

Evaluating Phonological Systems of Bilingual (Spanish-English) Children with Highly Unintelligible Speech

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Editorial

Several investigators have documented the need for better assessment practices of bilingual children [1,2]. Based on results reported by Skahan, Watson, and Lof, for example, practicing speech-language pathologists (SLPs) shared that they rely more on informal measures or, in some cases, assessment in English only when evaluating children with suspected Speech Sound Disorder (SSD). Given what we know about preferred bilingual assessment procedures, both the native language and second language should be evaluated [3]; which is supported by federal mandates ‘unless it is clearly not feasible to so provide or administer’ [4]. More recently, however, some challenges have been posited by speech sound experts in relation to the assessment of English Language Learners (ELLs) with SSD. Professionals have reported, for example, a “lack of culturally appropriate tools for assessment, lack of norms for multilingual speech acquisition, and a lack of confidence in the differential diagnosis between speech sound disorder and difference” [5]. It is important to address these concerns. The number of ELLs in the United States continues to rise [6]. Due to the fact that the majority of ELLs come from a Spanish-speaking household, there is a need to provide appropriate assessments to this population to ensure that children are not under or over identified for services [7], otherwise known as “disproportionality” [8].

To minimize the risk of disproportionality with bilingual children suspected of having SSD, SLPs not only need to conduct a thorough speech sound evaluation that includes an evaluation of phonological strengths and weaknesses and stimulability [9] but also must consider additional factors, including but not limited to: native and second language skills/use, language proficiency, phonological skills in both languages, and dialectal considerations [10]. Bilingual assessment recommendations include gathering information from the family and/or school personnel. Questionnaires that exist specifically for establishing impressions/attitudes related to intelligibility should be considered [11]. Identifying level of severity for children with suspected SSD is critical in order to determine whether a child’s phonological productions are considered to be mild, moderate, severe, or profound (i.e., highly unintelligible) [12]. In addition to an assessment of phonological skills in both languages (e.g., formal test; informal measure), the speech sound assessment of children with highly unintelligible speech should include a conversational speech sample, such as a percentage measure of intelligibility (e.g., Percentage of Intelligible Words) [13]. Connected-speech samples of more than 100 words are recommended to obtain an overall score of intelligibility [14]. Severity ratings in both languages are needed so that determinations can be made to differentiate speech sound difference from SSD. Rojas and Iglesias [15] recommend the use of narrative speech samples when working with bilingual children and build the

case for language sampling and an analysis of language abilities using dialect neutral language measures (i.e., mean length of utterance in words; number of different words; words per minute). Because children with SSD have been reported to experience concomitant difficulties in phonological awareness skills [16], a metaphonological assessment measure also should be considered [17].

Based on acquisition data, the majority of phonemes in both languages are reported to be acquired by age 4 years [18], with the exception of “later-developing” phonemes which typically emerge by age 8 years [19,20]. In general, phonological acquisition in bilingual (Spanish-English) children has been found to be similar, but not identical, to same-age, monolingual peers [21]. When comparing the English and Spanish productions of typically developing bilingual (Spanish-English) 4- and 5-year-old children, investigators additionally have reported that phonological patterns (what children need to learn) and deviations in both languages were comparable [22]. If a typically developing child, for example, correctly produces a phonological pattern in Spanish, they are more likely to also produce the same (shared) phonological pattern in English. Conversely, if a typically developing child presents with cluster reduction in Spanish on specific clusters, they are likely to present with cluster reduction on shared clusters in English. Moreover, there is evidence that typically developing bilingual (Spanish-English) speakers catch up over time [23]. Whereas bilingual (Spanish-English) children younger than 4 years of age have been found to present with a delay compared to typically developing, monolingual peers, bilingual children who are older than 4 years of age tend to approximate typically developing, monolingual peers. Phonological deviations in younger typically developing children commonly include liquid deviations and omissions of consonants in clusters/sequences [22,23].

In order for bilingual children to qualify for services, deficits in phonological patterns must exist in both languages. Fabiano [24] discussed four considerations for more accurately assessing speech productions of bilingual children: (1) an independent analysis (e.g., phonetic inventory in both languages), (2) relational analysis (e.g., accuracy of shared and unshared phonemes), (3) error analysis (ruling out cross-linguistic effects), and (4) a phonological pattern analysis (common versus uncommon patterns). Phonological deviations for bilingual (Spanish-English) children include the following omission and substitution categories: initial consonant deletion, fronting/backing, clusters/sequences, cluster/sequence reduction, and liquid deviations [25,26]. Table 1 illustrates common productions of Spanish-speaking children with highly unintelligible speech (speakers of Mexican Spanish). Based on the information from Table 1, omissions (in syllables, clusters, sequences) and substitutions (e.g., fronting, gliding, stopping) are common in utterances of children with highly unintelligible speech.

Table 1: Sample productions of children with highly unintelligible speech*

Word	English	Target	Production
Chicle	(gum)	/tʃikle/	[tite]
Cuchara	(spoon)	/kutʃara/	[taja]
Escuela	(school)	/eskwela/	[weja]
Estrella	(star)	/estreja/	[teja]
Flor	(flower)	/flor/	[po]
Lápiz	(pencil)	/lapis/	[ɔpi]
Pescado	(fish)	/peskaðo/	[ɔho]
Sombrero	(hat)	/sombbrero/	[bejo]
Negro	(black)	/negro/	[nego]

*Note: Productions from speakers of Mexican Spanish (Prezas, 2012)

Differentiation between omissions and substitutions in the analysis of phonological deviations is an important practice for determining level of severity [9]. Children who have a profound phonological disorder, the highest severity rating, have been characterized as having “extensive” omissions and “many” substitutions [12]. As children with highly unintelligible speech become more intelligible, omissions are often replaced by substitutions. Although the replacement sound (i.e., substitution) is still an incorrect production, a substitution error provides more context than an omission and, therefore, is a better error type in a child’s speech. Gradually, children who are in the profound severity category improve and shift to the severe range, the next level of severity, which includes “extensive” substitutions and “many” omissions [12]. It is important, therefore, to examine and differentiate substitutions and omissions in speech of all children including bilingual children.

When conducting a bilingual evaluation for SSD, dialects must be considered when determining whether a child may or may not have a phonological disorder. Whereas English dialects primarily differ due to vowel variations, Spanish dialects are ruled primarily by consonantal differences [7,22]. For example, for the word *escuela* (school), a speaker of Mexican Spanish typically says [eskwela], whereas a speaker of Puerto Rican Spanish commonly says [e^hkwela] or [e_hkwela]; with aspiration or deletion for the /s/ phoneme. Both instances are perfectly acceptable productions. The differences between dialects, however, indicate an important need to additionally consider consonant sequences (i.e., two or more adjacent consonants across syllables) in an analysis of speech sounds for Spanish-speaking children. Final consonants are another example where dialectal differences occur. Speakers of Mexican Spanish usually produce final /s/ in words such as *dos* (two) whereas children from homes with other dialects (e.g., Speakers of Puerto Rican Spanish) aspirate or omit the final /s/ sound. Knowledge related to dialectal background (e.g., the notion of “family” dialect) is essential in order to accurately and more appropriately make diagnostic recommendations.

Professionals who assess the phonological patterns of bilingual children with highly unintelligible speech have several factors to consider. In addition to general recommendations for a comprehensive assessment of SSD (e.g., language assessment), it is recommended to obtain phonetic inventories (strengths and weaknesses) and a severity

level in both languages. Phonetic inventories should include a relational analysis, error analysis, and phonological pattern analysis. Collaborate with bilingual professionals as needed, including interpreters. If commercially available tests are not available, consider informal assessment through a connected/narrative speech sample and estimates of intelligibility (e.g., Percentage of Intelligible Words). Use measures in both languages to evaluate effects of language/dialectal differences. Consider an analysis that differentiates substitutions and omissions, rather than giving the same score for all deviations (i.e., equal weighting for distortions, substitutions, omissions), which have different effects on intelligibility. These recommendations will not only yield a more comprehensive analysis but also aid in the development of better prognostic decisions and directions for intervention.

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