

Use of Conceptual Scoring to Increase Reliability and Validity of Direct Child Assessments with Linguistically Diverse Preschoolers¹

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BACKGROUND

- Nationally, 24% of all children under 5 are Hispanic (U. S. Census Bureau 2008). 74% of the UPCOS sample is Hispanic/Latino.
- The fair and valid assessment of bilingual and English Language Learner (ELL) children is a key issue.
 - ELLs learn some concepts at home in their primary language and are introduced to other concepts at preschool in English.
 - Research indicates that a significant portion of the vocabulary of ELLs is language specific.
- Conceptual scoring credits a child for a correct response independent of the language of the response.

OBJECTIVE

Evaluate the reliability and validity of conceptually scored assessments used with bilingual and Spanish-speaking preschoolers.

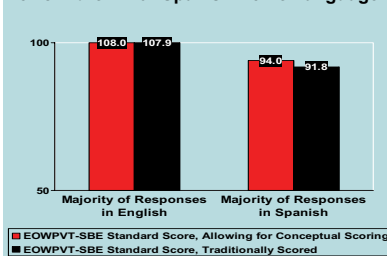
METHODS

- Sample
- 418 children attending LAUP programs in spring 2007 pilot
 - 1657 children attending LAUP programs in fall 2007; 953 from Spanish speaking households (children in language groups 2, 3, and 5 as described in Poster 2).
- Three conceptually scored measures administered individually:
- Expressive One-Word Picture Vocabulary Test-Spanish Bilingual Edition (EOWPVT-SBE)
 - Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) math
 - Rapid letter naming task
- The conceptually scored assessment began in the child's primary language. Prompts were repeated in the other language when necessary.
- Item Response Theory (IRT) was used to examine the properties of the items and measurement equivalence.

EOWPVT-SBE (spring and fall 2007)

- High reliability in spring ($\alpha = .96$) and fall ($\alpha = .93$)
- Little evidence of floor problems. Less than 1% of the children in the fall had a raw score less than 7.
- Some indication of differential item functioning (DIF) by language group (5 items) and some indication of misfit (4 items) in the spring pilot. This was about half as many items as were indicated as having problems on the PPVT-4 in the same spring pilot.
- In the full fall sample, children in the only or primarily English groups had higher mean scores than children in the only or primarily Spanish language groups ($F=400$; $P<.01$).
- Conceptual scoring made more of a difference in the fall EOWPVT scores of children who responded primarily in Spanish (figure 1).

Figure 1: EOWPVT-SBE Standard Scores³ for Children with Spanish Home Language



FINDINGS

ECLS-B Math (spring and fall 2007)

- Subset of 23 items
- Fall reliability $\alpha = .70$; Spring pilot reliability was better $\alpha = .80$.
- Little evidence of floor problems. Only 11 children could not answer any of the questions ($< 0.7\%$) in fall.
- No problems with item fit in fall or spring
- No DIF detected in spring pilot
- In the full fall sample, children who spoke only or primarily English correctly answered more items than those who spoke only or primarily Spanish ($F=175$, $P<.01$).
- Among the Spanish only group of children, an average of 39% of the correct responses were in English. An average of 89% of the correct responses of children in the primarily Spanish group were in English.

Rapid Letter Naming (fall 2007)

- High reliability $\alpha = .93$
- 23% of the children could not name all the letters. 2% of the children named all the letters.
- There were problems with item fit for the lower case a. This may be related to the font type.
- Some potential DIF was detected. Using an unadjusted $p<.05$, the letters W and q were easier for children for whom Spanish was the primary or only language. The letter k was easier for children who spoke primarily or only English. We will evaluate DIF again in spring 2008.
- Children who spoke primarily or only Spanish named fewer letters overall than children who spoke primarily or only English ($F=158$, $p<.01$).
- Letters X (3 percent) and A (2 percent) were most frequently identified correctly in Spanish.

Table 1: Mean, Standard Deviation, and Range of Responses by Language Subgroups

	Spanish Only (n = 224)	Spanish Primarily (n = 434)	English Primarily (n = 294)
EOWPVT-SBE: Correct responses in English	12.2% (16.6) Range = 0 - 68.9%	30.0% (21.8) Range = 0 - 85.7%	53.7% (14.9) Range = 0 - 79.5%
EOWPVT-SBE: Correct responses in Spanish	39.0% (18.0) Range = 0 - 80.4%	22.9% (20.1) Range = 0 - 70.0%	3.8% (8.9) Range = 0 - 53.2%
Letters named correctly in English	2.9 (5.7) Range = 0 - 27	4.9 (7.3) Range = 0 - 30	7.9 (9.2) Range = 0 - 30
Letters named correctly in Spanish	0.6 (2.1) Range = 0 - 18	0.2 (0.8) Range = 0 - 7	0.0 (0.2) Range = 0 - 2
ECLS-B Math: Correct responses in English	2.1 (2.5) Range = 0 - 12	4.2 (3.6) Range = 0 - 16	6.6 (3.7) Range = 0 - 21
ECLS-B Math: Correct responses in Spanish	3.3 (2.5) Range = 0 - 12	2.0 (2.5) Range = 0 - 12	0.6 (1.4) Range = 0 - 8

CONCLUSIONS

When naming letters and demonstrating math skills, most children from Spanish speaking households were more likely to do so in English than Spanish. However, in broader language skills (EOWPVT) there was less evidence of classroom influence (Spanish speakers were less likely to correctly respond in English).

The conceptually scored measures all had initial evidence of reliability and validity. Convergent and divergent concurrent validity were evaluated positively in the spring pilot. Conceptually scored measures represent what children know independent of language. We hypothesize that by spring more of children's vocabulary will be in English.