

# Use and Validity of Acadience Reading Pre-K: PELI in Kindergarten

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## Background

Acadience Reading K-6 is an assessment that has been designed and validated to screen and monitor progress of students in kindergarten through sixth grade in acquisition of early literacy and reading skills. At the beginning of kindergarten, there are two measures that serve as indicators of risk for difficulties in learning to read: First Sound Fluency and Letter Naming Fluency. Both measures demonstrate floor effects at the beginning of kindergarten, that is, a large proportion of students achieve low scores on the measures. Some of those students will make adequate progress when provided with core kindergarten instruction and some will need additional support, but it is not possible to know which of the students with low skills at the beginning of kindergarten are most likely to need instructional support. Acadience Reading Pre-K: PELI is comprised of preschool early literacy indicators that have documented reliability and validity to identify preschool children who are at risk for later reading difficulties and who are in need of additional instructional support to achieve early literacy goals by the end of pre-K and beginning of kindergarten (Kaminski et al., 2014). The PELI is administered to children who are 3 to 5 years of age in the two years prior to kindergarten entry.

### Purpose and Research Questions

The purpose of this study was to examine the extent to which the PELI may provide meaningful assessment information for screening students in kindergarten.

1. What are the descriptive statistics and distributions of PELI scores administered at the beginning and middle of kindergarten?
2. What is the relationship between performance on the PELI and performance on Acadience Reading K-6 measures administered concurrently?
3. What is the predictive validity of the PELI and future performance on Acadience Reading K-6 measures?
4. What is the incremental validity of the PELI to Acadience Reading K-6 in predicting end-of-year reading outcomes?

## Method

### Participants

Participants in this study included 136 kindergarten students from five schools in two districts in the Northeastern United States. One district is located in a small city and the other in a rural area. Student demographic information is presented in Table 1.

**TABLE 1**  
Summary of Demographic Data for Participating Students

District	Demographics							
	White	Black or African American	Hispanic or Latino	Asian	American Indian or Alaska Native	Native Hawaiian or Other Pacific Islander	Multiracial	Free/Reduced Lunch
1	62%	7%	25%	4%	0%	0%	2%	70%
2	91%	3%	2%	0%	0%	0%	4%	59%

### Measures

#### Acadience Reading K-6: Kindergarten

Acadience Reading K-6 assesses the essential early literacy and reading skills identified as the critical skills that every child must master to become a proficient reader. The measures are used for universal screening and progress monitoring in kindergarten through sixth grade, with a focus on early identification and prevention of later reading difficulties. The Acadience Reading K-6 measures are collected three times per year: at the beginning, middle, and end of the year. The measures collected in kindergarten are First Sound Fluency (FSF), Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), and Nonsense Word Fluency (NWF).

#### Acadience Reading Pre-K: PELI

The PELI (Kaminski et al., 2012) is a measure of early literacy skills comprising four subtests: Alphabet Knowledge, Phonological Awareness, Vocabulary-Oral Language, and Comprehension. All items are presented in a storybook format which is designed to be familiar and comfortable for the child. Administration time is about 15 minutes. The following existing PELI forms were used for this study: *Getting a New Puppy* and *Grandma's Birthday*.

The reliability and validity of the PELI has been investigated in a series of studies from 2009-10 to the present. Inter-rater reliability of PELI subtests and the PELI composite scores range from .90 to .98. Alternate-form reliability for the composite score ranges from .86 to .91. Criterion related validity for the Vocabulary-Oral Language subtest of various forms of the PELI with standardized norm-referenced tests of language development (e.g., PPVT-IV [Dunn & Dunn, 2007], CELF PreK ELI [Wiig et al., 2004]) ranges from .40 to .78. Criterion-related validity of the Early Literacy subtests of various forms of the PELI with Acadience Reading K-6 beginning of kindergarten measures range from .56 to .76.

### Procedures

The PELI was administered to children in kindergarten at the beginning and middle of the year. Acadience Reading K-6 measures were administered to all children at the beginning, middle, and end of the year. In addition, the Reading Composite Score (RCS) was calculated for each time of year.

### Analyses

Data analyses included descriptive statistics, correlations between PELI scores and Acadience Reading K-6 scores, and a logistic regression used to examine ROC curves.

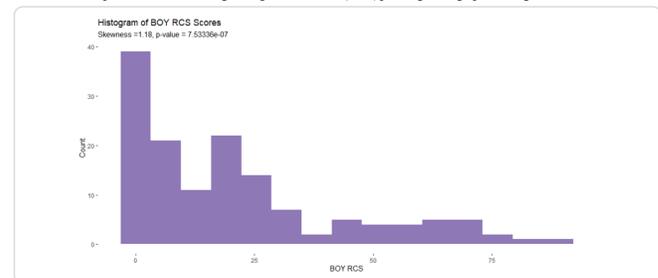
## Results

### Descriptive Statistics

Means, standard deviations, and distributions of PELI scores are presented in Figures 1-6.

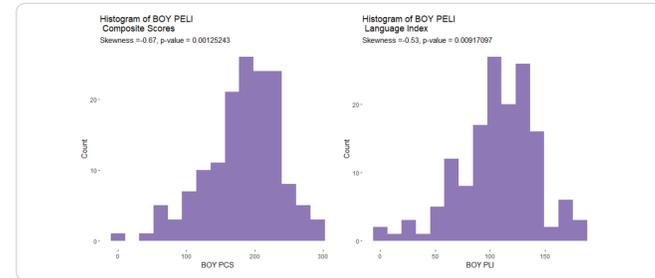
### Beginning of Year Figures

**FIGURE 1**  
Distributions of Acadience Reading Composite Scores (RCS) for Beginning of Kindergarten



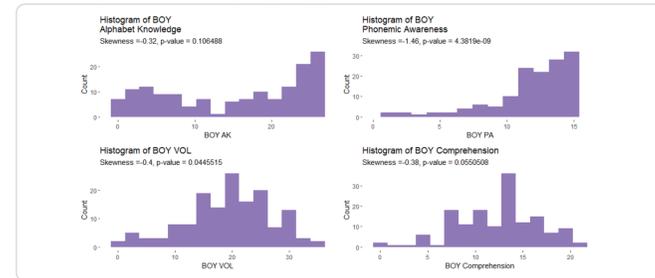
Note: BOY = Beginning of year. Summary statistics for the beginning of kindergarten are as follows. Mean = 21.12. Standard deviation = 10.98.

**FIGURE 2**  
Distributions of PELI Composite Scores (PCS) and PELI Language Index (PLI) Scores for Beginning of Year



Note: BOY = Beginning of year. Summary statistics for Summary statistics for the PELI Composite Score at the beginning of kindergarten are as follows. Mean = 203. Standard deviation = 54.04. Summary statistics for the PELI Language Index at the beginning of kindergarten are as follows. Mean = 119. Standard deviation = 34.74.

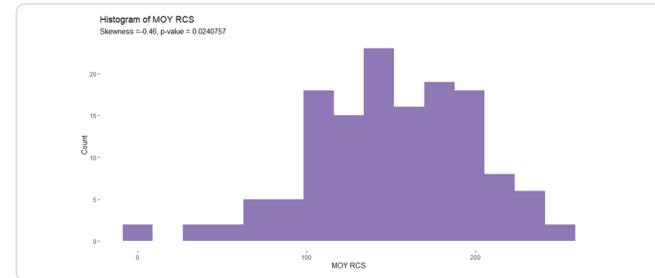
**FIGURE 3**  
Distribution of PELI Subtest Scores for Beginning of Year



Note: BOY = Beginning of year; AK = Alphabet Knowledge; PA = Phonological Awareness; VOL = Vocabulary-Oral Language. Descriptive statistics for the PELI subtest scores at the beginning of the year are as follows. Alphabet knowledge Mean = 15.40; Standard deviation = 9.29. Phonemic Awareness Mean = 11.43; Standard deviation = 4.16. Vocabulary-Oral Language Mean = 19.30; Standard deviation = 7.47. Comprehension Mean = 12.27; Standard deviation = 4.32.

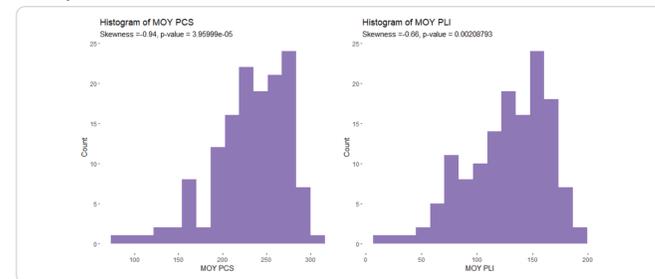
### Middle of Year Figures

**FIGURE 4**  
Distributions of Acadience Reading Composite Scores (RCS) for Middle of Year Kindergarten



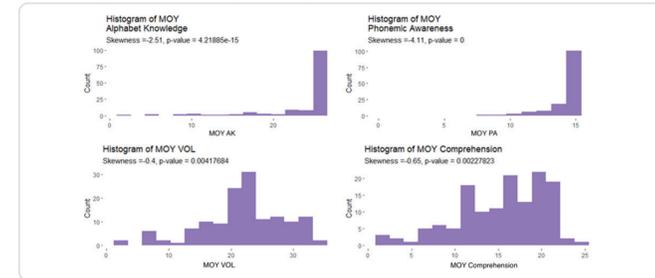
Note: MOY = Middle of year. Summary statistics for the middle of kindergarten are as follows. Mean = 149.94. Standard deviation = 48.67.

**FIGURE 5**  
Distributions of PELI Composite Scores (PCS) and PELI Language Index (PLI) Scores for Middle of Year



Note: MOY = Middle of year. Summary statistics for the PELI Composite Score at the middle of the year are as follows. Mean = 232.03. Standard deviation = 42.95. Summary statistics for PELI Language Index at the middle of the year are as follows. Mean = 127.64. Standard deviation = 36.67.

**FIGURE 6**  
Distribution of PELI Subtest Scores for Middle of Year



Note: MOY = Middle of year; AK = Alphabet Knowledge; PA = Phonological Awareness; VOL = Vocabulary-Oral Language. Descriptive statistics for the PELI subtest scores at the middle of the year are as follows. Alphabet knowledge Mean = 23.50; Standard deviation = 4.82. Phonemic Awareness Mean = 14.35; Standard deviation = 1.85. Vocabulary-Oral Language Mean = 22.09; Standard deviation = 6.67. Comprehension Mean = 15.35; Standard deviation = 4.97.

### Concurrent Validity of PELI in Kindergarten

Results of the correlational analyses are reported in Tables 2-3.

**TABLE 2**  
Correlations between PELI Subtests and Acadience Reading Composite Score (RCS) at Beginning of Year

Subtest	RCS	AK	VOL	Comp.	PA	PLI
RCS	1.00	-	-	-	-	-
AK	.71	1.00	-	-	-	-
VOL	.25	.17	1.00	-	-	-
Comp.	.25	.18	.57	1.00	-	-
PA	.35	.33	.41	.59	1.00	-
PLI	.28	.20	.91	.85	.55	1.00
PCS	.53	.57	.78	.79	.77	.88

Note: AK = Alphabet Knowledge; VOL = Vocabulary-Oral Language; Comp. = Composition; PA = Phonological Awareness; PLI = PELI Language Index; PCS = PELI Composite Score.

**TABLE 3**  
Correlations between PELI Subtests and Acadience Reading Composite Score (RCS) at Middle of Year

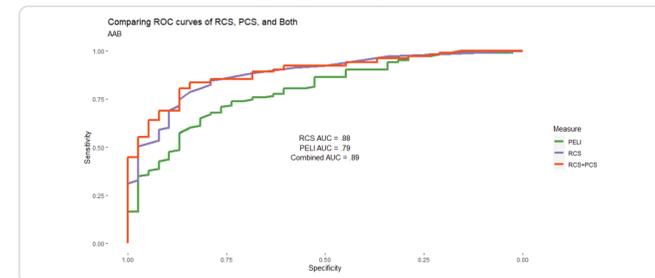
Subtest	RCS	AK	VOL	Comp.	PA	PLI
RCS	1.00	-	-	-	-	-
AK	.62	1.00	-	-	-	-
VOL	.32	.20	1.00	-	-	-
Comp.	.28	.14	.64	1.00	-	-
PA	.36	.42	.37	.32	1.00	-
PLI	.33	.19	.91	.91	.38	1.00
PCS	.48	.46	.87	.85	.59	.95

Note: AK = Alphabet Knowledge; VOL = Vocabulary and Oral Language; Comp. = Composition; PA = Phonological Awareness; PLI = PELI Language Index; PCS = PELI Composite Score.

### Logistic Regression

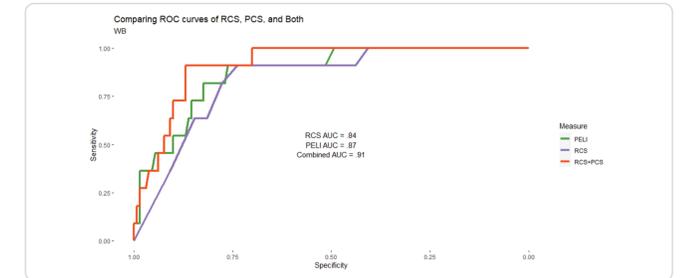
Results of the ROC curve analyses are presented in Figures 7-10.

**FIGURE 7**  
Comparing ROC Curves of Reading Composite Score (RCS), PELI Composite Score (PCS), and Both for At or Above Benchmark Students: Beginning to Middle of Year



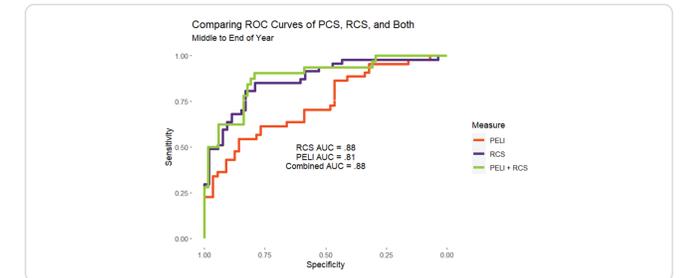
Note: AAB = At or Above Benchmark. Sensitivity refers to a True Positive fraction. Specificity refers to a False Positive fraction.

**FIGURE 8**  
Comparing ROC Curves of Reading Composite Score (RCS), PELI Composite Score (PCS), and Both for At Risk Students: Beginning to Middle of Year



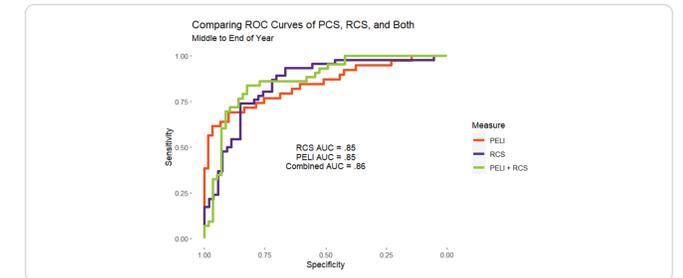
Note: WB = Well Below Benchmark. Sensitivity refers to a True Positive fraction. Specificity refers to a False Positive fraction.

**FIGURE 9**  
Comparing ROC Curves for Reading Composite Score (RCS), PELI Composite Score (PCS), and Both for At or Above Benchmark Students: Middle to End of Year



Note: Sensitivity refers to a True Positive fraction. Specificity refers to a False Positive fraction.

**FIGURE 10**  
Comparing ROC Curves of Reading Composite Score (RCS), PELI Composite Score (PCS), and Both for At Risk Students: Middle to End of Year



Note: Sensitivity refers to a True Positive fraction. Specificity refers to a False Positive fraction.

## Discussion

Use of the PELI in kindergarten is an effective tool for teasing apart students who score near the bottom of the distribution in the beginning of the school year

- The PELI in kindergarten was moderately correlated with the RCS, suggesting a valid assessment of early literacy.
- The PELI was effective at the beginning of the year at predicting later early literacy skills, especially for those students most at risk for reading difficulties.

Use of the PELI at the beginning of kindergarten for students who score Below/Well Below Benchmark on Acadience Reading K-6 may be useful in instructional planning.

Future research should include a broader sample of students, additional outcome measures, and follow the students longitudinally to explore prediction from Vocabulary-Oral Language and Comprehension (PELI Language Index) in kindergarten to later reading comprehension.

References available by contacting the authors.

