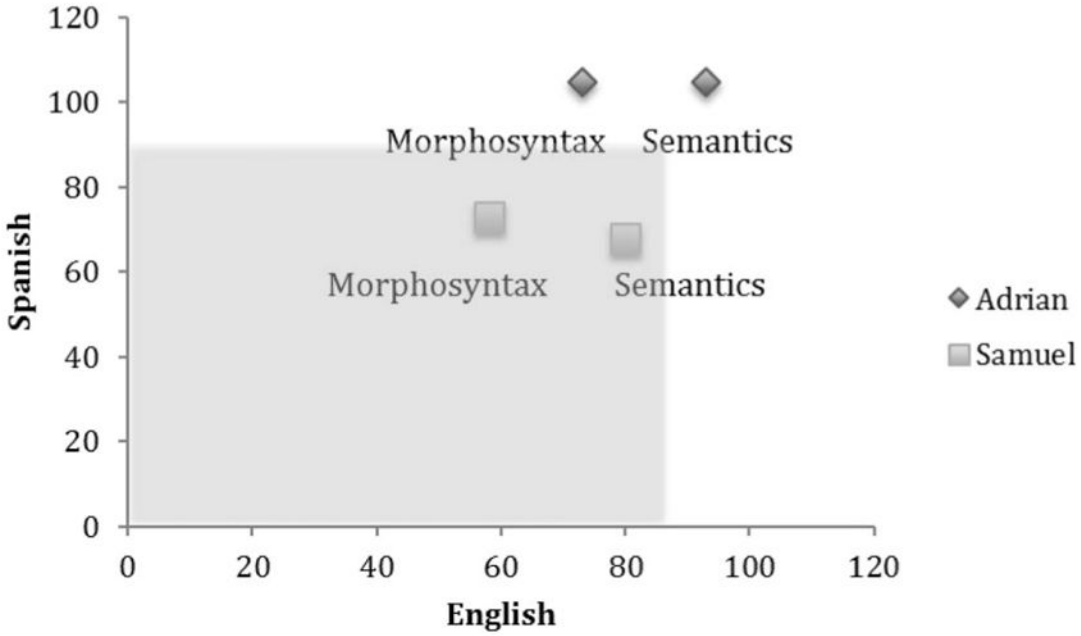

Figure 4.
BESA Results.