

School Size and School Climate among Texas Middle School Students as a Function of Programmatic Labels

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In this investigation, archival data for the 2010-2011 academic school year from the Texas Education Agency Academic Excellence Indicator System were analyzed to determine the extent to which school size was related to school climate as measured by dropout and attendance rates for students labeled as Limited English Proficient or economically disadvantaged in Texas middle schools. After forming three school size groups (i.e., small, medium, and large), students enrolled in medium-size schools (i.e., student enrollment 500 to 859) had the highest dropout rates and the lowest attendance rates. Findings were consistent for both students labeled as Limited English Proficient and for students labeled as economically disadvantaged. Suggestions for future studies are provided.

Keywords: school size, school climate, economically disadvantaged, Limited English Proficient

School size has been a topic of discussion in the United States for decades and has sparked moves toward educational reform (Weiss, Carolan, & Baker-Smith, 2009). The idea of school climate is not easy to define because numerous working frameworks have been used to specify its characteristics (Caldarella, Shatzer, Gray, Young, & Young, 2011). Nevertheless, Caldarella et al. (2011) affirmed that it is the combination of events that transpire at a school that improve the quality of the school environment. Furthermore, Greeney and Slate (2012) affirmed that the school environment can encourage students to perform better academically and to participate in extra-curricular activities. Participation in school activities has been documented to increase a feeling of connectedness with schools. Furthermore, absenteeism, attendance, and completion rates are all positively affected by higher levels of student connectedness (Greeney & Slate, 2012).

Collectively, researchers, parents, and educators have sought to elucidate whether school size affects school climate and, in turn, ultimately affects student success. Between 1940 and 1990, student enrollment in schools began to increase, yet the number of public schools declined (Cotton, 1996; Lay, 2007). Educational leaders realize that many variables impact student success; nevertheless, they affirmed that school size is of grave importance (Lay, 2007).

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Although some educators proclaim that larger schools positively affect curriculum, other educators insist that smaller schools have more of a positive impact on ultimate student success through interpersonal relationships (Cotton, 1996; Lay, 2007; Riha, 2011; Slate & Jones, 2005). Researchers have acknowledged that students at smaller schools feel more connected than do students at larger schools (Greeney & Slate, 2012). Nonetheless, an increase in school size prompted researchers to delve deeper into literature, studies, and data to determine the extent to which school size had an effect on school climate (Cotton, 1996).

Bowen, Bowen, and Richman (2000) and Weiss et al. (2009) affirmed that researchers and educators seek to identify the ideal school size and even though initiatives such as the Annenberg Foundation and the Bill and Melinda Gates Foundation aimed to increase student success through building relationships and using smaller schools sizes, few researchers have focused on middle schools. Rather, researchers focus on classroom size for elementary schools and focus on school size for high schools (Weiss, 2009). Though studies conducted on elementary and high schools are beneficial, researchers believe that middle school students are more sensitive to the negative aspects of school size than are high school students (Bowen et al., 2000).

Though educators perceive that larger-size schools are better than smaller-size schools because of the availability of resources, students at larger schools report being less satisfied with their school experience and that can negatively affect school climate and in turn, decrease attendance rates and increase dropout rates (Bakioglu & Geyin, 2009). Researchers proclaimed that despite the efforts of educational reform and policy implementations for the past 20 years, dropout rates remain the same (Bowen et al., 2000; Woolley, 2010). Furthermore, disengagement from school that leads to poor attendance and dropping out of school often times begin in middle school. Still, few studies have been conducted to identify the effect of school size in middle schools or the impact that school size might have on subpopulations such as students labeled as Limited English Proficiency and students labeled as economically disadvantaged (Woolley, 2010).

Various ways exist to prevent students from dropping out of school and to increase attendance rates, and according to Fashola and Slavin (1998) the first way to improve dropout and attendance rates is to provide students with engaging experiences while at school with hopes to increase student satisfaction and ultimately affect school climate. According to Zullig, Huebner, and Patton (2011), school satisfaction, along with school climate, play a vital role in student success, and both are associated with dropout and attendance rates. Similarly, researchers (e.g., Sheldon, 2007) have documented relationships among academic success, student attendance rates, and delinquent behavior.

Balfanz, Herzog, and Iver-Mac (2007) acknowledged that students who attend school on a regular basis and behave are more likely to experience school success and stay on the path to graduation. High dropout rates and low attendance rates are indicative of poor school climate and although many factors can contribute to student satisfaction, the individual experience greatly influences school climate ratings (Schneider & Duran, 2010). McCollum and Yoder (2011) acknowledged that students are successful when the school environment is conducive to student growth and progress, and researchers should focus on ways to slow the decline in

academic performance among students in middle schools if student success is the ultimate goal.

To increase success, students should participate in school, for students with higher levels of school engagement are more prone to attend school, less likely to dropout, and more likely to reach graduation (Weiss et al., 2009). Students who are engaged in school contribute to a productive school climate, which positively relates to students success (Adeogun & Olisaemeka, 2011; Swanson, 2011). Furthermore, Riha (2011) affirmed that positive interactions, high expectations, and teacher support all contribute to feelings of connectedness—which is indicative of a positive school climate—and directly impacts student success as well. Though school size is not a direct predictor of student success, larger-size schools are associated with less student satisfaction, and growing middle school enrollment is associated with a decline in academic achievement (Riha, 2011). With this increase in enrollment, an increase in the percent of subpopulations, such as students labeled as Limited English Proficient and students labeled as economically disadvantaged, in Texas public schools has occurred as well (Riha, 2011). Ultimately, many variables influence student achievement, and though school size does not cause low-performing schools, through various factors, school size is indirectly related to student success (Slate & Jones, 2005).

Purpose of the Study

The purpose of this study was to determine the effect of school size on school climate through the analysis of dropout and attendance rates for students labeled as Limited English Proficient and for students labeled as economically disadvantaged in Texas middle schools. School size was the independent variable, whereas school climate as defined by attendance and dropout rates constituted the dependent variable.

Research Questions

The following research questions were addressed in this study: (a) What is the effect of school size on the dropout rate for students labeled as Limited English Proficient in Texas middle schools?; (b) What is the effect of school size on the dropout rate for students labeled as economically disadvantaged in Texas middle schools?; (c) What is the effect of school size on the attendance rate for students labeled as Limited English Proficient in Texas middle schools?; and (d) What is the effect of school size the attendance rate for students labeled as economically disadvantaged in Texas middle schools?

Method

Participants

Data were collected from all Texas public middle schools for the 2010-2011 school year. Addressed in the research questions were Texas middle school students (i.e., grades 7-8) who were labeled as Limited English Proficient and students labeled as economically disadvantaged. For this study, data were analyzed from 1,004 public middle schools. Because of the substantial differences between charter schools and traditional public schools, charter school data were eliminated for consideration in this study.

Dropout is defined on AEIS (2011) as a “student who is enrolled in public school in

Grades 7-12, does not return to public school the following fall, is not expelled, and does not graduate, receive a GED, continue school outside the public school system, begin college, or die” (Texas Education Agency, 2011). The Academic Excellence Indicator System (2011) defined economically disadvantaged students as the “sum of the students coded as eligible for free or reduced-price lunch or eligible for other public assistance, divided by the total number of students” (Texas Education Agency, 2011). In this study, a large-size school was defined as a campus having more than 900 students enrolled. A medium-size school was defined as a campus having between 500 and 859 students enrolled. A small-size school was defined as a campus having fewer than 499 students enrolled. Each definition was determined by performing frequency distributions of school enrollment (Riha, 2011).

The Academic Excellence Indicator System defined students designated as Limited English Proficient as those persons who are identified as such “by the Language Proficiency Assessment Committee (LPAC) according to criteria established in the Texas Administrative Code (Texas Education Agency, 2011).

Instrumentation

Archival data for Texas middle schools during the 2010-2011 school year were obtained by accessing and downloading datasets from the Academic Excellence Indicator System (AEIS) database on the Texas Education Agency (TEA) website. All data for middle school size, dropout rates, and attendance rates for students labeled as Limited English Proficient and students labeled as economically disadvantaged were downloaded. After accessing the pertinent datasets from AEIS, each file was uploaded to the Statistical Package for the Social Sciences-Version 20. Once uploaded, the middle school variable was recoded to depict three distinct school sizes of small, medium, and large based on the criteria stated below.

Results

To determine the normality of the dropout and attendance rates data for students designated as Limited English Proficient and for students determined to be economically disadvantaged, the standardized skewness coefficients (i.e., skewness divided by its standard error) and the standardized kurtosis coefficients (i.e., kurtosis divided by its standard error) were calculated (Onwuegbuzie & Daniel, 2003). For the first and second research questions, all of the standardized coefficients fell outside of the +/-3 range of normality. Four of the six standardized coefficients were outside of the range of normality for the third research question, and three of the six standardized coefficients were outside the range of normality for the fourth research question. Because the data were largely non-normal, a decision was made to use a nonparametric statistical procedure, in this case, the Kruskal-Wallis was used. For this investigation, the same statistical procedure was used on the same sample group twice; therefore, a Bonferroni adjustment was necessary and the alpha level was adjusted to .025 (i.e., $.05/2 = .025$) (Vogt, 2005).

The Kruskal-Wallis revealed a statistically significant result for the effect of school size on the dropout rate for students labeled as Limited English Proficient, $\chi^2 = 8.00, p = .018$. The effect size for this finding was trivial with Cramer’s V at .07 (Cohen, 1988). The nonparametric

followup independent *t*-tests, the Mann-Whitney *U*, was used as a post hoc procedure on the same sample group three times; therefore, a Bonferroni (Vogt, 2005) correction was necessary and the alpha level was adjusted to .017 (i.e., $.05/3 = .017$) (Vogt, 2005). The nonparametric independent *t*-tests revealed that small-size middle schools and large-size middle schools were the only pair of schools that were statistically significant different. Small-size middle schools had a higher dropout rate than did medium-size middle schools. Table 1 provides details regarding the descriptive statistics for the first research question.

For the effect of school size on the dropout rate for students labeled as economically disadvantaged, the Kruskal-Wallis revealed a statistically significant result, $\chi^2 = 50.71, p < .001$. The effect size for this finding was small with Cramer's *V* at .16 (Cohen, 1988). The nonparametric independent *t*-tests revealed that small-size middle schools and medium-size middle schools along with small-size middle schools and large size middle schools were statistically significantly different. Medium-size middle schools had the highest dropout rate. Table 1 provides details regarding the descriptive statistics for the second research question. The Kruskal-Wallis revealed a statistically significant result for the effect of school size on the attendance rate for students labeled as Limited English Proficient, $\chi^2 = 10.34, p = .006$. The effect size for this finding was trivial with Cramer's *V* at .08 (Cohen, 1988). Small-size middle schools and medium-size middle schools were the only pair of schools that were statistically significantly different. Medium-size middle schools had the lowest attendance rates. Table 2 provides details regarding the descriptive statistics for the third research question. For the effect of school size on the attendance rate for students labeled as economically disadvantaged, the Kruskal-Wallis revealed a statistically significant result, $\chi^2 = 24.16, p < .001$. The effect size for this finding was small with Cramer's *V* at .11 (Cohen, 1988). Small-size middle schools and medium-size middle schools along with medium-size middle schools and large-size middle schools were statistically significantly different. Medium-size middle had the lowest attendance rate. Table 2 provides details regarding the descriptive statistics for the fourth research question.

Discussion

In recent years, researchers (e.g., Riha, 2011) have conducted studies to determine the impact of school size on middle school students. In this investigation, we analyzed the impact of school size on middle school students who were either Limited English Proficient or economically disadvantaged. Results from this study confirm that dropout rates and attendance rates were related to school size for these subpopulations in Texas middle schools. Students labeled as Limited English Proficient or as economically disadvantaged had higher dropout rates and poorer attendance rates than did students labeled as Limited English Proficient or as economically disadvantaged who were enrolled in small-size middle schools or in large-size middle schools. Traditionally, researchers placed focus on small-size and large-size schools, and often do not analyze middle schools or medium-sized schools.

This study was limited to only Texas schools and data for students labeled as being at-risk was not available for the grade type analyzed; therefore, students labeled as Limited English Proficient and economically disadvantaged were the primary groups of focus. Even though these

limitations exist, the data indicate that it is worth investigating because if school sizes continue to grow then this difference will grow as well if it is not addressed. Furthermore, budgetary issues threaten the existence of many schools in Texas and school sizes continue to grow while dropout rates increase and attendance rates decrease. According to Texas Education Agency, in 2008-2009 the district tax revenue per Weighted Average Daily Attendance (WADA) was \$37.42 (TEA). Therefore, a large-size middle school could lose up to \$11,000 dollars, should even a third of their students not attend school regularly. If variances present today in dropout rates and attendance rates are not addressed, then it is likely that differences will be greater in the future. School funding is tied to dropout and attendance rates; therefore, a closer analysis of data is warranted if schools seek to stay afloat.

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Table 1

Descriptive Statistics for Dropout Rates for Texas Middle School Students Labeled as Limited English Proficient or as Economically Disadvantaged as a Function of School Size

Student Grouping and School Size Category	<i>n</i> of schools	<i>M</i>	<i>SD</i>
Limited English Proficient			
Small-Size	141	0.35	1.70
Medium-Size	295	0.29	0.95
Large-Size	326	0.29	0.88
Economically Disadvantaged			
Small-Size	338	0.12	0.58
Medium-Size	326	0.15	0.28
Large-Size	339	0.14	0.29

Table 2

Descriptive Statistics for Attendance Rates for Texas Middle School Students Labeled as Limited English Proficient or as Economically Disadvantaged as a Function of School Size

Student Grouping and School Size Category	<i>n</i> of schools	<i>M</i>	<i>SD</i>
Limited English Proficient			
Small-Size	162	96.06	2.39
Medium-Size	306	95.90	1.37
Large-Size	329	96.17	1.06
Economically Disadvantaged			
Small-Size	338	95.43	1.57
Medium-Size	326	95.12	1.10
Large-Size	339	95.54	0.95