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Implications of Dual Language Scoring of the Preschool Language Scale-Fifth Edition Spanish for Bilingual Preschool-Aged Children

Callie Mae Mathis

University of Texas at El Paso, calliemaemathis@gmail.com

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IMPLICATIONS OF DUAL LANGUAGE SCORING ON THE PRESCHOOL
LANGUAGE SCALE-FIFTH EDITION SPANISH FOR BILINGUAL
PRESCHOOL-AGED CHILDREN

CALLIE MAE MATHIS

Master's Program in Speech-Language Pathology

APPROVED:

Connie Summers, Ph.D., CCC-SLP, Chair

Vanesa Smith, M.S., CCC-SLP

Rhonda Manning, PT, DPT, PCS

Charles Ambler, Ph.D.
Dean of the Graduate School

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Dedication

I dedicate this paper to my professor and mentor Dr. Connie Summers, who shares the same passion of researching communication disorders in bilingual children and for saying yes to me writing a thesis with her.

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LANGUAGE SCALE-FIFTH EDITION SPANISH FOR BILINGUAL
PRESCHOOL-AGED CHILDREN

by

CALLIE MAE MATHIS, B.S., B.A.

THESIS

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Abstract

Purpose: Spanish versions of standardized tests used in language evaluations are not well studied. The purpose of this study is to further examine the appropriateness of the Preschool Language Scale, Fifth Edition Spanish (PLS-5S) in a U.S./Mexico border community by comparing the Dual language scores versus the Spanish only scores and comparing the normative sample of the PLS-5S to the population of El Paso, TX.

Method: Twenty-three bilingual preschool aged children in the El Paso area completed the Spanish Edition of the PLS-5S. The parents and teachers of the participants completed two language proficiency questionnaires (Bilingual Input Output Survey; BIOS and the Instrument to Assess Language Knowledge; ITALK).

Results: Paired *t* tests were conducted to compare the average of each score. The results showed significant differences ($p < .001$) between the Dual language scores and Spanish only scores. The results indicated that the subjects had significantly lower scores when looking at the Spanish only scores versus the Dual language scores.

Conclusion: The findings demonstrated that the children in El Paso, TX had inflated scores on the PLS-5S. This may be due to the PLS-5S normed to a majority of children who are monolingual Spanish speakers when compared to the children of a border community who are bilingual in English and Spanish. These differences in the norms could lead to an under identification of children with language impairment. Caution should be taken when using this assessment.

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Chapter 1: Literature Review

The most recent U.S. Census revealed significant increases in the numbers of Culturally and Linguistically Diverse (CLD) groups (Census Reporter, 2017). The population of children who are Hispanic has grown from 9 percent in 1980 to 25 percent in 2016 (Child Trends, 2018). Following this trend, schools across the United States are also becoming more diverse. There is a 33 percent increase projected between 2011 and 2022 for students who are Hispanic and a 44 percent increase for students who are two or more races (Hussar & Bailey, 2014). With this increasing diversity, it is more likely that speech language pathologist (SLPs) will have to assess children who speak a language(s) other than English (Laing & Kamhi, 2003). One of the major challenges of speech language pathologists (SLPs) is that CLD children are often over-diagnosed or under-diagnosed with language impairment (Kapantzoglou, Restrepo & Thompson, 2012). Younger aged bilingual students are often under-diagnosed in special education programs, such as for language intervention (Kapantzoglou et al., 2012). However, in later school years, there is an overdiagnosis of bilingual students who are represented in special education programming (Kapantzoglou et al. 2012). Consequently, thorough assessment of language function and use is crucial in CLD children to differentiate between language differences and disorders (Arias & Friberg, 2017).

When it comes to assessing language, an SLP must decide if the child has a true language impairment or a language difference. The SLP must then identify strengths and weaknesses in all areas of language (i.e. syntax, semantics, phonology, morphology) and create appropriate treatment goals (Ebert & Scott, 2017). It is preferred that both languages of bilingual children are assessed to determine language abilities (Gilliam, Peña, Bedore, Bohman, & Mendez-Perez, 2013). Language proficiency will vary for these children. Several factors affect language proficiency such as the age the child was first exposed to each language spoken, the environment

for language learning, the importance of the language in the community or home, and the child's motivation to learn a second language (Caesar & Kohler, 2007). When a bilingual child truly has a language disorder, it will be present in both languages. SLPs often administer standardized tests in English in order to determine if a bilingual child has a language impairment. Yet, such a child could also be in the process of learning English, making the process more difficult. SLPs must go through a comprehensive language evaluation in order to accurately determine language disorder versus language difference.

Language Evaluation in CLD populations

The purpose of a language evaluation is to distinguish disorder from typical development, find the strength and weaknesses, and develop treatment goals (Ebert & Scott, 2014). There are multiple tools used in the process of language evaluation of children from CLD backgrounds.

The American Speech Language Hearing Association (ASHA) recommends including appropriate translators or interpreters and the appropriate use of alternative assessment procedures such as dynamic assessment, use of standardized tests, and interviewing techniques (2004; Caesar & Kohler, 2007). The Individuals with Disabilities Education Act (IDEA) states that assessment materials must not be racially or culturally discriminatory, and should instead focus on identifying if the child has a disability, show validation, and should be administered by trained personnel. Interviewing techniques could be a comprehensive review of the child's case history that includes culture, linguistic and familial information (ASHA, 2004).

Recommendations for intervention depend upon what evaluation tools clinicians choose to administer and interpret various assessment measures to discriminate between language differences and disorders (Arias & Friberg, 2017). While it is recommended that an evaluation

include multiple sources of data for CLD populations, standardized tests remain the most commonly used (Ebert & Pham, 2017).

Standardized tests offer means to examine different language skills; a reason many clinicians use them (Ebert & Pham, 2017). Tests can assess a variety of language skills across all levels of language such as the word, sentence, and discourse level and are used across a wide range of ages (Spaulding, Plante, & Farinella, 2006). If a child has a language impairment, it is expected that they will fall below the mean on language tests. School systems often require that children's standardized test scores fall below a certain standard deviation from the test mean in order for the child to qualify for speech language pathology services (Spaulding et al., 2006). Districts in many states include a criterion that a child must fall below the mean on a language test. For example, the child must score $-1.5 SD$ below the mean in Missouri and South Dakota, $-1.75 SD$ in Wisconsin, -1.5 to $-2.0 SD$ in New York and Arizona, $-2.0 SD$ in Kentucky, -1.5 in Texas (ASHA, 1999; Spaulding et al., 2006). Standardized tests that compare the performance of one child to a normative sample report relevant information to the SLP about a child's language skills (Arias & Friberg, 2017).

When it comes to identifying a language disorder, an essential factor is the use of published, norm-referenced tests. These tests have standardized administration, scoring, and interpretive procedures that show their validity, reliability, and applicability as well as report relevant information and evidence about the communication disorder to the SLP (Hoffman, Loeb, Brandel, & Gillam, 2011; McCauley & Swisher, 1984). In order to properly choose a norm-referenced test, a speech language pathologist makes a series of decisions and engages in various activities. There is a lack of standardized tests in languages other than English, which causes problems with reliability and validity of test scores for CLD populations (Arias & Friberg, 2017;

Kamhi, Masterson, & Apel, 2007). For the bilingual population, standardized assessments are limited.

Standardized Tests in CLD Populations

There are many weaknesses in the use of standardized tests for the CLD population. One reason SLPs use standardized tests in the CLD population is due to the lack of alternatives (Caesar & Kohler, 2007). Many of these tests have bias. The two most common are content bias and linguistic bias (Dollaghan & Horner, 2011). Content bias occurs when the individual is unfamiliar with the items on the exam due to cultural differences. Linguistic bias is the unfamiliarity of the linguistic rules attributed to dialectical differences (Dollaghan & Horner, 2011). Most standardized tests in other languages are translated from English, which can be misleading because differences in language structure can impact the test content (Bedore & Peña, 2008; Dollaghan & Honer, 2011). These tests often do not report accurate bilingual language abilities (Bedore & Peña, 2008). More research is required to address the appropriate use of standardized tests for bilingual children due to the complexity of both languages.

Normative Samples in the CLD Population

Normative tests are commonly used in the diagnostic process in the field of speech-language pathology. Normative samples are drawn from the general population and include individuals who represent the age matched peers and demographics of those for whom the test is anticipated (Peña, Spaulding, & Plante, 2006). There have been numerous tests published to assess children who speak languages other than English (McLeod, Verdon, Baker, Ball, Ballard, David . . . Zharkova, 2017). McLeod and Verdon (2014) reviewed 30 tests published in 19 languages other than English and found that few of these assessments were developed for or

normed with multilingual populations. Ebert and Pham (2017) recently found that several tests have been published for Spanish-English speakers but few of them include bilingual children in the normative sample. Nonetheless, there is a need for more tests that are representative of all Spanish dialects and regions of the United States.

Standardized tests may not be appropriate for particular children from CLD backgrounds if the norming sample does not match that child (De Lamo White & Jin 2011; Ebert & Pham, 2017). According to Kamhi et al. (2007) “Many English-speaking children in the U.S. do not speak Standard American English (SAE), yet the majority of assessment tools available to SLPs were developed and normed on speakers of SAE.” (p. 99). Hendricks and Adlof (2017) found a misdiagnosis of language impairment (LI) due to dialectal differences. Although standardized tests may not represent all dialects of Spanish, there are ways to utilize them for CLD populations.

Recommendations for Using Standardized Tests in CLD Populations

Recommendations for using standardized tests in CLD populations include using culturally and linguistically improved test equivalents in all languages to compare possible deficits (Goldstein, 2000). In recent years, several tests have been developed for use with bilingual children specifically. Some examples of these tests include the Bilingual English Spanish Assessment (BESA) authored by Peña, Gutiérrez-Clellen, Iglesias, Goldstein, and Bedore (2018), Preschool Language Scales, Fifth Edition Spanish (PLS-5S) by Zimmerman, Steiner and Pond (2012), and the Clinical Evaluation of Language Fundamentals (CELF) by Wiig, Semel, and Secord (2006). These tests use strategies to overcome bias. For example, the BESA Spanish subtest was the first test published that was not translated from English. It also

includes a normative sample with children from 17 Spanish dialects and 7 regional dialects for English (Peña et al., 2014).

Conceptual scoring is another strategy for reducing bias in testing in that responses are accepted in either language and are credited on a standardized assessment test. Conceptual scoring is a method designed to demonstrate the concepts a child has in their language knowledge regardless of the lexical item. This strategy has been found to decrease some of the noted differences in vocabulary scores between monolingual and bilingual children and provides a whole representation of a bilingual child's lexical knowledge as opposed to a single-language scoring (Bedore, Peña, Garcia, & Cortez, 2005; Peña, Bedore, & Kester, 2015). The PLS-5S (Zimmerman et al., 2012) is one such test, in which all the items are administered in the Spanish language first and the items answered incorrectly are then re-administered in English, in order to obtain the conceptual score.

In recent years, Zimmerman et al. (2012) has updated their version of the PLS. In Restrepo's (2001) study, she found that the PLS-3, an earlier version, had a limited norming sample with no information on the dialects or language proficiency of the population which it was normed on. It was also found that the PLS-3 had a poor description of standardization and norms and that the test could potentially lead to over-identification of bilingual children with language impairments (Restrepo, 2001). The most recent version of the PLS-5S used in this study states that the test demonstrates the most recent normative data representing the U.S. population and socioeconomic status shift between families (Zimmerman et al., 2012). It is unknown if the PLS-5S has adequately addressed concerns with earlier versions.

Purpose

In a previous study about diagnostic accuracy (Curtis et al., 2017), children fell below the cut off on the language knowledge questionnaire as reported by parents and teachers, but these children scored above the cut off of the PLS-5S. This study took place in El Paso, Texas, a city in the U.S./Mexico border and led to concerns about the use of the PLS-5S in this community. The purpose of this study was to further examine the appropriateness of the PLS-5S in the U.S./Mexico border community by answering the following questions:

1. Is there a significant difference between the Dual language scores versus the Spanish only scores on the PLS-5S?
2. How does the PLS-5S normative sample compare to the population of the border community?

Chapter 2: Methods

This study was part of a larger project examining diagnostic accuracy of assessment tools for bilingual English-Spanish children in a United States and Mexico border community (Curtis et al., 2017). The Institutional Review Board (IRB) for the university approved this study in the Fall of 2016.

Participants

Participants were recruited for the study by sending out flyers in both English and Spanish to different preschools, daycares, and Head Starts around the El Paso area. Participant families were offered an incentive of a \$40.00 gift card to a local grocery store. Consent forms were sent to the parents of the participants in their preferred language. Once researchers received the forms, they could begin the assessment. There were 47 participants recruited for the larger study (Curtis et al., 2017). For the current study, the inclusionary criteria were completion of the PLS-5S and passing a hearing screening. Exclusionary criteria were completion of the PLS-5 English and other diagnosed cognitive impairments. There was a total of 23 participants who met the inclusionary criteria of these 47 participants.

Measures

Participants completed a standardized assessment and parents and teachers completed language proficiency questionnaires. The questionnaires came from the *Bilingual English-Spanish Assessment* (BESA; Peña, et al. 2014) in order to obtain information about the child's language environment, input, and output, as well as proficiency in each language. The specific measures within each of these categories are described below.

Bilingual input output survey (BIOS). The first questionnaire, the *Bilingual Input Output Survey* (BIOS; Peña et al., 2014) was completed by parents and teachers to gather information about the child’s language exposure each year, what home language the family primarily used, and if the child attended a preschool and what language was used there. The parent/teacher also reported the child’s hour by hour input and output of each language (Spanish and English) resulting in the participants’ mean percentage of 45.6% English input, 52.6% English output, 54.4% Spanish input and 47.4% Spanish output (see Table 1).

Instrument to assess language knowledge (ITALK). The second questionnaire called the *Instrument to Assess Language Knowledge* (ITALK; Peña et al., 2014) was used to gather information regarding language use and proficiency in English and Spanish across five domains: vocabulary proficiency, speech proficiency (intelligibility), sentence production proficiency, grammatical proficiency, and comprehension proficiency. The parents and teachers rated the children from “does not know” which is a score of zero and then from 1 to 5 if they were proficient in five categories. All of these categories resulted in an average score from home and school. If the highest average score from home or school was greater than 4.18 there were no concerns in the child’s speech and language. The average of the Spanish scores were 4.06 at home and 3.50 at school and the average of the English scores were 3.87 at home and 3.42 at school on a 5-point scale (see Table 1). Parents rated the children higher than the teachers.

Table 1

BESOS and ITALK results

	ITALK		BIOS	
	H	Sch	In	Out
Eng	3.87	3.42	45.60	52.55
Sp	4.06	3.50	54.40	47.45

Note. M=Morphosyntax, S=Semantics, H=Home, Sch=School, In=Input, Out=Output, Eng=English, Sp=Spanish

Preschool language scales, fifth edition Spanish (PLS-5S). Each participant completed the *Preschool Language Scale Fifth Edition* (PLS-5S; Zimmerman, et al. 2012). In the PLS-5S there are two standardized scales, Auditory Comprehension (AC) and Expressive Communication (EC). The test is first administered in Spanish until a ceiling is reached, if the child receives a score of zero on any item, then those missed questions are asked in English until a ceiling is reached.

Procedure

All procedures were administered in a quiet location in the participant’s school or daycare. Assessments were completed in two to four sessions of 60-90 minutes. These tools were administered by certified speech-language pathologists or trained research assistants fluent in both English and Spanish. Research assistants were trained undergraduate and graduate students in the speech-language pathology program. The order of assessment for the procedures was counterbalanced in one of four sequences for each participant.

The two questionnaires were completed either by phone or in person in the parent’s strongest language in order to receive the most information about the child. Each interview lasted

about 15-20 minutes. The PLS-5S was scored using the administration guidelines from the manual to obtain the Dual language scores. For the purpose of this study, two trained graduate students then rescored each protocol. The English scores were counted as zero resulting in a Spanish only score. The dependent variables were the EC and AC scores from the PLS-5S. The independent variable of this study was the scoring method, Dual language scores or Spanish only scores.

Chapter 3: Results

Research Question 1

The first research question asked if there was a significant difference in the scores of the PLS-5S when comparing the Dual language scores and the Spanish only scores. The participants had an average standard score of 111.3 on the Dual AC and 108.6 on the Dual EC and a 98.69 Spanish AC and 92.95 Spanish EC (see Figure 1). Paired *t* tests were conducted to compare the Dual language scores and Spanish only scores (see Table 2). There were statistically significant differences ($p < .05$) between the Dual AC and Spanish AC scores and between the Dual EC and the Spanish EC scores (see Figure 1).

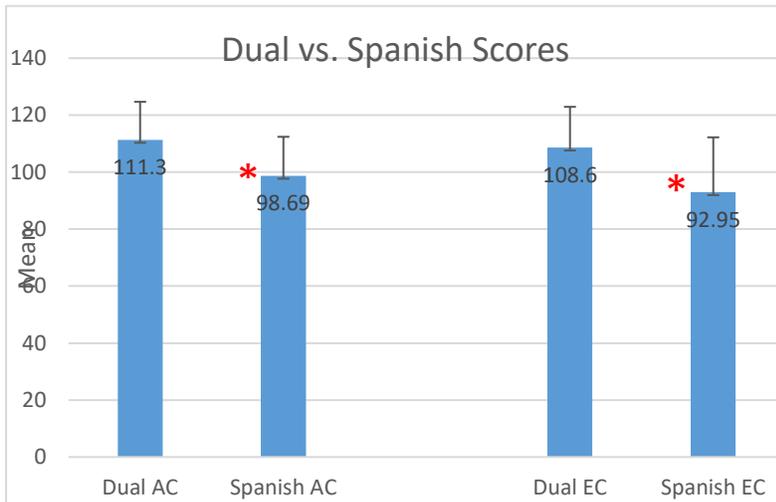


Figure 1: Dual vs. Spanish scores, * $p < .05$

Table 2

Paired t test results

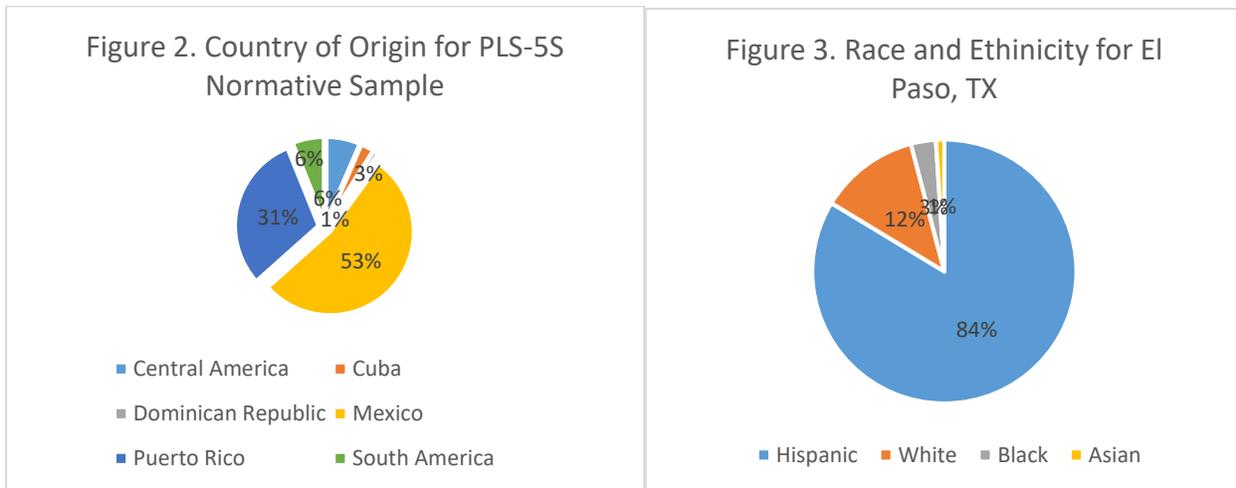
		t	df	p
Pair 1	Dual AC & Sp AC	5.231	22	.000*
Pair 2	Dual EC & Sp EC	3.748	22	.001*

Note. AC=Auditory Comprehension, EC=Expressive Communication, Dual=Dual language scores, Sp=Spanish only scores, t=paired t test, df=degrees of freedom, *p<.05

Research Question 2

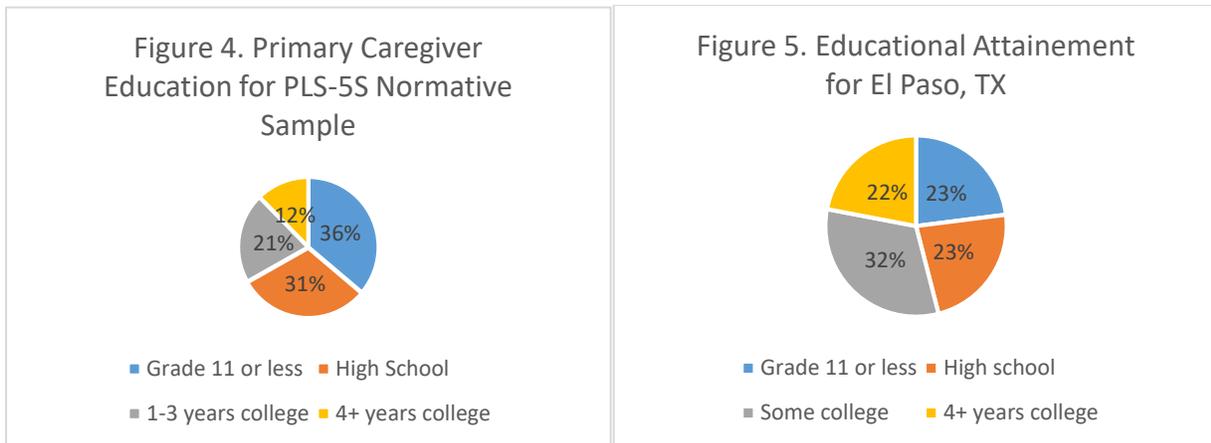
The second research question asked how the normative sample of the PLS-5S compared to the population of the El Paso border community. The norming sample of the PLS-5S was compared to the demographic information of the El Paso community. There were notable variations across the demographics of the normative sample of the PLS-5S and the population of El Paso (see Figures 2-7).

First, the race and ethnicity of the two populations were compared (see Figures 2 & 3). For the PLS-5S normative sample, the reported countries/areas of origin were Mexico (53%), Puerto Rico (31%), Central America (6%), South America (6%), Cuba (3%), and the Dominican Republic (1%). Eighty-four percent of El Paso is of Hispanic ethnicity (Census, 2017). With El Paso being a U.S./Mexico border community, it is probable that the majority of Hispanics come from Mexico whereas in the normative sample of the PLS-5S the country of origin varies which could result in dialectal differences.



Figures 2 & 3: Country of Origin for the PLS-5S Normative Sample; Race and Ethnicity for El Paso, TX

Second, the education levels of the two populations were compared (see Figures 4 & 5). Thirty-six percent of the primary caregivers of the PLS-5S normative sample attended eleventh grade or less with 31% completing high school for a total of 67% with high school or less and 33% attending at least some college (Zimmerman et al., 2012). In comparison, 46% of the population in El Paso, TX completed high school or less with 54% of the population attending at least some college (Census, 2017). The population in El Paso had more education overall than the normative sample of the PLS-5S.



Figures 4 & 5: Primary Caregiver Education for PLS-5S; Educational Attainment for El Paso, TX

The last comparison was made about the languages spoken at home (see Figures 6 & 7). A majority (67%) of the population of the normative sample of the PLS-5S are monolingual Spanish speakers and 33% of homes spoke primarily Spanish with some English (Zimmerman et al., 2012). In contrast, a majority (65%) of the El Paso population speak Spanish at home with the number of both English and Spanish is unknown (Census, 2017). Although the exact number is unknown from the census data, a large portion of the Spanish-speaking population in El Paso may also speak English due to the high levels of education which is different from the PLS-5S sample.

Figure 6. Level of Spanish Fluency for PLS-5S Normative Sample

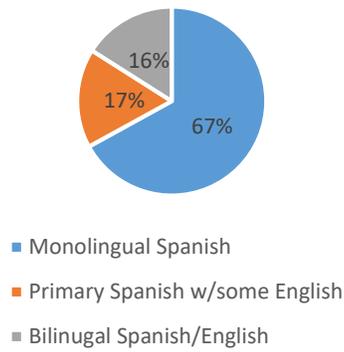
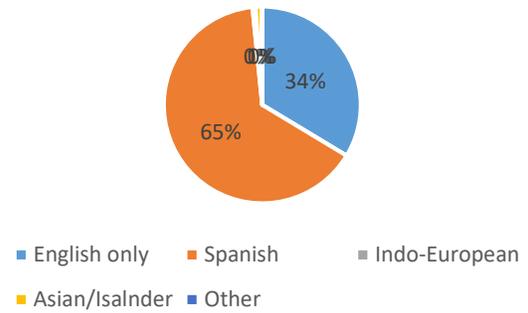


Figure 7. Languages Spoken at Home in El Paso, TX Children 5-17



Figures 6 & 7: Level of Spanish Fluency for PLS-5S Normative Sample; Languages Spoken at Home in El Paso, TX Children ages 5-17

Chapter 4: Discussion

With the increasing CLD population, SLPs have a crucial responsibility to accurately differentiate children who have a language impairment from those with a language difference. Conceptual scoring is an appropriate strategy to use with assessment information in both languages, although the research is limited. This study used a Spanish only scoring procedure to compare differences between Dual language scores and Spanish only scores from the PLS-5S. The study also compared the normative sample of the test to a local population to determine if it is an appropriate test for the community.

The finding that Spanish standardized tests based on English versions do not accurately reflect bilingual language abilities are consistent with previous research (Bedore & Peña, 2008). Results from the present study demonstrate such differences. This was represented in the differences between the Dual language scores and Spanish only scores. Not all language features are shared across languages (Ebert & Pham, 2017), which might affect the scores of the bilingual children in the border community resulting in inflated standard scores. These results are also consistent with Restrepo's (2001) study, that the norming sample of the PLS-5S is different when comparing to the population of the border community. These standard scores could be inflated on the PLS-5S found in bilingual children due to higher English proficiency in bilingual children in the border community than in the normative sample on the PLS-5S.

Previous studies have found that parent level of education is a significant predictor of child language (Pancsofar & Vernon-Feagans, 2006). With the higher levels of education in El Paso, TX as compared to the normative sample of the PLS-5S, Dual language scores may be higher on the PLS-5S, potentially leading to the under identification of children with language impairment. Caution must be used when using the PLS-5S in a U.S./Mexico border community.

The findings suggest that only using standardized tests is the optimal method of diagnosing a bilingual child with language impairment. Measures used for identifying bilingual children with a language impairment need to be supplemented by additional information (Dollaghan & Horner, 2011). Other methods of assessment should be used in the diagnostic process of language impairment of bilingual children such as dynamic assessment (Gutierrez-Clellen & Peña, 2001) and language sampling (Eisenberg & Guo, 2013).

Limitations & Future Research

This study had a limited sample size, with only 23 participants who met the inclusionary criteria. A larger sample size would increase confidence of the findings. There was no reliability achieved when rescoring the PLS-5S, which is another limitation. Likewise, the current study was done in El Paso, a border city in West Texas. Results may differ in other cities on the U.S./Mexico border across the United States.

The findings warrant further studies of the PLS-5S in other regions of the United States where the children are dominant in both English and Spanish. There is a need to find more appropriate assessment tools when diagnosing bilingual children in border communities or other areas where English and Spanish are dominant. Even though more information is needed, future research needs to dedicate more attention to measuring the language skills of bilingual children, the standardized assessments and the norms developed. With the increasing number of children in the United States who do not speak English as their first language to 300 percent in the past 45 years in and that this percentage continues to grow (Billing, 2009), it is necessary for further research in the subject. With further knowledge about how to diagnose bilingual children in a U.S./Mexico border community, better diagnostic strategies could be implemented.

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Vita

Callie Mae Mathis is a graduate student at the University of Texas at El Paso in the Speech Language Pathology Program. Callie is currently pursuing the Bilingual Certificate in Speech Language Pathology. She is a recipient of the Preparing Bilingually Certified Speech Language Pathologist Grant and the Texas Organization of Multilingual Multicultural Audiologist and Speech-Language Pathologist (TOMMAS) Scholarship. In 2016, Callie graduated from University of Mississippi with a Bachelor of Science in Communication Sciences and Disorders and a Bachelor of Art in Spanish with a minor in Teaching English to Speakers of Other Languages. She is a member of Dr. Summers' Research in Bilingual Language-Learning Lab, the National Student Speech-Language-Hearing Association and the Texas Speech-Language-Hearing Association.

Contact Information: calliemaemathis@gmail.com

This thesis was typed by Callie Mae Mathis.