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CONCEPTUAL AND TOTAL VOCABULARY IN SPANISH-ENGLISH BILINGUALS FROM 23 TO 35 MONTHS: ASSESSING VOCABULARY AMONG YOUNG, MIGRANT EMERGENT BILINGUAL CHILDREN

Rica Ramírez, Ph.D. [1]

[1] *Assistant Professor, Early Childhood and Elementary Education, Department of Interdisciplinary Learning and Teaching, University of Texas at San Antonio, ORCID: 0000-0002-5984-9186*

Abstract

Migrant and seasonal agriculture workers, mostly of Latino origin, largely supply the labor that goes into crop production, cultivation, and harvest in the agricultural industry in the United States. A major challenge of this population is having stable childcare and access to quality education services for their children. Unfortunately, most assessments overlook the various aspects of emergent bilingual children's development, leading to underestimation of their conceptual understandings and linguistic skills. This calls for a more comprehensive and inclusive approach to assessment. Three scoring methods have been identified as the most appropriate ways to score linguistic capabilities in bilingual children: single-language scoring, total scoring, and conceptual scoring (Bedore et al., 2005; Core et al., 2013). Each method presents advantages and disadvantages and is used according to the questions being asked. This longitudinal study aims to (1) compare total vocabulary and conceptual vocabulary in a group of two-year-old emergent bilingual children across time, (2) compare total and conceptual vocabulary with normed monolingual performance on a single-language measure across time using total and conceptual scoring methods, and (3) to determine which method of assessing vocabulary in two languages is most appropriate for two-year-old migrant bilingual children. Eight emergent bilingual children (50% female; Age: Time 1: M = 23.25 months, SD = 3.34) attending the Migrant and Seasonal Head Start (MSHS) or Redlands Christian Migrant Association (RMCA) were assessed using the MacArthur-Bates Communicative Developmental Inventory at three timepoints. Results showed that children's total vocabulary scores were larger than their conceptual vocabulary scores and when comparing to monolingual norms their total scores were larger than their conceptual scores. Implications and recommendations will be discussed further.

Keywords

Emergent Bilinguals, Migrants, Early Childhood, Assessment, Bilingual Language Development

Introduction

Migrant and seasonal agriculture workers, mostly of Latino origin, largely supply the labor that goes into crop production, cultivation, and harvest in the agricultural industry in the United States (U.S.). These jobs are for the most part temporary, resulting in migrant workers frequently moving across state lines and international borders to follow the work in agriculture. There are roughly 2.4 million farmworkers in the U.S. (Costa, 2023). Mexico makes up the largest group of foreign-born migrants that come to the U.S., where Spanish is the most used language in these households (Batalova, 2024). A major challenge of this population is having stable childcare and access to quality education services for their children. Upon entering school, their children are emergent bilinguals. Through school and by acquiring English, these children become bilingual. They are continuing to learn their home language and simultaneously learning English as their new language (García et al., 2008). There are 4,933,000 or 33% emerging bilinguals in the U.S. that are under the age of 3 (Migration Policy Institute, 2019). In states like Florida, emergent bilinguals under the age of 3 make up 42% of the population. This large and growing population comes with valuable linguistic and cultural assets, yet they are also disproportionately likely to face multiple risk factors such as socioeconomic conditions, migration, mobility, language, and cultural barriers, which can affect children's education, academic achievement, and well-being (Berthold & Libal, 2019; Hu & Szente, 2009).

Assessing Young Emergent Bilinguals

Assessment in early childhood classrooms is not just a routine task but one of the most crucial activities for early childhood teachers. It holds the key to understanding and nurturing the language proficiency of young emergent bilinguals, a task that comes with unique challenges. Examining the child's skills in both languages is essential for accurately assessing a bilingual's developmental status and instructional needs (NASEM, 2017). However, when assessing emergent bilingual learners, we must acknowledge the gaps in our current methods. Despite the importance of accurately assessing language proficiency among young emergent bilinguals in early childhood, research examining this population is limited. Most studies focused on preschool or elementary-age children (e.g., Bedore et al., 2005; McClaine et al., 2021) and two- to three-year old children, none of which examined migrant children (Core et al., 2013; Mancilla-Martinez et al., 2006; Thordardottir er al., 2006). Unfortunately, most assessments overlook the various aspects of bilingual children's development, leading to underestimation of their conceptual understandings and linguistic skills. This calls for a more comprehensive and inclusive approach to assessment. This study seeks to accurately capture the language proficiency among young emergent bilingual children in a migrant program using longitudinal design and more equitable scoring methods.

Assessment is defined as the process of observing, recording, and documenting children's overall growth and behavior (Mindes & Jung, 2015). According to the National Association for the Education of Young Children (NAEYC), data collection and interpretation should be a culturally and linguistically responsive process that evolves as children develop (2019). For assessment to be authentic and effective, teachers must use varied types of information (such as photos, artifacts, and observations). Assessment should also be continuous and routine throughout the school day (Elicker & Benson McMullan, 2013). Most importantly, assessment should focus on children's strengths and be responsive to student needs. Thus, teachers must focus on children's capabilities across their linguistic repertoire (García & Wei, 2014; Moreno & Klute, 2011).

There are, however, unique issues in assessing the language development of emergent bilingual children because their linguistic abilities are spread across the languages they are learning (López & Foster, 2021). One example of this variability is the timing or the sequence of acquisition of these languages (Baker, 2006; McLaughlin, 1984). For example, simultaneous language learners acquire two or more languages at the same time. This type of bilingualism is inherent in homes where parents speak multiple languages. Conversely, sequential language learners begin to learn a second language after age three (Baker, 2006; McLaughlin, 1984). This type of bilingualism is likely found in children with parents who speak one language and begin learning their second language upon entering school or childcare. When learning two languages sequentially, children acquire receptive vocabulary knowledge more quickly than expressive vocabulary knowledge (Gibson et al., 2014). Thus, structured tests provide only a limited picture of the richness and complexity of the child's bilingualism (Babino & Gonzalez-Carriedo, 2017; Baker, 2011).

Another example relates to context-specific vocabulary learning, where areas of vocabulary may be more developed in one language than the other (Gross et al., 2014; Hoff, 2018b). For example, many children who speak Spanish at home learn vocabulary centered on the home and may know words such as *cama* in Spanish but not *bed* in English. Conversely, these children learn English at school and may know the word for *desk* in English but not *escritorio* in Spanish. The amount of input and exposure in each language contributes to the extensive heterogeneity in this population (Hoff, 2018a; Thordardottir et al., 2006), as well as the quality of language input in each language (Kohnert, 2008).

Because of the distributed nature of their vocabulary, assessing bilingual children becomes complicated. Assessing them in only one language may underestimate their language abilities as it captures only one aspect of their language. Therefore, early childhood professionals must understand the complexities of these issues and consider these factors when assessing bilingual children's language abilities (Kan & Kohnert, 2005; Pearson et al., 1993; Zimmerman, 2014).

Measuring Bilingual Vocabulary Using Monolingual Norms

Current standardized assessments underestimate bilingual learners' capabilities because they were designed for monolingual English students in all English classrooms (Babino & Gonzalez-Carriedo, 2017; Baker, 2011). Historically, monolingual-English-speaking children have been deemed as the "norm" in the US school system, resulting in deficit orientations toward bilingual children (MacSwan, 2017; Martínez, 2018). Although there has been a shift in viewing these norms as insufficient, most assessments and schools still use monolingual assumptions of bilingualism and its development (Arias & Friberg, 2017; Luk & Christodoulou, 2016; Mancilla-Martinez et al., 2011). This is problematic because a monolingual view of bilingualism assumes that bilinguals should have equal proficiency in both languages and that bilingual children should have language proficiency in both languages comparable to that of monolingual children (McClain et al., 2021).

Previous studies measured Spanish-English bilingual students' vocabulary and used Spanish-monolingual norms against their Spanish vocabulary and English-monolingual norms against their English vocabulary (Mancilla-Martinez et al., 2011, 2017). However, this still makes it appear that students' language proficiency is lower in both languages. Using more equitable assessment practices may help account for children's abilities across

languages and accurately measure them against their monolingual peers (McClain, 2021). There is a need to create bilingual norms because these norms would assume that a child draws from one shared linguistic repertoire (García & Wei, 2014). That has yet to be fully undertaken.

Scoring Vocabulary in Two Languages

Three scoring methods have been identified as the most appropriate ways to score linguistic capabilities in bilingual children: single-language scoring, total scoring, and conceptual scoring (Bedore et al., 2005; Core et al., 2013). Each method presents advantages and disadvantages and is used according to the questions being asked. Single-language scoring (SL) refers to the assessment of a bilingual child using one language measure and comparing the scores with monolingual norms. However, a single-language scoring method cannot capture the unique environment of a bilingual child. Thus, it is not recommended because it underestimates their true linguistic abilities, resulting in scores much lower than their monolingual peers (Hoff et al., 2012; Bedore et al., 2005; Gross et al., 2014; Vagh et al., 2009). The difference in language scores has been viewed from a deficit perspective, often identifying a language delay rather than a temporary attribute of emergent bilingualism (Paradis et al., 2011).

The second method, Conceptual Vocabulary scoring (CV), gives credit to the child for knowing concepts rather than words, whether lexicalized in English, Spanish, or both. For example, if a child says *mesa* in Spanish and *table* in English and then knows *dog* in Spanish, her score would be two. Despite knowing the two-word forms of a *table,* it is considered one concept. This measure can account for all the words in one language plus the words that can only be produced in the other, also known as singlets. Many researchers have used this way of scoring bilingual children's vocabulary ability (Bedore et al., 2005; Gross et al., 2014; Hwang et al., 2019; McClain et al., 2021; Peña, & Halle, 2011; Thordardottir, 2006). Conceptual scoring, however, does not account for the difference in levels of linguistic competence expressed in Spanish compared to English. One can count translation equivalents in content words only because it would be laborious to account for all categories of vocabulary (Thordardottir et al., 2006).

The third measure, Total Vocabulary scoring (TV), is calculated by summing up the raw scores in English and raw scores in Spanish and comparing them to monolingual norms. It has been suggested that using total vocabulary scoring for bilingual children produces vocabulary sizes like those of monolingual children (Hoff et al., 2012; Pearson et al., 1993; Thordardottir et al., 2006). Indeed, total scoring depicts a more comprehensive profile of bilingual vocabulary knowledge (Oh & Mancilla-Martinez, 2021).

Current Study

Longitudinal studies can explain developmental trajectories that allows for the examination of interindividual and intraindividual variability in children's growth (Grammer et al., 2013). Therefore, this longitudinal study aims to (1) compare total vocabulary and conceptual vocabulary in a group of two-year-old emergent bilingual children across time, (2) compare total and conceptual vocabulary with normed monolingual performance on a single-language measure across time using total and conceptual scoring methods, and (3) to determine which method of assessing vocabulary in two languages is most appropriate for two-year-old migrant bilingual children.

Method

Participants

Eight bilingual children attending the Migrant and Seasonal Head Start (MSHS) or Redlands Christian Migrant Association (RMCA) were a part of the current study. MSHS is an education program that serves children of migrant and seasonal farmworkers, which is sponsored by the Office of Head Start. MSHS is a bilingual and bicultural division of Head Start that provides early childhood education solely to children of migrant and seasonal farmworker families from birth to age five. Children served by MSHS speak a variety of languages at home, most speak Spanish at 85%, 10% speak English, and another 5% speak an Indigenous language from Mexico, Central or South America (Mohan & Walker, 2016). Similarly, Redlands Christian Migrant Association is an early development center based out of Florida that provides quality childcare and education from the crib to high school and beyond for migrant workers and their families. They serve about 4,600 children annually.

Children were assessed at three time points (50% female; Age: Time 1: M = 23.25 months, SD = 3.34; Time 2: M = 30.13 months, SD = 4.14; Time 3: M = 35.13, SD = 4.34). Mothers (M age = 30.5 years, SD = 6.21) were born outside the United States and represented several Latin American countries. Four mothers were from Mexico, two from the Dominican Republic, one from Cuba, and one from Guatemala. Years spent in the US ranged between four and twenty-one years, averaging 10.75 years. Mother's education varied, ranging from completing some elementary school to completing some higher education. Seven mothers received their education in their country of origin where the language of instruction was Spanish. One mother was educated in Spanish and Mixteco, an indigenous language of Oaxaca, Mexico. All mothers could speak Spanish fluently, as it was their first and primary language, with seven mothers able to speak some English. Two mothers made less than $10,000 in annual income, and six made between $10,000 to $30,000. All families were migrant workers or had at least one

caregiver who was a migrant worker. Inclusion criteria for bilingual children included having at least one parent who speaks Spanish at home. Their country of origin or marital status did not exclude any mothers from participating. Children with neurological and sensory abnormalities or language delay/impairment were excluded from this study.

Measures

To capture children's language proficiencies across time the following measures were used. The Words and Sentences MacArthur-Bates Communicative Developmental Inventory: Second Edition (CDI: Fenson et al., 2007) was administered to obtain an understanding of the children's vocabulary production across time in English. The CDI is a 680- word vocabulary checklist filled out by the parents or caregivers. The checklist measures language production, asking parents to report only the words their children can say. The checklist consists of two parts, the first being vocabulary, which is made up of 22 categories (i.e., animal sounds, household objects, action words, descriptive words, pronouns, etc.) and the second part consisting of sentences and grammar (i.e., word forms, word endings, complexity, etc.). Parents were asked to check off any words their child knows even if the child pronounced the word differently (i.e., "raffe" for giraffe). For Spanish-dominant mothers, the English ratings were completed with the help of a bilingual researcher.

The Words and Sentences CDI is used for children between 16-30 months old. Although the present sample exceeded 30 months old at time 3, the guidelines in the CDI manual stated several reasons for choosing the Words and Sentences form. Three of these apply to the present study. First, if the interest is in conducting longitudinal comparisons on the same scale across ages. Secondly, researchers with older samples growing up in a bilingual environment can use the CDI. Furthermore, it should also be noted that the present sample is of low socioeconomic status, and most mothers have low levels of education. Through the norming process, MacArthur Bates and colleagues (2007) found that reported scores of vocabulary and grammar are lower for children with mothers who have fewer years of education. The present study meets these criteria. It is a longitudinal study with a sample of children who are growing up in a bilingual environment and are from a low socioeconomic household. Therefore, the use of the Words and Sentences version is appropriate across all three time points. Additionally, Mancilla and colleagues (2011) validated the CDI and Inventario II for use with 24- and 36-month-old bilingual children.

In addition, The Palabras y Enunciados: Inventario II MacArthur Inventarios del Desarrollo de Habilidades Comunicativas (Inventario II: Jackson-Maldonado et al., 2003) was administered to understand the children's vocabulary production growth in Spanish across time. Administered in the same way as the CDI in English, parents are asked to indicate the words their children can say. It is a 680-word vocabulary checklist organized into 23 semantic categories. Categories contain nouns (animals, vehicles, toys, etc.), games and routines, verbs, descriptive words, questions, a connecting words category, prepositions, quantifiers, etc. The second part of the checklist includes asking parents to indicate whether their child can produce word combinations and to provide examples of the child's best utterances. The last section of the checklist asks parents to report on the complexity of their children's speech.

Data Analysis

Descriptive information was obtained for each subtest in each language. The results of the CDI were tallied and analyzed using the conceptual vocabulary scoring method, total vocabulary scoring method, and single-language scores. To calculate a conceptual score, the MCDI scoring software creates a composite score, which is the number of phrases or words reported in English and Spanish, counting only once those which are reported in both languages (Fenson et al., 2007). The author then went through each child's composite scores and made corrections when the scoring software deemed two words as singlets and it in fact was not. Total vocabulary scoring was created by calculating the sum of the total raw scores in each language. A single-language score was calculated by reporting the raw score on each language. Table 1 represents the descriptive statistics on child language outcomes as measured by the CDI and Inventario II in English and Spanish across time. Children's language in English and Spanish increased across time in each of the scoring methods.

	Time 1		**Time 2**		**Time 3**	
Language Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
CDI	26	26.41	65.40	75.2	78.50	88.62
Inventario II	212.57	156.21	278.71	192.63	375.63	205.25
Total	231.14	151.27	325.43	231.99	454.13	253.05
Conceptual	206.57	129.39	261.43	272.97	356	175.7

Table 1. Means and Standard Deviations of Child Language Outcomes Across Time

Total and Conceptual Score Comparisons Across Time

Repeated measures ANOVA was conducted in order to answer the first aim of the study, which is to compare total vocabulary and conceptual vocabulary in a group of emergent bilingual children across time points, as well as effect sizes (Table 2). Children's English vocabulary production was reported to increase across time and was found to be significant, $F(2,8) = 5.26$, $p < .04$, with a partial eta square of .57. Children's Spanish vocabulary production was also reported to have increased as measured by the Inventario II, and was significant, $F(2, 10) = 7.92$, $p < .01$, with a partial eta square of .61. A post hoc pairwise comparison using LSD showed an increase between Time 1 ($M = 240.83$, $SD = 150.25$) and Time 3 ($M = 430.00$, $SD = 211.59$) of 189.17 Spanish words, which was statistically significant ($p < 0.02$). Another statistically significant mean difference of 111.50 of Spanish words ($p < 0.02$) was found between Time 2 ($M = 318.50$, $SD = 176.73$) and Time 3 ($M = 430.00$, $SD = 211.59$). Children's total scores increased as well and was significant, $F(2, 10) = 7.59$, $p < .01$, with a partial eta square of .60. A post hoc pairwise comparison using LSD showed an increase between Time 1 ($M = 262.50$, $SD = 138.57$) and Time 3 ($M = 521.50$, $SD = 259.76$) of 259 total words, which was statistically significant ($p < 0.03$). There was a statistically significant increase of 148.50 Total words ($p < 0.01$) between Time 2 ($M = 373.00$, $SD = 213.48$) and Time 3 ($M = 521.50$, $SD = 259.76$). Children's conceptual scores saw the same pattern, as they increased and were significant, $F(2, 10) = 8.28$, $p < .01$, with a partial eta square of .62. A post hoc pairwise comparison using LSD showed an increase between Time 1 ($M = 234.00$, $SD = 117.35$) and Time 3 ($M = 403.83$, $SD = 178.98$) of 169.83 conceptual words, which was statistically significant ($p < 0.01$). There was a statistically significant increase of 105.33 conceptual words ($p < 0.01$) between Time 2 ($M = 298.50$, $SD = 156.07$) and Time 3 ($M = 403.83$, $SD = 178.98$).

Effect of Time	*MS*	*F*	*p*	n^2
CDI English	8,534.47	5.26	*<.04*	*0.57*
Inventario II	54,248.39	7.92	*<.01*	*0.61*
Total	101,343.50	7.59	<.01	*0.60*
Conceptual	44,098.72	8.28	*<.01*	*0.62*

Table 2. Repeated Measures ANOVA for Child Language Outcomes

A statistically significant difference was found when comparing total and conceptual scores at time 1, $t(6) = 2.62$, $p < .04$, Cohen's d = .99, where total scores had more words ($M = 231.14$, $SD = 151.27$) than conceptual scores ($M = 206.57$, $SD = 129.39$). In addition, at time 2, total scores was significantly different, $t(6) = 2.61$, $p < .04$, Cohen's d = .99, where total scores ($M = 325.43$, $SD = 231.99$) calculated more words than conceptual scores ($M = 261.43$, $SD = 172.97$). Lastly, at time 3 the same pattern emerged. There was a statistically significant difference between scoring methods, $t(7) = 3.10$, $p < .02$, Cohen's d = 1.10, where total scores ($M = 454.13$, $SD = 253.05$), were larger than conceptual scores ($M = 356.00$, $SD = 175.70$).

Comparing Total and Conceptual Vocabulary using Percentile Ranks

The second aim of this study was to compare total and conceptual scores to monolingual norms in Spanish and English. Total and conceptual scores were compared to the Inventario II norms, as well as English norms (see Table 3). When comparing the present sample's total and conceptual score with English norms, their percentile rank was much lower than that of their Spanish percentile rank. Time 3 was excluded from this analysis because 36 months is beyond the age range for which the CDI and Inventario II were originally designed. The difference between English and Spanish percentile ranks was statistically significant for total scores, $t(2) = 10.00$, $p < .01$, with Spanish having larger percentile ranks than English. Similarly, conceptual scores in Spanish was statistically different than English percentile ranks, $t(1) = 8.00$, $p < .02$.

	Inventario II Percentile Rank	**English MCDI Percentile Rank**
Time 1 (Age: $M = 23.5$)		
Conceptual Score: 206.57	55	40
Total Score: 231.14	60	45
Time 2 (Age: $M = 30.13$)		
Conceptual Score: 261.43	20	10
Total Score: 325.43	30	15

Table 3. Comparing Percentile Ranks for Conceptual and Total Scores Across Time and Languages

In addition, there were statistically significant differences between total and conceptual percentile ranks using the Inventario II, where at Time 1 total percentile ranks ($M = 47.86$, $SD = 28.56$) were ranked higher than conceptual percentile ranks ($M = 45.00$, $SD = 26.93$), $t(6) = 2.83$, $p < .03$. Same differences were found for Time 2, $t(6) = 2.55$, $p < .04$, where total percentile ranks ($M = 38.57$, $SD = 33.38$) were ranked higher than conceptual percentile ranks ($M = 25.00$, $SD = 20.61$.

Discussion

The aims of this longitudinal study were threefold: (1) to compare total vocabulary and conceptual vocabulary in a group of 24-month-old emergent bilingual children across time, (2) to compare total and conceptual vocabulary with normed monolingual performance on a single-language measure using the CDI and Inventario II across time, and (3) to determine which method of assessing vocabulary in two languages is most appropriate.

Total Vocabulary vs. Conceptual Vocabulary

Unsurprisingly, the current samples' vocabulary grew at each time point. Twenty-four months is an age when children are exposed to and absorbing language at exponential rates. They exhibit rapid growth in vocabulary production in toddlerhood (Cabrera et al., 2015). The present study found that at each time point, total vocabulary scores were larger than conceptual vocabulary scores, and the difference was statistically significant.

There have been mixed results in studies where direct comparisons of these methods of assessing vocabularies have been conducted (Bedore et al., 2005; Core et al., 2013; Junker & Stockman, 2002; Pearson et al., 1993; Thordardottir et al., 2006). Bedore and colleagues (2005) examined whether single-language or conceptual scoring accurately captured the development in 40 bilingual Spanish-English speaking children (ages 5 and 6) as compared to monolingual English-speaking children. They found that monolingual and bilingual children achieved comparable conceptual scores. However, bilingual children in Spanish were more likely to score in the average range of monolingual children compared to their single-language score. The authors recommended using conceptual scores in assessing bilingual children, especially in Spanish. The reason is that children assessed in Spanish were more likely to code-switch to add information to their responses. However, Bedore and colleagues (2005) did not examine total scores. Therefore, we can conclude that using single-language scores to assess bilingual children's vocabulary is insufficient. Junker and Stockman (2002) did, in fact, examine total versus conceptual vocabularies among 10 bilingual English German-speaking children and 10 monolingual English-speaking children who were 24 months old. They found that the total vocabularies of bilingual children were significantly larger than their conceptual vocabularies as well as the vocabularies of the monolingual control group, which aligns with the present study's results, which this study corroborates.

In addition, Thordardottir and colleagues (2006) examined eight 2 to 3-year-old English French-speaking bilingual children using total and conceptual vocabulary scoring methods. They found that bilingual and monolingual children's vocabulary sizes were similar in the total vocabulary measure. Total vocabulary scores were found to be significantly greater than the conceptual vocabulary scores. Conceptual scores were found not to reach the monolingual normal range for vocabulary sizes. It should be noted that this was a very small sample size, and it was measured based on one time point. Although the present study examined a small sample size similar to that of Thordardottir and colleagues (2006), three time points were measured and analyzed, and similar results were found (i.e., total vocabulary scores were significantly greater than conceptual vocabulary scores).

Total and Conceptual Vocabulary vs. Monolingual Norms

Until we move beyond comparing against monolingual norms, we must examine whether total or conceptual scoring would be more equitable. Thus, the second aim of this study was to compare total and conceptual scores against monolingual norms in Spanish and English. The present study found that when comparing total scores with English norms, their percentile rank was much lower than their Spanish percentile rank. Mancilla-Martinez and colleagues (2011) found similar results when they compared the use of Spanish versus English norms to interpret their findings. They found that comparing bilingual scores with Spanish norms resulted in higher scores than when using English norms. Furthermore, this study found that when comparing total and conceptual percentile ranks using the Inventario II, total percentile ranks were ranked higher than conceptual percentile ranks. Additional research needs to be conducted with a larger sample to corroborate these findings. Results showed that children fell below the norm despite summing up both languages. Children who are from low socioeconomic backgrounds and who are language minorities tend to have low levels of vocabulary on these types of tests (Mancilla-Martinez et al., 2011). Similarly, our sample fell well below the norm despite using total scores. Given the inability of standardized assessments to capture bilingual children's language skills across both languages, this finding is not surprising. That is why there is a need to establish bilingual norms, especially when the bilingual population is ever-growing in this country.

Scoring Method Most Appropriate for Emergent Bilinguals

Lastly, the third aim of the study was to determine what scoring method is most appropriate when assessing bilingual children from low SES backgrounds, specifically children in a migrant program. The results of the present study support the use of total vocabulary scoring method over conceptual and single-language scoring as a means of assessing Spanish-English bilingual migrant children. Total scores were significantly larger than conceptual scores. Similarly, Core and colleagues (2013) found that the total vocabulary scoring method was more beneficial because it provided a more accurate representation of a bilingual child's language ability in both languages. They

assessed 47 bilingual Spanish-English speaking children at three time points (22, 25, and 30 months of age) and directly compared total and conceptual vocabulary scores. They found that the conceptual measures underestimated bilingual children's ability and could, therefore over identify children as at risk for language difficulties. This study found that the total vocabulary method of assessing bilingual children is the most accurate and appropriate method in most cases. Total vocabulary assessment measures more knowledge than conceptual vocabulary assessment because it captures phonological and semantic knowledge and accounts for vocabulary growth over time (Core et al., 2013; Marchman & Martinez-Sussman, 2002).

Given the limitations of individual language assessments for emergent bilingual children, it is critical to be cautious when interpreting children's language scores. To examine an emergent bilingual child's growth and development, assessment must be developmentally and culturally appropriate, come from multiple sources, and in a combination of languages (Garcia et al., 2017; López & Foster, 2021). Effective teachers are sensitive to the challenges of accurately assessing emergent bilingual children's linguistic growth, so the assessment is valid and well-balanced. Assessments must account for culturally, linguistically, and ethnically diverse and complex experiences. Brown and Sanford (2011) and García et al. (2017) offer the following recommendations for teachers working with young emergent bilingual children.

1. Use reliable and valid tools to identify and monitor students' needs in their first and second languages.
2. Assess students' linguistic proficiency in each language to capture performance in each language.
3. Be flexible and responsive to students' learning needs.

Future Directions

Given the improved ways to assess emergent bilingual children, researchers, and practitioners have the opportunity to advocate for the accurate portrayal of their abilities. Although there has been an improvement in the ways to assess bilingual children, there is still a need to continue conducting longitudinal investigations that document the development of bilingual children over time and the relationships between various components of language (phonology, oral comprehension, receptive and expressive abilities, etc.). Relationships between and within languages also need further investigation in order to gain a better understanding of how to assess their abilities in both languages across time (Garcia, 2014). Just as important is the continued development of non-English language versions of current measures and the development of new measures that are culturally and linguistically appropriate. Furthermore, creating norming samples for these measures should also be investigated to appropriately reflect the diverse demographics of the bilingual population of the United States (Mancilla-Martinez et al., 2011). With this knowledge gained through future investigations, much can be done to advocate for bilingual children language development.

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