Preschool Early Literacy Indicators (PELI): Initial Reliability and Validity

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Introduction

Early childhood research provides sound evidence that the foundations of literacy are established prior to children entering elementary school (e.g., Gadlin, McWilliam, & Lee, 2009). Given the recent emphasis on research-based reading instruction and the need to help students develop literacy skills as early as possible in their education, researchers have begun to look at the need for a responsive system of early literacy education in preschool (Greenwood et al., 2011). With a responsive, outcomes-driven model of early literacy and language instruction, early childhood education requires an assessment tool to universally screen students and identify those that may need additional support acquiring early literacy and language skills. An appropriate tool should also work to monitor progress of students receiving intervention. The Preschool Early Literacy Indicators (PELI) is an experimental measure that has been developed for use in an Outcomes Driven model of early education to universally screen all students in preschool programs, monitor students identified as needing intervention, and inform individual and systemic language and instructional practices.

The PELI is comprised of several items assessing four early literacy subskills: Alphabet Knowledge, Phonemic Awareness, Vocabulary and Oral Language, and Comprehension. These skills were chosen based on research showing these early literacy skills are important foundational pre-reading skills as well as developmentally appropriate instructive themes (Neuman & Rose, 2011; Loring & Bronson, 2009). All test items are presented in a playbook format that centers around a core theme that also reflects the story portion of the assessment (e.g., On the Farm, What’s for Dinner). The storybook format is designed to be familiar and comfortable for the child, and includes print awareness components, supports for emerging young children, such as footnotes, question numbers, asReturn view as a page number, and arrow hints that provides support at the time of writing. Suggested wording is given for all test items, however the instructions are not required to be said verbatim given the need for assessors to adjust their language and expectations to young children’s developmental level and be responsive in child behavior and needs (BonDur, McLean, & Smith, 2003).

The PELI has been piloted with preschool-aged children from 2.5 to 4 years of age. Administration time is between 5 and 12 minutes.

Purpose and Research Questions

The purpose of this study was to examine the reliability and validity of the PELI. The research questions were: (1) What is the interrater reliability reliability for the PELI? (2) What is the internal reliability reliability for the PELI? (3) What is the concurrent validity of the PELI with other early literacy screening assessments and standardized measures of early reading skills?

Participants

The research questions were answered by two separate studies. For the reliability study, all 3- and 4-year-old students enrolled in two preschool programs in the Pacific Northwest were invited to participate. Both sites were private preschool programs with active community placement for Head Start qualified students. For the validity study, 103 4- and 5-year-old students enrolled in Head Start programs in the Pacific Northwest participated. Data were collected during the 2009-2010 school year. In both studies, students received English language instruction and inclusion instruction of pre-reading skills. The study populations included children with disabilities and English language learners.

Method

Experimental Measure: PELI

The experimental Preschool Early Literacy Indicator is an untimed measure that assesses four foundational early literacy skills. Each skill is assessed using multiple methods in order to be sensitive to developing skills.

Alphabet Knowledge: During the Alphabet Knowledge (AK) section, children are asked to identify as many upper-case letters as possible on a page that includes 26 letters in random order. Students naming 16 letters are also shown a similar page of lower-case letters. Letters are printed in an easy reader font.

Phonemic Awareness: Two strategies are used assess phonological awareness on the PELI. Both tasks assess the skill at the phoneme level. In the first task, students are asked to produce a “little bit” of a one-syllable word. The second task asks students to select one of three words that goes in a story after being given the first sound.

Vocabulary & Oral Language: Vocabulary and Oral Language is assessed using several strategies on the PELI. The first asks students to name pictures of common items relating to the theme of the story (e.g., farm, present, and food) for a story about farm animals. Following completion of the picture naming task, the examiner then selects three of the words named by the student and asks him/her to tell everything he/she can about the item. In the final task, students are asked to retell a simple story that was read during the assessment.

Comprehension: A series of comprehension questions are asked during the administration of the PELI and are designed to capture students’ ability to infer, predict, and recall elements of a simple story. Questions require a range of comprehension skills from simple (i.e., What was the story about?/Is it true?) to more complex (i.e., being able to give an answer that kind of part of a family will adopt/ based on their discussion of ideas and define in the story).

Standardized Assessments of Early Reading

The validity study also utilized these three standardized measures of early reading skills. These measures were the: Clinical Evaluation of Language Fundamentals Pre-K (CELF Pre-K), the Peabody Picture Vocabulary Test (PPVT), and the Test of Preschool Early Literacy (TPEL).

Other Measures

Idiographic Growth and Development Indicators (IGDI): Three IGDI subtests of phonological awareness and three subtests of vocabulary were also used in the validity study. In the Rhyming subtest, students must select the word that rhymes with a target word. In the Syllable subtest, students must provide the number of syllables (one or two) in a word. A correct response is given during the Affixation subtest, where students are asked to identify the word that starts with the sound as the word provided. A third subtest of phonological awareness, Sound Blending, asks students to produce a word by combining two parts from the word at a spoken rate. Once the students are familiar with this word and data is being used, phonological awareness of vocabulary to identify the correct picture.

The Definitional Vocabulary subtest has answers a forced choice question about a word presented. The last vocabulary subtest, Picture Naming, has students give the names of the pictured items.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS): The final measure used during the validity study was Letter Naming Fluency (LNF), one of the DIBELS indicators. LNF is a fluency-based task where students identify as many upper- and lower-case letters printed on a page as they can in a set time period.

Procedures.

In the reliability study, all participants were administered the five PELI items within a two-week period. Approximately 80% of test administration were shadow scored to calibrate inter-rater reliability. All assessors were undergraduate and graduate students trained by the first author. In the validity study, student were assessed three times yearly (fall, winter, and spring) by trained data collectors as part of a federally-funded research consortium, the Center for Baseline Intervention in Early Childhood (PPIRC).

Results

Descriptive statistics for the five measures, administration, fall, spring, and winter, are reported in Table 1. Growth was consistent for the Alphabet Knowledge and Phonemic Awareness subtests. Mean scores on the Vocabulary Oral Language and Comprehension subtests increased from beginning of year to end of year, then experienced a slight decrease from middle of year to end of year.

Interrater reliability is reported in Table 1 and alternate form reliability is reported in Table 2. Inter-rater reliability was strong across all PELI subtests. Alternate form reliability for the PELI total score is reported in Table 3. Strong correlations were obtained for the PELI total score, and both the Alphabet Knowledge and Phonemic Awareness subtests. While 80% statistically significant, the Vocabulary/Oral Language and Comprehension subtests were not as robust.

Table 4 reports concurrent criterion-related correlations between the PELI subtests and the CELF PPVT, and TPEL standardised measures. Significant correlations were noted between PELI subtests and standardized measures assessing similar domains, such as PEI and PPVT as well as PELI, and Vocabulary/Oral Language and Comprehensive Expressive Vocabulary (P) and DIBELS Letter Naming Fluency (LNF).

Table 5 reports concurrent correlation with standardised norm referenced tests of PELI Oral Language and Early Literacy.

Discussion

Overall, the PELI’s three studies support the use of the PELI as a screening assessment that can be used to identify preschool children who may need additional support acquiring early literacy skills. Further research is needed to determine the utility of the PELI as a progress monitoring measure that can be used on a more frequent basis to measure growth. Based on these results, revision will be made to the forms to increase the alternate form reliability and make the measures more sensitive to growth (particularly Vocabulary/Oral Language and Comprehension).

References


