



# Assessing Language Skills in Bilingual Children: Current Trends in Research and Practice

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## Abstract

A continuously challenging issue in the field of speech–language pathology is accurately identifying and diagnosing a language disorder in school-aged (pre-kindergarten through 5th grade) bilingual children, as bilingual children are disproportionately under- and overidentified with a language disorder. The current review focuses on the assessment of bilingual children in pre-kindergarten through fifth grade, aimed to inform teachers, pediatricians, parents, and other relevant professionals of issues surrounding assessment of these dual-language learners. We examine the barriers to assessing bilingual children for language disorders, such as the lack of availability of bilingual tests, underinformative current best practice guidelines, lack of speech–language pathologist (SLP) training/knowledge of bilingualism, and use of interpreters. We discuss the necessary considerations when SLPs use norm-referenced tests with bilingual children, such as norming samples, accurate identification of a language disorder, reliability and validity, test administration, and potential solutions to using otherwise poorly suited norm-referenced tests. We also consider research on several alternative measures to norm-referenced assessments, including dynamic assessment, nonword repetition, language sampling, nonlinguistic cognition, and parent report. We conclude by synthesizing the information in this review to offer six principles of best practices for bilingual assessment.

## Keywords

- ▶ language assessment
- ▶ bilingual
- ▶ children
- ▶ developmental language disorder
- ▶ language impairment

## Introduction

One of the roles of a speech–language pathologist (SLP) is to determine whether a bilingual child (i.e., a child developing two languages) presents with typical language abilities, a delay in language development, or has a language disorder. The purpose of this article is to review the literature on how to successfully identify and diagnose a language disorder, specifically, developmental language disorder (DLD) in bilingual children in the pre-kindergarten through 5th grade age range. DLD is an impairment in acquiring the words (i.e., lexicon) and rules (i.e., morphosyntax) of the

child's native language(s), despite otherwise having generally typical cognitive and neurological function. Geared toward teachers, families, pediatricians, and other relevant professionals, this review considers the current trends in evidence-based practice for the assessment of bilingual children.

There are a few high-quality and useful reviews that cover DLD in bilingual children.<sup>1–6</sup> Bedore and Peña's<sup>6</sup> review laid out a clinical framework for assessing bilingual children. De Lamo White and Jin's<sup>4</sup> review suggested that clinicians take a holistic approach to assessing bilingual children for DLD, including evaluating a child's language

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abilities within the context of their environment. Castilla-Earls et al's<sup>3</sup> review suggested that clinicians look for converging evidence from multiple sources when assessing bilingual children. Kay-Raining Bird et al's<sup>2</sup> review discussed bilingual children with developmental disorders more broadly and identified important differences between simultaneous and sequential bilinguals. Ebert and Kohnert's<sup>5</sup> review provided a detailed discussion of diagnosis and treatment of bilingual children. Kohnert's<sup>1</sup> review discussed normal language development in bilinguals as well as how language disorder manifests in bilingual children.

The current review differs from these previous reviews in several ways. First, the current review is designed to inform teachers, families, pediatricians, and other relevant professionals, rather than having SLPs as the sole audience. Second, some of the highly influential reviews were published more than a decade ago, and since then, much has changed: new norm-referenced tests have been introduced, the field has advanced to provide additional, alternative approaches to norm-referenced tests and even the diagnostic label has largely changed, from specific language impairment to DLD. Third, we offer six principles to assess bilingual children for DLD, which are aimed to enhance knowledge for teachers, families, pediatricians, and other relevant professionals on the assessment process.

The importance of reviewing the state-of-the-art methods for assessing bilingual children is underscored by the evidence that bilingual children are prone to both overidentification<sup>7,8</sup> and underidentification<sup>9</sup> of language disorder. In this article, we discuss the (1) barriers to assessing bilingual children, (2) norm-referenced measures and (3) alternatives to norm-referenced measures that can be used to assess such children, and then we close with (4) six principles of best practice for bilingual assessment.

## Barriers to Assessing Bilingual Children for Language Disorder

In contrast to the monolingual child, there are several barriers to assessing a same-aged bilingual child for DLD. The first barrier is the lack of norm-referenced tests for use with bilingual children. Norm-referenced tests make comparisons to a normative database or sample of the intended population. Second, the American Speech-Language-Hearing Association (ASHA) and the Individuals with Disabilities Education Act (IDEA) provide best practice guidelines for SLPs on assessing bilingual children; however, these recommendations are not consistent with each other or with the literature on best practices. Third, it is difficult to identify a language disorder when SLPs do not have training or knowledge on how to assess bilingual children or are not familiar with the language and/or culture of a child being assessed. Fourth, the use of interpreters to assist with assessment is often problematic. We provide detail as to how all of these concerns result in obstacles to assessing bilingual children, while also offering evidence-based strategies on how to overcome them.

## Availability and Use of Norm-Referenced Tests

The first barrier to assessing the bilingual child is the availability of norm-referenced bilingual assessments. In the school setting, special education administrators often require the use of norm-referenced tests when assessing children, even if there is not a test available in the child's most proficient or dominant language.<sup>3,10-12</sup> In practice, SLPs use norm-referenced tests more often than alternative measures (e.g., language samples and dynamic assessment) in the school setting with bilingual children.<sup>10</sup> Overuse of norm-referenced assessments results in overdiagnosis of DLD,<sup>10,13-16</sup> often due to the tests being normed, or standardized among a larger group, with English monolingual children.<sup>17-19</sup> An SLP might be tempted to translate a test or specific test items; however, this practice is also not recommended because, for example, vocabulary items that are present within the child in one language may not be present in the other language, also falsely indicating the presence of a language disorder.<sup>6</sup>

An alternative to norm-referenced testing involves gaining a comprehensive profile on the child's strengths and weaknesses in language domains, while also considering the sociocultural and familial factors that contribute to the child's "clinical" presentation.<sup>4</sup> To do so, Saenz and Huer<sup>20</sup> and Caesar and Kohler<sup>10</sup> discuss several alternative approaches to norm-referenced assessment with bilingual children, including dynamic assessment, parent interviews, questionnaires/checklists, observation of the child across multiple communicative contexts (e.g., during recess and in the classroom), and language samples. Additional detail on many of these alternatives is offered in the "Alternative Measures" section. Dynamic assessment, for example, reliably identifies language disorders within bilingual children.<sup>21</sup> Dynamic assessment involves assessing a child at two time points with an intervention or teaching phase in between. If the child makes significant progress in response to teaching, it is likely that they are within the typical range of language development. If the child does not make significant progress, it is likely that they have some type of language disorder. Language sampling may also be effective with software, such as the Systematic Analysis of Language Transcripts (SALT),<sup>22</sup> since comparison data now exist for bilingual children in SALT's databases. However, aside from language sampling software, there are no comparison data for these alternative assessments, and thus a bilingual child's performance cannot be compared with his or her peers, which explains why school administrators prefer SLPs to use norm-referenced measures. In addition, Dollaghan and Horner<sup>23</sup> conducted a meta-analysis to identify diagnostic accuracy of language disorder with alternative language assessment measures and found that a combination of norm-referenced and alternative measures is necessary to ensure proper diagnosis.

## ASHA and IDEA Guidelines

In 2004, the ASHA issued guidelines for SLPs. In the same year, the IDEA was released, which provided practice guidelines for individuals (e.g., teachers and SLPs) working in a school setting. Therefore, it is expected that school-based

SLPs use the guidelines set forth by the ASHA and IDEA to ensure best practice. ASHA<sup>24</sup> states:

“Speech-language assessment for individuals who are bilingual and/or learning English as an additional language (i.e., “English Language Learners, ELL”) comprises services to assess speech-language and communication functioning (strengths and weaknesses) in an individual’s first language (L1) or a second language (L2). Bilingual assessment services include identification of language use (i.e., the language the individual speaks or is exposed to most of the time) and language proficiency (i.e., degree of ability in each language). In addition, assessment addresses potential impairments, associated activity and participation limitations, and context barriers and facilitators.”

IDEA<sup>25</sup> states:

“Assessments and other evaluation materials used to assess a child under this part—

(i) Are selected and administered so as not to be discriminatory on a racial or cultural basis; (ii) Are provided and administered in the child’s native language or other mode of communication and in the form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally, unless it is clearly not feasible to provide or administer; (iii) Are used for the purposes for which the assessments or measures are valid and reliable; (iv) Are administered by trained and knowledgeable personnel; and (v) Are administered in accordance with any instructions provided by the producer of the assessments.”

The major issue stemming from the current ASHA and IDEA practice guidelines is that bilingual assessment is not directly indicated; specifically, assessment should occur in either the native (L1) or second (L2) language. In addition, ASHA specifies that language assessment should include a profile of language use and proficiency, which helps determine which language to assess in, while IDEA does not. More recently, ASHA<sup>26</sup> stated that SLPs should use culturally and linguistically equivalent adapted tests to assess bilingual children across *both* languages when possible. However, there are few, if any, of those tests. Therefore, the SLP faces conflicting advice: assess according to practice guidelines in the first or second language, or assess bilingually, with few to no tests available. Even if SLPs were to assess the child across both languages, the amount of time required to do so is a barrier in the fast-paced environments of schools.<sup>27</sup>

IDEA<sup>25</sup> also states that the assessments must be administered according to the instructions of the test maker. However, in practice, many SLPs use norm-referenced tests in an informal manner, such as translating test items, reducing their ability to accurately and reliably make diagnostic decisions.<sup>28</sup> Despite the lack of clarity for which language to assess in and the use of norm-referenced tests in an informal way, SLPs should use ASHA and IDEA as guides within their practice, while being aware that these recommendations will not be applicable to all situations and children.

### **The SLP is not Familiar with the Language and/or has not Received Training on How to Assess Bilingual Children for Language Disorder**

Aside from the lack of norm-referenced tests for bilingual children and ambiguity on best practices from ASHA and IDEA, two additional, related barriers to bilingual assessment are (1) if the SLP is not proficient in one or more of the child’s languages<sup>29,30</sup> and (2) if the SLP does not possess adequate knowledge on how to assess the bilingual child.<sup>31</sup> These barriers dramatically affect the accurate interpretation of evaluation results. At the end of 2019, ASHA reported that out of all certified SLPs, only 6.5% were bilingual service providers.<sup>32</sup> Spanish is the most commonly spoken language, comprising of 4.4% of all SLPs. The situation is more alarming in elementary schools, where only 17% of all bilingual service providers work. For perspective, as of 2007, approximately 20% of the U.S. population speaks a language other than English at home,<sup>33</sup> a number that is projected to increase. Given the increased cultural and linguistic diversity in the U.S., the necessity is growing for more bilingual service providers who possess adequate proficiency in another language and knowledge on how to assess bilingual children. Moreover, Kritikos<sup>31</sup> identified in a survey of 811 SLPs that 64% did not speak the language necessary to assess the child, and importantly, around 60% did not possess adequate knowledge on bilingual assessment. When referring to knowledge, this includes course training on language disorders versus differences, second language acquisition, clinical experience with bilingual clients, knowledge of or experience working with children from nonmainstream cultures, and differential assessment practices for bilingual and monolingual children. While training programs have evolved since the publication of this study, many clinicians enter the field without the requisite knowledge of working with bilingual children.

If the SLP is not proficient in the language in which the child needs to be assessed, or is unfamiliar with the child’s culture, it is important that the SLP consults with teachers, families, and other related service providers to gain more information and knowledge about bilingual language development. Bilinguals do not exist in a vacuum, with variations in cultural and linguistic profiles. Bilingual children’s language development in many cases follows a different trajectory in each language.<sup>34</sup> Therefore, it is not appropriate to compare a bilingual child’s linguistic milestones to those of a monolingual child.<sup>27</sup> A child, whether monolingual or bilingual, may present with language difficulties in the domains of vocabulary and/or grammar. Vocabulary includes semantics, or meaning of words, and vocabulary size, or repertoire. Grammar includes morphology, or word structure, and syntax, or sentence structure. Moreover, deficits within the child could stem from understanding (receptive) and/or producing (expressive) aspects of language. Bilingual children with a language disorder may present with deficits in one or more of these linguistic domains. Importantly, the specific deficits may or may not exist across both languages. Furthermore, differences in morphosyntactic rules across languages may result in distinct rates or orders of acquisition in monolinguals versus bilinguals.<sup>6</sup> Importantly, typical

vocabulary, morphosyntactic, and narrative errors that bilingual children make relative to monolingual children may not indicate a language disorder but may be viewed as such by an underinformed SLP.

Aside from the knowledge SLPs, teachers, families, pediatricians, and other related service providers should have on language development in bilingual versus monolingual children, what characteristics do bilingual children demonstrate that indicate a true language disorder? A strong indicator of a language disorder is if the bilingual child presents with difficulties across both languages, although the specific deficits within each language will be distinct.<sup>6,34</sup> For example, Bedore and Peña<sup>6</sup> noted that language disorder in English-speaking children often involves difficulties with the past tense (e.g., *walk/walked*). Spanish-speaking children with language disorder often struggle with direct object clitics (e.g., *lo/la*) and articles (e.g., *el/la*). Another indicator of language disorder is if the child has difficulty learning new linguistic structures, independent of the languages he or she speaks, highlighting the necessity for dynamic assessment to tap into the child's learning abilities. In addition, to further identify language disorder versus difference, conceptual knowledge should be assessed, whether the child knows a linguistic structure (e.g., vocabulary item) in one language, the other, or both<sup>35</sup> which is discussed further in the "Norm-Referenced Assessment" section. Therefore, it is important to be aware that (1) there are differences in deficits that indicate a language disorder across bilingual children's languages, and (2) lack of knowledge does not indicate a language disorder, while lack of ability does.

If there is a need for a bilingual child to be assessed in a non-English language, ASHA<sup>24</sup> and IDEA<sup>25</sup> support the use of interpreters to assist with the assessment process, however, there are additional concerns with interpreters as well, which are identified next.

### The Use of Interpreters for Assessing the Bilingual Child

Given the majority of SLPs in the U.S. are monolingual, an option is to work with interpreters to assess bilingual children directly and/or communicate with families.<sup>30</sup> While research has revealed that collaboration between monolingual SLPs and interpreters is necessary to ensure best practice and service delivery for bilingual clients,<sup>12,24,25,36</sup> there are often obstacles when working with interpreters when they are not professionally trained (e.g., family members). The interpreter might not be proficient in both languages (e.g., Spanish-dominant), resulting in poor quality of interpretation; there are no clear guidelines for training bilingual interpreters, specifically for speech and language assessments; interpreters may lack knowledge in the field of speech-language pathology; and it is sometimes difficult for interpreters to remain neutral, confidential, and honest during the assessment process, therefore family members should be avoided.<sup>11,12,30,36,37</sup> Thus, SLPs, teachers, families, and other clinicians must collaborate with an interpreter who is professionally trained, familiar with the child's linguistic and cultural profile, possesses knowledge and terminology

about speech and language norms across both languages, is proficient in both languages, understands why testing is indicated, and maintains confidentiality.<sup>11,12,29,30,36</sup> This collaboration ensures best practice and, most importantly, that the child is appropriately assessed. Although this ideal scenario may take time and education, assessment can be accomplished by working with those who interact with the child most frequently (e.g., a teacher, parent, or cultural broker).

### Norm-Referenced Measures for Assessing Bilingual Children

Norm-referenced tests are highly utilized as effective assessment tools,<sup>38,39</sup> although they can also serve as a barrier to the assessment process. Norm-referenced tests are one of the methods that SLPs can use to tease apart whether a bilingual child has a language disorder (e.g., DLD) or if the child's profile represents a language difference (e.g., lack of adequate dual-language exposure).<sup>3</sup> The advantages include ease and consistency of administration, objectivity, and the ability to compare a child's performance to a sample of many same-aged children.<sup>40</sup> Norm-referenced tests provide a measure of a constellation of language skills and an accessible way for other educational and health professionals to interpret performance.<sup>38</sup> However, one barrier is that few assessments are available in languages other than English.<sup>10,15</sup>

While used by clinicians (i.e., SLPs), our goal is to provide teachers, parents, pediatricians, and other related service providers with an in-depth understanding as to why norm-referenced measures are used in the assessment of children for DLD and the issues that arise when these measures are used with bilingual children. Several factors must be considered when assessing bilingual children with norm-referenced tests, including representative norming samples, accurate identification of language disorder, validity and reliability, and administration and interpretation. We also offer potential solutions to the identified concerns with norm-referenced testing.

### Bilingual Tests with Representative Norming Samples

Importantly, norm-referenced tests are indeed norm-referenced, that is, prior to their release, researchers recruit a large sample of the population (i.e., 1,000+) of a particular demographic (e.g., bilingual children across a certain age range) to ensure that the norming sample is reflective of the population. A child's performance on a test is compared with the norming sample, which provides information as to whether the child falls within the average range based on their age or grade level.<sup>41</sup> While many assessment batteries are available and normed for English monolingual children, there is a dearth of tests for bilingual children, especially ones that include bilinguals in the norming sample. See ► **Table 1**.

In fact, only five assessments are available to SLPs with "adequate" norming samples containing bilingual children. If the bilingual child is older than 7, only receptive and expressive vocabulary can be assessed bilingually. Language

**Table 1** Tests and screeners that are available to assess Spanish-English bilingual children

Test	Domain	Age
Bilingual English-Spanish Assessment <sup>42</sup>	Morphosyntax, semantics, phonology, pragmatics	4 through 6
Ortiz Picture Vocabulary Acquisition Test <sup>43</sup>	Receptive vocabulary	2.5 through 22
Receptive One Word Picture Vocabulary Test-4: Spanish-Bilingual Edition <sup>44</sup>	Receptive vocabulary	2 through 80+
Expressive One Word Picture Vocabulary Test-4: Spanish-Bilingual Edition <sup>45</sup>	Expressive vocabulary	2 through 80+
Preschool Language Scale-5 Spanish <sup>46</sup>	Receptive and expressive language	0 through 7
Screenera	Domain	Age
Quick Interactive Language Screener <sup>47</sup>	Vocabulary grammar (product and process)	3 through 5
Bilingual English-Spanish Oral Screener <sup>48</sup>	Morphosyntax and semantics	4 through 6

\*Screeners are not used to make diagnostic decisions, but rather to identify if there are any language concerns. Screeners can be used to make a referral for a full speech and language evaluation.

disorders, especially in older children, exist in domains other than vocabulary as well, such as morphosyntax and narrative abilities (i.e., telling stories and conversational dialogue).<sup>6,41</sup>

Another important consideration when choosing a bilingual test is the diversity of bilinguals within the norming sample and throughout the population of bilingual children being assessed. This variation is due to bilingualism existing on a continuum of proficiency, dominance, and age of acquisition,<sup>13,49–51</sup> along with cultural and linguistic differences. Bilinguals in one country or geographic area (e.g., Spain) may differ from bilinguals in a different region (e.g., Puerto Rico) in terms of dialect, vocabulary, accent, and syntax. Bilinguals also represent a variety of socioeconomic backgrounds, many below the poverty line, which could lead to differential performance on norm-referenced language assessments.<sup>20</sup> Therefore, to adequately capture the diversity that encompasses bilinguals, norming samples reflective of the entire bilingual population must contain participants representative of a variety of socioeconomic and cultural backgrounds. Currently, the only bilingual test that recruited a diverse sample of bilingual children is the Bilingual English-Spanish Assessment (BESA). The BESA's norming sample included 4- through 6-year-old Spanish-English bilinguals throughout the United States and who spoke 17 distinct dialects of Spanish.<sup>42</sup> Perhaps the age range can be expanded to older, school-aged bilingual children in future versions of this test.

An additional concern with currently available norm-referenced tests is the variety of languages. The assessments listed in ▶Table 1 are normed for Spanish-English bilinguals. The majority of bilinguals in the United States are speakers of Spanish and English; therefore, the focus has been to create tests for these language pairings.<sup>13</sup> Arias<sup>52</sup> explains that there is a dearth of norm-referenced tests in languages other than English, resulting in clinicians using norm-referenced tests with bilingual children, but intended for English-only speakers. At the time of this publication, there are no bilingual assessments available for other language pairings.

### Identifying Language Disorder in Norming Samples: Considerations for Bilinguals versus Monolinguals

In addition to a representative norming sample and the lack of availability of tests across different language pairings, it is also necessary to identify the test's sensitivity and specificity. Sensitivity refers to a test or construct's ability to correctly identify those with an impairment (e.g., DLD), while specificity is defined as a test or construct's accurate identification of those without an impairment. Often, SLPs use English monolingual tests with bilingual children when the sensitivity and specificity of these tests are based on norming samples with English monolingual children. Therefore, using English monolingual tests can result in typically developing bilingual children appearing to have similar clinical presentations as monolingual children with a language disorder. These similar profiles can be seen, for example, when there is a gap in children's receptive (i.e., comprehension of language) versus expressive (i.e., production of language) language. Typically developing bilingual children may present with a similar receptive-expressive gap to monolingual children with language disorder on norm-referenced tests, where comprehension skills are greater than expression skills in one or both languages.<sup>53–55</sup> An important distinction here is that bilingual children with a large difference in scores on receptive versus expressive language subtests in one language only most likely do not have a *language disorder*, such as DLD, as this receptive-expressive gap represents a *language difference* of knowledge due to dual language exposure. Therefore, using norm-referenced test criteria (i.e., sensitivity and specificity) with bilingual children can lead to overidentification/misdiagnosis of language disorder.

### Understanding Validity and Reliability when Assessing Bilingual Children

Norming samples reflective of bilingual populations are critical to norm-referenced tests, along with high sensitivity and specificity; however, so too are the reliability and other aspects of the validity of the tests. Paul<sup>56</sup> provides definitions for validity and reliability. A test's validity refers to its ability

to adequately measure a content area (i.e., language domain), its inclusion of items that are representative of the content area, and its alignment with other tests that measure the same content area. A test's reliability ensures that the scores are the same over time (repeated administration), with different test administrators and scorers, and whether specific items within the test capture the content area that the test measures as a whole.

It would be invalid and inappropriate to rely on a Spanish and/or English monolingual test to assess a Spanish-English bilingual child<sup>4,57</sup> for several reasons. Bilingual children's vocabulary and/or syntax may be distributed across the two languages.<sup>6,40</sup> That is, a vocabulary item or sentence structure may be known in one language but not the other. As a result of bilingualism, children will hear and use words in both languages less frequently than their monolingual peers.<sup>41,58</sup> Therefore, norm-referenced tests may underestimate total (conceptual) linguistic knowledge if only one language is assessed or accepted as a correct response to a prompt. However, altering the test in any way to capture a bilingual child's conceptual knowledge, for example, would render it invalid.

Invalidating a norm-referenced test also occurs when SLPs translate the test or specific test items into a different language in which the test was not normed.<sup>6,40</sup> Translating tests also reduces reliability, since words across languages may have multiple translations and even different meanings.<sup>59</sup> It must not be assumed that children of different linguistic backgrounds acquire specific language structures along the same timeline, achieving the same milestones within each language, as monolingual children.<sup>6</sup> Translated tests also do not consider what the typical indicators are for language disorder in *each* language.<sup>6</sup> For example, a hallmark for DLD in English is difficulties with past tense (e.g., *go/went*), whereas in Spanish, children with a language disorder are challenged by direct object clitics (e.g., *lo/la*) and articles (e.g., *el/la*). If test creators analyzed each item on the test to examine children's performance across languages, then clinicians might be inclined to use translated tests.<sup>52</sup> Parents, teachers, and other related service providers should therefore interpret a bilingual child's performance on a test with caution if the items were translated.

### Test Administration and Interpretation with Bilingual Children

Once the test is deemed valid and reliable, the SLP performing the evaluation should assess a bilingual child in both languages whenever possible. However, previous and erroneous guidance to bilingual assessment would emphasize assessing the child in his or her more dominant language.<sup>24</sup> Language dominance measures the knowledge within one language relative to the other.<sup>40</sup> Dominance can be determined from questionnaires completed by parents and/or teachers, or through behavioral measures (e.g., verbal fluency task: name as many fruits one knows). Relying on language dominance alone to make a decision on which language to test in can result in an underestimation of a child's knowledge across both languages (conceptual knowledge).<sup>40,60</sup> As

suggested in Principle 4, SLPs should assess in both languages whenever possible, consult with those who are closest to the child for language background information (i.e., parents and teachers), and be aware that bilingualism exists on a continuum of multiple factors, including proficiency, dominance, and age of acquisition.<sup>13,49–51</sup>

Before administering the assessment(s), the clinician must decide which subtests or domains to focus on based on the language concerns with which the child presents, based on observation, family, and teacher report. For example, a norm-referenced test measuring receptive vocabulary will contain a list of words (i.e., nouns and verbs) that vary in difficulty, starting with the easiest and ending with the hardest items. The child views an array of 3 to 4 pictures and must select one after hearing it. In a test measuring expressive vocabulary, the child names the picture placed in front of them. Tests that measure other aspects of language, including morphology and syntax might focus on children's understanding of *wh*-questions (e.g., "who," "what," and "where") or ask children to produce certain grammatical forms with open-ended prompts (e.g., picture of a girl and boy playing tag: "the girl is the boy," target is "chasing"). As already discussed in identifying DLD in norming samples, a bilingual child with typical language skills may achieve a similar test score to a monolingual child with a DLD.<sup>16</sup> In other words, considering the heterogeneity in typically developing bilingual children's exposure and proficiency in their languages,<sup>1</sup> they often perform lower on norm-referenced tests in one or both languages relative to typically developing monolingual peers.<sup>13,16,27</sup> Parents, teachers, and other clinicians should therefore interpret speech and language evaluations of bilingual children with caution if scores are slightly below the average range in comparison to the bilingual child's same-aged (or grade) peers. As a side note, Thordardottir<sup>61</sup> proposed that SLPs should change score thresholds (i.e., cutoff criteria for typically developing versus language impaired) for bilingual children to reflect the amount of exposure in the more proficient or weaker language, depending on the language(s) tested.

### Potential Solutions to Using Norm-Referenced Tests with Bilingual Children

If an SLP uses a norm-referenced test normed with a monolingual population to assess bilingual child, a potential solution is to not report the scored results (quantitative performance) and discuss how the child performed in terms of observations during the assessment (qualitative performance). The SLP may describe the child's general language abilities based on the tests administered,<sup>4</sup> the amount of prompting required for the child to understand the task/subtest, the child's overall disposition during the test, and any of the child's behaviors worth noting during the assessment. Another solution to norm-referenced testing with bilingual children is to use conceptual scoring. The SLP readministers the item missed in the target language in the child's other language, and if the child answers correctly, the item is counted as correct. Conceptual scoring demonstrates that the child knows the item conceptually but does

not penalize them for not knowing it in one language.<sup>35,41,62,63</sup> Lowering score thresholds, discussing qualitative performance, and conceptual scoring on a monolingual test are considered informal measurements of the child's language skills. Moreover, conceptual scoring works well with vocabulary, but not with morphosyntax.<sup>40</sup> We propose in Principle 3 that a combination of *norm-referenced and alternative measures should be used* to gain insight into a child's linguistic profile.

To summarize, on norm-referenced tests are heavily utilized to assess monolingual children for DLD. However, with bilingual children, norm-referenced tests often do not contain appropriate norming samples, are nonexistent, lack diversity in language pairings, and are inappropriately used in invalid and unreliable ways (e.g., monolingual tests used with bilingual children and translating test items). In the next section, we expand upon the alternative measures, other than norm-referenced tests, that can be used to assess bilingual children.

### Alternative Measures for Assessing Bilingual Children

In addition to norm-referenced measures that can potentially be used to evaluate the bilingual child for DLD, there are also several alternative measures available. Alternative measures are sometimes preferred over the available norm-referenced measures with bilingual children due to their high diagnostic accuracy and lack of cultural and linguistic discrimination that is associated with current norm-referenced measures. This section covers dynamic assessment, nonword repetition, language sampling, nonlinguistic cognition, and parent report.

#### Dynamic Assessment

Whereas all other assessments used to assess bilingual children are static, in that they evaluate the child at one point in time and compare them to a normative sample or criterion, dynamic assessment is nonstatic. One example of dynamic assessment includes assessing the child at two points in time, with an intervening teaching phase, and then determining whether the child sufficiently improves in response to the teaching. If the bilingual child demonstrates significant progress, it is likely that their ability to learn is intact and that they are typically developing. Conversely, if the bilingual child does not make progress, their ability to learn may be deficient, and the child may have a language disorder, such as DLD.

Dynamic assessment derives from Vygotskij's sociocultural theory.<sup>64</sup> Vygotskij emphasized the level of learning that can be ascended to when assisted by others, relative to the unassisted level of learning. If this relative difference, called the zone of proximal development, is large, then it would indicate a healthy learning ability. If small, then a deficient learning ability would be suspected.

Dynamic assessment has advantages over static assessment. The major advantage is that it reduces the knowledge and experience variables.<sup>21</sup> In many cases, a bilingual will

have less experience than a monolingual child in using a given language, and that reduced experience will result in less knowledge of the language.<sup>41,58</sup> This lower knowledge can place the bilingual child in the atypical range on a static assessment, leading the child to be misdiagnosed as having DLD when, in reality, the child was lacking experience with the language (and thus knowledge). Dynamic assessment downplays the child's current knowledge or lack thereof and instead focuses on how much the child can learn when provided with a short intervention.

Dynamic assessment has been used to assess several domains of language, including lexical, morphosyntactic, and narrative skills. As an example of a recent study examining lexical skills, Petersen et al<sup>21</sup> used a test-teach-test dynamic assessment of word learning to classify Spanish-English bilingual kindergarteners, first graders, second graders, and third graders as language impaired or typically developing. As part of the pretest, children listened to a story that contained a novel word. For example, a sentence in the story was: "Then Juan decided to go inside and tell his mom that his clothes needed to be *punuped* because they were dirty." The children were tested on the meaning of the novel word; i.e., they were asked, what does *punup* mean? Next, as part the teaching phase, a new story with a new novel word was read to the child, and the examiner taught the child strategies for determining the meaning. For example, the examiner told the child to look for nearby words that might help them learn the meaning of the novel word. During this teaching phase, the examiner completed a modifiability scale that rated the child's potential to learn word meanings. Lastly, as part of posttest, the children were told yet another story with a novel word, and they were tasked with learning the meaning of the novel word. The results indicated that the children with a language disorder had lower modifiability scores, as well as lower posttest scores, relative to typically developing children. The dynamic assessment was more successful in classifying children as typical or disordered than static assessments that were conducted in both of the child's languages. With sensitivity in the 90 to 100% range and specificity in the 90.5 to 95.2% range, the dynamic assessment was a highly effective diagnostic tool for identifying language disorder.

The positive results from Petersen et al<sup>21</sup> are consistent with those of a meta-analysis conducted a year prior.<sup>65</sup> In the meta-analysis, 7 dynamic assessment studies of bilingual children aged 3 to 8 were analyzed. The results indicated that examiner modifiability scores were effective in differential diagnosis of children with and without language disorder, though gain scores from pretest to posttest were not effective, and that almost all of the studies had specificity and sensitivity values that were close to or above 80%. Based on the positive results, the authors suggest that "it may be beneficial for clinicians to use [dynamic assessment] in their practices."<sup>65</sup>

#### Nonword Repetition

Aside from dynamic assessment, nonword repetition tests may also be used to capture a bilingual child's linguistic skills. Nonword repetition tasks are processing-based. That

is, nonword repetition tests assess the child's language-processing mechanisms, rather than language knowledge, by having the child repeat back nonwords, such as *versatronist* and *stoppagrattic*. These tests—which test some of the cognitive foundations of language learning, such as phonological processing and short-term memory—have been found to have mostly adequate diagnostic accuracy in the assessment of DLD in monolingual children.<sup>66,67</sup> Given that these tests have validity in monolingual children, and that they seem less likely to disadvantage bilingual children who have less experience with and knowledge of a given language (relative to monolingual peers), nonword repetition tests have been extensively studied as a possible diagnostic tool for assessing language disorders in bilingual children.<sup>68–77</sup>

The studies of nonword repetition tests in bilingual children have examined diagnostic accuracy when both language-specific versions and language-general versions are given. Language-specific refers to nonword repetition tests whose nonwords conform to the phonotactic rules (i.e., rules for combining speech sounds) of a given language, whereas language-general refers to nonword repetition tests whose nonwords are meant to be phonotactically compatible with most languages. While language-specific tests sometimes demonstrated adequate sensitivity and specificity, language-general tests, though much less studied, appear to have higher sensitivity and specificity.

If administered a language-specific nonword repetition test, bilingual children are prone to be misdiagnosed, because bilingual children often perform worse than monolingual children on such tests.<sup>68–70,78–80</sup> This finding suggests that nonword repetition tests, particularly language-specific versions, are not in fact knowledge-free. Indeed, when lower vocabulary in bilinguals is taken into account, bilinguals' lower performance on the language-specific nonword repetition test disappears.<sup>79,80</sup> Nevertheless, some studies have found success in using language-specific versions to diagnose language disorders in bilingual children,<sup>71–73</sup> and this may be especially the case when language-specific versions are given in both of a bilingual's languages.<sup>74,75</sup>

In contrast to language-specific versions, early research on language-general versions is more promising. In particular, preliminary positive results have been observed with the Cross-Linguistic Nonword Repetition Test.<sup>71,76,77</sup> This test was designed to be “maximally compatible with different languages.”<sup>76,77</sup> It consists of vowels and consonants that are common to many languages, and all syllables are of the common CV structure. Though merely preliminary, this language-general version has demonstrated high specificity and sensitivity in L2 learners of Dutch with a variety of L1s (e.g., Chinese and Russian).<sup>76</sup>

### Language Sample Analysis

Language Sample Analysis involves the elicitation, recording, coding, and analysis of a child's speech in a naturalistic context. For example, as part of an assessment, the child might retell a narrative, such as the “Frog, Where are You?”<sup>81</sup> story, and then the clinician will assess the child's commu-

nication for the number of different words that they used, for the grammatical correctness of their sentences, for the length and complexity of their sentences, etc. Although Language Sample Analysis can be labor-intensive and it often lacks the psychometric properties of most norm-referenced tests (e.g., sensitivity and specificity), it has some major benefits. Foremost is its ecological validity, capturing real-world language use. Additionally, Language Sample Analysis is highly flexible, in that it can be used to measure many different aspects of language, across different settings, age groups, and languages. For these reasons, along with the view that it is less culturally and linguistically biased than many norm-referenced tests, Language Sample Analysis has been deemed to be the gold standard of language assessment for bilingual children.<sup>82</sup>

However, Language Sample Analysis does to some extent have the same major limitation as many norm-referenced tests, in that it can disadvantage bilinguals relative to monolinguals. That is, on certain measures, such as grammaticality in a language sample, typically developing bilingual children perform worse than typically developing monolingual children.<sup>83–85</sup> If typically developing bilinguals perform worse, they are at risk for being falsely diagnosed as having a language disorder. Nevertheless, Language Sample Analysis has shown utility in assessing bilingual children, especially when bilingual children are compared with a database of other bilingual children rather than monolingual children,<sup>22</sup> though often sensitivity and specificity analyses have not been included in these studies.<sup>86</sup>

As an illustrative example of a study that examined the effectiveness of Language Sample Analysis, 4- and 5-year-old Spanish-English bilingual children were asked to retell a wordless picture story, among other assessments that were taken.<sup>87</sup> Two measures, grammaticality (i.e., grammatical errors per communication unit) and D (i.e., a measure of lexical diversity), accurately classified children as typical or disordered, with 90% sensitivity and 85% specificity.

While some combination of measures derived from Language Sample Analysis are likely to be effective during assessment, which specific measures are most useful remains to be identified. As in the study described above, measures of grammaticality have emerged as promising differentiators of typical and atypical language development.<sup>86,88–90</sup> Measures of lexical diversity, as in the above study, may be useful, though more evidence is needed.<sup>84,90,91</sup> Measures of utterance length, such as mean length of utterance in words and morphemes, may be helpful but are generally less helpful than other measures.<sup>86–89,92,93</sup> Language Sample Analysis has shown promise in the assessment of bilingual children, but more studies are needed to determine which measures to use and how accurate these measures are at diagnosing DLD in bilinguals.

### Nonlinguistic Cognition

Although very few studies have considered the possible use of nonlinguistic cognitive assessments, for example, assessments of nonverbal working memory, to diagnose language disorders in bilingual children or even monolingual children,



these assessments have significant promise. Despite the classic definition of DLD as children who are neurotypical in their nonlinguistic cognitive abilities but atypical in their linguistic abilities, it is now clear that such children have minor, *subclinical* deficits (i.e., not deficient enough to be diagnosed with an impairment) in several areas of nonlinguistic cognition, including processing speed,<sup>94</sup> working memory,<sup>95</sup> attention and inhibition,<sup>96</sup> and procedural memory.<sup>97</sup> These nonlinguistic deficits demonstrate that it might be possible to successfully identify language disorder in children by using tests that are devoid of language.

Because language-based tests can disadvantage bilinguals, the use of nonlinguistic cognitive assessments is particularly appealing in the case of bilingual assessment. However, for these assessments to be effective, the nonlinguistic cognitive domains in question need to be unaffected by experience with two languages, which might not always be so, given some evidence for bilingual advantages. In other words, there is some evidence for bilingual advantages in nonlinguistic domains, such as working memory<sup>98</sup> and attention and inhibition.<sup>99</sup> Thus, bilingual children with DLD might perform in the normal or above normal range on these tests, leading to underidentification and low sensitivity. Yet, many studies that have examined monolingual and bilingual children with and without DLD on such measures have failed to find a bilingual advantage,<sup>100</sup> rescuing the possibility of using nonlinguistic tests for bilingual language diagnostics.

As an example of a recent study that used nonlinguistic tests for bilingual diagnostics, Ebert and Pham<sup>101</sup> employed three nonlinguistic tests—tests of processing speed, working memory, and attention/inhibition—in attempt to detect language disorder in 6- to 10-year-old English monolinguals and Spanish-English bilinguals. The processing speed task involved quickly pressing the corresponding button whenever the child saw a red or a blue circle. The working memory test involved determining whether two auditory tones were the same or different. The attention/inhibition test was a flanker test in which a central fish was flanked by surrounding fish that sometimes pointed in the opposite direction of the central fish, and the participants had to indicate the direction in which the central fish was pointing. The results indicated fair to good sensitivity or specificity in many cases, suggesting that there is promise for nonlinguistic tests but that these tests need to be improved before clinical use. In the near future, DLD might be accurately diagnosed in both bilinguals and monolinguals by utilizing a language-free assessment.

### Parent Report

Assessments of bilingual (and monolingual) children often include information from the parent of the child being evaluated. For example, as part of the BESA,<sup>42</sup> there are parent interviews, called the Instrument to Assess Language Knowledge and the Bilingual Input-Output Survey, in which parents are queried about their child's history of exposure to the two languages and their child's ability in both languages in regards to vocabulary, intelligibility, utterance length,

grammatical proficiency, and comprehension proficiency. Parent report is valued because parents have considerably more experience with their child's language than clinicians do, and because parent report is often correlated with objective measures of language.<sup>102-105</sup> Further, parent report may be especially valuable when norm-referenced tests are not available. However, parent report is subject to bias, as parents might over- or underestimate their child's ability, potentially leading to misdiagnosis.<sup>106,107</sup>

Research on the use of parent report in bilingual assessment is sparse, but some of the studies have demonstrated success,<sup>108,109</sup> but see Pua et al.<sup>110</sup> For example, in a recent study,<sup>111</sup> the Alberta Language and Development Questionnaire (ALDeQ)<sup>109</sup> was administered to parents. The ALDeQ is a questionnaire that collects data on the child's L1, with questions about the child's age of first word, age of first word combinations, among many other aspects of language. Points are assigned to every question, leading to a quantifiable score. In this study, children who were, on average, 5 years and 10 months old, with an average of 2 years and 9 months of English exposure, were successfully identified as having a language disorder by the questionnaire. In fact, the questionnaire had 100% sensitivity and 95.2% specificity. These results are promising, and parent report is likely to be a useful component of language assessment, but more data are needed before parent report can be fully recommended as a stand-alone assessment.

## Synthesis and Summary: Six Principles for Assessing Bilingual Children

To synthesize and summarize the information covered in this article, as well as to provide guidance for teachers, pediatricians, families, and other related professionals, we offer six, evidence-based principles for best practice to assess bilingual children in the elementary grades, pre-kindergarten through fifth grade (–Table 2). If applied, these six principles may remove the ambiguity and confusion surrounding bilingual assessment, as well as serve as a resource to those involved in the assessment process.

### Principle 1: Bilingual and Monolingual Children should not be Assessed in the Same Manner

What makes the bilingual experience unique is that bilinguals have more than one way to express their thoughts and feelings. Bilingual children may also be bicultural as a result of their language repertoire and background. Within language assessment, SLPs must account for this increased diversity and ensure that this variability does not negatively impact the child's overall evaluation. Knowing an L2 alone does not negatively impact overall academic performance<sup>112</sup>; however, children from nonmainstream cultures might perform worse on language assessments than children from mainstream cultures (monolinguals) if the same measures are used across both groups.<sup>15</sup> Lower performance occurs because most language assessments are designed for mainstream-culture monolinguals. Therefore, bilingual and monolingual children should not be assessed for a

**Table 2** Six principles of bilingual assessment

Principle 1	Bilingual and monolingual children should not be assessed in the same manner
Principle 2	No two bilingual children are the same
Principle 3	Use a combination of norm-referenced and alternative measures for assessment
Principle 4	Assess in both languages whenever possible
Principle 5	Determine if there is a language disorder or a language difference
Principle 6	Collaborate with SLPs, families, teachers, interpreters, and other professionals

Abbreviation: SLP, speech–language pathologist.

language disorder in the same manner, using the same tools. Otherwise, bilingual children would be at greater risk for overidentification of DLD. Different language assessment techniques have been developed for use with bilingual children from nonmainstream cultures, such as a holistic approach,<sup>4</sup> including dynamic assessment, nonword repetition, language sampling, nonlinguistic tests, and parent report.

### **Principle 2: No Two Bilingual Children are the Same**

Given the linguistic and cultural diversity among bilinguals, it is also important to highlight that no two bilingual children present with the same linguistic profile. Bilingualism exists on a continuum of proficiency, dominance, and age of acquisition.<sup>13,49–51</sup> Within this continuum comes much variation. For example, there are two English-Spanish speaking children that are the same age and in the same classroom. One child speaks only Spanish at home, along with English and Spanish in school, while the other child speaks both languages at home and at school. The former child first started learning English upon school entry, while the latter child learned English and Spanish from birth. Both children present with an expressive language delay across both languages. These children, although bilingual speakers of English and Spanish, differ in proficiency, dominance, and age of acquisition. This case scenario highlights the heterogeneity within the bilingual population, even within the same classroom. Moreover, these factors are important in estimating the children's overall linguistic ability and will impact assessment decisions (e.g., what linguistic information is needed from the family, which language(s) to assess in, which measures to use). Although it is unclear at this point how proficiency, dominance, and age of acquisition impact language development,<sup>16</sup> these factors must be determined to examine their relative contributions to the child's linguistic profile and to ensure best practice for bilingual assessment.<sup>24</sup>

### **Principle 3: Use a Combination of Norm-Referenced and Alternative Measures for Assessment**

As there is a great deal of heterogeneity in the bilingual population, it is important to take a holistic view of the child during assessment. Current trends in research and practice demonstrate that a combination of norm-referenced and alternative measures must be used to assess a bilingual child's linguistic strengths and weaknesses and to ensure diagnostic accuracy.<sup>23,28,40</sup> This article discussed the use of

norm-referenced and alternative assessments with bilingual children and elucidated the advantages and challenges of each. For example, there is a lack of norm-referenced tests that are available for use with bilingual children.<sup>15,30</sup> Therefore, tests designed for English monolingual children are often used with bilingual children, which can result in overidentification of DLD.<sup>6</sup> One solution is to not report norm-referenced scores and discuss the child's qualitative performance.<sup>4</sup> Another is to change, or lower, the norm-referenced score thresholds that indicate a language disorder.<sup>61</sup> However, these methods indicate a norm-referenced test is being used in an informal way. Therefore, alternative methods, such as (but not limited to) dynamic assessment, nonword repetition tasks, and language samples should be considered for use in conjunction with formal measures to ensure diagnostic accuracy. Although using multiple methods of assessment can be time consuming, SLPs can advocate to request additional time to ensure fair assessment and best practice.

### **Principle 4: Assess in Both Languages whenever Possible**

Related to using multiple forms of assessment, the bilingual child should be assessed in both languages whenever possible. ASHA<sup>26</sup> and research<sup>10,27,71,113</sup> suggest that dual-language assessment is best practice with bilingual children. However, bilingual assessment may not always be feasible. The SLP often does not speak both languages proficiently and/or possess adequate knowledge of the bilingual assessment process, and bilingual tests are not available to adequately capture a child's linguistic profile. There are solutions to overcome these obstacles. The SLP can work with a trained interpreter and/or a cultural broker who is knowledgeable about speech and language development, neutral, and remains confidential throughout the process. The SLP can also use a combination of norm-referenced and alternative measures across languages that allow him or her to gain insight into the child's holistic linguistic profile, including strengths and weaknesses. These solutions are especially critical as the majority of SLPs in the U.S. are monolingual.<sup>10,32</sup>

### **Principle 5: Determine if There is a Language Disorder or a Language Difference**

Whether the child is monolingual or bilingual, the SLP's primary role for assessment in the school setting is to determine if there is a language disorder that negatively

impacts social and academic performance.<sup>24,25</sup> With bilingual children, teasing apart language disorder versus difference becomes challenging for several reasons. Oetting et al<sup>14</sup> argue that a false dichotomy occurs between dialect, or in the current case, language difference, and disorder. The statement of language *difference* versus *disorder* suggests that there might be some similarities between these two concepts, which is untrue. This dichotomy also minimizes the emphasis on identifying the nature and impact of DLD and puts more emphasis on describing the differences that exist between two languages. Moreover, relying solely on norm-referenced measures, bilingual children with typical language skills often present with a similar profile to monolingual children with a language disorder. In other words, bilingual children perform worse on norm-referenced tests of language than monolingual children.<sup>10,14–16,71</sup> This is often due to norm-referenced tests' norming samples, which include English monolingual children only. If language deficits are present *only* in one language, then this indicates a language difference. Therefore, using alternative measures to norm-referenced tests may assist in identifying whether a bilingual child presents with a true language disorder or if their profile represents a language difference. Knowledge about the differences in language development as well as profiles of language disorder in bilingual versus monolingual children is key to ensuring that accurate dissociation between a disorder and difference. Graduate programs training future SLPs should include multicultural competence, exposure to diverse populations, and information on bilingual language development within their coursework and practical experiences to enhance service delivery.<sup>10</sup>

### **Principle 6: Collaborate with SLPs, Families, Teachers, Interpreters, and Other Professionals**

The last, and likely most critical principle of bilingual assessment is for collaboration among those who are closest to the child, especially families and teachers. This collaboration extends to interpreters when the SLP is not proficient in the child's language(s). More and consistent information about the bilingual child's linguistic background will result in increased diagnostic accuracy. Collaboration is key in the assessment of bilingual children since the process is not as straightforward as it is for monolingual children. For example, norm-referenced tests and observation of the child's behavior may be sufficient to diagnose a monolingual child with DLD, but this is not the case with bilingual children. SLPs can interview parents to understand the bilingual children's strengths and weaknesses. Parent questionnaires are also available. Classroom teachers spend almost as much time with children as do parents and can therefore provide a wealth of information. Other school-based professionals, including nurses, social workers, and other teachers, can provide additional data. In all cases, cultivating positive relationships with families and colleagues, and serving as an advocate for the bilingual child's needs, will ensure that the bilingual child receives the services he or she deserves.

## **Conclusion**

This article discussed current trends in research and practice for assessing the bilingual child, including barriers to assessment, norm-referenced testing, and alternative measures. We summarized aspects within each domain by offering six, evidence-based principles for bilingual assessment. We aimed to provide information about the bilingual assessment process and to assist with overcoming barriers, applicable to families, teachers, pediatricians, and other related professionals. With an eye toward the future, Caesar and Kohler<sup>10</sup> describe that to advance our field and ensure evidence-based assessment of bilingual children, it will take a combination of external forces, including school administrators allowing extra time for assessment, more tools to assess bilingual children, and graduate program education, with intrinsic motivation within clinicians, including professional development and literature searches, to effect change.

### **Conflict of Interest**

None declared.

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