



The Impact of Socioeconomic Status on Elementary Student Achievement in Rural South Texas Schools

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ABSTRACT

The primary focus of the study is to analyze the effect of socioeconomic status on academic achievement by analyzing the scores of economically disadvantaged students in comparison to those of non-economically disadvantaged students on the State of Texas Academic Assessment of Readiness (STAAR) exam. Specifically, the study examines the 2013 STAAR reading and math scores of third, fourth, and fifth graders in attendance at four small rural schools in order to allow educators the capability to further understand the association between socioeconomic status and academic achievement among students in rural communities. Binary logistic regression is utilized and the results of analysis pointed out that socioeconomic status had a significant impact at the 4th grade level specifically. The results of this study provided information to be utilized by school leaders ranging from teachers all the way up to superintendents and on through higher education to inform teacher preparation curriculum that is specific to the needs of economically disadvantaged learners.

Key words: socioeconomic status; academic achievement; STARR; rural education

INTRODUCTION

When students begin school each year, their parent(s) or legal guardian(s) must fill out countless forms that require information pertaining to health status, insurance, living arrangements, and income. The Department of Health and Human Services (HHS) uses this information and the poverty guidelines to determine whether the child(ren) is(are) economically disadvantaged. This economically disadvantaged “label” becomes a means of tracking equity for state and federal accountability purposes.

Increasing evidence confirms that the environment in which a child is raised, traced back to pre-birth, contributes to childhood development [1]. Unfortunately, children from economically disadvantaged backgrounds are not subjected to stimulating early childhood experiences [2]. By the age of three, economically disadvantaged children have heard an average of three million fewer words as opposed to children from higher income households resulting in extensively smaller vocabularies upon entering school [2]. Additionally, children of

poverty are not naturally exposed to print-rich environments or reading [3]. Furthermore, economic restraints create difficult circumstances for poor parents to provide toys, books, or quality childcare that may be beneficial for their children's development [4]. This lack of stimulation contributes to poor emergent literacy skills and puts children at an automatic disadvantage once enrolled in school [4].

Research by Daily, Burkhauser, and Halle [5] exposed a significant achievement gap at the start of kindergarten between low-income children and more affluent students. Results uncovered "cracks" in the areas of cognitive, social, and physical development [5]. One specific national study revealed that the average cognitive scores of affluent students are 60 percent higher than those of the poorest prior to entering school [5].

Healthcare is another area where socioeconomically disadvantaged students are susceptible to factors which are detrimental to their education as children raised in low-income households experience poorer health than their wealthier counterparts, which discourages academic achievement [6]. Rothstein [3] indicates that children from low income families often go without health insurance leaving these children to forgo preventive health and dental care which in turn leads to increased attendance issues due to subsequent illnesses. The 2007 Annual Report of the Children's Defense Fund documented that nearly 25 percent of children who live in poverty lack adequate health care and miss too many days of school because they are ill [7]. Absences at school contribute to learning gaps that increase over time. In addition, according to Action for Healthy Kids [8], active, healthy children encounter less discipline referrals and outperform those who are not healthy on standardized achievement tests in math and reading.

The education of economically disadvantaged students is further endangered by a lack of stable, quality housing [4] which contributes to disrupting the continuity of children's education and consequently places them behind their peers. Families of poverty directly expose their children to risks within the home that include illness, crowding, stress, lack of psychosocial stimulation, and limited resources all of which affect student achievement [5].

Other factors outside of the home also affect achievement for socioeconomically disadvantaged students. Sadly, economically disadvantaged students often attend poor, minority schools and receive inadequate educational resources that yield lower academic achievement than more affluent students who attend higher quality schools. Currently, children living in poverty tend to be concentrated in schools that underperform and are additionally staffed by ill-prepared teachers [9]. Smyth [10] explains that vital learning instruments such as textbooks, computers, internet access, parental involvement, extracurricular activities, fine arts, and electives are not usually present at the schools that children of poverty attend. Highly qualified teachers and high-level student achievement are generally not present either [10]. Hewitt [11] reveals that attending a highly impoverished learning institution is one of the leading predictors of academic failure.

Hernandez [12] also found that socioeconomic status and third grade reading ability was an indicator of academic failure and found that 26 percent of students who fall below the poverty line for a minimum of one year and are not reading at grade level in the third grade do not graduate. This is six times the rate for students who are proficient readers in third grade.

The academic achievement gap that exists between affluent students and their not so affluent counterparts is often attributed to an opportunity gap. It is documented that students who come from economically disadvantaged families have limited or restricted access to

opportunities to which other students may have. Poverty for students often means lack of housing, inadequate nutrition, inadequate health care and inadequate educational resources all of which contribute to the achievement gap.

Purpose Of The Research Study

Over the past three decades, the incomes of families have diverged just as the educational performances of the respective children have diverged [13]. The low academic performance of economically disadvantaged learners in comparison to non-economically disadvantaged learners denotes the very existence of achievement gaps [14].

Unfortunately, low socioeconomic status significantly limits a family's quality of life and may manifest itself in the form of malnutrition, ill health, generational lack of education, unemployment, high mobility rates, disadvantaged living conditions, and limited resources; all of which affect a child's education [15]. Moreover, children from economically disadvantaged backgrounds tend to experience an increased number of problems at school that include lower academic performance[15]. Factually, children from economically disadvantaged families are more likely to earn lower classroom grades which typically manifests in lower grade completion and lower standardized test scores [15]. Although there is a general agreement on the seriousness of the achievement gap, there is no consensus on what causes it or how it can be solved [16].

The primary focus of the study is to analyze the effect of socioeconomic status on academic achievement by analyzing the scores of economically disadvantaged students in comparison to those of non-economically disadvantaged students on the State of Texas Academic Assessment of Readiness (STAAR) exam. Specifically, the study examines the 2013 STAAR reading and math scores of third, fourth, and fifth graders in attendance at four small rural schools in order to allow educators the capability to further understand the association between socioeconomic status and academic achievement among students in rural communities. Richard Rothstein [3] sums it up by stating that understanding the effects of socioeconomic differences on student learning is a vital step to closing the achievement gap.

Conceptual Framework

Using standardized tests to measure student success, and therefore, hold students, teachers, and schools accountable has become a common practice. In the United States there has been concern about the damage that "high stakes" testing imposes on teachers and students [17]. Haertel and Herman [18] summarized that from the 1900's to the Head Start program evaluations of the 1960's and up through the testing requirements imposed by ESEA and NCLB, policymakers have utilized standardized test scores to determine which schools are fulfilling their responsibilities to adequately educate students. Wiliam [17] states one of the most distinctive features of testing for accountability is the risk involved for teachers. In some cases, evaluations and pay for educators are tied to test results.

It is useful to examine the logic behind the notion that higher quality schools yield higher student scores [17]. Messick [19] points out that this conclusion turns into a matter of validity as the scores fail to adequately represent student differences such as socioeconomic status. While the laws that reinforce utilizing standardized assessments do so in an effort to assure equal educational opportunities, these laws often overlook the critical point that students are individual human beings with needs that cannot be measured by a single test [20].

METHODOLOGY

The data were compiled electronically by importing student information that was generated by the Public Education Information Management System (PEIMS) in addition to the State of Texas Assessment of Academic Readiness (STAAR) met/not met student results report. STAAR is mandated to be administered by every Texas public school. The researchers sent requests via e-mail for participation to each superintendent within the Region two area. The request specifically asked for access to their elementary schools' 2012-2013 PEIMS information and 2012-2013 STAAR scores for grades 3, 4, and 5. The data software, Statistical Package for the Social Sciences (SPSS), was utilized to run binary logistic regression

The data collected for this study included a total sample of 843 students (N=843) ranging from grades three through five. Frequency information is presented in Table 1 while Table 2 depicts the socioeconomic status of each school.

Table 1: Frequency Statistics for Sample

	School 1	School 2	School 3	School 4	Total	Percentage
3rd	63	85	27	148	323	38.3
4 th	60	71	23	95	249	29.5
5 th	43	70	43	115	271	32.1
Total	166	226	93	358	N=843	

Table 2: Descriptive Statistics

	School 1	School 2	School 3	School 4	Total	Percentage of N
3rd						
ECO	49	60	21	131	261	31
NON ECO	14	25	6	17	62	7
4 th						
ECO	39	55	19	73	186	22.1
NON ECO	21	16	4	22	63	7
5 th						
ECO	31	44	36	102	213	25.3
NON ECO	12	26	7	13	58	7
Total						
ECO	119	159	76	306	660	78.3
NON ECO	47	67	17	52	183	21.7

RESULTS

For this study, the researchers used a binary logistical regression to analyze the data for research question one and two. Binary logistical regression was utilized to evaluate the impact of the predictors, socioeconomic status and grade level, on academic achievement as measured by the standardized STAAR exam utilizing dichotomous scores of pass and fail in the areas of reading and math for 3rd, 4th, and 5th graders.

Research Question Number One

Is there a difference in reading achievement for third, fourth, and fifth grade students as measured by the state of Texas Assessment of Academic Readiness test between students coded as economically disadvantaged and students not coded as economically disadvantaged in rural elementary schools in South Texas?

For research question number one, 843 students comprised of 78% economically disadvantaged and 22% of non-economically disadvantaged were analyzed to determine that

socioeconomic status and grade level does significantly influence STAAR passing rates in reading. A logistic regression analysis was conducted to predict the passing of STAAR reading for 843 students using socioeconomic status and grade level as predictors. A test of the full model against a constant model was statistically significant, indicating that the predictors as a set reliably distinguished between passers and non-passers (chi square = 15.374, $p < .002$ with $df = 3$). Nagelkerke's R^2 of .024 indicated a 2.4% variability of dependent variable by the independent variables in the model. Prediction success overall was 56.9% (27% for fail and 82.1% for pass). The Wald criterion demonstrated that socioeconomic status ($p = .002$) and grade level ($p = .038$) make significant contributions to prediction in STAAR reading passing rates. There were no significant differences found between grade 3 students coded as economically disadvantaged and those coded as not economically disadvantaged in reading achievement, chi square(1) = 2.75, $p = .10$ and between grade 5 students coded as economically disadvantaged and those coded as not economically disadvantaged in reading achievement, chi square(1) = 1.62, $p = .20$. Adding economically disadvantaged to reading was significant, chi square(1) = 6.02, $p = .01$. The estimated model is: $\text{Logit}(\text{reading}) = -.238 + .723(\text{Economically Disadvantaged})$. The coefficient of Economically Disadvantaged is significant, Wald(1) = 5.87, $p = .02$. The relative odds (odds/ratio) indicated that the Non Economically Disadvantaged are 2.06 times as likely to pass as the Economically Disadvantaged.

Research Question Number Two

Is there a difference in math achievement for third, fourth, and fifth grade students as measured by the State of Texas Assessments of Academic Readiness test between students coded as economically disadvantaged and students not coded as economically disadvantaged in rural elementary schools in south Texas?

For research question number two, 843 students comprised of 78% economically disadvantaged and 22% of non-economically disadvantaged were analyzed to determine that socioeconomic status does significantly influence STAAR passing rates in math. A logistic regression analysis was conducted to predict the passing of STAAR math for 843 students using socioeconomic status and grade level as predictors. A test of the full model against a constant model was statistically significant, indicating that the predictors as a set reliably distinguished between passers and non-passers (chi square = 7.119, $p < .008$ with $df = 1$). Nagelkerke's R^2 of .011 indicated a relatively weak relationship between prediction and grouping. Prediction success overall was 55.2% (81.9% for fail and 25.7% for pass). The Wald criterion demonstrated that socioeconomic status ($p = .008$) and grade level ($p = .013$) make significant contributions to the prediction of STAAR math passing rates. Adding economically disadvantaged to math was not significant at the third grade level, chi square(1) = 2.98, $p = .08$ or the 5th grade level, chi square(1) = .01, $p = .91$. However, at the fourth grade level, adding economically disadvantaged to math was significant, chi square(1) = 8.44, $p = .00$. The estimated model is: $\text{Logit}(\text{math}) = -.437 + .856(\text{Economically Disadvantaged})$. The coefficient of Economically Disadvantaged is significant, Wald(1) = 8.24, $p = .00$. The relative odds (odds/ratio) indicated that the Non Economically Disadvantaged are 2.35 times as likely to pass as the Economically Disadvantaged.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The data specifically pointed out that socioeconomic status had a significant impact in 4th grade. Socioeconomic status did not contribute significantly in grades three and five. In 3rd grade, the first major "high-stakes" test of that magnitude that is administered for state/national purposes. In 5th grade, students must pass in order to be promoted to 6th grade. Considering the special circumstances that are presented in grades 3 and 5, it is

fascinating to reflect upon the possibility that these variables may be strong enough to make socioeconomic status insignificant. It is also important to note that this research was based on a newly administered STAAR test as opposed to the Texas Assessment of Knowledge and skills (TAKS). Different tests may yield different results. This study indicates that further research with STAAR should be considered as the significance may also be due to the validity of the tests at the various grade levels. In other words, the testing may not be as demanding at different grade levels. According to Johnston [21] "current testing practices clearly have deleterious effects on students, teachers, and the curriculum. These effects are not distributed equally across gender, race, or class. . . Although intended to improve equity, testing veils the erosion of equity [22].

It has been theorized that socioeconomic status affects academic performance and that students who come from economically disadvantaged backgrounds persistently score below those who are not economically disadvantaged, and this discrepancy contributes to keeping the academic achievement gap alive. [3, 5, 15]. However, based on these results we can now dispute the idea that regardless of teacher or curriculum quality, socioeconomic status cannot be overcome; as there are 2 instances where this was not true.

The results of this study provided information to be utilized by school leaders ranging from teachers all the way up to superintendents and on through higher education to inform teacher preparation curriculum that is specific to the needs of economically disadvantaged learners. The research reveals that the variable of socioeconomic status is still one to contend with and the pursuit for equity continues. This study indicates that further research with STAAR should be considered.

The following recommendations were made as a result of this study: Future research could examine other districts to reflect various geographic regions both state and nationwide. Future research could study what successful schools with a high frequency of economically disadvantaged students are doing. Future research should involve the variable of race. Some challenges with regard to socioeconomic status include the comparison to race and the need for research in order to develop policy [23]. The pursuit for equity in education still persists. The socioeconomic status of students continues to influence academic outcomes. While many national and state efforts have been made to address the academic achievement gap, it still has not been eliminated.

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