



Research Brief

**Assessment and Evaluation Department
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The Relationship of Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency to performance on Arizona Instrument to Measure Standards (AIMS)

Purpose

- The purpose of the study was to determine whether third-grade students who reach a benchmark level of oral reading fluency are likely to meet the standard on the AIMS Reading test and conversely, whether students with poorly developed reading fluency are unlikely to meet the standard. If so, are the findings similar for ELL students, for girls and boys, Hispanic students, White students, and students qualified for free/reduced lunch? Recent evidence from various states suggests that a measure of oral reading fluency can be used as an early warning signal for students who are not on track to meet the reading standard on statewide standards tests.

Measures

- The DIBELS Oral reading fluency subtest (ORF) is an individually administered test of reading accuracy and fluency of text passages. Results from the Spring 2004 end-of-year administration were used in this study. The median number of words read accurately in one minute across three grade level passages is the score used to represent level of fluency. Students were classified into three performance categories using criteria established by the authors of DIBELS:
 - At Risk – less than 80 words per minute
 - Some Risk – between 80 and 109 words per minute
 - Low Risk – 110 or more words per minute.
- Arizona Instrument to Measure Standards is a multiple choice paper and pencil test designed to measure proficiency of grade-level reading standards, with a significant emphasis on comprehension. Both the scale score and a proficiency level (meet/not meet standard) from the Spring 2004 assessment were used.

Students

- Two hundred and forty-one (241) students in grade 3 were included in the analysis. They were from three schools that received a Reading First grant from the U.S. Department of Education. To be included, students were required to have

both AIMS and ORF scores available. Demographic identifiers for ethnicity, gender, eligibility for free/reduced lunch, and ELL status were available.

Findings for Overall Group

- **Positive relationship between AIMS and ORF**
The correlation between AIMS and ORF for the overall group was positive and moderately large ($r = .741$). Students with higher levels of fluency tended to score higher on AIMS and vice versa. Figure 1 reveals this relationship in a scatterplot. The AIMS scale score is shown on the vertical axis and has a horizontal reference line at 500, the score set for proficiency. The ORF scale is on the horizontal axis with vertical reference lines at 80 and 110 words per minute that divide the plot into the 3 fluency performance categories. Each dot on the scatterplot shows an individual student's performance on AIMS and ORF. The majority of dots fall into the upper right hand and lower left hand sections of the plot. Figure 2 summarizes the number of students in each category who are/are not proficient on AIMS.
- **“Low Risk” students on ORF are mostly proficient on AIMS**
Figure 2 shows that 81.9% of students in the low risk category on ORF were proficient on AIMS.
- **“At Risk” students on ORF are unlikely to reach proficiency**
93% of students in the at risk category on ORF were unable to meet proficiency on AIMS.
- **“Some Risk” students on ORF are equally likely to be proficient as not**
51% of students in the some risk category on ORF were proficient.

Figure 1. Scatterplot of Grade 3 AIMS Reading Scaled Score by ORF

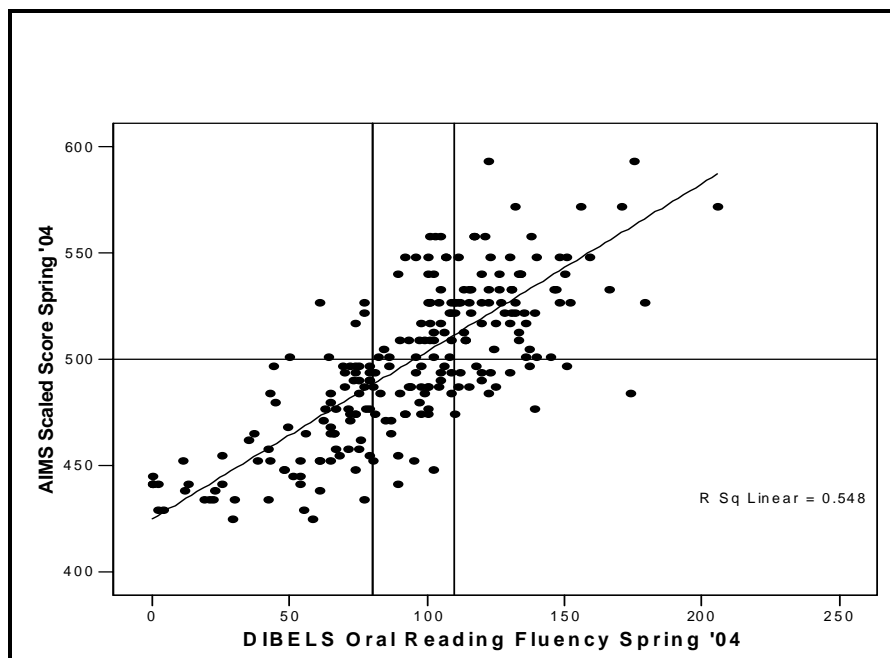
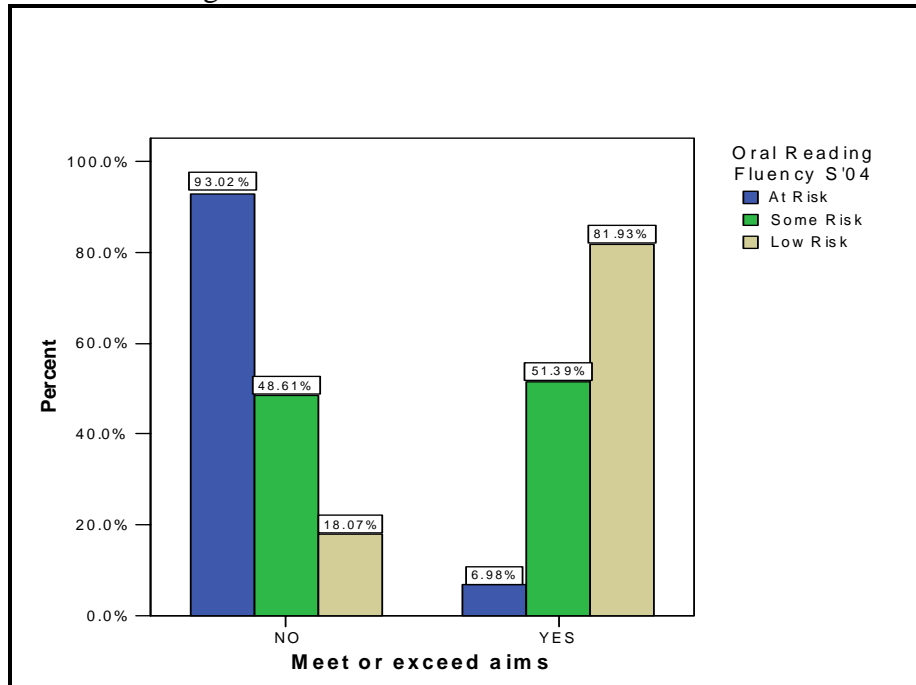


Figure 2. Percent of Students Meeting/Not Meeting Standard on AIMS by ORF Risk Categories



Findings for Demographic Subgroups

- **There were subgroup differences in performance on both AIMS and ORF**
Females, White students, and students not eligible for free/reduced lunch, and students not classified as ELL were more likely to meet the standard on AIMS and to perform at a higher level of fluency on ORF.
- **Positive relationship between AIMS and ORF for each subgroup**
Despite the differences in performance, the relationship between the AIMS scale score and ORF score were similar. Correlation coefficients shown in Table 1 for demographic subgroups were positive and moderately large, ranging from .64 to .78. Scatterplots for each subgroup were very similar to the one shown in Figure 1.
- **AIMS performance by ORF categories in demographic subgroups are similar to overall group results**
Table 1 on page 5 presents the percent of students in each demographic subgroup cross-classified by ORF and AIMS. The pattern shown for the demographic subgroups in the ORF Low Risk and At Risk performance categories appears to be similar to that of the overall group. Students in the Low Risk Group on ORF are likely to reach proficiency on AIMS, regardless of subgroup. Percentages across subgroups range from 76% to 89%. Also, students in the At Risk group are very likely to score below the standard on AIMS, regardless of demographic subgroup. Percentages range from 90% to 95%.

- **Some differences in demographic subgroups within the Some Risk ORF classification**

Males and females in the Some Risk group were about equally likely to meet the standard as not on AIMS. In contrast, students in the Some Risk group who are White, not ELL, or not eligible for free lunch were more likely to meet the standard on AIMS than their counterparts.

Conclusions

- ORF can identify those students who are likely to meet the proficiency standard on AIMS with good accuracy (those in Low Risk category). Further, ORF can identify those who are quite unlikely to reach proficiency (those in the At Risk category). Accuracy is somewhat better for identifying students who are not on track to meet the AIMS standard.
- The ORF measure can be used about equally well for various demographic subgroups.
- This study needs to be updated when the 2005 AIMS DPA measurement scale and performance levels are established. The relationship between the various scores may differ and classification accuracy could change if the relationship takes a different form (e.g., nonlinear) or the performance level shifts lower or higher.
- The sample of students is limited to three schools. Replication of the study is needed with a broader sample of students to determine how well results can generalize to other schools in the district.

Table 1. Cross-classification and correlations between AIMS and ORF by demographic subgroups.

Group	AIMS meet/exceed	<u>N</u>	At Risk	Some Risk	Low Risk	<u>R</u> *
Overall N=241	YES	111	7.00%	51.4%	81.9%	.741**
	NO	130	93.0%	48.61%	18.1%	
Male N= 131	YES	54	5.4%	52.9%	80.5%	.762**
	NO	77	94.6%	47.1%	19.5%	
Female N=109	YES	57	10.3%	50%	83.3%	.717**
	NO	52	89.7%	50%	16.7%	
Hispanic N=117	YES	45	8.2%	38.9%	84.4%	.781**
	NO	72	91.8%	61.1%	15.6%	
White N=82	YES	47	8.7%	64%	82.9%	.680**
	NO	35	91.3%	36%	17.1%	
Free lunch N=167	YES	62	6.8%	44.7%	76.6%	.743**
	NO	105	93.2%	55.3%	23.4%	
Pay lunch N=70	YES	49	8.3%	64.0%	88.9%	.653**
	NO	24	91.7%	36.0%	11.1%	
ELL N=65	YES	13	0.0%	30%	77.8%	.778**
	NO	52	100.0%	70.9%	22.0%	
Non-ELL N=175	YES	98	12.2%	59.6%	82.4%	.669**
	NO	77	87.8%	40.4%	17.6%	

* Correlation between ORF score and AIMS Scale Score.

** p< .01

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