Evaluating the Sensitivity of a Reading Comprehension Benchmark Assessment as a Predictor of Performance on a High Stakes Academic Assessment For Middle School Students

René Fetchkan

Indiana University of Pennsylvania

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EVALUATING THE SENSITIVITY OF A READING COMPREHENSION BENCHMARK ASSESSMENT AS A PREDICTOR OF PERFORMANCE ON A HIGH STAKES ACADEMIC ASSESSMENT FOR MIDDLE SCHOOL STUDENTS

A Dissertation
Submitted to the School of Graduate Studies and Research in Partial Fulfillment of the Requirements for the Degree Doctor of Education

René Fetchkan
Indiana University of Pennsylvania
December 2014
Indiana University of Pennsylvania  
School of Graduate Studies and Research  
Department of Educational and School Psychology  

We hereby approve the dissertation of  

René Fetchkan  

Candidate for the degree of Doctor of Education  

August 27, 2014  

Signature on File  
Joseph F. Kovaleski, D.Ed.  
Professor of Educational and School Psychology, Advisor  

August 27, 2014  

Signature on File  
Mark J. Staszkiewicz, Ed.D.  
Professor of Educational and School Psychology  

August 27, 2014  

Signature on File  
Timothy J. Runge, Ph.D.  
Associate Professor of Educational and School Psychology  

August 27, 2014  

Signature on File  
Joseph E. Betts, Ph.D.  
Manager  
Psychometric Services  
Pearson VUE  

August 27, 2014  

Signature on File  
Tammy J. Croce, Ed.D.  
Director of Personnel  
Lake Forest School District  

ACCEPTED  

Signature on File  
Timothy P. Mack, Ph.D.  
Dean  
School of Graduate Studies and Research
This study examined the predictive validity and diagnostic accuracy of STAR Reading, a computer-adaptive benchmark assessment tool, with the Pennsylvania System of School Assessment (PSSA), the state summative test. Student data for 320 students in grades 7 and 8 over two years of assessment were examined. Indices of correlation and predictions were analyzed. Multiple and hierarchical regression analyses examined the relationships of fall and winter administrations of STAR Reading for patterns of relationships of proximity of administration to the summative test. Logistic regression and ROC Curve analyses provided indices of classification accuracy for prediction of proficient performance and local cut scores for fall and winter administrations of STAR Reading. These local cut scores were compared to the published national benchmark cut points for STAR Reading. An attempt was made to cross-validate the prediction of
proficient performance from the first year of the study to the second year.

Results showed moderate to strong correlations among STAR Reading and PSSA Reading scores. Despite significant prediction indices for combined fall and winter STAR Reading scores in both grades, predictive values were weaker in grade 8 data. No clear evidence of a stronger relationship of prediction as a function of proximity to the completion of the state test was found, but hierarchical regression showed that the winter score added predictive value in three of four analyses conducted. Logistic regression indicated good classification accuracy and prediction of proficient performance on PSSA Reading for grade 7 students, but produced inconsistent statistical results for grade 8. ROC curve analyses showed adequate area under the curve (AUC) indices for three of four analyses. Inconsistencies were demonstrated frequently in grade 8 data; the attempt at cross-validation of probability of prediction was not able to be completed for grade 8 due to a slope intercept of .000 for one of the groups of eighth grade data. While evidence was provided that the overall models of prediction of STAR Reading to PSSA Reading was statistically significant, the lower effect size for grade 8 provided limitations to the mathematical utility of prediction to PSSA Reading scores.