

Overview of Reading Progress Indicator Correlation Studies

Introduction

Reading Progress Indicator (RPI) is a computerized assessment designed to rapidly measure the impact of the Fast ForWord products. It evaluates early reading skills across the domains of phonological awareness, decoding, vocabulary, and comprehension, to determine an overall reading score. RPI was developed through a partnership between Scientific Learning and Bookette Software Company. Established psychometric procedures were used to produce a test that is valid, reliable, and unbiased, and to generate nationally-representative norms. Since the release of RPI in 2007, further validation studies have been conducted, comparing it to a number of widely-used, standardized reading measures, including high-stakes state assessments. This paper summarizes the results of 23 such studies carried out between 2007 and 2015.

Methods

In each of the studies reviewed here, school staff administered RPI and a second assessment to a group of students and then submitted the scores to Scientific Learning for analysis. The tests were administered in a similar time frame (generally, within two to three months of each other) so that a student would come to both tests with roughly the same level of skill.

Within a given study, the statistical method used to calculate the correlation was determined by the type of score reported for the second assessment. Some measures, such as the State of Texas Assessments of Academic Readiness (STAAR), report scores on a continuous scale across grades. In these cases, a bivariate correlation was performed, comparing scaled scores on the two measures. Other measures, such as the Massachusetts Comprehensive Assessment System (MCAS), report scores on a grade-dependent scale. In these cases, a partial correlation was performed, comparing scaled scores on the two measures while controlling for grade level. Yet other measures, such as the Group Reading Assessment and Diagnostic Evaluation (GRADE), report percentile scores. In these cases, the percentile scores were converted to Normal Curve Equivalent (NCE) scores and a bivariate correlation was performed, comparing NCE scores on the two measures. (Although the analyses were performed with scaled scores or NCE scores, for ease of understanding, RPI results are frequently described in terms of grade-equivalent reading levels or percentile scores.) Each correlation was tested for statistical significance with a criterion of $p < 0.05$.

Results

Each of the 23 studies comparing Reading Progress Indicator (RPI) to another reading assessment found a statistically significant, positive correlation. (See below for details of each study.) Across the studies, the correlation coefficients ranged from 0.48 (moderate) to 0.88 (strong), with an average of 0.69. Collectively, this body of research has established that RPI has a high level of concurrent validity, indicating that it is a valid measure of important reading skills.

State Assessments

RPI correlation studies have been conducted with the following state assessments:

- Arizona’s Instrument to Measure Standards (AIMS)
- Florida Comprehensive Assessment Test 2.0 (FCAT 2.0)
- Indiana Reading Evaluation and Determination-3 (IREAD-3)
- Indiana Statewide Testing for Educational Progress Plus (ISTEP+)
- Iowa Tests of Basic Skills (ITBS)
- Massachusetts Comprehensive Assessment System (MCAS)
- New York State Testing Program (NYSTP)
- Nevada Criterion Referenced Test (CRT)
- End-of-Grade (EOG; North Carolina)
- Ohio Achievement Assessments (OAA)
- Pennsylvania System of School Assessment (PSSA)
- South Dakota State Test of Educational Progress (DSTEP)
- State of Texas Assessments of Academic Readiness (STAAR)

Across these 13 studies, correlation coefficients ranged from 0.48 (Ohio’s OAA) to 0.81 (Arizona’s AIMS), with an average of 0.69. Results from each of the studies can be seen in Table 1, and scatterplots from four representative studies are shown in Figure 1.

Assessment	State	Students	Correlation Coefficient	Significant
AIMS	Arizona	3659	0.81	yes
FCAT 2.0	Florida	961	0.79	yes
IREAD-3	Indiana (Grade 3)	206	0.66	yes
ISTEP+	Indiana (Grades 4+)	147	0.69	yes
ITBS	Iowa	60	0.80	yes
MCAS*	Massachusetts	500+	0.61	yes
NYSTP*	New York	104	0.76	yes
CRT*	Nevada	1767	0.68	yes
EOG	North Carolina	1038	0.65	yes
OAA	Ohio	610	0.48	yes
PSSA	Pennsylvania	183	0.68	yes
DSTEP	South Dakota	72	0.64	yes
STAAR*	Texas	1468	0.70	yes
Average			0.69	

*Table 1. Across 13 studies with more than 10,000 participating students, RPI demonstrated statistically significant correlations to state reading assessments. The average correlation coefficient was 0.69 and all correlations were moderate to strong. *Shown in Figure 1.*

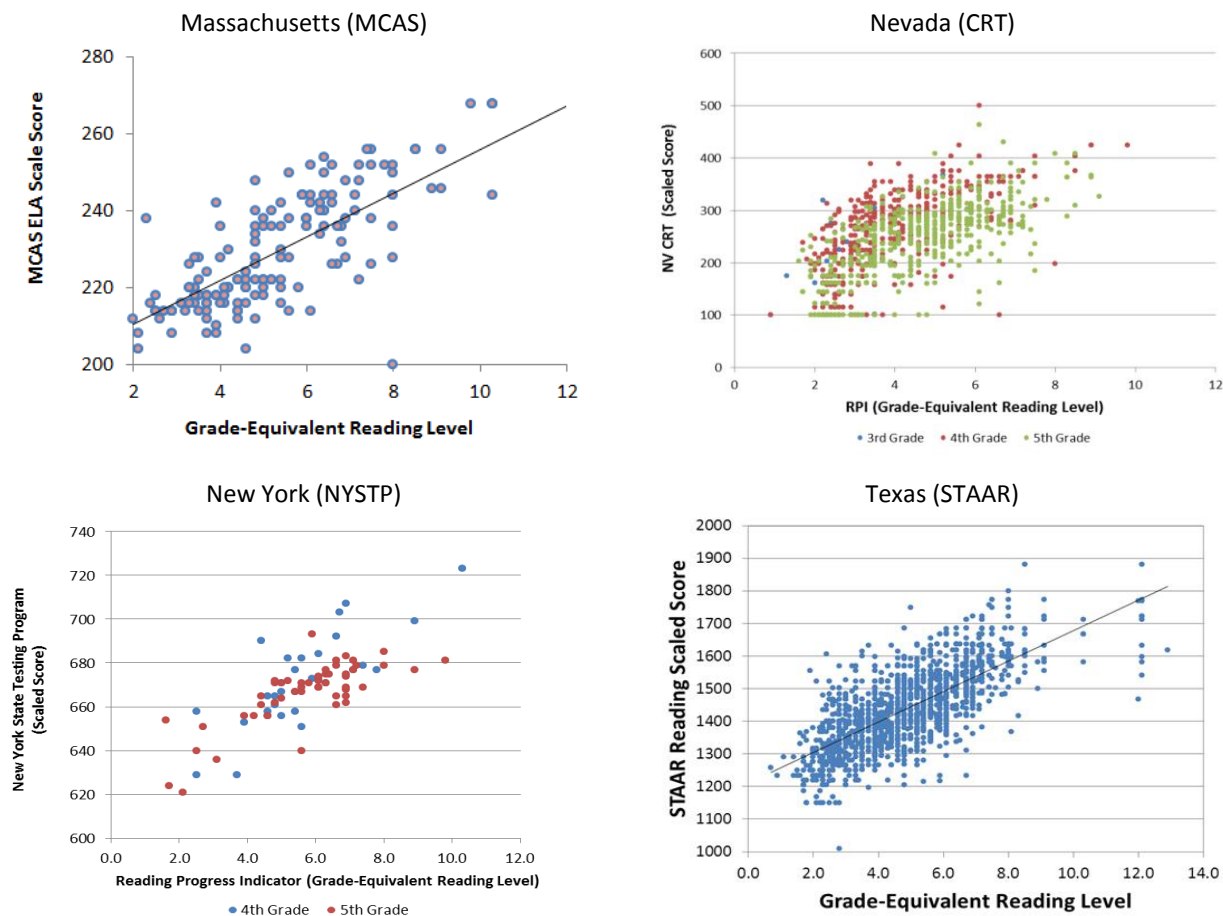


Figure 1. Scatterplots from studies finding that RPI has moderate to strong positive correlations with: the Nevada Criterion Referenced Test (CRT), the Massachusetts Comprehensive Assessment System (MCAS), the New York State Testing Program (NYSTP), and the State of Texas Assessments of Academic Readiness (STAAR).

Other Standardized Reading Assessments

RPI correlation studies have also been conducted with the following widely-used assessments:

- AIMSweb – Curriculum Based Measure: Reading (CBM-R)
- AIMSweb – MAZE (MAZE)
- Dynamic Indicators of Basic Early Literacy Skills – Oral Reading Fluency (DIBELS-ORF)
- Developmental Reading Assessment (DRA)
- Gates-MacGinitie Reading Tests (GMRT)
- Group Reading Assessment and Diagnostic Evaluation (GRADE)
- NWEA: Measures of Academic Progress (MAP)
- Scholastic Reading Inventory (SRI)
- Renaissance Learning’s STAR (STAR)
- Woodcock-Johnson, Third Edition (WJ-III)

Across these studies, correlation coefficients ranged from 0.50 (DIBELS-ORF) to 0.88 (DRA), with an average of 0.69. Results from each of the studies can be seen in Table 2, with representative plots in Figure 2.

Assessment	Students	Correlation Coefficient	Significant
AIMSweb CBM-R*	156	0.67	yes
AIMSweb MAZE*	156	0.65	yes
DIBELS-ORF*	407	0.50	yes
DRA*	154	0.88	yes
GMRT	40	0.72	yes
GRADE	193	0.64	yes
MAP	1,446	0.73	yes
SRI	474	0.79	yes
STAR	72	0.71	yes
WJ-III	58	0.60	yes
Average		0.69	

Table 2. Across 10 studies with more than 3,000 participating students, RPI demonstrated statistically significant correlations to 10 widely-used reading assessments. The average correlation coefficient was 0.69 and all correlations were moderate to strong. *Shown in Figure 2.

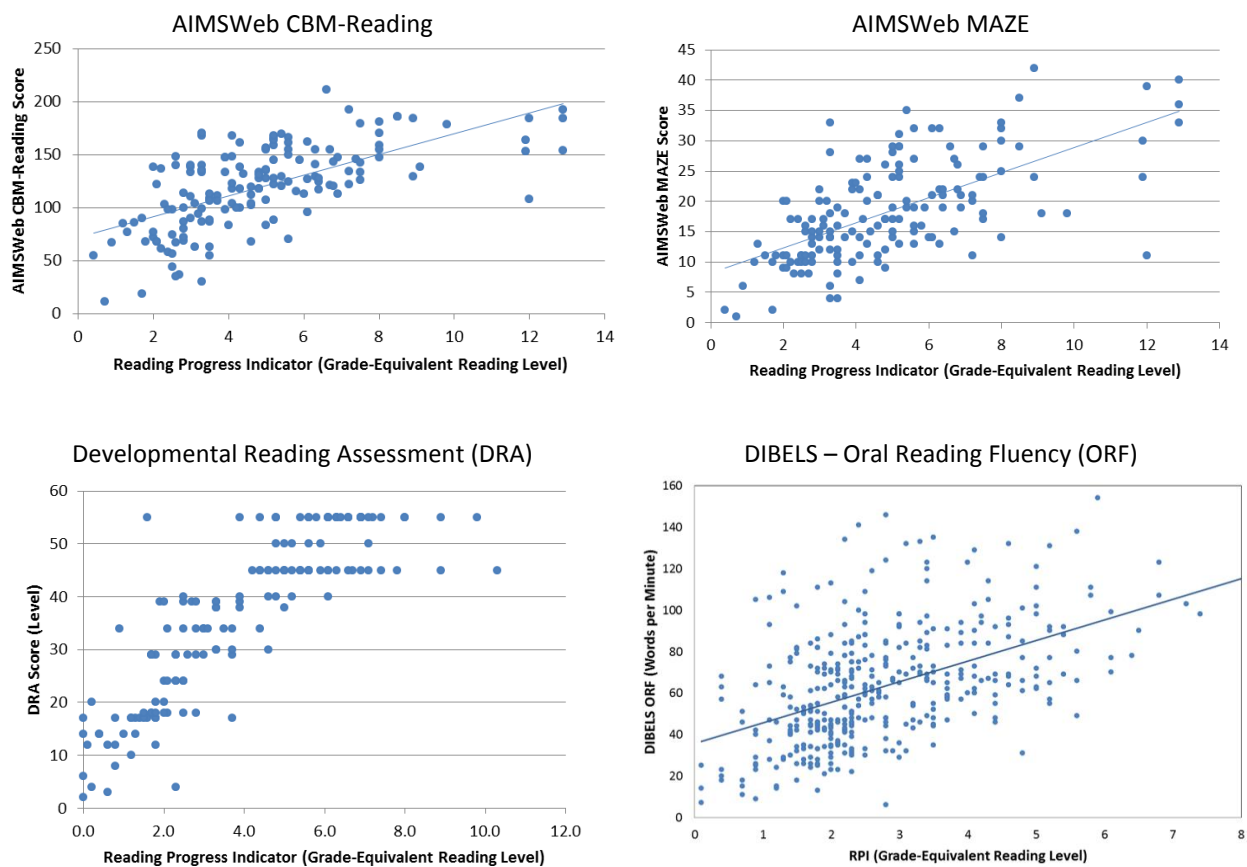


Figure 2. Scatterplots from studies finding that RPI has moderate to strong positive correlations with: the AIMSweb CBM-Reading, the AIMSweb MAZE, the Developmental Reading Assessment (DRA), and the DIBELS – Oral Reading Fluency (ORF).

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