DIFFERENCES IN GENERAL EDUCATION DEVELOPMENT RECIPIENT RATES AS A FUNCTION OF HIGH SCHOOL SIZE FOR STUDENTS OF POVERTY: A TEXAS MULTIYEAR, STATEWIDE STUDY

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Abstract

In this investigation, the extent to which the GED recipient rates of students in poverty differed as a function of high school size, with respect to student enrollment, were examined. Archival data were analyzed from the Academic Excellence Indicator System report from the Texas Education Agency. School size categories, based on student enrollment groupings as defined by Greeney and Slate (2012), Perez and Slate (2015) and the University Interscholastic League categories (2014), were used to ascertain whether school sizes were differentially related to GED recipient rates of students in poverty. Statistically significant results were yielded only when the University Interscholastic League classifications were used. Students in poverty who were enrolled in Very small high schools (i.e., 25 to 104 students) had statistically significantly higher GED recipient rates than students in poverty who were enrolled in larger high schools. As student enrollment increased, GED recipient rates decreased. Implications for policy and practice and recommendations for future research are provided.

INTRODUCTION

General Education Development (GED) was originally created to serve veterans of World War II who needed the necessary credentials to obtain a job in an industrial era (Bowen & Nantz, 2014; Zajacova & Everett, 2014). The GED, as a high school credential, is now a standardized test used by civilians to obtain a certificate that is equivalent to a high school diploma (Hanford & Smith, 2014). In fact, every year, about 750,000 students take the GED in place of a high school diploma (Sanchez, 2012).

In the competitive job market of today, a high school diploma is the ideal school completion credential. However, for those students who do not obtain a high school diploma, the alternative solution is the GED. Although the GED credential is viewed as being less than a traditional high school diploma (Tuck, 2012), in contemporary times, some form of high school equivalency is vital to the growth of the American economy and an individual's satisfaction with life (Smith & Thomson, 2014). For the United States economy to prosper, an educated workforce is needed to take on tasks and jobs that require at least a high school credential of some sort. The GED was never intended to be a second-chance diploma; however, the GED's prevalence has gained importance in giving students the necessary credential to enter the workforce or enter postsecondary education (Hanford & Smith, 2014).

Employers are placing more stringent criteria for employment, and jobs are becoming more difficult to locate, especially for students who do not have a completed high school credential. Emerging adults, those individuals between the ages of 18 and 29, who do not obtain a high school diploma or an equivalency, can experience long-term negative consequences such as difficulty with job attainment, lower earning wages, and family formation (Bergman, Kong, & Pope, 2014). Moreover, growth or promotion opportunities for individuals not having the high school credential may be dismal and possibly lead to a future of delinquency (Neely & Griffin-Williams, 2013).

Entwisle, Alexander, and Olson (2004) conducted a longitudinal investigation of 293 first time dropouts in Baltimore to compare students who resumed school after a short time with students who dropped out permanently. They reported that 40% of Black males and girls and 40% of White females had completed high school by ages 22 or 23, compared to 31% of White males. Permanent dropouts were more likely to come from disadvantaged backgrounds, and these dropouts were more likely to have been retained and/or maintained a lower grade average than students who eventually reentered high school (Entwisle et al., 2004).

Another variable that may affect high school completion rates and increase the need for GED programs is high school size, with respect to student enrollment. Historically, larger schools are generally thought to be associated with lower student achievement (Fowler & Walberg, 1991; Grabe, 1981; Horyna & Bonds-Raacke, 2012). However, several researchers (e.g., Conant, 1959; Duke, DeReberto, & Trauvetter, 2009; Greeney & Slate, 2012; Moore, Combs, & Slate, 2014) have documented that larger high schools have more academic opportunities and better curricular and co-curricular offerings. As a result, decreased dropout rates and higher graduation rates may be established in larger high schools.

In a recent examination of high school size and Hispanic student dropout rates, Greeney and Slate (2012) established that the lowest dropout rates were present at medium-size high schools than either small-size or large-size high schools. For three of the five years analyzed in their study, Hispanic students had statistically significantly better completion rates in larger-size high schools than in small-size high schools (Greeney & Slate, 2012). Larger high schools were

determined to be more conducive for completion rates than were small-size high schools for Hispanic students. However, Greeney and Slate (2012) did not analyze data on students of poverty.

Several researchers (Horyna & Bonds-Raacke, 2012; Stiefel, Berne, Iataroloa, & Frutcher, 2000; Tinto, 1975) agreed more educational opportunities are available for students in larger schools. However, Stiefel et al. (2000) contended a larger school may cause more competition among students and decrease identity, which could be detrimental for students who are economically disadvantaged. More competition among students could lead to higher dropout rates. Although high school size has been analyzed more frequently in recent research, poverty is a topic that has been understudied in the relationship of dropout rates of students in poverty and high school size.

To offset the reasons a student may drop out, the need of an alternate way to complete high school, such as the GED, is necessary. However, test developers are making the test more rigorous for students. With the recent updates in the GED examination, not only are high school standards assessed, now students are assessed on college and career readiness (Smith, 2014). In a recent 5-year statewide investigation on the relationship of high school size and college readiness, Moore et al. (2014a) documented that White students had statistically significant higher college-readiness rates in English Language Arts, Mathematics, and in both subjects in large-size high schools than White students who were enrolled in either medium-size or small-size high schools. Similarly, in another 5-year investigation conducted by Moore, Combs, and Slate (2014b), Black students exhibited higher college readiness rates in English Language Arts, mathematics, and in both subjects in large-size high schools than Black students in either small-size or medium-size high schools. Moore et al. (2014b) also established college readiness rates for Black students were very low in Texas.

Purpose of the Study

The purpose of this investigation was to examine the extent to which differences might be present in GED recipient rates as a function of high school size for students in poverty. Specifically, high school size and GED recipient rates were analyzed for the 2013 and the 2014 4-year longitudinal data. These two school years were selected because they represented the most recent data available for Texas high schools.

Significance of the Study

For youth to obtain economic mobility as an adult, a strong educational foundation is essential. Informed educational practice in deciding to create environments that are conducive to GED completion may be possible as a result of this study. Moreover, results from this multiyear empirical study may add to the extant literature. Often, students who drop out lack non-cognitive skills (e.g., motivation, grit, determination) that could be fostered within the classroom walls. Moreover, students from poverty need support in building social, human, and financial capital. Educators might use the results from this study as a starting point for creating programs or environments in which students persist and earn a high school credential.

Research Questions

The following research questions were addressed in this study: (a) What is the difference in GED recipient rates as a function of high school size for students in poverty using the Greeney and Slate (2012) school size definition, using the Perez and Slate (2015) school size groupings, and using the Texas University Interscholastic League groupings?, and (b) What consistency, if any, is present in dropout rates by high school size for students in poverty using the Greeney and Slate (2012) definition, using the Perez and Slate (2015) definition, and using the Texas University Interscholastic League groupings? The first research question was analyzed for 4-year longitudinal data for 2013 and 2014 whereas the second research question was a comparison of results across the 2013 and the 2014 4-year longitudinal data.

METHODOLOGY

Research Design

The research design for this empirical investigation was non-experimental, causal comparative (Johnson & Christensen, 2014). In this causal comparative research investigation, archival data was used. Therefore, in this investigation, the independent variable of high school enrollment size, with respect to student enrollment, and the dependent variable of GED recipient rates had already occurred. Accordingly, neither variable could be manipulated (Johnson & Christensen, 2014).

Participants and Instrumentation

Students who receive a GED typically complete a system of standardized examinations to receive a credential considered as equivalent to completion of high school (Texas Education Agency, 2015). Once students have fulfilled all necessary requirements, they are assigned a final status of GED recipient (Texas Education Agency, 2015). Therefore, participants in this study were be students from all traditionally configured Grade 9 through Grade 12 Texas high schools in which GED recipient rates were reported to the Texas Education Agency. Student in poverty refer to students who qualify for free or reduced lunch under the National School Lunch and Child Nutrition Program (Texas Academic Performance Report Glossary, p. 14).

For the purpose of this study, high school size in the Greeney and Slate (2012) definition consisted of three sizes: Small, Moderate, and Large. A Small-size high school was defined as a school with an enrollment of 400 or fewer students, with a minimum of 50 students. A Moderate-size high school was defined as a school with an enrollment of 401 to 1,499 students. A Large-size high school was a school with an enrollment of 1,500 or more students (Greeney & Slate, 2012).

In the Perez and Slate (2015) definition, high school size consisted of four sizes: Small, Moderate, Large, and Very Large. A Small-size high school was defined as a high school with a student enrollment of 50 to 500 students. A Moderate-size high school was a high school with a student enrollment of 501 to 1,499 students. A Large-size high school was defined as a high school

with a student enrollment of 1,500 to 2,499 students. A Very Large-size high school had a student enrollment of 2,500 or more students (Perez & Slate, 2015).

The third group of high school sizes were from the University Interscholastic League (2014) guidelines: Very Small, Small, Moderate, Medium, Large, and Very large. A Very Small-size high school was defined as a high school with a student enrollment of 25 to 104 students. A Small-size high school was a high school with a student enrollment of 105 to 219 students. A Moderate-size high school was defined as a high school with a student enrollment of 220 to 464 students. A Medium-size high school was a high school with a student enrollment of 465 to 1,059 students. A Large-size high school was defined as a high school with a student enrollment of 1,060 to 2,099 students. Finally, a Very Large-size high school was a high school with an enrollment of 2,100 or more students (University Interscholastic League, 2014).

Archival data were obtained from the Texas Academic Performance Report as published annually by the Texas Education Agency. Available at the Texas Academic Performance Report website are data for each of the school years. With specific reference to this investigation, Texas Academic Performance Report data were downloaded for the 2013 and for the 2014 4-year longitudinal GED recipient rates. Specific variables that were downloaded were: (a) grade span configuration of each high school; (b) total student enrollment; and (c) GED recipient rates of students in poverty.

RESULTS

To determine whether a difference existed in GED recipient rates as a function of high school size as defined by Greeney and Slate (2012), Perez and Slate (2015), and the Texas University Interscholastic League (2014) groupings for students who were economically disadvantaged, an Analysis of Variance (ANOVA) procedure was completed for each of these research questions. Prior to conducting an ANOVA, the standardized skewness coefficients and the standardized kurtosis coefficients were calculated for normality to ensure the GED recipient rate data were normally distributed, +/- 3 (Onwuegbuzie & Daniel, 2002). The Levene's Test of Error Variance was also calculated to determine the degree of homogeneity of the data, in which a violation was discovered. However, Field (2009) contended the ANOVA procedure is sufficiently robust to use as the statistical procedure.

Results for the Greeney and Slate Groupings

For the first research question, the following enrollment numbers were used for each high school grouping (Greeney & Slate, 2012): Small-size high schools (50 to 400 students); Moderate-size high schools (401 to 1,499 students); and Large-size high schools (1,500 or more students). For the 2013 4-year longitudinal data, a statistically significant difference was not revealed in GED recipient rates for students in poverty as a function of school size, $F(2, 1041) = 0.04$, $p = .96$. The GED recipient rates for students in poverty were similar across the three school size groupings. Readers are referred to Table 1 for the descriptive statistics concerning the GED recipient rates of students who were in poverty for the 2013 4-year longitudinal data.

Table 1

Descriptive Statistics for the 2013 4-Year Longitudinal GED Recipient Rates for Students in Poverty as a Function of High School Size Using the Greeney and Slate (2012) Definition

School Size Grouping	*n* of schools	*M*	*SD*
Small (400 or less)	349	0.58	1.61
Moderate (401-1,499)	339	0.56	1.34
Large (1,500 or more)	356	0.59	0.83

Concerning the 2014 4-year longitudinal data, a statistically significant difference was not present in the GED recipient rates of students in poverty as a function of school size as defined by Greeney and Slate (2012), $F(2, 1074) = 1.11$, $p = .33$. Consistent with the previous school year result, the 2013-2014 GED recipient rates of students in poverty were comparable by high school size. Descriptive statistics for this analysis are presented in Table 2.

Table 2

Descriptive Statistics for 2014 4-Year Longitudinal GED Recipient Rates for Students in Poverty as a Function of High School Size Using the Greeney and Slate (2012) Definition

School Size Grouping	*n* of schools	*M*	*SD*
Small (400 or less)	362	0.78	2.65
Moderate (401-1,499)	348	0.60	1.39
Large (1,500 or more)	367	0.62	0.91

Results for the Perez and Slate Groupings

For the second part of the first research question, the following enrollment numbers were used for each high school grouping (Perez & Slate, 2015): Small-size high schools (50 to 500 students); Moderate-size high schools (501 to 1,499 students); Large-size high schools (1,500 to 2,499 students); and Very Large-size high schools (2,500 or more students). For the 2013 4-year longitudinal data, a statistically significant difference was not revealed in GED recipient rates for students in poverty as a function of school size, $F(3, 1040) = 0.11$, $p = .95$. The GED recipient rates of students in poverty were commensurate across all of the four high school sizes. Readers are directed to Table 3 for the descriptive statistics for this school year.

Table 3

Descriptive Statistics for the 2013 4-Year Longitudinal GED Recipient Rates for Students in Poverty as a Function of High School Size Using the Perez and Slate (2015) Definition

School Size Grouping	*n* of schools	*M*	*SD*
Small (400 or less)	349	0.58	1.61
Moderate (401-1,499)	339	0.56	1.34
Large (1,500-2,499)	234	0.56	0.84
Very Large (2,500 or more)	122	0.63	0.82

Concerning the 2014 4-year longitudinal data, a statistically significant difference was not yielded for GED recipient rates for students in poverty as a function of school size, $F(3, 1073) = 0.75$, $p = .53$. Similar to the previous school year, GED recipient rates of student in poverty were similar across the four high school groupings. Table 4 contains the descriptive statistics for the 2013-2014 school year.

Table 4

Descriptive Statistics for the 2014 4-Year Longitudinal GED Recipient Rates for Students in Poverty as a Function of High School Size Using the Perez and Slate (2015) Definition

School Size Grouping	*n* of schools	*M*	*SD*
Small (400 or less)	362	0.78	2.65
Moderate (401-1,499)	348	0.60	1.39
Large (1,500-2,499)	245	0.62	0.98
Very Large (2,500 or more)	122	0.62	0.75

Results for the University Interscholastic League Groupings

For the third part of the first research question, the following enrollment numbers were used for each high school grouping (University Interscholastic League, 2014): Very Small-size high schools (25 to 104 students); Small-size high schools (105 to 219 students); Moderate-size high schools (220 to 446 students); Medium-size high schools (465 to 1,059 students); Large-size high schools (1,060 to 2,099 students); and Very Large-size high schools (2,100 or more students). For the 2013 4-year longitudinal data, a statistically significant difference was revealed in GED recipient rates for students in poverty as a function of school size, $F(5, 1056) = 5.83$, $p < .001$, $\eta^2 = .027$, a small effect size (Cohen 1988). Scheffe` post hoc procedures were used next to determine which school size pairwise comparisons were statistically significantly different with respect to GED recipient rates for students in poverty. Students in poverty who were enrolled in Very Small-size high schools had higher GED recipient rates than any other school size. No other school size pairwise comparisons had statistically significantly different GED recipient rates. Descriptive statistics for this school year are revealed in Table 5.

Table 5

Descriptive Statistics for the 2013 4-Year Longitudinal GED Recipient Rates for Students in Poverty as a Function of High School Size Using the University Interscholastic League (2014) Definition

School Size Grouping	*n* of schools	*M*	*SD*
Very Small (25-104)	58	1.79	4.96
Small (105-219)	130	0.53	1.79
Moderate (220-464)	227	0.55	1.59
Medium (465-1069)	210	0.54	1.10
Large (1,070-2099)	220	0.58	1.04
Very Large (2,100 or more)	217	0.60	0.79

In regard to the 2014 4-year longitudinal data, a statistically significant difference was yielded in GED recipient rates for students in poverty as a function of the University Interscholastic League (2014) school size definition, $F(5, 1091) = 3.30$, $p = .006$, $\eta^2 = .015$, a small effect size (Cohen 1988). Scheffe` post hoc procedures revealed that students in poverty who were enrolled in Very Small-size high schools had statistically significantly higher GED recipient rates than students in poverty who were enrolled in Moderate-size high schools, Medium-size high schools, and Very Large-size high schools. The other pairwise comparisons of high school size groups did not yield any statistically significant differences in their GED recipient rates. Table 6 contains the descriptive statistics for this analysis.

Table 6

Descriptive Statistics for the 2014 4-Year Longitudinal GED Recipient Rates for Students in Poverty as a Function of High School Size Using the University Interscholastic League (2014) Definition

School Size Grouping	*n* of schools	*M*	*SD*
Very Small (25-104)	64	1.60	4.85
Small (105-219)	133	0.95	3.49
Moderate (220-464)	236	0.58	1.71
Medium (465-1069)	212	0.58	1.42
Large (1,070-2099)	232	0.66	1.07
Very Large (2,100 or more)	220	0.60	0.78

Results for the Greeney and Slate Groupings Consistency

Using the groupings as defined by Greeney and Slate (2012), consistency was present. Though the two analyses did not yield statistically significant differences, readers should note that Small-size high schools had the highest percentages of GED recipients for both the 2013 and the 2014 4-year longitudinal data. For both 4-year longitudinal data examined, Moderate and Large-size high schools had very similar GED recipient rates, within one percent. Figure 1 is a representation of the GED recipient rates for students in poverty for the 2013 and the 2014 4-year longitudinal data.
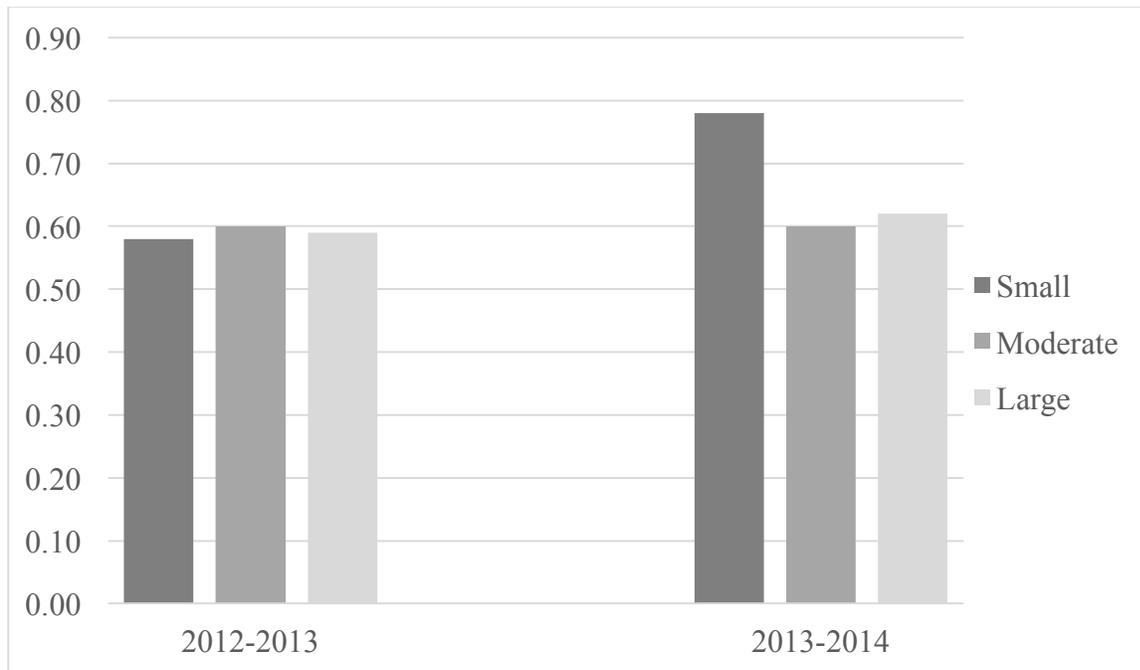
Figure 1. Four-Year Longitudinal General Education Development recipient rates for 2013 and 2014 as a function of the Greeney and Slate (2012) definition of high school size.

**Results for the Perez and Slate Groupings Consistency**

Using the groupings as defined by Perez and Slate (2015), consistency was not present across both school years in regard to the highest GED recipient rates. For the 2013 4-year longitudinal data, Very-large size high schools had the highest GED recipient rates of students in poverty. However, in the 2014 4-year longitudinal data, Small-size high schools had the highest GED recipient rates of students in poverty. Congruent with the Greeney and Slate (2012) grouping results, Moderate-size and Large-size high schools had very similar GED recipient rates for the 2013 and the 2014 4-year longitudinal data. These results are depicted in Figure 2.
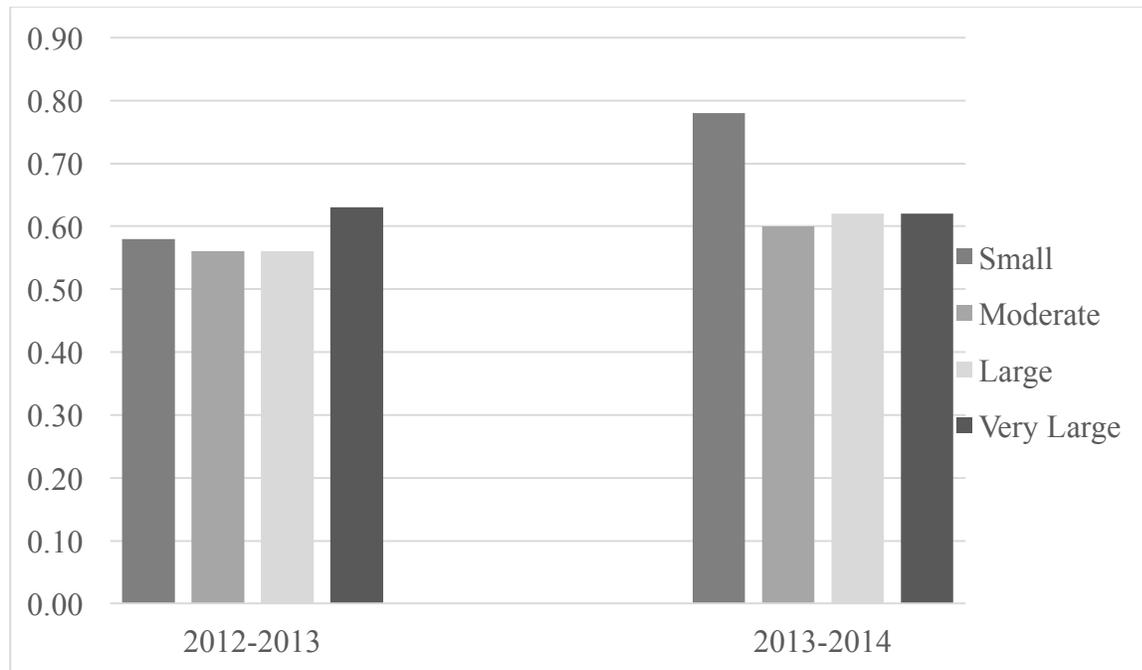
Figure 2. Four-Year Longitudinal General Education Development recipient rates for 2013 and 2014 as a function of the Perez and Slate (2015) definition of high school size.

Results for the University Interscholastic League Groupings Consistency

Using the classifications as defined by the University Interscholastic League (2014), consistency was present for Very-small-size high schools. In Texas, high schools with 25 to 104 enrolled students, GED recipient rates were the highest for students in poverty for both the 2013 and the 2014 4-year longitudinal data. Moderate-size and Medium-size high schools had very similar GED recipient rates, within 1% in both school years. Readers are directed to Figure 3 for a presentation of the consistency in GED recipient rates for the 2013 and the 2014 4-year longitudinal data for the University Interscholastic League (2014) definition of school size.
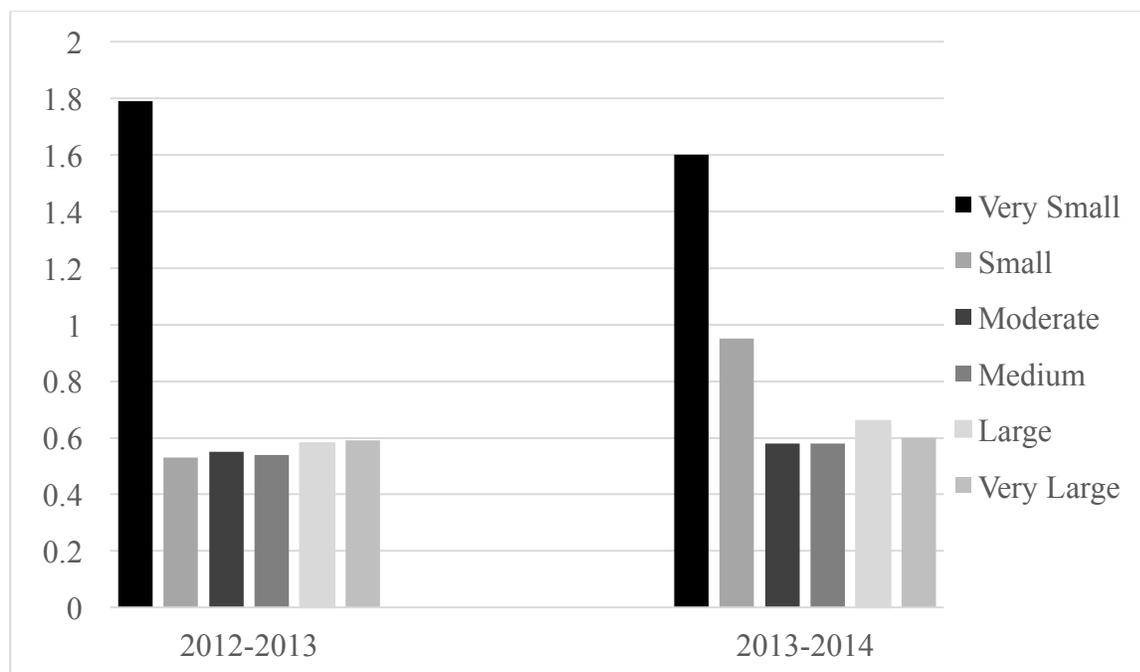
Figure 3. Four-Year Longitudinal General Education Development recipient rates for students in poverty for 2013 and 2014 school years as a function of the University Interscholastic League (2014) definition of high school size.

Summary of Results for GED Recipient Rates of Students in Poverty

For both the 2013 and 2014 4-year longitudinal data, statistically significant differences were not present in the GED recipient rates of students in poverty using the groupings as defined by Greeney and Slate (2014) and Perez and Slate (2015). However, using the UIL classifications for both the 2013 and 2014 4-year longitudinal data, Very Small-size high schools had the highest GED recipient rates of students in poverty. For schools that had a student of enrollment of 25 to 104 students, GED recipient rates more than doubled in Very Small-size size high schools than any other high schools size analyzed in this investigation.

DISCUSSION

In this study, the extent to which high school GED recipient rates differed as a function of high school size for students in poverty was examined. Statewide Texas data were obtained from the Texas Academic Performance Reports for the 2013 and the 2014 4-year longitudinal data. Inferential statistical procedures were used to determine whether high school size was a contributing factor to the GED recipient rates of students in poverty in Texas. Of the high school groupings analyzed in this investigation, only the University Interscholastic League groupings yielded statistically significant results. Students in poverty who were enrolled in Very Small-size high schools had higher GED recipient rates.

Connection to the Literature

As noted by other researchers (e.g., Conant, 1959; Duke, DeReberto, & Trauvetter, 2009; Greeney & Slate, 2012; Moore et al, 2014), large schools have more opportunities for curricular and co-curricular participation which in turn can lead to lower dropout rates and higher graduation rates. In this investigation, smaller size schools had higher GED recipient rates of students in poverty than did larger size schools. These results align with current literature in the respect that higher dropout rates yield more students to obtain a GED. Thus, smaller high schools have higher GED recipient rates due to having a larger pool of students who may have to take the GED to receive a high school credential.

Implications for Policy and Practice

Based upon the results of the three sets of inferential analyses, Very Small-size high schools had statistically significant differences in the GED recipient rates of students in poverty as a function of the student enrollment at their high schools. Educational leaders are encouraged to audit each of their high school's GED recipient rates by student economic status, as well as by other demographic characteristics. Such audits could assist them in determining whether new programs are needed to reduce their dropout rates or implement other interventions, such as the GED. The effectiveness of current GED programs should be examined for effectiveness as well to ensure students are exiting high school with some form of high school credential. With the demand of the labor market and high school accountability standards, GED programs and other interventions are necessary.

Recommendations for Future Research

In this investigation, the GED recipient rates of students in poverty were analyzed as a function of high school size, with respect to student enrollment. Moreover, aggregated GED recipient rate data at the high school level were only examined for the 2013 and 2014 4-year longitudinal data. As such, researchers are encouraged to analyze the GED recipient rates of students by important demographic characteristics such as ethnicity/race, at-risk status, and English Language Learner status. Are the GED recipient rates of Black or Hispanic students influenced by high school size? Furthermore, in regard to GED recipient rates, future researchers are advised to use the University Interscholastic League groupings when examining the issue of school size in Texas.

Researchers are also encouraged to investigate the relationship of high school size with other important accountability standards such as graduation rates and college readiness. The extent to which the findings obtained in this investigation would generalize to other academic outcomes is not known. This research study was conducted only on high school students in Texas. Accordingly, this research investigation should be replicated in other states to determine whether the results in other states are similar to these Texas results.

CONCLUSION

Overall public school enrollment is projected to increase to 52.9 million students by the school year 2024-2025 (National Center for Education Statistics, 2015). Because of increasing student enrollment, it is imperative for policymakers to examine other relationships between school buildings and student achievement (Greeney & Slate, 2012). School size is one of the few variables that can be controlled by policy makers to ensure schools can maximize student achievement (Humlum & Smith, 2015). Consolidating schools to provide equal opportunities for all students may be the answer to increasing high school completion rates. Larger schools could also create dropout prevention and GED programs to assist students to obtain some form of high school credential.

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