

**Title:** How Linguistic Skills Mediate the Effects of Demographic Characteristics on Reading and Math Achievement in the Elementary Grades

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## **Introduction**

What student characteristics predict success in school? A variety of explanations have been offered, including variations in family background, family and school resources, and even genetic endowment of intelligence. Gaps in achievement between Whites and minorities have been under study since the Coleman Report (1966), and despite 30 years of research, only a precarious conclusion that income mediates most of the effect of race on student outcomes has been reached (see Jencks and Phillips, 1998). The educational background of the parents has been found to be a significant predictor on student outcomes, yet the exact means by which parents pass the benefit of their education on to their children is still somewhat unclear. One explanation for the way the advantages are transmitted intergenerationally concerns students' endowment of cultural capital, which purportedly gives children qualities that are valued by middle-class institutions like schools (Farkas, 2003; Swidler, 1981; Coleman, 1988). School characteristics, such as teacher credentials, the proportion that is minority, free lunch and Title I eligible, as well as district financial resources have also been studied to determine the extent of their effects on student achievement, yet none of these explanations are unanimously endorsed by social researchers.

A recent study by Farkas and Beron (forthcoming) suggests that linguistic skills are important determinants of reading achievement. The idea that language skills are essential for cognitive performance outcomes hardly seems novel, but there are no studies to date that demonstrate the extent of their effects. How early language skills mediate the effects of demographic characteristics on reading and math skills in later grades is the focus of this study.

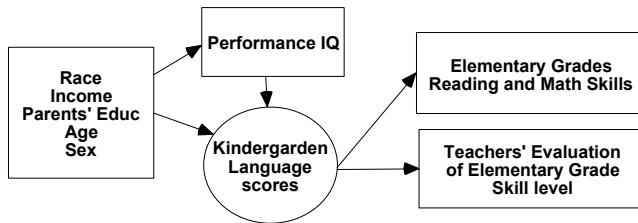
## **Methods**

The data used in this study come from an original sample of 1,929 students selected from a stratified cluster sample representative of urban, suburban, and rural areas

in 3 Midwestern population centers. The data were collected by researchers at the University of Iowa's Child Language Research Center beginning in 1996 (Tomblin et al, 1997). This data set is particularly useful for this study because it includes measures of student demographics, non-verbal performance IQ scores collected around age 5, as well as language assessment scores obtained early in the kindergarten year. The data are longitudinal and also include reading scores in 2<sup>nd</sup> and 4<sup>th</sup> grade as well as math scores for 3<sup>rd</sup> and 4<sup>th</sup> grade.

Analysis will be performed using a latent recursive path model. Figure 1 demonstrates the expected process through which language influences later academic outcomes.

Figure 1.



## Preliminary Results

Preliminary multivariate regression analyses have demonstrated that kindergarten language scores are particularly strong mediators of 2<sup>nd</sup> grade reading and 3<sup>rd</sup> grade math scores, accounting for a tremendous amount of variation net of the effects of family income, mother's educational level, race (sample restricted to Blacks and Whites), age at testing, and gender. Interestingly, the impact of language skills seems to be greater than that of cognitive ability captured by the Weschler Preschool Primary Scale of Intelligence test. The AMOS software package for estimating structural equation models will be used to calculate total, direct, and indirect effects of all proposed predictors of elementary reading and math skills.

## References

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