



## Rasch analysis of a Spanish language-screening parent survey



Mark Guiberson<sup>a,\*</sup>, Barbara L. Rodriguez<sup>b</sup>

<sup>a</sup> University of Wyoming, WY 82071-2000, USA

<sup>b</sup> University of New Mexico, NM 87131, USA

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### ABSTRACT

The purpose of this study was to evaluate and refine items from a parent survey designed to screen the language skills of Spanish-speaking preschoolers. This investigation applied Rasch modeling to systematically evaluate and identify items that demonstrated favorable qualities.

A set of 124 parent survey items was administered to 107 Spanish-speaking parents of preschool age children. Parents completed survey items intended to provide a global measure of preschool language abilities. Rasch analyses of the survey items were conducted using WINSTEPS.

Results indicated that 59 items, all vocabulary items, fit the Rasch model. Sufficient unidimensionality was obtained, with the model accounting for 58% of the variance. Item difficulty estimates ranged from  $-7.43$  to  $4.12$ , with a shortage of items at both the lower ability level and at the higher ability level. Analyses of pruned and remaining items identified the type of items that may be most useful for a refined item bank. These results will inform the development of new items for a Spanish language-screening parent survey for preschool age children.

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The Hispanic population is the fastest growing minority group in the United States. Between the years 2000 and 2010, the Hispanic population grew by 43%, with young children representing the largest portion of this growth (U.S. Census Bureau, 2010). The Census Bureau estimates that in the coming years the Latino school-age population will increase from 11 million to 28 million and this number will continue to grow as Latino children account for almost 26% of the nation's population under five years of age. A large segment of these children are Spanish-speaking; approximately 79% percent of English language learners (ELLs) are from Spanish-speaking backgrounds (Payán & Nettles, 2007; U.S. Census, 2010).

The increasing presence of young Spanish-speaking children in the U.S. combined with the lack of available tools presents the need to develop language-screening measures to identify children within this population who are at-risk for language impairment (LI). Indeed, many federally funded preschool programs require that children be screened for the risk of language impairment and other disabilities (U.S. Department of Education, 2012; U.S. Department of Health & Human Services, 2001). In addition to the paucity of language screening measures available in Spanish, there is a concomitant shortage of Spanish-English bilingual speech-language pathologists (SLPs) to complete screening and assessment activities (American Speech-Language-Hearing Association, 2010a). The shortage of bilingual providers creates heavy workloads for bilingual SLPs, which makes accessing bilingual SLPs even more difficult (American Speech-Language-Hearing Association, 2010b; Guiberson & Atkins, 2012). To complicate this matter early interventionists, including SLPs, report that they lack confidence when screening linguistically diverse children and the lack of easy to use, reliable and valid screening tools is a major obstacle to serving these children and families (Guiberson & Atkins, 2012; U.S. Office of Special Education Programs, 2007).

\* Corresponding author. Tel.: +1 307 766 3985.

E-mail address: [mguibers@uwyo.edu](mailto:mguibers@uwyo.edu) (M. Guiberson).

The use of parent surveys to screen the language skills of young Spanish-speakers may provide a solution to some of the challenges associated with accurate identification of children at-risk for LI. A monolingual English-speaking SLP could use a Spanish parent survey as a first step in the screening process. This would help determine which children should be referred for a second level screening with a Spanish-speaking SLP and which children should be passed. Ideally this will decrease unnecessary referrals to bilingual SLPs and lead to accurate identification of children who have language difficulties. Finally, Spanish parent surveys could also provide a way for families to be actively involved in the screening process as recommended by federal guidelines (Guiberson, 2008; Guiberson & Banerjee, 2012; IDEA, 1997, 2004; U.S. Department of Health & Human Services, 2006).

## 1. Language-screening surveys for use with Spanish-speaking preschoolers

Efficient and effective screening measures are needed in Spanish to differentiate children who are at risk for LI from children who have typical language development (TD). There are several parent surveys that have been used with Spanish-speaking preschool age children (Guiberson, 2008; Paradis, Emmerzael, & Duncan, 2010; Squires, Twombly, Bricker, & Potter, 2009). These tools are reviewed in the following section in order to describe the classification accuracy and usefulness of each tool.

### 1.1. Alberta language development questionnaire

The Alberta language development questionnaire (ALDeQ) is a parent questionnaire developed to screen the language skills of preschool age children of linguistic minority backgrounds in Canada (Paradis et al., 2010). Many of the ALDeQ items were based on Spanish parent survey questions used in an earlier study of school age children (Restrepo, 1998), but unique items were also created. The ALDeQ was also developed to be non-first language specific, with the goal of using a standard set of questions with parents from a variety of linguistic backgrounds. The questionnaire consists of four sections: early milestones, current first language abilities, behaviors patterns/activity preferences, and family history. Parents are asked to describe their child's skills using rating scales; this format was selected over yes/no questions so that the tool could capture detailed developmental information about emergent skills.

The developers of the ALDeQ completed a norming study that included 168 children and parents from nine different language backgrounds, including Spanish (Paradis et al., 2010). Language impaired and typically developing group comparisons revealed significant group differences across subtests. However, discriminant analyses revealed inadequate classification accuracy (with poor sensitivity described but no coefficients reported). The authors of the ALDeQ caution that given the tool's poor sensitivity, the ALDeQ should be used qualitatively in combinations with other sources of information. These results indicated that when used alone, the ALDeQ is inadequate to screen the language skills of Spanish-speaking preschoolers.

### 1.2. Spanish ages and stages questionnaires

The ages and stages questionnaires (ASQ) (Squires et al., 2009) are a set of age specific questionnaires that can be used to screen preschool age children. The questionnaires are used to screen five developmental areas including communication. Parents rate a child's development with respect to specific age-appropriate behaviors sampled from these domains by answering each question with a 0 (not yet), 5 (sometimes), or 10 (yes). Scores are then used to classify children as either pass (i.e., scores above the empirically derived cutoff score in all domains) or at risk (i.e., on or below the cutoff score in any domain). The English ASQ has demonstrated favorable psychometric properties including strong concurrent validity, test-retest reliability, and adequate sensitivity and specificity (Hamilton, 2006; Skellern, Rogers, & O'Callaghan, 2001; Squires et al., 2009).

The ASQ has been translated or adapted for use with Spanish-speaking families. Two studies have evaluated the classification accuracy of the Spanish ASQ communication subscale (Guiberson & Rodriguez, 2010; Guiberson, Rodriguez, & Dale, 2011). The first study included preschool age Spanish-speaking children ( $N = 48$ ). Significant concurrent validity ( $r = .56, p < .01$ ) was observed with the Spanish Preschool-Language Scale 4th edition (SPLS-4), but inadequate sensitivity (.59). Similar findings were revealed in the second study with toddler age children, significant concurrent validity with the SPLS-4 ( $r = .71, p < .01$ ) but inadequate sensitivity (.56). Results from these two studies indicate that the ASQ has inadequate classification accuracy when used with Spanish-speaking preschool age children, and therefore should not be used for screening the language skills of these children.

### 1.3. Pilot Inventario-III

The Pilot Inventario-III (Pilot INV-III; Guiberson, 2008) is a Spanish version of the MacArthur-Bates Communicative Development Inventory-III (Fenson et al., 2007). This tool is meant to measure global language ability in preschool age children. It includes multiple components, including a vocabulary checklist, a sentence usage section, and a language usage section. The vocabulary checklist is not meant to be a comprehensive inventory of all of the words that a child uses; rather it is a list of words that capture a range of vocabulary observed in preschool age children. The sentence usage section presents

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