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Differences in Reading by the Economic Status of Grade 3 Black Boys and Girls

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ABSTRACT

Examined in this study was the reading achievement of Grade 3 Black boys and girls in Texas as a function of their economic status (i.e., Not Poor, Moderately Poor, and Extremely Poor). Three reading indicators (i.e., Phase-In I, Phase-In II, and Phase-In III) from the 2015-2016 State of Texas Assessment of Academic Readiness exam were analyzed separately for Grade 3 Black boys and girls. Inferential statistical analyses revealed the presence of a stairstep effect in all three dependent measures of reading. As the poverty level of Grade 3 Black boys and Black girls increased, their reading performance decreased. That is, the percentages of Grade 3 Black boys and Black girls who passed the three reading indicators decreased as their poverty level increased. Implications of the findings are discussed and suggestions for further research are made.

Keywords: *economically disadvantaged, STAAR, poverty, Phase-In I, Phase-In II, and Phase-In III.*

INTRODUCTION

Teachers across the globe, regardless of geographical location, are charged with a similar mission – to educate students and to ensure mastery of grade level content. Although states may mandate divergent curriculum standards, the expectation is still the same. Teachers are expected to provide a high-quality education to all students, regardless of cognitive or environmental differences, and make certain that by the end of the academic year, all students will perform satisfactorily on district and state assessments. However, as documented by numerous researchers (e.g., Conradi, Amendum, & Liebfreund, 2016; Owens, 2010; McGown & Slate, 2017; Sharkins, Leger, & Ernest, 2017), students living in poverty perform at a disproportionally lower rate than their peers, even when given equivalent academic experiences. According to McGown and Slate (2017), boys and girls living in poverty have fewer resources available to them at home which stifles their literacy development. Moreover, boys and girls in poverty lack needed support from adults who encourage reading practice.

With respect to children in the United States, 43% of them live in poverty. The effects of poverty can have a negative influence on children's ability to learn and ultimately contribute to social, emotional, and behavioral problems (National Center for Children in Poverty, 2017). A multitude of reasons exist for why students who are economically disadvantaged underperform academically. "Taken together, even in the face of significant family strengths, the harmful effects of poverty undermine individual students' academic achievement and growth" (Walsh et al., 2014, p. 112). Underachievement among students in poverty is evident in the results of standardized assessments. To inform the reader of the critical effect poverty has on reading achievement, additional research studies are discussed here.

During the foundational years of learning, the primary focus for educators is to teach students how to read. Students from high-poverty settings read at a lower proficiency level than their wealthier peers (Conradi et al., 2016). To examine the issues with reading performance in high-poverty schools, Reardon, Valention, and Shores (2012) conducted a study using existing data from the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K). The sample size consisted of 25,000 kindergarten students who were followed from Kindergarten through Grade 8. In their investigation, Reardon et al. (2012) established that the income-

achievement gaps widened as students progressed from Kindergarten to Grade 8. Documented in their study was that the magnitude of the disparity in academic performance was substantial between high-income and low-income students (Reardon et al., 2012). According to Reardon et al. (2012), disparities in literacy skills are increasing for students in poverty.

Another study in which the ECLS-K was used involved an analysis of the relationship of poor literacy and behavior problems in school. Morgan, Farkas, Tufis, and Sperling (2008) documented that reading problems in first grade were statistically significant in supporting a relationship between reading and externalizing behavior problems for students living below the poverty line. Similarly, Hagans and Good (2013) conducted a study to examine the effect of early literacy intervention techniques on students in poor and affluent families. Hagans and Good (2013) established the presence of statistically significant differences between students in poverty and those students from middle or high economic backgrounds. Children from high poverty backgrounds have lower levels of literacy skills upon entry into school than their peers (Hagans & Good, 2013).

Additionally, children from low-income families are less likely to attend prekindergarten programs than children from high-income families (Cunningham, 2006). The benefits of early literacy in prekindergarten programs has been examined for decades; however, schools with large numbers of children in poverty seldom achieve their goals for end-of-grade literacy test (Cunningham, 2006). "The negative effect a low family income has on reading achievement persists from childhood through early adolescence" (Pungello, Kupersmidt, Burchinal, & Patterson, 1996, p. 757). Students from low- income families enter high school with reading skills five years behind those from high-income families. When students struggle to read proficiently in elementary school, those gaps sometimes widen as they move to middle and high school.

Statement of the Problem

For several decades, the effects of poverty on student academic performance have been investigated. Many researchers (e.g., Conradi et al., 2016; Hagans & Good, 2013; Reardon, 2013; Owens, 2010) have tried to identify the reasons behind this connection. As mentioned earlier, researchers (e.g., Sharkins et al., 2017) have examined many facets surrounding educating students in poverty including, early literacy programs, authentic reading and writing experiences, and scripted reading programs to understand why this group of students consistently performs at a disproportionately lower rate than their peers who were not economically disadvantaged. The No Child Left Behind (NCLB) Act of 2002 was established to close the achievement gap and improve academic outcomes for children who were economically disadvantaged (Owens, 2010). As part of this act, the Reading First Initiative was formed to deliver direct and systematic researched based instructional methods to students. Despite the effort, evidence does not exist that demonstrates Reading First has been of special benefit to groups of students in poverty (Krashen, 2008).

To measure reading performance in Texas, starting in Grade 3, students take the State of Texas Assessment of Academic Readiness assessments (STAAR). The assessment results are then used to determine the overall yearly rating of schools and districts. "Schools with large numbers of children in poverty seldom achieve their goals for end-of-grade literacy tests" (Cunningham, 2006, p. 382). Schools in Texas have seen a decline in STAAR results over the last five years; 68% of all students in Grade 3 through Grade 8 passed their reading or writing exam, a decline was documented from 76% in 2012 (Lilley, 2017). As indicated by the standardized testing results, schools are unable to respond to the challenges facing children in poverty (Walsh et al., 2014).

The focus of this study on differences in reading achievement on the STAAR exam for Grade 3 Black boys and Black girls by their poverty status will enrich the available literature on educating students in poverty and provide teachers, literacy coaches, and administrators quantitative data obtained during students' foundational years. Given the developmental risks that children who were economically disadvantaged face during the early years of schooling, it is imperative that educators and lawmakers determine the reasons associated with such low performance. The Constitution requires that all students receive equal educational opportunities no matter what their race/ethnic background, or whether they are rich or poor. Therefore, it is critical to ensure that students living below the poverty line have the same opportunities in life as their peers who are privileged.

PURPOSE OF THE STUDY

The purpose of this study was to examine the extent to which differences were present in the reading achievement of Grade 3 Black boys and Black girls as a function of their economic status. Specifically addressed was the degree to which differences existed in reading performance by degree of economic disadvantage (i.e., Not Poor, Moderately Poor, Extremely Poor) for Grade 3 Black boys and Black girls. Reading performance consisted of three different Phase-In levels standards. These standards were analyzed by the economic status of Grade 3 Black students.

Significance of the Study

A substantial body of research (e.g., Conradi, Amendum, & Liebfreund, 2016; Cunningham, 2006; Gathercole, Tiffany, Briscoe, & Thorne, 2005; Owens 2010; Sharkins, Leger, & Ernest, 2017; Walsh et al., 2014) exists in which the presence of statistically significant relationships between poverty and student achievement have been documented. Regarding students in poverty, numerous empirical studies are available concerning disparities in reading achievement as a function of economic status. Few researchers, however, have analyzed the relationship between degrees of economic disadvantage and reading performance as measured by the State of Texas Assessment of Academic Readiness exam. Through this level of analysis, the differences in performance by economic status: free lunch (i.e., Extremely Poor) and reduced lunch (i.e., Moderately Poor), the level of need and support can be established. Furthermore, results from this investigation may be used to add to the existing literature, as limited studies have been conducted in this area using the Phase-In levels of accountability on the STAAR assessment. Finally, school officials, legislators, and organizations that contribute to providing funds for students who are economically disadvantaged might use the findings of this study when formulating policies and making decisions with respect to educating students in poverty. Additionally, awareness regarding the gaps between students in poverty and their peers may provide an explanation as to why these students in poverty continue to struggle after elementary school.

Research Questions

The following overarching research question was addressed in this investigation: What is the effect of economic status (i.e., Not Poor, Moderately Poor, and Extremely Poor) on the reading achievement of Grade 3 Black students? The sub-research questions that were addressed were:

- What is the effect of economic status on reading achievement at the Phase-In I level for Grade 3 Black students?
- What is the effect of economic status on reading achievement at the Phase-In II level for Grade 3 Black students?; and
- What is the effect of economic status on reading achievement at the Phase-In III level for Grade 3 Black students?

These research questions were answered separately for Black girls and boys.

METHOD

Research Design

The research design used in this study was a quantitative, causal comparative, non-experimental research design (Johnson & Christensen, 2012). A causal comparative design is a research design that seeks to find relationships between independent and dependent variables after the action has already taken place (Johnson & Christensen, 2012). In this study, the action already taken was the State of Texas Assessment of Academic Readiness (STAAR) test that was administered to students in the 2015-2016 school year. Additionally, the independent variable in this research study was the degree of economic disadvantage (i.e., Not Poor, Moderately Poor, and Extremely Poor) and the dependent variables were the three reading indicators (i.e., Phase-In I, Phase-In II, and Phase-In III) from the 2015-2016 State of Texas Assessment of Academic Readiness exam analyzed separately for Grade 3 boys and girls.

Participants

Participants in this study were Grade 3 Black students in Texas who took the STAAR exam in the 2015-2016 school year. Archival data analyzed herein were requested through a Public Information Request form to the Texas Education Agency Public Education Information Management System, which is a database of demographic student data used to report and monitor student performance. For the purpose of this study, e*conomically disadvantaged* is defined by The Texas Education Agency (TEA, 2015) as “a student who is eligible for free or reduced-price meals under the national School Lunch and Child

Nutrition Program" (para. 5). Furthermore, the description of economic status was defined by the following,

- Extremely Poor (i.e., those students who qualify for the federal free-lunch program),
- Moderately Poor (i.e., those students who qualify for federal reduced-lunch program),
- Not Economically Disadvantaged (i.e., those students who did not qualify for the federal free- nor reduced-lunch program).

Instrumentation and Procedures

Data utilized in this study were obtained from the Texas Education Agency Public Education Information Management System database for the 2015-2016 school year. The Statistical Package for Social Sciences (SPSS) software program was used to analyze the data. Test score data were obtained and analyzed on Texas Grade 3 Black students. To obtain these data, a Public Information Request was submitted to the Texas Education Agency for data. Data specifically requested were: (a) Black students in Grade 3, (b) students economic status, (c) STAAR Reading test scores, and (d) STAAR Phase-In Levels.

The Texas Education Agency utilized the services of the Human Resources Research Organization (HumRRO), in compliance with House Bill (HB) 743, to access the reliability and validity of the State of Texas Assessment of Academic Readiness (STAAR) in 3rd – 8th grade (www.tea.texas.gov, 2015, para 2**).** Established in 1951, HumRRO, a nonprofit, independent company who conducts research and development in behavioral and social sciences. Included in the past experiences of HumRRO, validity and reliability studies were conducted in Texas and other states. The company's process to evaluate the STAAR test included two sections. Section 1 includes providing empirical evidence for the reliability and validity of the STAAR results. Section 2 includes providing empirical evidence for the projected reliability of the test (www.tea.texas.gov, 2015, para 2**).** For more reliability and validity information, readers are directed to http.//tea.texas.gov/.

The STAAR assessment identifies three categories for performance which include Phase-In I, unsatisfactory academic performance; Phase-In II, satisfactory academic performance; and Phase-In III, advanced academic performance (Texas Education Agency, 2016). Students not meeting Phase-In I level on the STAAR assessment did not meet the minimum standard set for that subject which indicates the student performed at a level that is below passing. According to the Texas Education Agency, students scoring in this category are not sufficiently prepared for the next grade level and are not likely to be successful in that grade without significant and ongoing instructional support (Texas Education Agency, 2016). Students reaching the Phase-In II level, performed at a level that is at or above passing. The Texas Education Agency, states this category indicates that students are sufficiently prepared for the next grade and are likely to be successful (2016). Students at Phase-In III level performance is considered above passing. In addition, students performing in this category are considered well prepared for the next grade and considered highly likely to be successful in that grade (Texas Education Agency, 2016).

RESULTS

Prior to conducting Pearson chi-square procedures to answer the research questions, its underlying assumptions were checked. The sample size was sufficiently large and provided more than five data points per cell as well as the data were independent of each other. As a result, the assumptions for utilizing a chi-square were met (Slate & Rojas-LeBouef, 2011).

Grade 3 Black Girl Results

Regarding the first research question in which the focus was placed on economic status and the STAAR Reading Phase-In I level performance of Grade 3 Black girls, the result was statistically significant, $\chi^2(2) = 893.47$, $p < .001$. The effect size for this finding, Cramer's V, was small, .20 (Cohen, 1988). As the poverty level increased from Not Poor to Moderately Poor to Extremely Poor, the percentage of Grade 3 Black girls who met this reading standard decreased. A stairstep effect was present, in that the percentage of Black girls who were Extremely Poor and who did not meet this reading standard was more than one and a half times the percentage of Black girls who were Moderately Poor who met this reading standard. Moreover, the percentage of Black girls who were Extremely Poor and who did not meet this reading standard was more than two times the percentage of Black girls who were Not Poor who met this reading standard. Readers are directed to Table 1 for the descriptive

statistics for this analysis.

Table1. *Frequencies and Percentages of the STAAR Reading Achievement Phase-In Level I of Grade 3 Black Girls by Their Economic Status*

	Did Not Meet Standard	Met Standard
Economic Status	*n* and %age of Total	*n* and %age of Total
Not Poor	(*n* = 1,221) 20.20%	(*n* = 4,813) 79.80%
Moderately Poor	(*n* = 373) 25.60%	(*n* = 1,085) 74.40%
Extremely Poor	(*n* = 6,003) 41.30%	(*n* = 8,526) 58.70%

Concerning the second research question in which the focus was placed on economic status and the STAAR Reading Phase-In II level performance of Grade 3 Black girls, the result was statistically significant, $\chi^2(2) = 1092.89$, $p < .001$. The effect size for this finding, Cramer's V, was small, .22 (Cohen, 1988). As the poverty level increased from Not Poor to Moderately Poor to Extremely Poor, the percentage of Grade 3 Black girls who did not meet the standard increased. A stairstep effect was present, in that the percentage of Black girls who were Extremely Poor and who did not meet this reading standard was more than one and a quarter times the percentage of Black girls who were Moderately Poor who met this reading standard. Moreover, the percentage of Black girls who were Extremely Poor and who did not meet this reading standard was one and a half times the percentage of Black girls who were Not Poor who met this reading standard. Table 2 contains the descriptive statistics for this analysis.

Table2. *Frequencies and Percentages of the STAAR Reading Achievement Phase-In Level II of Grade 3 Black Girls by Their Economic Status*

	Did Not Meet Standard	Met Standard
Economic Status	*n* and %age of Total	*n* and %age of Total
Not Poor	(*n* = 3,093) 51.30%	(*n* = 2,941) 48.70%
Moderately Poor	(*n* = 836) 57.30%	(*n* = 622) 42.70%
Extremely Poor	(*n* = 10,805) 74.40%	(*n* = 3,724) 25.60%

With respect to the third research question in which the focus was placed on economic status and the STAAR Reading Phase-In III level performance of Grade 3 Black girls, the result was statistically significant, $\chi2(2) = 837.19$, $p < .001$. The effect size for this finding, Cramer's V, was small, .20 (Cohen, 1988). As student economic status decreased, the percentage of girls who met this reading standard deceased. Very high percentages of Grade 3 Black girls did not meet this particular reading standard. Regarding the degree of economic disadvantage, Grade 3 Black girls who were Extremely Poor had a 16.2 percentage point higher rate of not meeting this standard than Grade 3 Black girls who were Not Poor and a 10.4 percentage point higher rate of not meeting this standard than Grade 3 Black girls who were Moderately Poor. Readers are referred to Table 3 for the descriptive statistics for Grade 3 Black girls Phase-In III levels by their degree of economic status on the STAAR exam for the 2015-2016 school year.

Table3. *Frequencies and Percentages of the STAAR Reading Achievement Phase-In Level III of Grade 3 Black Girls by Their Economic Status*

	Did Not Meet Standard	Met Standard
Economic Status	*n* and %age of Total	*n* and %age of Total
Not Poor	(*n* = 4,370) 72.40%	(*n* = 1,664) 27.60%
Moderately Poor	(*n* = 1,140) 78.20%	(*n* = 318) 21.80%
Extremely Poor	(*n* = 12,869) 88.60%	(*n* = 1,660) 11.40%

Grade 3 Black Boy Results

Regarding the economic status on the reading achievement at the Phase-In I level performance of Grade 3 Black boys, the result was statistically significant, $\chi2(2) = 964.85$, $p < .001$. The effect size for this finding, Cramer's V, was small, .20 (Cohen, 1988). As the poverty level increased from Not Poor to Moderately Poor to Extremely Poor, the percentage of Grade 3 Black boys who met this reading standard decreased. A stairstep effect was present, in that the percentage of Black boys who were Extremely Poor and who did not meet this reading standard was more than one and a half times the percentage of Black boys who were Moderately Poor who met this reading standard. Moreover, the percentage of Black boys who were Extremely Poor and who did not meet this reading standard was more than two times the percentage of Black boys who were Not Poor who met this reading standard. Readers are directed to Table 4 for the descriptive statistics for this analysis.

Table4. *Frequencies and Percentages of the STAAR Reading Achievement Phase-In Level I of Grade 3 Black Boys by Their Economic Status*

	Did Not Meet Standard	Met Standard
Economic Status	*n* and %age of Total	*n* and %age of Total
Not Poor	(*n* = 1,800) 28.60%	(*n* = 4,490) 71.40%
Moderately Poor	(*n* = 569) 36.20%	(*n* = 1.001) 63.80%
Extremely Poor	(*n* = 7,846) 51.20%	(*n* = 7,477) 48.80%

With respect to the second research question which the focus was placed on economic status of the reading achievement at the Phase-In II level for Grade 3 Black boys, the result was statistically significant, $\chi 2(2) = 975.50$, $p < .001$. The effect size for this finding, Cramer's V, was small, .20 (Cohen, 1988). As the poverty level increased from Not Poor to Moderately Poor to Extremely Poor, the percentage of Grade 3 Black boys who did not meet the standard increased. A stairstep effect was present, in that the percentage of Black boys who were Extremely Poor and who did not meet this reading standard was more than one and a quarter times the percentage of Black boys who were Moderately Poor who met this reading standard. Moreover, the percentage of Black boys who were Extremely Poor and who did not meet this reading standard was a little less than one and a half times the percentage of Black boys who were Not Poor who met this reading standard. Table 5 contains the descriptive statistics for this analysis.

Table5. *Frequencies and Percentages of the STAAR Reading Achievement Phase-In Level II of Grade 3 Black Boys by Their Economic Status*

	Did Not Meet Standard	Met Standard
Economic Status	*n* and %age of Total	*n* and %age of Total
Not Poor	(*n* = 3,827) 60.80%	(*n* = 2,463) 39.20%
Moderately Poor	(*n* = 1,101) 70.10%	(*n* = 469) 29.90%
Extremely Poor	(*n* = 12,405) 81.00%	(*n* = 53,819) 19.00%

For the final research question in which the focus was placed on economic status on the reading achievement at the Phase-In III level for Grade 3 Black boys, the result was statistically significant, $\chi 2(2) = 669.68$, $p < .001$. The effect size for this finding, Cramer's V, was small, .17 (Cohen, 1988). As student economic status decreased, the percentage of boys who met this reading standard deceased. Very high percentages of Grade 3 Black boys did not meet this particular reading standard. Regarding the degree of economic disadvantage, Grade 3 Black boys who were Extremely Poor had a 12.5 percentage point higher rate of not meeting this standard than Grade 3 Black boys who were Not Poor and a 5.6 percentage point higher rate of not meeting this standard than Grade 3 Black boys who were Moderately Poor. Readers are referred to Table 6 for the descriptive statistics for Grade 3 Black boys Phase-In III levels by their degree of economic status on the STAAR exam for the 2015-2016 school year.

Table6. *Frequencies and Percentages of the STAAR Reading Achievement Phase-In Level III of Grade 3 Black Boys by Their Economic Status*

	Did Not Meet Standard	Met Standard
Economic Status	*n* and %age of Total	*n* and %age of Total
Not Poor	(*n* = 4,993) 79.40%	(*n* = 1,279) 20.6%
Moderately Poor	(*n* = 1,355) 86.30%	(*n* = 215) 13.70%
Extremely Poor	(*n* = 14,078) 91.90%	(*n* = 1,245) 8.10%

DISCUSSION

Examined in this study was the extent to which differences were present in the reading achievement of Grade 3 Black boys and Black girls in Texas as a function of their economic status (i.e., Not Poor, Moderately Poor, and Extremely Poor). Three specific reading indicators (i.e., Phase-In I, Phase-In II, and Phase-In III) from the 2015-2016 State of Texas Assessment of Academic Readiness exam were analyzed separately for Grade 3 Black boys and Black girls. Results were that the percentage of Grade 3 Black boys and Black girls who passed the three reading indicators decreased as their poverty level increased. In all three STAAR Reading measures, a clear stairstep effect was present. As the degree of poverty increased, the percentage of Black boys and Black girls who met the STAAR Reading standard decreased.

"Poverty is the largest correlate of reading achievement" (Cunningham, 2006, p. 382). Researchers (e.g., Brooks-Gunn & Duncan, 1997; Klerman, 1991) have previously established that students who are economically disadvantaged experience developmental delays, exhibit learning disabilities, or repeat a grade. It is evident from the information presented in this

study that economic status is clearly related to the reading performance as measured by the STAAR assessment for Grade 3 Black boys and Black girls.

Absent in this study was an attempt to examine why the differences in academic performance on the STAAR assessment among Grade 3 students actually exist. Therefore, this issue should be explored in future studies. In addition, other questions that could be examined in future research include: (a) What differences exist in the mathematics achievement of Grade 3 Black boys and Black girl as a function of their economic status?; (b) What differences exist in the reading and mathematics performance of Grade 3 Black boys and Black girls as a function of their economic status over time?; and (c) What differences exist in the academic achievement of other ethnic/racial groups of students by their economic status? Quantitative as well as qualitative studies can be utilized in future research efforts to obtain a more thorough analysis of the effects of poverty on student performance. The findings from this study and future research concerning this topic could provide relevant, essential data to school officials, policy makers, and parents.

A statement of caution is provided to the readers regarding the generalizability of the findings. This study was limited to Grade 3 Black students in the state of Texas, and although the sample size was large, the results may not be generalizable to the performance of students in other states. Additionally, data for this study were analyzed for one year (2015-2016) and could represent unique circumstances that may prevent the study's findings from being applicable to other cohorts of students. To improve the generalizability, a multi-year study is recommended.

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