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Dynamic Assessment With Bilinguals: A Focus on Increasing Clinicians' Confidence

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Abstract

Speech-language pathologists (SLPs) are obligated to judiciously select and administer appropriate assessments without inherent cultural or linguistic bias (Individuals with Disabilities Education Act [IDEA], 2004). Nevertheless, clinicians continue to struggle with appropriate assessment practices for bilingual children, and diagnostic decisions are too often based on standardized tests that were normed predominately on monolingual English speakers (Caesar & Kohler, 2007). Dynamic assessment is intended to be a valid and unbiased approach for ascertaining what a child knows and can do, yet many speech-language pathologists (SLPs) struggle in knowing what and how to assess within this paradigm. Therefore, the aim of this paper is to present a clinical scenario and summarize extant research on effective dynamic language assessment practices, with a focus on specific language tasks and procedures, in order to foster SLPs' confidence in their use of dynamic assessment with bilingual children.

The vast majority of school-based speech-language pathologists (SLPs) currently serve or can expect to serve linguistically diverse students. According to the National Center for Education Statistics and the U.S. Census Bureau, approximately 21% of children ages 5 to 17 speak a language other than English at home (Aud et al., 2013; Ryan, 2013). Speech-language pathologists (SLPs) are obligated to judiciously select and utilize test materials that are not racially or culturally discriminatory (Individuals with Disabilities Education Act [IDEA], 2004), yet linguistically diverse children are insufficiently represented by the normative samples of most standardized language assessments. Even if the test norms include sampling of linguistically diverse children, the test may still not be valid for them, as other factors (e.g., differences in linguistic developmental milestones, socioeconomic status) may also influence test validity.

The SLPs knowledge of appropriate assessment practices for bilingual children has advanced in many ways over the years. For example, SLPs are now typically familiar with the concepts of Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP; Cummins, 1979). More clinicians understand that bilingual children should be tested in both languages, not just the language that may appear "dominant," since relative dominance may shift depending on particular social or academic task demands (Grosjean, 1982). Additionally, researchers have documented problems with translating English tests into other languages; for example, Restrepo and Silverman (2001) identified differences in item difficulty between languages which compromise test content validity. Moreover, certain grammatical features that cause difficulty in children with language impairment are not consistently the same across languages (e.g., Leonard, 2000).

While test development for linguistically diverse children has improved, the overall quantity and quality of bilingual language tests remains inadequate. Dollaghan and Horner (2011) conducted a meta-analysis of the diagnostic accuracy of numerous language measures for identifying language impairment in Spanish-English bilingual children. Their search yielded nine studies published between 1991 and 2008, with data reported on seventeen total index

measures of language. The authors' analysis of these index measures identified numerous critical weaknesses. They indicated that no single measure stood out as optimal for differentiating language differences from disorders in bilinguals. Further, they cautioned that clinicians should interpret children's performance on these measures as no more than suggestive, not a clear indicator, of diagnostic status. Even as new measures are proposed, use of multiple sources of data are recommended.

When diagnosing language impairment in bilinguals, however, many SLPs continue to over-rely on formal English tests normed predominately on monolingual English speakers (Caesar & Kohler, 2007). Moreover, SLPs appear to be under-utilize alternative assessment methods, such as dynamic assessment. As opposed to static assessment designed to assess what a child has already learned, dynamic assessment focuses on the learning process and the amount of change that occurs during the examiner-child interaction (Gutiérrez & Peña, 2001). Based on the work of Feuerstein (1979) and Vygotsky (1986), dynamic assessment (DA) is a notable, evidence-based assessment method designed to tap children's true language learning capacity while attempting to remove linguistic bias that is often inherent in other measures. A relatively wide base of research supports its contribution to valid assessment of linguistically diverse children (Camilleri & Law, 2007; Hasson, Camilleri, Jones, Smith, & Dodd, 2013; Kapantzoglou, Restrepo, & Thompson, 2012; Peña, Gillam & Bedore, 2014; Peña, Iglesias, & Lidz, 2001; Ukrainetz, Harpell, Walsh, & Coyle, 2000). Therefore, the aim of this paper is to briefly summarize current research on effective dynamic language assessment practices in order to foster SLPs' confidence in their use of DA with bilingual children.

Clinical Scenario

Megan is an SLP in her second year of work in a relatively diverse school district. A teacher has referred Binh, a kindergarten student, age 5;6, whose first language is Vietnamese, for an evaluation due to concerns with his expressive language. With a Vietnamese speaking interpreter, Megan interviewed Binh's parents using the Bilingual Language Proficiency Questionnaire (Mattes & Nguyen, 1996). They reported that Binh was exposed primarily to Vietnamese until the age of three, when he began attending an English-speaking preschool program. He is an only child. His parents continue to speak with him and with each other in Vietnamese, although Binh reportedly now prefers to communicate in English. On a weekly basis, approximately 60% of his language input (what he hears) is in Vietnamese, while 75% of his language output (what he speaks) is in English. Binh's parents indicated having some early concerns with his language development, but they did not seek services because he began to talk more in preschool.

With the interpreter, Megan probes Binh's Vietnamese language skills through a conversational sample with the interpreter, informal tasks to observe his comprehension, and a narrative retell of a wordless picture book in Vietnamese. Binh appeared to comprehend the interpreter, but he struggled to express himself in Vietnamese. Given his reported percentage output in English, she also decides to administer a formal language assessment in English. His scores fell within the average range in comprehension but below average in expressive language. She knows, however, that children with Binh's language experience are not adequately represented within the normative sample and that informal assessment is a critical part of a comprehensive assessment. Megan read Gutiérrez and Peña's (2001) tutorial on dynamic assessment in graduate school, but unfortunately, she does not yet have experience implementing DA. She is committed to evidence-based practice. Thus, she decides to delve into the literature to gain a better understanding of various researchers' approaches to DA with linguistically diverse children, language targets, procedures for evaluating children's language learning ability, and how well approaches have differentiated differences from disorders in diverse children.

Approaches to Dynamic Assessment

Megan learns that there are various types of dynamic assessment. Numerous studies investigating the utility of DA for identifying bilingual children with language impairment have entailed a test-teach-retest approach (e.g., Kapantzoglou et al., 2012; Peña et al., 2014, 2001;

Ukrainetz et al., 2000). In addition, Laing and Kamhi (2003) described a method based on use of graduated prompting, progressing from minimal to maximal prompting, to teach a targeted language skill (e.g., Hasson et al., 2013). With this method, assessment and teaching phases occur simultaneously, while the evaluator assesses child response and level of prompting needed. A combination of these methods may also be used (e.g., Camilleri & Law, 2007).

Language Targets

Next, Megan wants to learn more about what particular language skills have been targeted within dynamic assessment protocols. Megan's review of the literature indicates that a wide variety of skills have been used in dynamic assessment protocols with linguistically diverse children. The specific language targets in each of the reviewed studies are presented in Table 1.

Table 1. Summary of Studies on Dynamic Assessment with Linguistically Diverse Children.

Authors (year)	**Language Targets**	**Participant ages/grades**	**Duration**	**Assessment measures**	**Classification accuracy**
Camilleri & Law (2007)	Receptive word learning in English	• Various language backgrounds • Ages 41-51 months • Pre-kindergarten	One, 45-minute session incorporating both static and dynamic elements	• Vocabulary scale	Sensitivity and specificity not available
Kapantzoglou, Restrepo, & Thompson (2012)	Receptive word learning in Spanish	• Spanish-speaking ELLs • Ages 4-5 years	One mediation session of 30-40 minutes	• Word learning measure • Learning Strategies Checklist • Modifiability Scale	• Classification accuracy 78.6% • Sensitivity 76.9% • Specificity 80%
Ukrainetz, Harpell, Walsh, & Coyle (2000)	Categorization in English	• Arapahoe or Shoshone tribal members • Kindergarten	Two, 30-minute mediation sessions	• Semantic assessment • Learning Strategies Checklist • Response to Mediation Checklist	• Sensitivity 75% • Specificity 87%
Peña, Iglesias, & Lidz (2001)	Expressive labeling in English and/or Spanish	• Latino or African American • English and/or Spanish-speaking • Ages 45-57 months • Preschool	Two, 30-minute mediation sessions	• Single word expressive vocabulary test • Language assessment • Learning Strategies Checklist • Modifiability Scale	• Classification accuracy 92.3% • Sensitivity 77.8% • Specificity 95.3%

(continued)

Peña, Gillam, & Bedore (2014)	Narration in English	• Spanish-English bilingual • Kindergarten	Two, 30-minute mediation sessions	• Mediated learning observation • Grammaticality	• Classification accuracy 80.6%- 97.2% • Sensitivity 88.9%-100% • Specificity 72.2% to 94.4%
Hasson, Camilleri, Jones, Smith, & Dodd (2013)	Vocabulary, sentence structure, phonological production	• Various language backgrounds • Ages 3-5 years	One, 40-minute session	• DAPPLE measures	Sensitivity and specificity not available

Receptive Word Learning. Camilleri and Law (2007) utilized DA to examine pre-kindergartners' gains in English receptive vocabulary. Participants were between 41 and 50 months of age and included 14 children who were typically developing and 40 children who had been referred for speech-language therapy. Twelve of the children referred for therapy were linguistically diverse children who spoke both English and another language at home; the authors did not specify the other languages, the age at which children began to learn English or the number of years of English exposure. Based on the British Picture Vocabulary Scale II (BPVS; L. M. Dunn, Dunn, Whetton, & Burley, 1997), the children referred for speech-language therapy were then divided into a high scoring group (≥25th percentile) and a low scoring group (<25th percentile). Results indicated that although the vocabulary scores of children with English as another language were lower than scores of the English monolinguals, their scores on the dynamic measures were comparable. The low scoring group indeed displayed low scores on the dynamic measures as compared to their peers. These findings support the premise that DA is a less-biased method of assessment for linguistically diverse children than simple use of a vocabulary measure and strengthened Megan's intent to incorporate its use with Binh.

Kapantzoglou et al. (2012) examined children's receptive word learning in Spanish. Specifically, they examined performance of 28 four- and five-year old Spanish-speaking English language learners (ELLs) living in the United States. Of these, 15 had typical language, and 15 had language impairment. Most classroom instruction was in English. Examiners taught the children three CVCV words and nonwords that contained early acquired consonants. The words consisted of three unfamiliar items (i.e., an indistinguishable animal, seeds, and a bubble level presented as toy) from three semantic categories (i.e., animal, food, and a toy). Next, vocabulary also included three familiar objects (i.e., a flower, pizza, and sunglasses). Examiners used a mediated learning script, based on Lidz's (1991) mediation principles (see Table 2), to teach the words in Spanish. The teaching segment entailed five steps in which the examiner: (1) reported the target word category, (2) talked about the word function and an accompanied gesture, (3) described the item, (4) gave the child the opportunity to handle the object, and (5) prompted the child to imitate the word three times. In Phase 1, children were exposed to the words 9 times, in Phase 2, another 9 times, and in Phase 3, an additional 9 times, for a total of 27 times. Evaluators rated children's responsiveness and modifiability using the Learning Strategies Checklist (LSC) and Modifiability Scale (MS; Peña, 1993, accessible to ASHA members in Ukrainetz et al., 2000, and Gutierrez & Peña, 2001).

Table 2. Components of a Mediated Learning Experience (based on Lidz, 1991).

MLE Components	Purpose	Examples of Starters
1. Intention to Teach	The clinician clearly states the goal of the session.	• Today we are going to learn/ practice…
2. Mediation of Meaning	The clinician indicates that purpose of the skill to be practiced in the session.	• How does this help us? • This is important because…
3. Mediation of Transcendence	The clinician helps the child relate the skill and session activity to his/her daily life.	• What happens at home/ school if…? • You often do this at home/ school when you…
4. Mediation of Planning	The adult then helps the child develop a plan for an activity and carry it out with adult support.	• We're going to… • What do we need? • Then what do we need to do? • Do you remember what we are learning today?
5. Mediation of Transfer	The clinician provided positive feedback about the child's performance. Both the adult and child review the experience by talking about what the child did, what strategies the child used, and how the child demonstrated learning the skills, and again, why the skill is important.	• You worked very hard to… • You remembered to… • It's important to remember to… • Tell me what you did/what strategies you used? • How are you going to remember to…? • This is important because…

Interestingly, the researchers observed the greatest differences in word learning between groups after Phase 1 (9 exposures) and Phase 3 (27 exposures). The combination of children's word learning and modifiability scores on the LSC provided the best discrimination of children with typical versus impaired language, with an overall classification accuracy of 78.6%, sensitivity (i.e., percentage of true identification for children having a disability) of 76.9%, and specificity (i.e., percentage of true identification for children not having a disability) of 80%. Megan recalled from her graduate studies that discrimination accuracy between 80–90% is considered "fair" and that accuracy above 90% is considered "good" (Plante & Vance, 1994). Aware that no single assessment measure should be used to make a diagnosis, she determined that this procedure could potentially contribute to her own DA implementation with Binh.

Expressive Labeling. Peña and colleagues (2001) examined the response of 79 children, ages 45 to 57 months, to a DA protocol targeting expressive labeling. Children were identified as having low language skills or typical skills based on a combination of parent report, teacher report, and classroom observation. Because children were enrolled in a bilingual (English-Spanish) preschool program, their vocabulary was evaluated and teaching was conducted in the language(s) identified as each child's stronger language. For the mediated learning sessions, children learned the importance of using special names to accurately label items. During the first session, children practiced labeling transportation and food items. In the second session, children labeled animals and community workers. The activities involved various materials including toys, books, cards, and puzzles. For the pretest and posttest, the researchers used the Expressive One-Word Picture Vocabulary Test (EOWPVT; Gardner, 1990) to evaluate children's labeling. For the modifiability measures, they used the aforementioned LSC and MS. Results indicated that children with low language skills demonstrated significantly less change in skills than their typical peers. The investigators conducted various analyses and determined that the combination of LSC and MS measures and second administration of the single-word vocabulary measure yielded the most

accurate classification rate of 92.3%, with a sensitivity of 77.8% and specificity of 95.3%. As can be seen from the lower sensitivity, these findings underscore the importance of using multiple sources of data when conducting language assessments.

Categorization. Megan then found a study of categorization skills in English in which participants were kindergartners, like Binh. Ukrainetz et al. (2000) examined how well DA targeting categorization differentiated children who were identified as stronger and weaker learners, per teacher report and classroom observation. Their participants included 23 English-speaking students who were Arapaho or Shoshone tribal members from the jointly owned Wind River Reservation in Wyoming. The majority of kindergarten classroom instruction was in English, and children had also recently begun to receive some language instruction in Arapaho or Shoshone, which are both severely endangered languages (Moseley, 2010). In groups of two, children received two mediation sessions of 30 minutes each. During these sessions, children were introduced to the concept of categories (e.g., food, clothing, animals, and transportation), and activities involved having children group items or circling pictures of items by category. The investigators rated children's modifiability using the LSC and a Response to Mediation Checklist (based on Lidz, 1991). Results indicated that the group of stronger language learners achieved significantly higher scores than weaker language learners on both checklists; of the two, the Response to Mediation Checklist provided stronger group differentiation. Sensitivity and specificity were 75% and 87%, respectively, again indicating both the utility of DA and the need for multiple sources of assessment data.

English Narration. Peña et al. (2014) investigated how well DA with English narration as the targeted skill differentiated language ability in bilingual Spanish-English children. Participants included 18 children with language impairment, 18 children with typical language in a matched group (i.e., matched by age, sex, language experience, and IQ), and 18 children with typical language in a comparison group (i.e., matched on age, sex, language experience, but without IQ). The last group was also of interest, as practicing clinicians do not routinely conduct IQ testing. All children used both Spanish and English at least 20% of the time, with an average of 44.13% exposure to Spanish and 55.87% exposure to English at the time of the study. The wordless picture book *Two Friends* (Miller, 2000b) was used to elicit the pretest narrative. Children participated in two, 30-minute MLE sessions. The focus of the first MLE session was on helping the child practice making his/her story more complete and complex. During the second session, the clinician and child co-constructed a new story using a Mercer Mayer wordless picture book. *The Bird and His Ring* (Miller, 2000a) wordless picture book was used to elicit the posttest narrative.

Using a Mediated Learning Observation (MLO), examiners rated three behaviors in each of four areas: (a) affect (anxiety, motivation, and persistence), (b) behavior (responsiveness to feedback, attention, and compliance), (c) arousal (task orientation, metacognition, and nonverbal self-reward), and (d) elaboration (e.g., problem solving, flexibility, and verbal mediation). Analysis of MLO scores indicated that children with language impairment required significantly more support than their typically developing peers. The investigators also analyzed language using the Systematic Analysis of Language Transcription (SALT; Miller & Iglesias, 2008). Results indicated no significant differences between groups in the total number of different words, total number of words, or mean length of utterance in words; this finding was in contrast to a previous study with first and second grade English speakers in which greater differences between groups in story productivity were observed (Peña et al., 2006). Grammaticality was significant lower in the group with language impairment. Based on combination of MLO scores and grammaticality, various analyses indicated overall classification accuracy ranging from 80.6% to 97.2% accuracy, sensitivity from 88.9% to 100%, and specificity from 72.2% to 94.4%.

Multiple Tasks in DA. Hasson et al. (2013) investigated their Dynamic Assessment of Preschoolers' Proficiency in Learning English (DAPPLE) protocol, which incorporates several tasks. Participants were between three and five years of age and from a variety of language backgrounds including Bengali, French, Gujarati, Lingala, Polish, Portuguese, Spanish, Turkish, Twi, and Yoruba. All testing was conducted in English; therefore, eligibility required that participants were

exposed to English. Twelve children were on SLPs' caseloads, and 14 were in a control group. Children completed nonverbal cognitive screening tasks (i.e., block building and drawing a person) and dynamic assessments of vocabulary, expressive language, and phonology. For the vocabulary task, the examiner presented three cards, one unfamiliar and two familiar, to the child. Using a standardized hierarchy of cues, progressing from least to most support, the examiner scored how readily the child used a process of elimination strategy to identify the unfamiliar object. Next, immediate recall of the items was tested by asking the child to name items while posting them in a box. To observe retention, the adult then asked the child to name the items a second time. For the expressive language DA task, the examiner told the child that they were going to look at and tell stories about pictures, following an adult model. The examiner scored the child's responses according to how well the child produced a complete sentence in accordance with the adult model. For the phonological DA task, the child was asked to name each of 10 pictures from the screener two times. If the child produced any speech sound incorrectly, the adult modeled and asked the child to repeat to assess stimulability. Then, the adult asked the child to name them once again and scored how well the child responded to the teaching. Finally, a dynamic assessment of expressive language post-test consisted of scoring the child's ability to independently tell what was happening in two pictures.

Overall, analysis revealed significant differences in performance between the caseload and control groups. Children in the clinical group had greater difficulty and needed more prompting to learn vocabulary words and achieve syntactic targets. The groups did not differ in sound stimulability, although phoneme accuracy remained lower in the caseload group. Classification accuracy, sensitivity, and specificity data were not provided. However, this study provides Megan with additional ideas for targets and administration procedures which have proven informative.

Dynamic Measures

Based on her review, Megan develops a plan for how she will score Binh's learning and modifiability. First, she decides to use the items from the LSC, which Kapantzoglou et al. (2012), Peña et al. (2001), and Ukrainetz et al. (2000) found diagnostically informative. She will rate the sixteen areas on a scale from 0 to 2 (i.e., 0 indicating none of the time, 1 some of the time, and 2 most of the time), for a total possible score of 32. Specifically, for the attention/discrimination category, she will evaluate how often he: (a) initiates focus with minimal cues, (b) maintains focus with minimal cues, and (c) responds to relevant cues and ignores irrelevant cueing. For the comparative behavior category, she will score how often he: (a) comments on the features of the task, (b) uses comparative behavior to select items, and (c) talks about same and different. For the planning category, she will score how often he: (a) talks about the overall goal, and (b) talks about his plan. For the self-regulation/awareness category, she will score how often he: (a) waits for instructions, (b) seeks help when the task is too difficult, (c) corrects himself, and (d) rewards himself. For the transfer category, she will score how often he: (a) applies strategies within tasks, and (b) applies strategies between tasks. Lastly, for the motivation category, she will score how often he: (a) persists even when he is frustrated and (b) shows enthusiasm.

Based on the research indicating the predictive utility of child modifiability measures (Kapantzoglou et al., 2012; Peña et al., 2001; Ukrainetz et al., 2000), Megan also plans to use the MS. First, she will rate examiner effort, meaning how much effort she had to exert to induce change in Binh's skills, on a scale from 0 to 3 (i.e., 3 indicating extreme/very high effort, 2 high-moderate, 1 moderate, and 0 minimal/slight). Second, she would rate child responsiveness using the same scale. Thirdly, she will rate his transfer/carryover of skill on a scale from 0 to 2 (i.e., 0 indicating minimal/low, 1 moderate/medium, and 2 maximal/high). The total possible score using this system is 8 points.

Overall, Megan feels more confident in her decision and ability to implement dynamic assessment. Based on her review of the literature, teacher concerns, and the areas on which Binh displayed difficulty on formal testing, she decides to target receptive word learning in English and develops a mediated learning script based on Lidz's (1991) mediation principles (see Table 2).

Overall, Megan finds that, even with a well-planned teaching phase, Binh demonstrates minimal modifiability. Based on the LSC, she rates the majority of areas as a 0 or 1. In particular, Binh needs frequent cueing to maintain focus and has significant difficulty using and applying the targeted strategies. Using the MS, Megan notes that she needs to exert very high effort, yet Binh demonstrates minimal modifiability and responsiveness. She knows that converging evidence is key to making a diagnosis with culturally and linguistically diverse children. Consequently, based on parent concern, teacher concern, informal results with the interpreter that expressive skills in Vietnamese are poor, and Megan's clinical input, converging evidence suggests that an expressive language disorder is present. In the future, Megan plans to continue incorporating DA into her assessment practices and will consider additional protocols and modifiability measures to expand her practice.

Discussion

According to federal IDEA regulations (IDEA, 2004), SLPs are obligated to select valid assessments without inherent cultural and linguistic bias that provide accurate information on what children know and can do. Dynamic assessment is a notable assessment method that is designed to tap children's true language learning capacity while attempting to remove linguistic bias that is often inherent in other measures. Consequently, the purpose of this paper was to familiarize more SLPs with existing research on dynamic assessment with linguistically diverse children in order to enhance their confidence in incorporating it into their own assessment practices.

As summarized in the current paper, several language targets, teaching procedures, and measurement tools have been successfully utilized with linguistically diverse children. Clinicians have a wide variety of options for teaching targets. They can select appropriate areas based on their knowledge of the reasons for children's referrals and demonstrated areas of difficulty during pretesting. Task complexity may potentially exceed ELL's English proficiency (Peña et al., 2014); thus, clinicians should consider children's English proficiency to ensure selection of realistic targets. Research suggests that children with language impairment have poorer information processing skills and greater difficulty with attention and memory than their typically developing peers (e.g., Dollaghan & Campbell, 1998; Weismer, Evans, & Hesketh, 1999; Kohnert, Windsor, & Yim, 2006). Therefore, a strategically developed teaching phase will enable clinicians to observe and evaluate children's information processing and learning capacity when given effective instruction.

Conclusion

Children who respond well to mediated learning experiences are not likely to have true language impairments, while those who demonstrate difficulty learning and low modifiability are likely to be those with true language impairments. While further research is needed to continue validating DA procedures with various populations, current research supports clinical use of information obtained during dynamic assessment, especially with converging evidence from parent and teachers, to help differentiate language differences from disorders.

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