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The Impact of Peer Mentoring on the Academic and Nonacademic Performance of High

School Students

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ABSTRACT

The Impact of Peer Mentoring on the Academic and Nonacademic Performance of

High School Student

In 2001, New Jersey initiated a freshmen peer-mentoring program to

create safer schools, improve transition, and improve achievement. The purpose

of this study was threefold: (a) to determine the impact of peer mentoring type on

the academic and the nonacademic performance of high school students; (b)to

determine further the differential effect two peer-mentoring programs; and (c) to

determine further the interaction between organization structure (schools with

peer mentoring and traditional schools without peer mentoring) and

socioeconomic status (SES).

For a 3- year period, the School Report Cards provided data of 7 student

performance indicators and school demographics of 102 New Jersey public high

schools. The schools were placed into types (peer mentoring schools either

Transition Project or Peer Group Connection and traditional schools) and matched

for socioeconomic status and student mobility rate. Academic indicators were

HSPA-Language Arts and –Math, graduation rate, and percentage of graduates

who planned to attend 4-year colleges. Nonacademic indicators were attendance,

suspension, and dropout rate.

Student outcomes in schools with the Transition Project were more positive than student outcomes of the other peer-mentoring program and students in traditional schools. One-way ANOVA analyses found no significant impact of peer mentoring type. Two-way analysis of the interaction between organizational type and SES level was significant ($p \leq 0.05$) for the dropout rate of students. Peer mentoring programs were shown to influence positively the student dropout rate, irrespective of schools' socioeconomic status.

Recommendations for school administrators were (a) to consider peer mentoring as a positive strategy to create safer schools and improve school climate, (b) to provide ongoing monitoring of the program to mitigate agency problems (c) to assess the program's alignment to broader school goals, and (d) to use these same student indicators to evaluate the impact more longitudinally. Recommendations for researchers and principals were to include a tool to measure student sense of belonging and add other qualitative components in a case study.

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If a mountain won't move, build a road around it.

If the road won't turn, change your path.

If you are unable to change your path,

Just transform your mind.

I posted this message on the wall of my study and office at work. The words allowed me to find my way to complete my dissertation. The message will always be with me. From hence forth, I will post it and share it. Dr. Walker is with me for the rest of my life.

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DEDICATION

Maintain the Universal Flow

This dissertation is dedicated to the teachers who made a difference in my life. They all gave me knowledge and skills, but more importantly, each encouraged me to explore tangential areas of educational interests. Those educational adventures often took me beyond the confining ways of learning in a typical classroom. These teachers opened a door to my own teaching and educational career, as well as to an array of interests. I hope that as I proceed along my way I maintain the universal flow with students in the next generation.

My teachers from Morgantown, West Virginia:

Mrs. Shanks, Grade 3

Miss Davies, Grade 5

Mrs. Tomasky, Junior High Art

Mrs. Sisler, Junior High Physical Education

Mrs. Rockenstein, English Grade 9 and Homeroom

Mrs. Southern, Science Grade 9

Mrs. Allamong, Biology Grade 10

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CHAPTER I

INTRODUCTION

Background

Improving high schools is a complicated, demanding task that begins with establishing goals and developing a clear mission. State responses to the federal No Child Left Behind (NCLB) Act resulted in a hodgepodge of varied rules and regulations. A review of these responses ascertains that states and schools have focused on specific strategies that target accountability measures (Gordon, 2007; Lewis, 2004).

States and policy makers have become aware of the increased importance of obtaining a high school degree for entry into postsecondary education or the labor market. The current wave of school restructuring, with its attempt to reform schools based on the perceived needs of the information/technology age, has reinforced existing school practices and values rather than substantively transforming schools. Much like past educational initiatives that were designed to meet industrial needs, current educational initiatives have been designed to meet the functional needs of our society's emerging commercial interests (Goodman, 1995; Rury, 2002).

Public education prepares youth to become part of our nation's future workforce. Our schools need to prepare students to compete within a global, technological economy (Friedman, 2005; Gordon, 2007). However, international assessments of mathematics and science education reveal that U.S. students often rank lower than expected when compared to similar students in other leading countries (Howie & Plomp, 2005; Organisation for Economic Co-operation and Development [OECD], 2006; Third

International Mathematics and Science Study [TIMSS], 2003). The test scores of American high school students have been decreasing over the years; in the 1980s, students were not performing as well as they had been in the 1960s (National Commission on Excellence in Education, 1983).

In 1983, the demand for more academic rigor for all high school students became much stronger when the National Commission on Excellence in Education, an organization composed of educational and business leaders, released its report *A Nation at Risk.* The report presented a broad goal of promoting rigor, excellence, and equity through advanced recommendations that change the structure of schools to fight against a rising tide of mediocrity. The recommendations called for an increase in the number of years of core courses for graduation, the use of measurable standards, higher expectations for academic performance and student conduct, more time devoted to the basics, and a more effective use of the school day and year.

As a result, states have seriously taken the demand to raise the bar of expectations and performance for high schools. By 1990, 42 states had increased course requirements for high school graduation and 47 states had mandated student-testing standards (National Center for Education Statistics [NCES], 2000). The NCLB introduced mandatory reporting and accountability of student and school performance (Raymond & Hanushek, 2003). By the spring of 2002, approximately 70% of high school students in 25 states had taken at least one competency examination and 19 states had mandated exit exams (U.S. Department of Education, 2004). These exams opened the way for states to review annual progress and compare student performance by school and district.

Policy makers have historically sought ways to identify and improve student performance and researchers have historically studied school effectiveness to understand why some schools are more effective than are others. Central to both concerns is determining how to measure the effectiveness of schools (Rumberger & Thomas, 2000). Test scores, not students, have become the product of schools (Goodman, 1995). High schools offer many incentives to students who already buy into the system and have a clear idea about what they want to do with their lives. However, students without skills, social capital, or clear plans are at a disadvantage unless high schools consider reforms that include more student-focused practices, emphasize personalized environments, and forward an academic press and academic optimism (Hoy, Tarter, & Hoy, 2006; Lewis, 2004; National Association of Secondary School Principals [NASSP], 2004).

Annual high school reports that have presented increases in student and school performance have boasted of their students' success. The U.S. Department of Education reported that the average national freshman graduation rate for public school students increased from 71.7% for the class of 2000-2001 to 73.9% for the class of 2002-2003. Additionally, the dropout rate for ages 16 to 24 has declined since 1973 (NCES, 2006). The good news is the positive trend of these measures. It is easy to focus on positive statistics when evaluating the effectiveness of public schools, but a more careful look will show that unless high schools initiate programs such as peer mentoring to increase student sense of belonging, improving student and school performance will remain a challenge in public education.

Equally telling measures of school effectiveness are the characteristics of the students who drop out of a particular high school (Rumberger & Thomas, 2000). A

national survey of dropouts revealed that they had career aspirations that required education beyond high school and that a majority had grades of C or better. However, circumstances in the students' lives and inadequate responses to these circumstances by schools led these students to drop out. There was no single reason why students dropout. Respondents reported the following reasons for their lack of connection to school environment: a perception that school is boring (47%); feeling unmotivated (69%); academic challenges (35%) failing, 45% poorly prepared, and 32%) repeating a grade); and the weight of real world events (32% had to get a job, 26% became a parent, and 22% had to care for a family member). Based on their research, Bridgeland, Dilulio, and Morison (2006) concluded that the high school dropout rate is an American epidemic:

> Each year, almost one third of all public high school students—and nearly one half of all blacks, Hispanics and Native Americans—fail to graduate with their class. . . . The decision to dropout out is a dangerous one for the student. Dropouts are much more likely than their peers who graduate to be unemployed, living in poverty, receiving public assistance, in prison, on death row, unhealthy, divorced, and single parents with children who drop out from high school themselves. (p. i)

Most dropouts blame themselves for their school failures. By sharing the blame and implementing certain strategies, school can help keep these students in school. Early signs of students at risk for dropping out are truancy, disciplinary problems, being held back one or more grades, transferring schools, and poor grades (Bridgeland et al., 2006; Rumberger, 2001). The decision to drop out is part of a gradual process that draws on a complex web of experiences (Lee & Burkham, 2003). Scholars suggest that the act of

dropping out is promoted by school practices that tend to discharge students (Riehl & Sipple, 1996). Developments in high school organization, such as larger school size, increasing specialization of staff, and diversification of curriculum, also contribute to student alienation. The tendency to drop out is further increased by weak normative environments where little effort is expended to enhance human engagement (Bryk & Thum, 1989; Riehl, 1999). The dropout rate has thus become a key measure of school effectiveness, and similar to achievement, is influenced by both individual and school characteristics (Rumberger & Thomas, 2000).

One assumption behind high school reform is that schools promote effectiveness through policies and practices that challenge the traditional model of school organization to make schools more interesting and responsive to student needs. A promising strategy is one that addresses the need to promote student sense of belonging through the structure of peer mentoring (Bridgeland et al., 2006). High schools have experimented with personalized, supportive contexts for academic achievement through the development of connections (Institute of Medicine [IOM], 2004). Peer mentoring takes advantage of the small age difference between adolescents and their shared experiences. Schools benefit by enhanced peer relations and improved social behaviors. Moreover, both mentors and mentees accrue academic and social benefits (Kalkowski, 1995; Karcher & Lindwall, 2003). Mentoring has the capacity to add meaning to learning beyond the normal school environment and promote opportunities for students to form bonding relationships. Mentoring is among the top four strategies aimed at preventing dropping out of school. (Schargel & Smink, 2001).

High schools continue to fail where they have always failed. Many schools fail to serve poor, minority, and urban students and continue to have students with low expectations due to a lack of academic and social preparedness, parental guidance, and interest in traditional educational environments (Schargel & Smink, 2001). A definite academic need exists for students from low socioeconomic status (SES), special education, and minority populations (Ferguson, 2003; McGee, 2004; NCES, 2006; North Central Regional Educational Laboratory [NCREL], 2004).

Research has revealed another discrepancy in performance. In October 1998, urban high schools had dropout rates that ranged from 19% to 47% (Rumberger, 2001; Rumberger & Parlardy, 2002). Such data support the contention that student characteristics and the environment are the major determinants of whether students achieve and remain in school. However, the nature of high school influences achievement. Beyond ethnicity, poverty, and setting, some high schools underserve students both academically and socially (Rumberger, 2001).

In October 1998, nearly 5 out of every 100 young adults enrolled in high school in October 1997 left without completing a high school program. These dropouts accounted for approximately 500,000 of the 10 million 15- to 24-year olds who had been enrolled in high school the previous October. In 1998, there were 3.9 million 16- to 24-year olds not enrolled in school who had not completed a high school program (NCES, 2000). Declining test scores spurred national policy to reduce the number of dropouts and increase both the number of high school graduates and the number of these graduates who pursue postsecondary education (Lee & Burkam, 2003; NCES, 2000).

In addition to the dropout rate itself, the characteristics of dropouts have caused concern. Studies have linked a number of factors to the risk of dropping out of school, including coming from a single-parent family and/or the inner city, poverty, minority status, and limited English proficiency. However, in a national survey of high school dropouts, over half reported that they had none of these risk factors. A national profile of sophomore dropouts described 66% as White, 87% as coming from a home where English was spoken, 68% coming from a two-parent family, 42% having attended suburban schools, 60% having a C average or better, and 71% having never repeated a grade (Schargle & Smink, 2001). This profile of dropouts reinforces a need to better understand why students leave school and how schools can keep students from leaving.

High school reform runs the gamut from making curricular changes, establishing standards, requiring high-stakes testing, increasing parental and community involvement, and attracting and retaining highly qualified teachers. However, these responses have made little if any difference in the ability to close the achievement gap or impact dropout and graduation rates because they pay too little attention to the nature of adolescents (McGee, 2004). Data gathered from national student surveys indicated that as many as 40% to 60% of high school students, regardless of whether the school setting is urban, suburban, or rural, became chronically disengaged and simply "go through the motions" of attending school. Rejected students have no sense of belonging or engagement (Klem & Connell, 2004; Meloro, 2005). Attention to adolescent development, particularly the need for belonging and the social basis for learning, has emerged as a key component in improving achievement. Students form emotional attachments to and internalize attitudes, values, and the ways of adults and the institutions around them. The primary task of

schools is to provide positive relationships and a sense of belonging that lead to comfort, confidence, and motivation to learn (Deci & Ryan, 2000; Comer, 2005). Students with little sense of belonging tend to have behavioral problems and lower interest and achievement, leading them to drop out of school (Anderman, 2003; Certo, Cauley, & Chafin, 2003; Goodenow, 1993).

Schools with peer mentoring programs have been found to create positive associations, support a positive school climate, reduce measures of aggression and victimization, improve attendance rates, reduce the risk of freshmen failing more than one course, and reduce the dropout rate (Karcher, 2005; Karcher & Lindwall, 2003; Phelan, Davidson, & Yu, 1998; Stader & Gagnepain, 2000).

One peer-mentoring program, the Transition Project (TP), became a state of New Jersey initiative in 2001. The initiative had two goals: to make schools safe by responding to changing demographics and societal shifts and improve student performance (Division of Student Services, 2006). Annual reports have heralded New Jersey's student and school achievement. In 2006, New Jersey led the nation with an 87% graduation rate and a 1.8% dropout rate. In terms of preparedness for college, New Jersey is one of the top states due to its offering of Advanced Placement (AP) courses. Its schools have the greatest percentage of students enrolled in AP courses and its students earn the highest average AP exam scores (NCES, 2006; New Jersey Educational Association, 2006).

Despite these encouraging outcomes, the New Jersey Secondary School Report Cards show disparity among the state's public high schools (New Jersey Department of Education, 2007). Part of this disparity relates to school districts' index of SES. The

Department of Education uses an index known as the District Factor Group (DFG), which ranges from A, the lowest status, to I, the highest status. A preliminary review of 2005-2006 academic year data of low-SES schools, represented by letters of A to CD, shows the following student performance: (a) a 30.4% graduation rate, (b) a 86.2% attendance rate, (c) a 56.5% suspension rate, (d) a 15.4% dropout rate, (e) a 16.5% student passing rate on the High School Proficiency Assessment for math (HSPA-Math), and (f) a 47.5% student passing rate on the High School Proficiency Assessment for language arts (HSPA-LA). In addition, 22.1% of graduates indicated that they planned to attend 4-year colleges. The indicators used to assess school performance were used as indicators in this study (see Table 1).

Table 1

New Jersey State Averages for the 2005-2006 School Year

Indicator	State average (%)	Range (%)
HSPA-LA passing rate	83.5	43.3–96.9
HSPA-Math passing rate	75.9	16.5–99.93
Graduation rate	93.2	56.8–100
Planned to attend 4-year colleges	40.3	17.2–100
Attendance rate	94.5	81.9–99.1
Suspension rate	14.0	0.2–56.5
Dropout rate	1.8	0.0–15.0

(New Jersey Department of Education, 2007).

New Jersey has 335 public high schools, many of which state agencies have stated require improvement. In 2001, the New Jersey Department of Education implemented the TP, a peer-mentoring program, to enhance student sense of belonging and increase school membership through structuring relationships between 9th-grade students and upper-class mentors (Division of Student Services, 2006). The program targeted student transition from middle school to the ninth grade. As part of the Safe Schools Initiative, the New Jersey Department of Education sponsored the modification and implementation of the Peer Group Connection (PGC), a peer-mentoring program that had already been implemented. The TP is thus a modification of the PGC, both of which had been

designed by the Princeton Center of Leadership Training (PCLT). The PGC program provides senior leaders with skill development, group-dynamics training, and leadership training to facilitate group activities for 9th-grade students placed in groups of 10 to 15 integrated by gender, ethnicity, and feeder schools. Senior leaders meet daily for at least 45 minutes with a staff advisor trained by the PCL and attend a kick-off retreat with their advisors. From September to May, senior coleaders facilitate weekly, one-hour activities that help 9th-grade students examine their values and how these values affect their relationships with others (A. S. DeGraff, personal communication, April 17, 2006).

The second type of peer mentoring is represented by the TP, which is sponsored by New Jersey state agencies as part of the Safe Schools initiative. The TP requires fewer meetings between upper-class leaders and advisors but requires that students hold monthly peer-group meetings. Senior leaders have a kick-off retreat with advisors for training and the coleaders continue training with an advisor after school. Upper-class leaders provide a series of activities to examine adolescent issues, both academic and social, that impede the achievement of 9th-grade students (A. S. DeGraff, personal communication, April 17, 2006).

Peer-mentoring programs require schools to balance the loss of instructional time with the need for time to train peer mentors and for peer-mentoring groups to meet. School practices tend to discourage the loss of instructional time, and many schools are cautious about the loss of time for what they view as nonacademic purposes (Kubitschek, Hallinan, Arnett, & Galipeas, 2005). The report *Prisoners of Time* suggested that the concept of "instructional time" may be flawed and schools could be better served with a focus on learning (National Education Commission, 1994). Studies of schools that had

changed their structures noted that improvement in student achievement depended upon a fundamental change in time and a focus on improved relationships (Carroll, 1994).

The TP requires less loss of instructional than does the PGC. Both programs have six core learning objectives for freshmen: (a) help them examine their own values and how their values affect relationships with others; (b) help them identify and appreciate the roles and responsibilities that they have at school and home; (c) help them become aware of and sensitive to problems experienced by young people today and promote healthy emotional, physical, and social habits; (d) help them improve their communication skills, including the ability to express themselves clearly and listen attentively; (e) help them become more accepting of others and respectful of differences to decrease disrespect and stereotypes; and (f) help them increase self-confidence and self-worth. The last objective, which is contingent upon the first five objectives, was characterized as the most important (A. S. DeGraff, personal communication, April 17, 2006).

Regardless of a peer group's ultimate goal, peer-group effectiveness depends on three factors: the amount of time available, the way in which the group provides identity for its members, and the strength of the peer-group network (Ma, Shek, Cheung, & Tan, 2002). Purposeful peer groups can promote students' sense of belonging and provide optimal opportunities for prosocial behaviors. Programs that enhance prosocial skills tend to enhance academic success (McEvoy & Welker, 2000). Peer-mentoring programs may limit the influence of informal peer groups that serve as training grounds for antisocial developmental acts (Ladd, 1999). By integrating students from different social and

academic backgrounds, schools promote an ideology of academic achievement and a practice of supporting and motivating one another to succeed (Sallee & Tierney, 2007).

Schools implementing peer-mentoring programs seek to accommodate the social and cognitive needs of freshmen transitioning into high schools and improve the school climate for greater achievement. Peer mentoring helps minimize students' perceptions that a set number of social options define them and broadens support for individual students and academic values (Meloro, 2005). Ninth-grade students gain resiliency when peer groups provide the opportunity for students to share their opinions. Students' sense of belonging is positively associated with their expectancy of success and belief in the intrinsic value of school (Deci & Ryan, 2000; Goodenow, 1993). Peer-mentoring connections establish a sense of school membership. Peer leaders, who represent students connected to their high school, serve as tangible evidence that 9th- grade students can navigate their way socially and academically to experience successful high school careers that could include postsecondary academic plans (A. S. DeGraff, personal communication, April 17, 2006).

In a case study of peer mentoring for at-risk high school students, Pitts (2006) found that a limited number of meetings between mentors and mentees led to positive results in both social and academic areas. Qualitative analysis of student surveys found that there was no need for more meetings with their mentors, leading Pitts to conclude that a limited number of meetings could produce effective peer mentoring.

This study extends the previous research to investigate the impact of the type of peer mentoring on student performance. The nonacademic indicators of attendance rate, suspension rate, and dropout rate measure student sense of belonging. HSPA-LA and

HSPA-Math passing rates, graduation rate, and the percentage of graduates who planned to attend 4-year colleges indicate academic performance.

The Problem

Too many students are leaving high schools without graduating or graduating unprepared for the workforce or postsecondary education. Student performance relates to engagement, which in turn relates to motivation. A transitional peer-mentoring model in schools helps promote a sense of belonging among students. Students who are engaged in school tend to be motivated to attend classes, learn, graduate, and chart a path for the future (Kearsley, 1994; McLean, 2004; Stader & Gagnepain, 2000).

A number of New Jersey public high schools use one of two types of peer mentoring to personalize schools and strengthen student engagement. In 2001, the state of New Jersey sponsored the Transition Project (TP), a scaled-down version of the Peer Group Connection (PGC) program that schools had implemented in the late 1980s and 1990s. This study examined how peer mentoring promotes students' sense of belonging beginning in the transitional year of ninth grade and how their sense of belonging affects their aggregate academic and nonacademic performance.

The Purpose

The purpose of this study was to determine the effect of peer mentoring on the academic and nonacademic performance of high school students. Students acclimatize to high school in the ninth grade. The connection of 9th-grade students to their school and feeling of a sense of belonging in the school are expected to improve with the implementation of a peer-mentoring program. If students have a strong sense of

belonging, they are likely to be engaged at school. In this study, the measures analyzed to determine sense of belonging were the attendance, suspension, and attendance rates.

Schools with peer mentoring programs are expected to promote student engagement and improve academic performance. The academic indicators assessed in this study were HSPA-LA and HSPA-Math passing rates, graduation rate, and percentage of graduates who planned to attend 4-year colleges. If students have a strong sense of belonging, then a positive or significant relationship between the independent variable, the type of mentoring program, and the dependent variables of student performance would be found. The academic achievement of students in schools with a peer-mentoring program was expected to be more positive than that of students in schools without a peer-mentoring program, which were termed *traditional schools* in this study.

The primary purpose of researching peer-mentoring programs was to gauge their significance in improving student academic performance. The secondary purpose was to study the effectiveness of peer mentoring as a strategy to improve high school climate and enhance school connectedness.

Research Questions and Null Hypotheses

The central focus of the study was to determine to what extent, if any, peer mentoring impacts student performance. Three main research questions, each of which had seven null hypotheses related to one of the dependent variables, were addressed. The first research question addressed the impact of peer mentoring on academic and nonacademic student performance. The basic hypothesis was that students in schools that offer peer mentoring (peer-mentoring schools) perform no differently than do students in

schools that do not offer peer mentoring (traditional schools). Each null hypothesis related to one of the measures of student performance.

$H_0 1$: There is no difference between the HSPA-LA passing rates of students in peer-mentoring schools and students in traditional schools.

$H_0 2$: There is no difference between the HSPA-Math passing rates of students in peer-mentoring schools and students in traditional schools.

$H_0 3$: There is no difference between the graduation rates of students in peer-mentoring schools and students in traditional schools.

$H_0 4$: There is no difference between the percentages of graduates who planned to attend 4-year colleges of students in peer-mentoring schools and students in traditional schools.

$H_0 5$: There is no difference between the attendance rates of students in peer-mentoring schools and students in traditional schools.

$H_0 6$: There is no difference between the suspension rates of students in peer-mentoring schools and students in traditional schools.

$H_0 7$: There is no difference between the dropout rates of students in peer-mentoring schools and students in traditional schools.

The second research question addressed the differential effects of the TP and PGC programs on academic and nonacademic student performance. The basic hypothesis was that students in schools offering the TP program (TP schools) perform no differently than do students in schools offering the PGC program (PGC schools). Each null hypothesis related to one of the measures of student performances

H_08: There is no difference between the HSPA-LA passing rates of students in TP schools and students in PGC schools.

H_09: There is no difference in the HSPA-Math passing rates of students in TP schools and students in PGC schools.

H_010: There is no difference in the graduation rates of students in TP schools and students in PGC schools.

H_011: There is no difference in the percentages of graduates who planned to attend 4-year colleges of students of students in TP schools and students in PGC schools.

H_012: There is no difference in the student attendance rates of students in TP schools and students in PGC schools.

H_013: There is no difference in the student suspension rates of students in TP schools and students in PGC schools.

H_014: There is no difference in the student dropout rates of students in TP schools and students in PGC schools.

The third research question addressed how the interaction between the type of peer-mentoring program and socioeconomic status (SES) influenced the academic and nonacademic performance of high school students. The basic hypothesis was there is no significant interaction between the type of peer-mentoring program and SES on student performance. Each null hypothesis related to one of the measures of student performance.

H_015: There is no difference in the interaction between organizational structure and SES on the HSPA-LA passing rate.

H_016: There is no difference in the interaction between organizational structure and SES on the HSPA-Math passing rate.

H_017: There is no difference in the interaction between organizational structure and SES on student graduation rate.

H_018: There is no difference in the interaction between organizational structure and SES on the percentage of graduates who planned to attend 4-year colleges.

H_019: There is no difference in the interaction between organizational structure and SES on student attendance rate.

H_020: There is no difference in the interaction between organizational structure and SES on student suspension rate.

H_021: There is no difference in the interaction between organizational structure and SES on student dropout rate.

<div align="center">Delimitations and Limitations of the Study</div>

The study was limited to a 3-year period between the 2003-2004 and 2005-2006 school years. Two state of New Jersey initiatives were relevant to this study. One initiative, the TP, was implemented progressively starting in 2001. The second initiative, the administration of the HSPA, a more rigorous test aligned with revised Core Curriculum Content Standards, began in 2002 (New Jersey Department of Education, 2007b). This study analyzed student and school report card data that had been defined and collected by the New Jersey State Department of Education since the 2002-2003 school year. The definitions and standard calculations of data, although limited, added strength to the measures reported for students in 102 different high schools. In 2006, the juniors sitting for the HSPA exams had been in ninth grade in 2003. The statistical analysis of the impact of peer mentoring on student performance used only report card data from the 2005-2006 year.

Other school factors, including setting, demographics, or other school programs such as sports or tutorials, may influence student sense of belonging and academic performance. These factors and programs were excluded in this study. The schools studied had specifically implemented the TP or PGC program for at least 3 years. These two programs share a core set of objectives and activities designed by the PCLT staff with regard to the value of peer mentoring in the student transition to high school and the building of a sense of belonging in school. Advisors trained by PCLT follow a program based on established objectives and activities performed within an established period. In response to local goals and needs, implementation of the programs may deviate from the prescribed times and activities to achieve social and academic objectives. The fidelity with which schools implement the program and abide by the prescribed guidance lies beyond the control of the PCLT and this study.

This study compared the performance of students in peer-mentoring schools with that of students in traditional schools. In order to study more exclusively the impact of peer mentoring on student performance, TP schools were matched for DFG status and student mobility rate to PGC and traditional schools.

Significance of the Study

This study has significance to high school administrators, curriculum leaders, teachers, guidance personnel, school board members, and parents interested in the academic and social value of peer-mentoring relationships and personalization to improve school connectedness and achievement. This study shed light upon one strategy intended to transform high schools into schools that work for students. The U.S. Department of Education, which promotes and awards grants aimed at narrowing the achievement gap,

may be interested in identifying common features of student peer-mentoring programs to share with high schools tackling the achievement gap and improving academic achievement.

This study examines the effectiveness of two types of peer-mentoring programs that share similar goals, objective, and activities. School board members and administrators may find it useful to use this study to compare the needs of their students and schools to the programs to better judge the cost effectiveness and efficiency of each type of peer-mentoring program and the impact of peer mentoring on student performance. The measures used in this study, which have been standardized by the data fields of the New Jersey State Report Card, are readily available. This study establishes a methodology for districts to use for action research. In addition, if peer mentoring works to improve student performance in New Jersey, its implications can be applied to high schools within and beyond New Jersey.

Conceptual Frameworks

This study has four conceptual frameworks. One framework is the challenge of academic transition when students move from a middle school to a high school setting. Research has identified the ninth grade as a key valve in the education pipeline. The current climate of school and accountability requirements suggests that some schools may have to provide additional support to 9th-grade students (Abrams & Haney, 2004). Contributing to the 9th-grade transition challenge is the large, bureaucratic nature of high schools that offers little support for students experiencing the landscape of departmental schedules, teacher-centered instruction, and course and graduation requirements. Most vulnerable are students with weak academic preparation (Black, 2004; Kerr & Legters,

2004). Over 40% of 9th-grade students, even those with adequate skills, receive a grade of F in a major subject. Successful academic transition into high school increases the likelihood that students will graduate (Alspaugh, 1998).

The second framework encompasses the nature of adolescent development, including the role of peers, diminishing influence of adults, and student sense of belonging. At this stage of development, adolescents tend to be wary of adults. Among adolescent groups, peers provide nine times more reinforcement than do adults (Brendtro, Mitchell, & McCall, 2007). Peer influence may be positive negative. One characterization of peer mentoring in high schools is that it is the antidote to the negative power of peer groups. Peer mentoring provides a series of activities that examine adolescent issues, both academic and social, that impede 9th-grade student performance. The large, bureaucratic nature of some high schools does little to promote learning, trust and caring. Peer mentoring programs integrated into high schools help establish healthier, more productive relationships among students (Stader & Gagnepain, 2000). Student transition to high school is associated with a loss of self-esteem and self-perception (Alspaugh, 1998; Seidman, Aber, Mitchell, & Feinman, 1994). Research has found that some schools that implemented peer mentoring experienced improved school climate, social relations, shared values, and student self-esteem (Kalkowski, 1995; Stader & Gagnepain, 2000). Among varying demographic backgrounds, peer mentoring favorably affects youths and eases their transition into secondary schools (Dubois, Holloway, Valentine & Cooper, 2002).

The third framework relates to human motivation based on Maslow's (1968) theory of the hierarchy of needs. Individuals are ready to act upon their growth needs if

and only if their deficiency needs have been met. Students need to achieve a sense of belonging before addressing their need for self-esteem. In the 1990s, Lowery expanded the level of growth needs prior to the final level of self-actualization. The expansion included the needs to know, understand, and explore. These growth needs fall into the realm of education (Maslow & Lowery, 1998). Hence, adolescent learners with a sense of belonging to a school are more likely to achieve academic success. The second and third frameworks share the common ground of the sense of belonging. Peer mentoring fosters student sense of belonging.

The fourth framework is the effect of SES on students and schools. This framework places school districts in a hierarchy of needs that parallels the hierarchy of individual needs. After controlling for SES factors, the properties of schools have been difficult to relate to student achievement (Hoy, Tarter, & Hoy, 2006). The relationship between a locality's SES and its academic performance is typified by Bracey's (2002, p.148) phrase that "poverty is a condition like gravity: gravity affects everything we do." Disadvantaged minorities, especially African Americans and Hispanics, often have difficulty achieving in high school. Consequently, low SES minority students who do not achieve in high school are more likely to be marginalized from future work and social structures (Carnoy, 2005).

These four frameworks in the context of the impact of peer mentoring on student performance are further explored in the literature review.

Definition of Terms

Achievement gap: For the purpose of this study, the achievement gap refers to the under representation of minority students (African Americans, Hispanics, and Native Americans) and low-SES students among high-achieving students in academic performance (North Central Regional Educational Laboratory, 2004).

District factor group: For the purpose of this study, the district factor group (DFG) is an index of SES status created by the state of New Jersey that uses data from the seven following indicators obtained in the decennial Census of Population: (a) percentage of the population without a high school diploma, (b) percentage of the population with some college, (c) occupation, (d) population density, (e) income, (f) unemployment, and (g) poverty. The DFG statuses range from A, the lowest level, to I, the highest level (New Jersey Department of Education, 2006).

Dropout rate: For the purpose of this study, the dropout rate is the percentage of students within various subgroups who left school before graduating between Grades 9 and 12. The percentage is calculated by dividing the number of students in Grades 9 through 12 who dropped out of school during the period of July to June each school year by the October enrollment reported for Grades 9 through 12 (New Jersey Department of Education, 2006).

Exit exam: For the purpose of this study, an exit exam is a test or series of tests that students must pass to receive a high school diploma even if they have completed the necessary coursework with satisfactory grades (Center for Education Policy, 2005).

Graduation rate: For the purpose of this study, the graduation rate is calculated by the formula contained in the approved Accountability Workbook for New Jersey that

is required by the NCLB. Based on the National Center for Education Statistics' definition, this calculation provides an estimate for the cohort of students that began high school 4 years ago. The calculation's formula is:

(number of school year graduates + the summer graduates following the senior year) /(school year + summer graduates + number of grade 9 dropouts four years prior + number of grade 10 dropouts three years prior + number of grade 11 dropouts two years prior + number of grade 12 dropouts for the report card year). The product is multiplied by 100 to obtain the graduation rate (New Jersey State Department of Education, 2005).

Graduation rate (national context): For the purpose of this study, the graduation rate is the percentage of students who graduate from secondary schools with a regular diploma in the standard number of years (Swanson, 2003).

High School Proficiency Assessment: For the purpose of this study, the High School Proficiency Assessment (HSPA) is the New Jersey high-stakes exit exams in Language Arts and Mathematics. Eleventh graders must score at least 200 to be to receive a high school diploma. The scores are scaled from 100 to 199 (*partially proficient*), 200 to 249 (*proficient*), and 250 to 300 (*advanced proficient*; New Jersey State Department of Education, 2005).

New Jersey School Report Card: The annual New Jersey School Report Card is required under a 1995 state law. It presents 35 fields of information for each school in the following categories: school environment, students, student performance indicators, staff, and district finances (New Jersey Department of Education, 2007b).

Ninth-grade bulge: A sharp increase in the number of students enrolled in Grade 9, indicating that many students have been held back to repeat Grade 9 (Abrams & Haney, 2004).

Peer-mentoring program: This study analyzes the Peer Group Connection (PGC) program and Transition Project (TP) developed by the Princeton Center of Leadership Training (PCLT).

Student engagement: For the purpose of this study, student engagement is a student's psychological investment in learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote (Newmann, 1992, as cited in IOM, 2004).

Student mobility rate: For the purpose of this study, student mobility rate is the percentage of students who both entered and left during the school year. The rate is calculated by dividing the sum of the students entering and leaving after the October enrollment count by the total enrollment (New Jersey State Department of Education, 2005).

Student sense of belonging: For the purpose of this study, student sense of belonging is the extent to which students feel personally accepted, respected, included, and supported within the school social environment. Students with a strong sense of belonging tend to have a positive attitude toward school, teachers, and peers (Certo et al., 2003). Student sense of belonging measures are the attendance, suspension, and dropout rates.

Student suspension rate: For the purpose of this study, student suspension rate is the percentage of students suspended at least once during the school year. Students

suspended more than one time are only counted once. The percentage is calculated by dividing the total number suspended by the total student enrollment (New Jersey State Department of Education, 2005).

Traditional high school: For the purpose of this study, a traditional high school is a New Jersey public high school teaching Grades 9 to 12 that does not offer either the PGC or TP program.

Transition year: For the purpose of this study, the transition year is the first year of high school in a new physical setting, generally when students leave middle school and enter high school as ninth graders. In New Jersey, this is the year in which middle school students in eighth grade move to the high school as ninth graders.

CHAPTER II

RESEARCH AND LITERATURE REVIEW

This chapter provides a review of relevant research and theory. Each section

contributes information regarding the problem, research questions, and findings of the

study. A brief history helps explains the factors behind high school reform. Relevant

studies and theories are connected to the four frameworks of the (a) challenge of the

transition to high school, (b) nature of adolescent development, (c) theories of social and

cognitive needs, and (d) role of SES factors. The research supports the selection of

measures, their interpretations, and the implications of the study. Evidence of improved

student performance is viewed in the context of minimizing barriers to schooling. Finally,

the strategy of peer mentoring relates to minimizing student barriers upon entering high

school, enhancing student sense of belonging, improving academic and nonacademic

performance, and improving school climate.

High School Reform

The 1983 report *A Nation at Risk* recommended implementing specific

graduation requirements that increased the number and rigor of academic courses and

measurable standards, set higher expectations for academic performance and student

conduct, increased the time devoted to the basics, and made more effective use of the

school day and year (National Commission on Excellence in Education, 1983). In

response, states upgraded their graduation requirements. However, over the next 2

decades, student achievement in high school language arts, mathematics, and science

exams has remained stagnant; the test scores of minority students have continued to lag behind those of White students; and American students have made little progress toward closing the international achievement gap (U.S. Department of Education, 2003).

The enactment of the NCLB was accompanied by strong public support for the notion of accountability. This legislation was designed to improve schools by measuring the performance of students and schools through standards-based assessments (Hess, 2006; U.S. Department of Education, 2006). By 2002, approximately 70% of students in 24 states had taken at least one minimum competency exam related to graduation (U.S. Department of Education, 2003). These exams have become state measures of student and school effectiveness. With established measures of student performance, researchers can study which factors contribute to student performance.

Researchers have generally taken one of two perspectives regarding the understanding and improvement of low student performance. One viewpoint stresses that the organization and nature of high school heavily influences student performance. In October of 2003, the Office of Vocational and Adult Education (OVAE) kicked off a high school initiative by hosting a leadership summit in Washington, D.C. At the High School Leadership Summit, the gap between student aspiration and preparation was described by the following statement:

> More than 97 percent of youth say they aspire to participate in some sort of postsecondary education, and 63 percent enroll. Yet, little more than half actually take a mix of academic classes in high school that will prepare them for success either in college or today's workplace. The courses they do take often fail to maintain their interest in school at all (U.S. Department of Education, 2002, p. 1).

A second viewpoint holds that a variety of student characteristics heavily influences student performance. Several researchers have consistently found that SES, academic preparedness, mobility, and family structure are powerful predictors of student achievement and dropout behavior (Bryk & Thum, 1989; O'Brien & Ó Fathaigh, 2004; Rumberger, 2001).

Reforming high schools involves more than increasing test scores and adding requirements. It requires dealing with rising violence, teenage suicide and pregnancy rates, and family dysfunction. The crisis in education goes to the problem of relationships within the schools (Frymier & Gansneder, 1989). Fundamental flaws within schools lead to student lack of trust, understanding, respect, and personal connections. Students become alienated and disengaged from school. Accordingly, school reform should focus on the social fabric that knits schools into caring communities (Baker & Bridger, 1997). The wave of reform has shifted focus to the nature of schooling. At the foundation has been a cultural change based on relationships. Relational approaches envision schools as caring communities and promote improving schooling by attending to the social context in which academic learning transpires (Fullan, 2001; Sergiovanni, 1994).

Student Performance Related to the Nature of High School

The structure of a high school, including its curriculum, size, and schedule, influences students' academic success and their decision to stay in school (NASSP, 2004). The organizational structure of high schools reflect artifacts from American educational history that evolved to meet the pragmatic demands of their day rather than sound educational and psychological theories (Baker et al., 2001).

One important school resource, the availability of time, can been seen a minimal condition for setting the boundaries of teacher opportunities (Kubitschek et al., 2005). The typical high school teacher has appropriately 75 hours to present a semester's worth of material. School activities result in an average loss of 7 days per year (National Education Commission on Time and Learning, 1994). Research has consistently found that the provision of more instructional time leads to higher achievement (Chaille, 2002; Kelly, 2004). The converse belief is that the loss of instructional time leads to the loss of learning opportunities. However, the loss of instructional time does not always lead to lower achievement (Carroll, 1994). Academic success is also influenced student learning style, school climate, and relationships (Kubitschek et al., 2001).

In a study comparing the achievement of students in year-round schools to students in traditional schools, the researchers found that instructional time might be better judged by the degree of student engagement, focus on learning, positive relationships, and how these factors relate to achievement (McMillan, 2001). Providing more time allowed students to socialize, gain prosocial skills, and recharge for learning, which often led to improved achievement (Chaille, 2002; Kelly, 2004).

In *The Prisoners of Time,* the National Education Commission on Time and Learning (1994) suggested more time for core instruction but recognized the value of nonacademic and extracurricular programs in the context of changes within schools and society. Poor academic performance, antisocial behavior, and academic failure result from a complex interplay of factors. Although a review of pertinent literature indicates that the relationship between academic failure and antisocial behavior remains unclear, schools can improve their climate, performance, and achievement by intervening with

programming that builds prosocial skills, especially communication skills (McEvoy & Welker, 2000).

In urban settings, students in deviant peer groups undergo a process of training that imparts deviant norms and values that exacerbate antisocial behavior and school failure (Henry, 2000). Once students become part of a gang's social network, they tend to engage in more criminal activity. They increase their repertoire of criminal activities as the norms and approval of the group become increasingly influential in the shaping of their behavior and As gang members become models and mentors. The interplay between academic failure and antisocial behavior extends some students' trajectory along a developmental path that leads to school dropout (Gordon, 2004).

The High School Effectiveness Supplement of the 1988 National Educational Longitudinal Study (NELS) sampled 3,840 students in 190 urban and suburban high schools. Secondary analyses found students were less likely to drop out if schools offered mainly academic courses, enrolled fewer than 1,500 students, and encouraged positive relationships between students and teachers (Lee & Burkham, 2003). The Education Alliance at Brown University promotes high school reform through strategies that develop students' need to belong and create individual and group identities. Positive peer influence has been found to be one contributing developmental asset. These strategies have been shown to strengthen relationships by personalizing the school environment. Consequently, these school reforms have led to increased attendance and decreased dropout rate and disruptive behavior (NASSP, 2004).

High schools have pursued several avenues toward personalization. One strategy has been peer mentoring and others have been family and parental involvement, student

involvement in activities beyond the classroom, and high school reorganization into smaller learning communities. Peer mentoring is an organizational feature of school reform. This practice changes large high schools into a set of smaller communities within the schools.

The 1980 High School and Beyond database and a general-purpose survey of 160 American high schools and 3,450 students from eighth to 12th grade investigated the effect of high school structure on student disengagement, alienation, and dropout rate. A constellation of structural and normative features was found to lead to high absenteeism and eventual student drop out. SES forces beyond the reach of schools and the increasing differentiation of student experience resulted in a shopping mall curriculum and weak normative environment (Bryk & Thum, 1989). Several organizational features of high schools had significant consequences for all students and especially at-risk students. Smaller high schools with substantial informal adult-student relationships were effective in fulfilling students' need for safety, developing a sense of shared purpose among students, and decreasing absence and dropout rates. These outcomes were distributed equitably over SES. Organizational trust, commitment to school, and increased contact with others who share their difficulties, uncertainties, and ambitions were the indirect social benefits of small school size (Lee & Burkam, 2003).

Still, if administrators created smaller schools from a large high school, the reform would not necessarily meet students' other social and emotional needs (IOM, 2004). Coleman (1990) pointed out that when children mature, their social capital shifts from parents to include peers and schools. Schools may need to assume a primary responsibility for teaching students social and cognitive skills needed as adults. It is

through organizational change that high schools develop social capital, the quality of social relationships to either enhance or hinder individuals' capacity to attain desirable social goods, such as graduating and becoming productive adults (Lee & Burkam, 2003).

Many students who dropped out of high school cited lack of social support as one reason for doing so. Positive social relationships have been shown to create powerful incentives for students to come to school, even when these same students reported that schoolwork was difficult and expectations were hard to meet (Lee & Burkham, 2003). Social relationships become increasingly important as children move to adolescence. For high school students, their social capital includes norms, traditions, and behavior patterns that shape both the goals that students pursue and their opportunities for doing so. A growing body of research has linked the organizational structure of high school to student behaviors and their decisions to disengage or dropout (Lee & Burkham, 2003). An effective practice to keep students enrolled and decrease the dropout rate has been an academic press that improves school climate (Rumberger & Palardy, 2001). Academic press translates into high expectations into school policies and practices and classroom practices. Achievement gains were best developed within schools with a high degree of academic press.

A correlation has been discovered between rising test scores and a rising dropout rate. One way schools raise test scores has been to contribute to the increase in the number of students who drop out. Students who drop out generally have lower test scores (Riehl, 1999). A variation of the drop out -the ninth-grade bulge has been detected in relation to the high-stakes test scores of the Texas public high schools (Abrams & Haney, 2004; Haney, 2000). Analyses of the 1990s public schools 'performances on

high-stake tests and other demographic data revealed a loss of students entering Grade 10. These students were not dropouts. The schools' testing program impacted promotion. Ninth grade students who did not pass the end of year exam(s) were retained in Grade 9. Student retention contributed to the likelihood that these students would drop out. Research shows that the rate of student retention is much greater with high- rather than low-stakes testing programs (Abrams & Haney, 2004).

In consultation with the 25-state American Diploma Project consortium, the New Jersey Department of Education is moving to end-of-course assessments, starting with biology and algebra in 2008. School districts may recommend that students who fail to achieve proficiency on the exams repeat the courses (New Jersey Department of Education, 2007a). Educators may consider monitoring schools for the presence of a 9th-grade bulge, an increased dropout rate, and a decreased graduation rate.

<center>Barriers to High School Graduation</center>

State-testing accountability can be a final barrier to high school student graduation. The organization of traditional high schools can be an early barrier. Ninth-grade students enter a new physical, social, and academic environment. Successful transition by students into high school increases their likelihood of graduating (Alspaugh, 1998; Chapman & Sawyer, 2001). The large, bureaucratic nature of high school offers little support to incoming ninth graders. Students with weak social and academic preparation are most vulnerable because the transition often involves loss of self-esteem and self-perception (Alspaugh, 1998; Seidman et al., 1994).

In a 2-year case study of 350 9th- and 10th-grade students, the role of self-perception of ability correlated positively with student achievement as measured by

semester grades in math, science, and language arts courses. The critical linkage between self-perception and performance is important in successful student transition into high school. However, the construct of self-perception includes other sociocultural factors such as parental education and SES as well as individual factors such as academic ability and intelligence (Silverthorn, DuBois, & Crombie, 2005).

Loss of student achievement as measured by test scores is associated with each transition in schooling. Over 40% of all ninth graders—even students who had adequate skills relative to national norms—received an F in a major subject (Roderick & Camburn, 1999). In addition, the school setting is among the barriers to successful transition. Surveys of Chicago adolescents who had academic difficulty in ninth grade highlighted three reasons for their difficulty: not attending class, not completing the required work, and not passing examinations. Although the reasons seem simple and direct, the behaviors that placed students in these conditions are complex. Some of the conditions were skill level, motivation, peer influence, level of expectation, monitoring of students at home and school, and teaching effectiveness (Roderick & Camburn, 1999). The increased academic difficulty of high schools and increased student disengagement were barriers to the passing of courses. Restructuring high school and concentrating on the transitional year were strongly recommended to improve student performance in urban settings (Roderick & Camburn, 1999).

Another urban district, the city of Baltimore, implemented a comprehensive reform program at Talent Development High School (TDHS), where many students, especially ninth graders, had been failing core academic courses. TDHS devised a 9th-grade curriculum that provided students with more time in core courses and provided

transitional learning activities targeted at students with demonstrated weak social and study skills. The reforms created an environment conducive to learning at high levels and the communal organization led to positive, meaningful, social relationships. All categories of school improvement were needed in the comprehensive reform model for changes to take hold and make a difference in student learning. An enhanced student sense of belonging was found to improve student attendance and sense of shared academic values (Jordan, McPartland, Letgers, & Balfanz, 2000).

A survey of 138 Maryland public high schools found many programs and practices related to increasing student membership in high school and easing the transition of ninth graders. The surveys were administered to public school administrators through the Maryland State Department of Education. Student dropout rate, 9th-grade promotion rate, and percentage of ninth graders passing the Maryland Functional Math Test were the quantitative data collected by the Maryland State Department of Education (Kerr & Letgers, 2004). Strategies that were identified as likely to promote a strong sense of school community and increase 9th-grade student performance were identified. Personalized learning, through peer mentoring, programs had an impact. Eighty percent of the schools reported various successful transitional strategies, including interdisciplinary 9th-grade teachers (26%), extended class periods for ninth graders (33%), homeroom or advisory groups (33%), and more student-centered instructional practices (79%). Subsequent multivariate analysis revealed that two practices, student learning communities and interdisciplinary teams, were associated with strong student engagement, significantly lower dropout rates, and increased 9th-grade promotion (Kerr & Letgers, 2004).

Social and Emotional Learning

Educational theorists including Dewey, Piaget, Vygotsky, and Bandura recognized that a student's ability to regulate strong emotions and maintain self-awareness impact performance, both social and academic (Zins, Weissberg, & Wang, 2004). Their writings suggested that prosocial and social-emotional learning skills are valued outcomes and instrumental for academic success. Their studies, based on social-cognitive theory, found that peer relations in elementary and middle school years have a strong and positive impact on academic achievement. Prosocial settings promote social networks and are conducive to academic learning (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000). The pre-and early-adolescent years are a time when students choose informal peer groups that reinforce antisocial behaviors. These informal peer groups include skateboarders, video gamers, garage bands, sport groups, and gangs. Research has shown that not all these groups are equally effective in contributing to academic success or failure. In particular, of all the informal, out-of-school peer groups, it is only when students seek the support and affiliation of gangs that the risk of negative academic sanctions increases. Gangs require members to adopt a delinquent, oppositional identity, or one that outwardly resist school practices. Gang members are expected to feign disinterest in school (Henry, 2000; Sallee & Tierney, 2007).

Peer delinquency appears to be one mechanism of socialization. Members of deviant peer groups become models and mentors. Some peer groups develop an oppositional identity and encourage group members to resist school practices. Gang members come to school to socialize whereas nongang members come to prepare for careers or college (Sallee & Tierney, 2007). Antisocial behaviors include coming late to

class, cutting class, cheating, stealing, showing defiance, using substances, and being physically violent (Eamon & Altshuler, 2004). Of great concern should be the tendency for those with antisocial tendencies to become gang members. This tendency is greatest in urban and poverty settings and for young, African American males in those settings (Gordon et al., 2004; Pattillo, 1998; Sallie & Tierney, 2007).

Although academic failure correlates with antisocial conduct, it does not predict the forms of antisocial behavior. Research has found that schools that emphasize academic quality tend to have students with less antisocial behaviors. Such schools tend to intervene actively to limit antisocial behaviors by offering academic and/or social interventions that promote communication skills toward a desired set of social skills (McEvoy & Welker, 2000).

Researchers have demonstrated a strong correlation between antisocial behavior and academic failure (Ladd, 1999; Quinn, 2002; Sallee & Tierney, 2007). Often, educational programs attending to this link have been limited in two ways: They treated the two behaviors separately or focused narrowly on the cognitive or personality characteristics of the individual (McEvoy & Welker, 2000). After a critical review of the link, McEvoy and Welker suggested that prevention and intervention programs should hinge on identifying and modifying school climate. Although the main mission of schools is to educate, they also provide sites in which to concentrate efforts that build the values and skills necessary for young people to assimilate into society. As such, these researchers have emphasized the role of human relationships and encouraged schools to help students foster positive, supportive, and affective bonds with peers as well as adults (McEvoy & Welker, 2000).

Children form emotional attachments, identify with, imitate, and internalize the attitudes, values, and ways of the adults and the institutions around them. By focusing on adolescent development, schools improve student achievement (Comer, 2005). A child does not recognize the primary task of schooling is to learn. Therefore, the primary task of schools is to provide the positive relationships and sense of belonging that students need for comfort, confidence, competence, and motivation to learn.

Student relatedness, defined as the feeling of belonging and being accepted by peers and teachers, influences autonomy and competence. Students who participate in school activities and interact with peers and adults in prosocial ways experience a sense of belonging (Certo et al., 2003). A host of positive, social, and developmental outcomes has been associated with participation in extracurricular activities, including increased achievement, improved interpersonal skills, reduced juvenile delinquency, reduced likelihood of dropping out, and improved self-esteem (Hanks & Eckland, 1976; McNeal, 1995, 1999).

A positive social and emotional climate promotes learning. However, high school students' behavior, motivation, and mental health are also influenced by the fit between their developmental stage and the characteristics of the social environment or school (McNeeley, Nonnemaker, & Blum, 2002). Junior high school and early high school introduce a more competitive environment in which a greater number of students feel a more limited sense of belonging to the school and sense of success (Roeser & Eccles, 1998). Older students often feel less attached to school. Correlation studies have suggested that a more personalized, caring environment, such as a schools-within-a-school program or an advisory period, serves to motivate students (Eccles, Midgefield, &

Wigfield, 1993). The traditional high school environment contributes to more youth

experiencing the secondary school environment as both frustrating academically and

unsupportive socially. With less of a sense of belonging, students tend to disengage from

school (Anderman & Midgley, 1996).

The National Longitudinal Study of Adolescent Health, which studied 75,515

students in 127 schools, investigated the association between the school environment and

school connectedness. The study found that extracurricular activities, positive classroom

management, school size, and tolerant disciplinary policies increased school

connectedness. One particularly effective extracurricular activity was found to be peer-

group mentoring for ninth graders. All of these practices were found to be positively

associated with higher school connectedness (McNeely, Nonnemaker, & Blum, 2002).

A sense of belonging enhances student ability to respond to two paradoxical

needs: the development of self-esteem and employment of social and emotional

connections to learn. Schools understand the role of social and emotional learning during

adolescent development in improving sense of community and academic performance.

Students who exhibit a psychological sense of community perceive a similarity to others,

acknowledge interdependence with others, and are willing to maintain this

interdependence by giving or doing for others what is expected from them. Students feel

part of a larger, dependable, and stable structure. These are the ingredients of the

psychological sense of community or school (Sarason, 1974). Schools that actively

manipulate their organization, such as adopting a peer-mentoring structure, promote

student engagement. These same schools create a situation with less risk than those

schools that fail to take into consideration the fit between the student and school

environment. Schools balance adolescent needs directly by providing opportunities for student sense of community and offering appropriate times for autonomy and self-direction (Baker et al., 2001).

Theory and Research of Social and Cognitive Development

Early research on intrinsic motivation showed a role for a sense of belonging to other individuals, groups, or cultures (Deci & Ryan, 2000). One of the basic psychological needs of students is relatedness. The primary reason students perform learning behaviors is because these behaviors are valued by significant others to whom they feel (or would like to feel) connected. Students who have a sense of belonging show higher academic engagement and achievement.

Maslow, a human psychologist, set up a hierarchy of five levels. From lowest to highest, the basic needs are physiology, safety, sense of belonging, esteem, and self-actualization. The person does not feel the second need until the demands of the first have been satisfied, nor the third until the second has been satisfied, and so on. The sense of belonging is in the middle of Maslow's (1968) hierarchy of needs. The basic needs are both means and steps to the ultimate goal of self-actualization. The hierarchy presents the different strength and priority of the needs. Upon satisfying one level of need, students strive for the next level of satisfaction. A lower level of need, such as belongingness, is prepotent over levels above it, such as esteem needs and the need to know and understand (Sarma & van der Hoed, 2004). This attention to bonding and relatedness are components of every major theory of human motivation (Huitt, 2004).

The importance of a sense of belonging or connectedness to one's school has been shown to relate to positive academic, psychological, and behavioral outcomes during

adolescence. Positive interactions with others relates to a concern for the well-being of others. Positive outcomes related to academic motivation and attitudes have been observed when the student need for belonging was met (Anderman, 2003). A sense of belonging becomes even more complex concept when students' perception of social acceptance enters into their social and cognitive development. Students' interpretation of their social environment is pivotal; students who perceive little sense of belonging are more likely to have low-self esteem and depressive symptoms. These students seem to have diminished ability or experience to interpret social acceptance and rejection, judge their weaknesses and strengths, and understand that success comes with failure. This finding has been noted more frequently among both males and females from the ages of 9 to 13 (Zimmer-Gembeck & Pronk, 2007).

A lesser sense of belonging, coupled with the loss of cultural support of identity that results from rapid economic and social shifts, leads to increased depression and possible suicidal behaviors (Langford, Ritchie, & Ritchie, 1998). This loss could be individual, arising from the loss of family security, or the loss of an entire community. To counter these antisocial depressive symptoms in adolescents, Langford, et al advocated more training in prosocial skills. They recommended that early-adolescent students could benefit from training directed at interpretation and interaction with prosocial, socially competent peers. Adolescents' social fit relates to their academic fit.

Adolescent students with little sense of belonging have a greater likelihood of experiencing behavioral problems and lower interest and achievement, and frequently drop out of school (Certo et al., 2003). In urban settings, where schools tend to be large, students tend to have a lower sense of belonging than do students in suburban settings.

Smaller schools promote interpersonal skills and allow students to more easily form social relations (Anderman, 2003). Studies of student sense of belonging found that disengagement affected mainly minority students (Goodenow, 1993). Both school setting and minority status influence student sense of belonging. In New Jersey, most public school students are enrolled in large, urban schools whose student population is dominated by minority and lower SES students (Pomeroy, 2004).

Effective teachers promote a sense of belonging. From the students' perspective, engaging teachers communicate with, care for, and enthusiastically provide them with opportunities for active learning (Cothran & Ennis, 2000). Engaging teachers apply Vygotsky's theory of the student zone of proximal development by building a sense of belonging through instructional practices and interpersonal skills. Teachers build the bridge or scaffold over impediments to student engagement (Kearsley, 2007). In a 2003 study of 33 students from seven comprehensive high schools in Richmond, Virginia, Certo, et al, found the quality of instruction accounted for only about half of the variation in student sense of belonging. While the teacher-student relationship is clearly a crucial one, peer relationships also have a significant impact on student engagement.

Another theme emerged from the previous qualitative study. Students had little time to interact during the school day, whether during instructional or noninstructional periods (Certo et al., 2003). This finding challenges school personnel and the public, who often attribute low levels of student engagement to factors intrinsic to the child's or home environment. Noninstructional time provides opportunities to socialize. When their social goals are met, students' level of engagement is likely to increase (Certo et al., 2003).

However, when students did not fit in, noninstructional time was bad time; it was a time when students were picked on. The researchers found that school environments that offered time for students to talk with and support one another increased student sense of belonging, and consequently engagement, while promoting acceptance and tolerance. Eighty-five percent of the students who experienced a sense of belonging had a generally positive view of school. The remaining 15% of the students echoed a similar positive view but indicated that school was boring, unfair, and that their voices were not heard (Certo et al., 2003). Educators were encouraged not to think of students as being engaged or disengaged. Instead, educators were encouraged to conceptualize levels of student engagement in different areas of school, including instructional, noninstructional, and extracurricular time. Further consideration was given to extracurricular time. Many students worked after school. These students did not voluntarily opt out of extracurricular activities. To promote a sense of belonging, schools created times for students to meet in organized social settings during the school day.

A strong link exists between relational trust and student gains in academic productivity. Relational trust does not directly affect student learning but rather fosters a set of organizational conditions, some social and some social-psychological, that make it more conducive for individuals to initiate and sustain the kinds of activities that lead to productivity improvements (Bryk & Schneider, 2002). In general, the composite measure of trust in schools is highly predictive of school productivity trends.

A longitudinal study of high schools in Chicago provided evidence directly linking the development of relational trust in a school community to long-term academic improvement. In a 1994 case study with surveys of teacher-parent trust, teacher-principal

trust, and teacher-teacher trust, schools with strong positive trust were three times more likely to have improved reading and math than those with weak trust. Four years later, the differences were even greater. Schools with strong trust had a one in two chance of improved productivity whereas schools with weak trust had a one in seven chance for improvement. Even more telling, schools with weak trust in 1994 and 1997 had virtually no chance of improvement in reading or math (Bryk & Schneider, 2002).

Bandura's (2000) social cognitive theory stresses self-efficacy. A critical component of this theory is an individual's belief about her or his capacity to organize and execute actions required to produce a given level of attainment. The need for a force of academic optimism expands Bandura's theory (Hoy, Tarter, & Hoy, 2006). Academic optimism in schools has consistently predicted student achievement even after controlling for SES. Schools with academic optimism have academic emphasis, collective efficacy, and school trust of students and parents. Moreover, the strength of the efficacy of a school is dependent upon individual self-efficacy. Overall, reciprocal relationships have been discerned about how student sense of belonging pertained to individual social development and school climate development.

Developmental assets, including positive relationships, sense of belonging, and a belief in their competency, seems to be missing from the school experiences of disengaged, underachieving students (Scales & Taccogna, 2000). Building student developmental assets relates to a variety of antecedents to achievement as well as to measures of actual performance and achievement. From a list of 40 developmental assets, students who reported experiencing 31 to 40 (53%) of the assets were found to be several times more likely than students reporting only 11 to 20 (19%) to get mostly As in school.

Other significant internal assets are high level of effort, strong academic goal orientation, belief in competency and the value of education, and high grades and graduation rates. Nurturing internal assets encourage students to develop an internal compass to guide their behaviors and choices. Students who reach the level of self-regulation promote a sense of school community.

A sense of school community refers to the feeling that one matters in a group and school and that the school matters to the individual. The possible role of gender in the sense of community in high school and academic outcomes was investigated in one study. The 143 participants were mostly Mexican and Puerto Rican seniors from a large urban high school. The academic outcomes were grade point average, absenteeism, motivation, effort, and educational aspirations and expectations (Sanchez, Colon, & Esparza, 2005). Analyses found that sense of school belonging strongly predicted academic outcomes, including motivation, effort, and absenteeism. Furthermore, no significant relationship was found between sense of belonging and gender and academic outcomes. The subjects were 12th graders who were probably not interested in fitting into the school environment. A sense of belonging might not be as important to seniors who are thinking about their career plans and starting a life beyond high school. A positive relationship was found to exist between sense of belonging and attendance; a strong sense of belonging potentially kept students in school who were legally able to drop out.

One enduring educational problem has been the student dropout rate, which reflects new patterns of immigration, movement within the country, changing family structures, poverty, teenage sex and pregnancy, drugs, violence, and crime. These elements relate to challenges facing New Jersey high schools and strategies to lower the

number of dropouts. Peer mentoring is among the top four strategies used to solve the

school dropout problem (Schargel & Smink, 2001).

<p align="center">Peer Groups and Peer Mentoring</p>

High school reform focuses on change in three highly interconnected areas:

culture, structure, and instruction (NASSP, 2004). The report *Breaking Ranks II* stated

that an essential strategy is for large comprehensive schools to form smaller units within

the schools so that students and teachers would have the opportunity to get to know and

care about each other. An obvious benefit of student affiliation and belonging is increased

safety and order.

Following the school tragedies at Littleton, Colorado in 1999 and the threats to

security after the events of September 11, 2001, New Jersey school districts, in

conjunction with state agencies, implemented programmatic responses that included the

TP initiative. The TP was designed to reduce factors that placed students at risk for

substance abuse and other negative behaviors when they transitioned form middle school

to high school. The TP utilizes peer mentors to provide information and facilitate

discussion on substance abuse, gang avoidance, bullying prevention, and coping. The TP

is based upon the relationship between the connectedness of students to school and

school climate (New Jersey Department of Education, 2006).

The goals of most mentoring programs are to seek changes and benefits in the

general areas of academic achievement, employment or career preparation, social

behavior modification, and social responsibilities. Peer mentoring builds social capital.

Regardless of structure or purpose, effective peer group mentoring relies on roughly

equal peer status, common interests, and sustained interaction. The success of peer

mentoring is contingent upon the frequency of contact and the length of time that contact is sustained among the group members. Additional factors are the ways in which peer mentoring provides identity to its members and the strength of the social network. A well-structured peer-mentoring program provides a sense of belonging and increases student achievement. Peer-mentoring programs prevent the formation of more organically grown peer groups by creating scaffolding that may not be different than that of a gang but whose focus is entirely different (Sallee & Tierney, 2007).

Mentoring has been shown to be a powerful low-cost, low-technology strategy to keep at-risk students in school (Schargel & Smink, 2001). Critical elements for successful mentoring are a clear statement of purpose, a recruitment and selection process for mentors, training, a support program for mentors, and monitoring and evaluation of the program (Dubois et al., 2002). Regardless of the presence or absence of these elements, a key to effective mentoring relationships is the development of trust, which requires time and a significant amount of effort by mentor and mentee (Schargel & Smink, 2001).

Schools with a positive school climate have two common characteristics: an increased emphasis on academics and positive relationships among peers (National Research Council [NRC], 2004). Surveys of student perspectives found that the most important aspect of school climate was the relative level of tension or ease that characterized student interactions (Stader & Gagnepain, 2000). Students who felt safe within their environment had a better chance at succeeding. Peer-mentoring programs provide frameworks to establish healthier and more productive relationships among students.

Connectedness affected school climate as measured by aggression and victimization. A positive school climate does not always reduce the likelihood of aggression and victimization and a negative climate does not necessarily increase the risk. Strong school connectedness has a protective effect independent of school climate (Stader & Gagnepain, 2000). Schools with a peer-mentoring program have highly connected students within both positive and negative climates. Highly connected students are less likely to be perpetrators or victims (Stader & Gagnepain, 2000; Wilson, 2004). A long-term case study of peer mentoring noted the power of peer mentoring to change school climate. Students prefer a school community where students get along and have a sense of belonging (Stader & Gagnepain, 2000).

Peer mentoring assists younger students with their academic and social integration. Mentees develop a bond or friendship with their mentors. Peer mentoring capitalizes on Bandura's theory of social learning by emphasizing the importance of modeling the behaviors, attitudes, and emotional reactions of others (Kearsley, 1994). The concept of peer mentoring assumes that the mentor is familiar with the academic and social terrain of the institution before serving as a model and guide (McLean, 2004). In Missouri from 1990 to 2000, Stader and Gagnepain conducted a long-term case study of a peer-mentoring program in Crystal City High School. The school had instituted a peer-mentoring program in response to negative indicators The school had lost over half of its enrollment to tuition schools and had a 10% dropout rate, an 88% to 89% daily attendance rate, and a high rate of freshmen failing more than one course (Stader & Gagnepain, 2000). The researchers found that student performance improved in specific classes and school climate became more positive but mentoring did not significantly

reduce the number of students failing multiple courses. Disciplinary referrals decreased by 40%, the dropout rate declined to 3%, and the average daily attendance improved to 93%. Over time, peer mentoring significantly improved student interpersonal relationships (Stader & Gagnepain, 2000). For a 2-year period during this same case study, 91% of the mentors reported that they learned skills that would be useful later in life and 100% reported they would volunteer to be mentors again (Stader & Gagnepain, 2000). The impact of mentoring on the peer leaders accorded with other studies that found that becoming a peer mentor creates lifelong value (Dopp & Block, 2004; Karcher, 2005; Karcher & Lindwall, 2003).

Additional characteristics of peer mentoring programs have been examined for perceived benefits. In Big Brother/Big Sister programs, the mentoring relationships are characterized by continuity and consistency. The longevity of mentor-mentee relationship has been cited as a measure of success. Yet, other benefits of the mentor-mentee relationship are found when the mentor and mentee spend less time, not more time together. The element of time, including the frequency of meetings and duration of each meeting, remains consideration when designing a peer- mentoring program (Dubois & Neville, 1997).

The benefits of peer mentoring are apparent across youth varying in demographic and background characteristics such as age, gender, race/ethnicity, and family structure. Although the effect sizes (0.14 and 0.18) of their benefits are modest, peer-mentoring programs enjoy widespread and largely unquestioned support (Dubois et al., 2002).

No single feature of peer-mentoring programs has been found responsible for the positive trend of their outcomes. However, several practices have emerged as significant

moderators of effect size. These practices are ongoing training for mentors, structured activities for mentors and youth, expectations for frequency of contact, mechanisms for support and involvement of parents, and monitoring of overall program implementation. These practices are consistently among the strongest predictors of greater positive effects for mentoring programs (Dubois et al., 2002). Peer mentoring has been shown to benefit students who have the specific indicators of low SES and lack of positive adult support but not necessarily students identified as being at risk solely on the basis of individual-level characteristics such as academic failure. Peer-mentoring programs have substantial positive effects when the students targeted are regarded as at risk from both an individual and environmental perspective (Dubois et al., 2002).

Adolescents tend to wary of adults and gravitate toward like-minded peers who reinforce one another's thinking, behaviors, and values. According to Bronfenbrenner (2005), youth groups could become negative influences when adults become disengaged from active interaction with the young (Brendtro et al., 2007). Peer cultures can be harmful or beneficial. Peer-mentoring programs tend to reinforce a positive peer culture (Brendtro et al., 2007). In studies of the Positive Peer Culture Program to reverse peer deviance training, Brendtro and Vorrath found evidence of two ways to counter the inordinate negative influence peers have on one another's thinking, values, and behavior: (a) reconnect all youth to caring adults and (b) create positive peer cultures (prosocial gangs) for all youth (Brendtro et al., 2007). The power of youths in group settings was evident. Youths in these positive peer cultures provided nine times more reinforcement to peers than did the adult staff. When adults disengage, children often become desperate to bond. Peer-mentoring programs are the antidote to negative peer influence because they

anchor adolescents' need for a sense of belonging. Effective peer mentoring relies on adults being effective in their roles. Changes in school leadership, coercive policies, and a lack of formal certification and training of adult advisors derail effective peer-mentoring programs (Brendtro et al., 2007).

Taking a broad view, peer mentoring has a range of conditions. Peer mentoring can involve same-age classmates or cross-age mentoring. The term "peer" is somewhat an oxymoron. Regardless of the age differences in peer mentoring, it has three commonly cited benefits: the learning of academic skills, development of social behaviors and classroom discipline, and enhancement of peer relations. The power of peer mentoring is twofold in that both mentors and mentees accrue benefits (Kalkowski, 1995).

Outcomes vary depending on the type of peer-mentoring program. One type of peer mentoring addresses the needs of ninth graders during their transitional year of high school. Transitional peer-mentoring programs match small groups of 9th-grade students with senior and/or junior leaders. Mentoring provides young people with the chance to act on their social interests. Mentors become involved by sharing their own positive experiences of connectedness and decide to become mentors because of their high social interest. A study was conducted of 120 adolescents, half of whom were mentors and half controls, who had completed the Hemingway-Measure of Adolescent Connectedness program. The mentors were found to be more connected to their schools than were the controls. In a second phase of the study, the mentors who had high social interest were found to decline in connectedness to the school after mentoring students with academic or social problems (Karcher & Lindwall, 2003).

The strength of the relationship between mentors and mentees is measured by the length of the relationship and number of early terminations. Youths with behavioral or emotional problems who have difficulty building positive relationships are not viewed as candidates for mentoring (Grossman & Rhodes, 2002). Student demographic characteristics and perceived common interests have been studied as other possibly important qualities of the relationships. A perceived common interest is more important than are ethnicity, race, or gender. Because cultural barriers limit the building of strong relationships, relationships improve when students are paired with students of the same gender, ethnicity, and race (Hayashi & O'Donnell, 2007).

In conclusion, relevant research has found that peer mentoring impacts student academic and nonacademic performance. The training and support of mentors, purpose and duration of the program, and time allotted for mentor-mentee meetings all impact the success of a peer-mentoring program for students and schools.

The literature review presented the history of reform, implications of the structure of high schools on student performance, the role of the transitional year of high school, and the role of adolescent development in student sense of belonging and success. Chapter 3 describes the methodology used in this study. The methodology was based on findings from the literature review relating to the impact of the type of peer-mentoring program on student academic and nonacademic performance in New Jersey public high schools.

CHAPTER III

RESEARCH METHODOLOGY

Introduction

This chapter describes the methodology used in the study. A review of the rationale, the problem statement, and specific research questions that address the problem statement are presented. The chapter also contains information regarding the selection of schools in the sample and the data collection and analysis methods used.

This causal-comparative study employed a quantitative method to explore the relationship among the variables. The ability to link a causal variable with outcome variables is one of the primary reasons for educational research. In a causal-comparative study, the researcher attempts to determine the cause for the preexisting differences in the populations in the study (Haller & Kleine, 2001). Because these differences are preexisting, the study is classified as *ex post facto* (after the fact) because the effect and the alleged cause occur and are studied retrospectively. In this study, peer mentoring is the independent variable examined for its causal relationship to the academic and nonacademic performance of high school students in New Jersey.

The study was quasi-experimental in that the researcher equated schools for the two variables of socioeconomic status (SES) and student mobility rate. This study matched schools based on the demographic variables of the New Jersey District Factor Group, an SES code, and student mobility rate. Current research has indicated that these demographic variables are possible explanatory variables in student academic and

nonacademic success (Alexander, Entwisle, & Dauber, 1996; Engec, 2006; Pribesh & Downey, 1999; Swanson & Schneider, 1999; Wright, 1999). A 1990 study of 10th-grade students in one New Jersey high school found mobility, along with primary language and family income, were good predictors of student achievement (Wright, 1999). The impact of these variables on student performance was captured in a study by Vail (1996), who contended that mobility walks hand in hand with poverty . Vail's research found students of high mobility occurred in families of low SES and families of high SES. One common reason for the high student mobility was the change in the parents' jobs. One difference was that low SES parents relocated for more affordable housing often in the same municipality, whereas high SES parents relocated to a more high-performing school district (Gillespie & Everhart, 1999).

Research Rationale and Questions

The purpose of the study was to determine how peer mentoring impacted the academic and nonacademic performance of high school students. Both types of peer mentoring studied placed 9th-grade mentees with upper-class mentors. Ninth grade is a pivotal year for students for establishing a social and an academic sense of belonging (Alspaugh, 1998; Blyth, Simmons, & Bush, 1978; Bryk & Thum, 1989; Rumberger, 2001; Seidman et al., 1994). High schools organized with attention to the nature of adolescent learning and development have found that transition programs positively influenced 9th-grade promotion, attendance rate, dropout rate, and academic success (Brendtro et al., 2007; Kerr & Letgers, 2004; Rumberger & Palardy, 2002).

Peer-mentoring programs have also been found to increase support in schools to overcome youth violence, negative peer pressure, and educational failure (McLean, 2004;

Stader & Gagnepain, 2000). Improved social skills, self-esteem, and academic

achievement have been found to be positively associated with peer-mentoring programs

that sought to improve connectedness to school (Dubois et al., 2002; Dubois & Neville,

1997; Karcher, 2005; Karcher & Lindwall, 2003). Social and academic benefits have

been found to accrue for the mentors as well as mentees (Dopp & Block, 2004;

Kalkowski, 1995; Karcher & Lindwall, 2003).

In 2001, New Jersey initiated a freshmen program called the Transition Project

(TP) to reduce factors that place students at risk for substance abuse and other negative

behaviors when they transition from middle school to high school (Division of Student

Services, 2006). The TP is a scaled down version of the Peer Group Connection (PGC)

program created by the Princeton Center for Leadership Training (PCLT). These

programs have a core curriculum and set of activities (A. S. DeGraff, personal

communication, April 17, 2006) that promote student sense of belonging and propel

students along a path leading to healthy school values and practices (Powell, 2006).

The two programs share common features. PCLT staff train all of the adult

advisors, who participate in a kick-off retreat with the upper-class leaders before the start

of the school year. The advisors construct groups mixed by gender, ethnicity, and sending

schools of 12 to 15 students each. The differences between the two types of peer

mentoring relate to the time required for leader training and leaders' meetings with their

peer group (see Table 2).

Table 2

Differences Between the TP and PGC Programs

Transition Project	Peer Group Connection
Leaders meet monthly to learn group skills and activities of the month	Leaders meet daily to learn group skills and activities of the week
80 minutes/month of peer group activity	80 minutes/month of peer group activity
Little discussion of emerging issues	Fuller discussion of emerging issues

(A. S. DeGraff, personal communication, April 17, 2006)

Overall, this study examined the impact of peer mentoring on the academic and nonacademic performance of New Jersey public high school students. Specifically, this study sought to answer the following three research questions:

1. What is the impact of the type of peer mentoring on the academic and nonacademic performance of high school students?

2. What is the differential effect of the TP and the PGC programs on the academic and nonacademic performance of high school students?

3. How does the interaction between organizational structure and SES influence the academic and nonacademic performance of high school students?

Description of Sample

The PCLT provided invaluable assistance in selecting the study sample. The PCLT identified 42 New Jersey public high schools that had completed at least 3 years of implementation of the TP program and 47 public high schools with from 3 years to decades of implementation of the PGC program. This study investigated three types of high schools: (a) traditional schools with no peer-mentoring programs (termed *traditional schools*), (b) schools that offered the TP program (termed *TP schools*), and (c) schools that offered the PGC program (termed *PGC schools*). The schools were organized into 34 sets, each of which consisted of a traditional school, a PGC school, and a TP school. This study controlled for SES and student mobility. The SES, DFG, and school mobility rates were provided by the 2005-2006 New Jersey School Report Card database in which the state had created an index of SES using 7 indicators collected from the decennial Census of Population (New Jersey Department of Education, 2006). The DFG statuses range from A, the lowest level, to I, the highest level.

First, the sets of schools were matched for DFG status. Of the 34 sets, 28 were matched exactly by DFG status and 6 were matched within ± 1 level of DFG status (see Table 3). Second, the study closely matched the student mobility rates in the schools. In New Jersey, the mobility rate is the percentage of students who both entered and left during the school year. The measure is derived by calculating the sum of students entering and leaving after the October enrollment divided by the total enrollment (New Jersey Department of Education, 2007b). Thirty-two sets of schools in the study matched within ± 7.5 for the student mobility rate and 2 sets of schools matched within ± 12.2. By matching sets of schools for student mobility rate, the study controlled for changes in

student membership within the high schools, minimizing the effect of students entering or leaving the high schools, whether or not the students were participants in the 9th-grade peer-mentoring programs. After matching for DFG status and student mobility rate, the final sample consisted of 102 schools that were placed into 34 matched sets (see Tables 3 and 5).

Table 3

SES Matching Among the Three Types of High Schools

DFG status	Number of TP schools	Number of traditional schools	Number of PGC schools	Total schools
A	6	6	6	18
B	1	1	2	4
CD	3	3	2	8
DE	6	6	5	17
FG	4	4	6	14
GH	8	8	7	23
I	6	6	6	18
Total type	34	34	34	102

Data Collection and Instrumentation

Additional sources of information, all of which fall under the realm of public

domain, were obtained from the New Jersey Department of Education's historical

records, current school report cards, and publications from 2002 to 2006. The available

data included each school's demographics and student academic and nonacademic

performance (New Jersey Department of Education, 2007b). Since 1995, the State of

New Jersey has required public school districts to submit 35 fields of information in the

following categories: school environment, students, student performance indicators, staff,

and district finances. The New Jersey School Report Cards are publicly available on the

state of New Jersey Web site. This study used the state of New Jersey's definitions and

calculations for the measures used for attendance, graduation, mobility, dropout,

suspension, and postgraduate-plan rates.

The dropout rate is calculated by dividing the number of students in Grades 9

through 12 who dropped out of school during the period of July to June each school year

by the October enrollment reported for Grades 9 through 12. The attendance rate is

calculated by dividing the sum of days present in each grade level by the sum of possible

days for all students in each grade. The school attendance rate is calculated by dividing

the sum of days present in all applicable grade levels by the total possible days for all

students. The graduation rate is calculated by adding the number of school-year graduates

to the number of summer graduates following the senior year and dividing this figure by

a combination of the following: . The calculation's formula is: (number of school year

graduates + the summer graduates following the senior year) /(school year + summer

graduates + number of grade 9 dropouts four years prior + number of grade 10 dropouts three years prior + number of grade 11 dropouts two years prior + number of grade 12 dropouts for the report card year). The product is multiplied by 100 to obtain the graduation rate (New Jersey State Department of Education, 2005). The percentage of graduating seniors who planned to attend a 4-year college, which is based on self-reported data, is calculated by dividing the number of respondents in this category by the number of total graduates. The suspension rate, which counts a student only once during a school year, is calculated by dividing the total number suspended by the total enrollment.

The state of New Jersey requires all public high school students to demonstrate mastery of reading, writing, and mathematics skills as specified in the New Jersey Core Content Standards before graduating (New Jersey State Department of Education, 2005). Every spring, 11th-grade students take the High School Proficiency Assessments for language arts and mathematics (HSPA-LA and HSPA-M). In each content area, eleventh graders must score at least 200 to be considered at the proficient passing level necessary to receive a high school diploma. The scores are scaled from 100 to 199 (*partially proficient*), 200 to 249 (*proficient*), and 250 to 300 (advanced *proficient*).

Students who had been ninth graders in the 2001-2002 school year were 11th graders who took the HSPA-LA and HSPA-M in the 2005-2006 school year. These students' HSPA-LA and HSPA-M proficiency rates were two of the academic measures analyzed in this study. The other academic measures studied were the graduation rate and the percentage of graduates planning to attend 4-year colleges. The attendance,

suspension, and dropout rates were the nonacademic measures used to investigate student sense of belonging.

Table 4

Description of the Variables in the Study

Variable	Description	Status
Peer-mentoring type	TP, PGC, or traditional	Independent
HSPA-LA	% of students ≥ proficient level	Dependent, academic
HSPA-Math	% of students ≥ proficient level	Dependent, academic
Graduation rate	N. J. School Report Card data and definition	Dependent, academic
Percentage of graduates who planned to attend 4-year colleges	N. J. School Report Card data and definition	Dependent, academic
Attendance rate	N. J. School Report Card data and definition	Dependent, sense of belonging
Suspension rate	New Jersey School Report Card data and definition	Dependent, sense of belonging
Dropout rate	New Jersey School Report Card data and definition	Dependent, sense of belonging

Data Analysis

The data were analyzed using descriptive and inferential statistics. The descriptive statistics compared the means for the three types of schools to each other and to the New Jersey state means for the 3-year period from 2003 to 2006. Trends in the means by peer-mentoring type were also analyzed. Repeated measures were used to test whether differences in trends were statistically related to the type of peer group.

The first research question addressed the impact of the type of peer mentoring on the academic and nonacademic performance of high school students. The null hypotheses were tested using a one-way ANOVA. The types of school were recoded into peer mentoring or traditional schools using the data for the TP schools combined with the data for the PGC schools.

Table 5

Recoding of Peer Mentoring Types for Research Question 1

Type of school	*N*	Recode label
Traditional	34	1
TP and PGC	68	2
Total of schools	102	

The second research question addressed the differential effect of the TP and PGC programs on the academic and nonacademic performance of high school students. Descriptive statistics were used to examine trends in the means of the schools using

different peer-mentoring programs and the null hypotheses were tested using a one-way ANOVA.

The third research question addressed whether the interaction between organizational structure and SES influence the academic and nonacademic performance of high school students. A univariate analysis was conducted, with schools being recoded into two SES levels (see Table 6) before examining the interactions for significance.

Table 6

Recoding for SES Level for Research Question 3

SES level	*N*	Recode label
DFG (A, B, CD, and DE)	55	1
DFG (FG, GH, and I)	47	2
Total of schools	102	

Table 7

Data Analysis of Research Questions with Null Hypotheses

Research question with null hypotheses	Type of analysis
Research Question 1	
$H_0 1$-$H_0 7$	One-way ANOVA
Students in peer-mentoring programs perform no differently than do students in traditional schools.	
Research Question 2	One-way ANOVA
$H_0 8$-$H_0 14$	
Students in TP schools perform no differently than do students in PGC schools.	
Research Question 3	Univariate and plots
$H_0 15$-$H_0 21$	
There is no significant interaction between organizational structure and SES category on student performance	

This chapter discussed the methodological approach used in the study. Chapter 4 describes the data collected and the data analysis used for each research question and its sets of related hypotheses as well as a brief summary of the major findings.

CHAPTER IV

PRESENTATION AND ANALYSES OF DATA

Summary of Research

The purpose of this study was to determine the impact of peer mentoring on the academic and the nonacademic performance of high school students. As many as 2.5 million youth receive some form of mentoring each year. Cross-age mentoring, which includes peer mentoring, constitutes half of all mentoring matches (U.S. Department of Education, 2006). The growth of these programs is attributed to an increased emphasis on community service; positive developments in working with at-risk youth; and an increased need for schools to overcome youth violence, negative peer pressure, and educational failure (Brendtro et al., 2007; Stader & Gagnepain, 2000)

In peer-mentoring programs, mentors develop an encouraging and supportive relationship with younger students for the primary purpose of providing broad support, guidance, and friendship (U.S. Department of Education, Office of Safe and Drug-Free Schools, 2006). These programs rest on the assumptions that educational and social climate can either impair or improve student development and achievement and that students experience greater attachment and commitment in schools with a positive climate (Wilson, 2004). Although Web sites and anecdotal articles have described the value of peer mentoring, a growing body of research is now emerging on the positive and negative effects of mentoring (Karcher, 2005).

The benefits of peer mentoring include the learning of academic skills, development of social behavior, enhancement of peer relations, improvement in self-esteem, and improved school attendance. These benefits accrue for both mentors and mentees (Kalkowski, 1995). Some factors for successful peer mentoring are (a) the structuring of activities for mentors and mentees, (b) frequency of contact, (c) emotional closeness, and (d) students speaking a similar peer language (Dubois et al., 2002; Kalkowski, 1995). Effective peer-mentoring programs promote developmentally appropriate practices for high school students and the development of smaller learning communities (Achilles & Tienken, 2005). However, implementation of peer-mentoring programs requires administrative attention to the details of scheduling, training, and recruiting. If implementation obstacles can be overcome, peer mentoring improves student achievement and leads to a host of social and affective outcomes (Kalkowski, 1995; Karcher, 2005: Karcher & Lindwall, 2003; Stader & Gagnepain, 2000).

Scientifically based research supports the positive effects of peer mentoring to ease the transition of 9th-grade students into the high school community (Jordan et al., 2003; Kerr & Letgers, 2004; Stader & Gagnepain, 2000). Peer mentoring also contributes to student perception of a sense of connectedness or belonging to the school (Certo et al., 2003; Comer, 2005; McNeely et al., 2002). Additional research has noted the significant positive impact of sense of belonging on academic and nonacademic student performance (Anderman, 2003; Bryk & Schneider, 2002; Deci & Ryan, 2000; Ferguson, 2003; Goodenow, 1993; Sanchez et al., 2005). This study examined how peer mentoring promotes student sense of belonging beginning in the 9th-grade transitional year and how sense of belonging affects academic and nonacademic aggregate student performance.

The New Jersey Department of Education's Web site provided historical and current data relevant to the study.

The rationale underlying the impact of peer mentoring on student performance relates to establishing student sense of belonging. Students who feel connected to their school are expected to have a higher attendance rate and higher academic performance. In addition, these students are expected to believe in the importance of school and graduation and plan to attend 4-year colleges. If peer mentoring supports a sense of connectedness to school, then students are more likely to attend school more frequently, resulting in greater time on task. If students demonstrate more time on task, their aggregate academic performance, as measured by their scores on the HSPA-LA and HSPA-Math exams, is expected to increase over the course of time. The graduation rate measures the impact of peer mentoring on sustained academic performance. Students must achieve at least at the passing level on the HSPA-LA and HSPA-Math and accrue credits that meet school graduation requirements in order to graduate.

The fourth measure of academic performance, the percentage of graduates who plan to attend 4-year colleges, also relates to a component of student sense of belonging. In Maslow's (1968) hierarchy of needs, the sense of belonging is a prepotent step to ultimate self-actualization. Graduates who plan to attend 4-year colleges are expected to extend the value of belonging to a school to the value of education within a larger community. Connected students are expected to visualize how their future relates to education beyond high school. If peer mentoring positively impacts student connectedness to school and school mission, then more students are expected to plan to attend 4-year colleges over time. Overall, the study assessed 4 measures of student

academic performance in schools using 1 of 2 types of peer-mentoring programs and contrasted these measures with those from schools that do not offer a peer-mentoring program. These 4 measures are the passing rates of students on the HSPA-LA and HSPA-Math, graduation rate, and the percentage of graduates who planned to attend 4-year colleges.

The school report cards provided the nonacademic performance measures of attendance, suspension, and dropout rates. According to Maslow's (1968) hierarchy of needs, peer mentoring is expected to increase student sense of safety and sense of belonging to school through the personalized relationships formed in peer-mentoring groups. If peer mentoring increases sense of safety and sense of connectedness, then students are expected to come to school more often, as measured by increased attendance rates. When students feel connected to other students and the school belief system, they are expected to get along more often and exhibit fewer reported acts of violence and substance abuse, as measured by decreased suspension rates. Students who are connected are expected to become members of the school community. Students who have a strong sense of belonging are not expected to drop out. Peer mentoring is expected to positively affect the sense of belonging of 9th-grade students so that over the 3-year period of high school, peer mentoring is expected to decrease dropout rates.

Student performance trends were analyzed to determine if peer mentoring influenced performance. The performance of students in peer-mentoring schools was compared to the performance of students in traditional schools. The performance of students in the TP program was compared to the performance of students in the PGC program, the performance of students in traditional schools, and to New Jersey state data

over a 3-year period. Inferential statistics employing a one-way ANOVA test were used to determine the significance of the impact of peer mentoring on aggregate academic and nonacademic student performance. A univariate interaction analysis tested the significance of the impact of the interaction of organizational type and SES on academic and nonacademic student performance.

Description of Sample

The type of peer mentoring program was the independent variable in this study. Three different types of schools were investigated: (a) schools that offered no peer-mentoring program (traditional schools), (b) schools that offered the TP program (TP schools), and (c) schools that offered the PGC program (PGC schools). The schools were organized into 34 sets, each of which consisted of a traditional school, PGC school, and TP school. This study controlled for SES and student mobility. After matching for DFG status and student mobility rate, the final sample consisted of 102 schools that were placed into 34 matched sets (see Table 3).

The primary research goal was to determine the impact of peer mentoring on the academic and nonacademic performance of New Jersey high school students. Using descriptive statistical analyses, the average academic and nonacademic performance of students in peer-mentoring programs was compared to that of students in traditional schools, each other, and New Jersey state means. A repeated analysis of variance was used to test for significant differences between the types of schools over 3 years. Inferential statistics employing an analysis of variance—a one-way ANOVA—were used to test the significance of the impact of type of peer-mentoring on the dependent variables. A univariate analysis was used to test for the significance of the impact of the

interaction between organizational type and SES level on the same measures of academic and nonacademic student performance. The academic dependent variables were the HSPA-LA and HSPA-Math passing rates, graduation rates, and percentages of graduates who planned to attend 4-year colleges. The nonacademic dependent variables were the attendance, suspension, and dropout rates.

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Peer-Mentoring Schools Versus Traditional Schools:
Descriptive Analysis of Trends in Student Performance

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In this study, the means of the student performance of 102 schools were taken from the 2005-2006 New Jersey current and historical report cards. Peer-mentoring data were summarized into tables and comparatively analyzed for patterns and exceptions over a 3-year period. Table 5 presents the number of schools in each category. Tables 8 to 14 show the means and standard deviations for each dependent variable from 2003 to 2006.

Table 8

HSPA-LA Passing Rate Means and Standard Deviations

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
Traditional	34	83.0	13.72	82.0	17.04	82.0	16.91
All mentoring programs	68	82.7	13.71	83.4	13.75	83.0	14.98

For the 2004-2005 and 2005-2006 school years, the average HSPA-LA passing rates for students in schools with peer-mentoring programs were 83.4 % and 83.0%, respectively. In the same period, the average passing rates for students in traditional schools was 82.0% both years. Table 8 shows that the average HSPA-LA performance in schools with peer-mentoring programs was 1.4% higher in the 2004-2005 school year and 1.0 % higher in the 2005-2006 school year than that of students in traditional schools for the same period.

Table 9

HSPA-Math Passing Rate Means and Standard Deviations 2003-2006

Type	*N*	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
Traditional	34	69.2	21.04	73.5	20.78	73.5	20.75
All mentoring programs	68	69.3	20.29	74.5	18.90	74.9	19.42

The average HSPA-Math passing rate for students in peer-mentoring schools increased over the 3-year period and was 0.1%, 1.0%, and 1.4% higher over the 3-year period, consecutively, than that of students in traditional schools. The average HSPA-Math passing rates for students in peer-mentoring and traditional schools increased from the 2003-2004 to 2004-2005 school year but remained unchanged from the 2004-2005 to 2005-2006 school year. There was virtually no change in the average HSPA-Math

passing rate for students in both types of school during the 2005-2006 school year (see Table 9).

Table 10

Mean Graduation Rates and Standard Deviations

Type	$\underline{N}$	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
Traditional	34	69.2	21.04	73.5	20.78	73.5	20.75
All mentoring programs	68	69.3	20.29	74.5	18.90	74.9	19.42

For the 2004-2005 and 2005-2006 school years, the average graduation rate for students in traditional schools was virtually identical to the average graduate rate of students in peer-mentoring schools. Table 10 shows that the average graduation rate increased over the 3-year period for both types of schools.

Table 11

Percentage of Graduates Who Planned to Attend 4-Year Colleges

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
Traditional	34	56.9	18.53	56.8	20.26	56.9	2014.
All mentoring programs	68	55.5	19.54	54.8	18.95	54.4	19.75

Over the 3-year period, the average percentages of graduates in traditional schools who planned to attend 4-year colleges were 56.9%, 56.8%, and 56.9%, consecutively. These percentages were higher than the average percentages of graduates in peer-mentoring schools who planned to attend 4-year colleges, as can be seen in Table 11. The graduation rates remained unchanged in the traditional schools and fluctuated approximately 1% for the peer-mentoring schools.

Table 12

Percentage of Graduates Who Planned to Attend 4-Year Colleges

Type	*N*	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
Traditional	34	93.1	3.91	93.5	3.80	93.2	3.94
All mentoring programs	68	92.5	2.51	92.8	2.60	92.4	2.98

Over the 3-year period, the average attendance rates for students in schools with peer-mentoring programs were slightly below the average attendance rates for students in traditional schools (see Table 12). The differences were 0.6%, 0.7%, and 0.8%, respectively, for the 2003-2004, 2004-2005, and 2005-2006 school years.

Table 13

Mean Suspension Rates and Standard Deviations

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
Traditional	34	17.2	13.30	15.6	12.07	15.3	12.48
All mentoring programs	68	14.6	11.30	12.2	9.63	13.3	10.04

Over the 3-year period, the average suspension rates for students in both types of schools decreased. From the 2003-2004, 2004-2005, and 2005-2006 school years, the suspension rates were 14.6%, 12.2%, and 13.3%, respectively, for students in peer-mentoring schools. These rates were lower than the rates of 17.2%, 15.6%, and 15.3%, respectively, for students in traditional schools. In the 2003-2004 school year, the average suspension rate of 14.6% for students in schools with peer-mentoring programs was 2.6% lower than the average suspension rate for students in traditional schools. In the 2005-2006 school year, the average suspension rate of students in peer-mentoring schools was 2.0% lower than that of students in traditional schools (see Table 13).

Table 14

Mean Student Dropout Rates and Standard Deviations

Types	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
Traditional	34	1.61	1.64	2.5	2.86	3.0	4.02
All mentoring programs	68	2.0	2.42	2.3	2.24	2.1	2.60

In the 2003-2004 school year, the average dropout rate of 2.0% for students in schools with peer-mentoring programs was higher than the average dropout rate of 1.61% for students in traditional schools. This difference was reversed for the final 2 years. For the 2004-2005 and 2005-2006 school years, the average dropout rates were 2.3 % and 3.0%, respectively, for students in schools with peer-mentoring programs and 2.5% and 3.0%, respectively, for students in traditional schools. Overall, students in schools with peer-mentoring programs had higher average dropout rates than did students in traditional schools (see Table 14).

A repeated analysis of variance found that in spite of these trends, there were no significant differences between the type of school over the 3-year period and the outcome measures.

Transition Project Versus Peer Group Connection:
Descriptive Analysis of Trends in Student Performance

An analysis of the combined peer-mentoring programs left unresolved any differences in performance trends of students between TP schools and PGC schools. Descriptive statistics were used to analyze the 7 performance measures for each peer-mentoring program over the 3-year period.

Table 15

HSPA-LA Mean Passing Rates and Standard Deviations by Peer-Mentoring Program

Type	N	2003-2004		2004-2005		2006-2006	
		M	SD	M	SD	M	SD
TP	34	84.5	12.72	85.5	12.92	85.4	14.12
PGC	68	80.9	14.50	81.3	14.42	80.6	15.64

Over the 3-year period, the average passing rates on the HSPA-LA were 84.5%, 85.5%, and 85.4%, consecutively, for students in TP schools and 80.9%, 81.3%, and 80.6%, consecutively, for students in PGC schools. Over the 3-year period, the passing rates for students in TP schools were 3.6%, 4.2%, and 4.8% higher on average than those in PGC schools (see Table 15).

Table 16

HSPA-Math Mean Passing Rates and Standard Deviations by Peer-Mentoring Program

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	71.7	18.80	77.2	17.94	77.6	18.23
PGC	34	66.8	21.69	71.8	19.71	72.2	20.46

Over the 3-year period, the average passing rates on the HSPA-Math were 71.7%, 77.2%, and 77.6%, consecutively, for students in TP schools and 66.8%, 71.8%, and 72.2%, consecutively, for students in PGC schools. Over this 3-year period, students in TP schools had averages 4.9%, 5.4%, and 5.4% higher than did students in PGC schools (see Table 16).

Table 17

Mean Graduation Rates and Standard Deviations by Peer-Mentoring Program

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	91.4	9.49	92.9	8.37	94.3	8.99
PGC	34	90.0	9.45	90.6	9.62	93.2	8.05

Table 17 shows that over the 3-year period, the average graduation rates were 91.4%, 92.9%, and 94.3%, consecutively, for students in TP schools and 90.0%, 90.6%, and 93.2%, consecutively, for students in PGC schools The graduation rates for TP schools were 1.4%, 2.3%, and 1.1% higher than those of PGC schools over the 3-year period.

Table 18

Percentages of Graduates Who Planned to Attend 4-Year Colleges by Peer-Mentoring Program

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	55.4	17.69	56.9	17.23	55.9	18.75
PGC	34	53.9	21.47	52.6	20.57	52.8	20.86

In the 2003-2004 school year, the average percentage of TP-school graduates who planned to attend 4-year colleges in schools was 55.4%, which is 1.5% higher than the average percentage of PGC-school graduates who planned to attend 4-year colleges. Table 18 shows that in the 2004-2005 and 2005-2006 school years, the average percentage of TP graduates who planned to attend 4-year colleges were 56.9% and 55.9%, respectively whereas 52.6% and 52.8% of PGC graduates planned to attend 4-year colleges. Over the 3-year period, the average percentages of TP-school graduates who planned to attend 4-year colleges were higher than those of PGC-school graduates (see Table 18).

Table 19

Mean Attendance Rates and Standard Deviations by Peer-Mentoring Program

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	92.0	2.30	92.5	2.32	92.0	3.03
PGC	34	92.9	2.71	93.1	2.84	92.8	2.95

Table 19 shows that over the 3-year period, the average attendance rates of 92.9%, 93.1%, and 92.8 %, consecutively, for students in PGC schools were higher than the average attendance rates of 92.0%, 92.5%, and 92.0%, consecutively, for students in TP schools. From 2003-2006, the differences between the average attendance rates of students in the two peer-mentoring programs were 0.9%, 0.6%, and 0.8%, consecutively. Table 19 shows that the average attendance rates of students in PGC schools were higher than were those of students in TP schools.

Table 20

Mean Suspension Rates and Standard Deviations by Peer-Mentoring Program

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	11.9	10.84	10.4	9.60	11.3	10.17
PGC	34	17.3	11.56	13.9	9.73	15.2	9.96

Table 20 shows that over the 3-year period, the average suspension rates for students in TP schools were lower than the average suspension rates for students in PGC schools. From 2003 to 2006, the average suspension rates were 11.9%, 10.4%, and 11.3%, respectively, for students in TP schools and 17.3%, 13.9%, and 15.2%, respectively, for students in PGC schools. These figures represent differences of 5.4%, 3.5%, and 3.9%, respectively, from 2003 to 2006.

Table 21

Mean Dropout Rate and Standard Deviations by Peer-Mentoring Program

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	30	2.4	2.54	2.4	2.65	2.3	3.14
PGC	33	1.5	0.90	2.2	1.91	1.9	2.23

Table 21 shows that over the 3-year period, the average dropout rates for students in PGC schools were 1.5%, 2.2%, and 1.9%, consecutively, which were lower than the average dropout rates of 2.4%, 2.4%, and 2.3%, consecutively, for students in TP schools. The data show that the average dropout rates were virtually constant in TP schools.

Overall, when comparing the performance between students in TP and PGC schools, the average attendance and dropout rates for students in PGC schools shows a more favorable difference. Over the 3-year period, students in PGC schools had higher average attendance rates and lower average dropout rates than did students in TP schools. The remaining five performance measures showed more positive outcomes for students in TP schools.

Peer-Mentoring Programs Versus New Jersey State Means:
A Descriptive Analysis of Trends in Performance

When the performance for students in TP schools is compared to the performance of students in PGC schools, it can be concluded that students in TP schools performed better than did their counterparts in PGC schools (see Tables 22 to 28). One final analysis examined mean performance for students in TP schools, students in all mentoring programs, and New Jersey state means for student performance.

Table 22

HSPA-LA Mean Passing Rates by Peer-Mentoring Program and New Jersey State Averages

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	84.5	12.72	85.5	12.92	85.4	14.12
All mentoring programs	68	82.7	13.71	83.4	13.75	83.0	14.98
NJ state	-	80.2	-	82.2	-	83.5	-

In the 2003-2004 and 2004-2005 school years, an average of 82.7% and 83.4%, respectively, of students in peer-mentoring schools passed the HSPA-LA, which were higher than the state average percentages of 80.2% and 82.2% for the same years. In the 2005-2006 school year, an average of 83.0% of students in peer-mentoring schools passed the HSPA-LA, which was lower than the state average passing rate of 83.5%.

Over the 3-year period, the average passing rates were 84.5%, 85.5%, and 85.4%, consecutively, on the HSPA-LA for students in TP schools. These figures were 4.3%, 3.3%, and 1.9% higher, consecutively, than the state average passing rates for students over the 3-year period. The HSPA-LA average passing rates for students in TP schools were 84.5%, 85.5%, and 85.4%, consecutively. These values were higher than the HSPA-LA average passing rates of 82.7%, 83.4%, and 83.0%, consecutively, for all peer-mentoring program schools. Students in TP schools scored higher average passing rates than did students in all peer-mentoring schools (see Table 22).

Table 23

HSPA-Math Mean Passing Rates and Standard Deviations by Peer-Mentoring Program and New Jersey State Averages

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	71.7	18.80	77.2	17.94	77.6	18.23
All mentoring programs	68	69.3	20.29	74.5	18.90	74.6	19.42
NJ state	-	65.8	-	70.0	-	75.5	-

In the 2003-2004 and 2004-2005 school years, the HSPA-Math average passing rates of 69.3% and 74.5%, respectively, for students in all peer-mentoring schools were higher than were the state average passing rates of 65.8% and 70.0%, respectively. For

the 2005-2006 school year, the HSPA-Math state average passing rates for students were higher than were the average passing rates for students in all peer-mentoring schools. In contrast, the HSPA-Math average passing rates for students in TP schools were 71.7%, 77.2%, and 77.6%, consecutively. These values were higher by 5.9%, 7.2% and 1.1%, consecutively, than the state average passing rates on the HSPA-Math.

From 2003 to 2006, the HSPA-Math average passing rates for students in TP schools were higher than were the HSPA-Math average passing rates for students in all peer-mentoring schools. The HSPA-Math passing rates for students in TP schools were 2.4%, 2.7%, and 1.1% higher, consecutively, than that for all peer-mentoring schools (see Table 23).

Table 24

Mean Graduation Rates and Standard Deviations by Peer Mentoring Program and New Jersey State Averages

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	91.4	9.49	92.9	8.37	94.3	8.99
All mentoring programs	68	90.7	9.42	91.8	9.01	93.8	8.49
NJ state	-	89.5	-	90.6	-	93.2	-

Over the 3-year period, the average graduation rates of students in all peer-mentoring schools and New Jersey state average graduation rates increased. The average graduation rates for students in all peer-mentoring schools were 1.2%, 1.2%, and 0.6% higher, consecutively, than were the average state student graduation rates. Over the 3-year period, the average graduation rates for students in TP schools were 1.9%, 2.3%, and 1.1% higher, consecutively, than were state average graduation rates (see Table 24).

Table 25

Mean Percentages and Standard Deviations of Graduates Who Planned to Attend 4-Year Colleges by Peer-Mentoring Program and New Jersey State Averages

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	55.4	17.69	56.9	17.23	55.9	18.75
All mentoring programs	68	55.5	19.54	54.8	18.95	54.4	19.75
NJ state	-	53.0	-	53.4	-	54.0	-

Over the 3-year period, the average percentages of graduates of all peer-mentoring schools and TP schools who planned to attend 4-year colleges were higher than were the state mean percentages of graduates with such plans. For students in all peer-mentoring schools, the average percentages were 2.5%, 1.4%, and 0.4% higher, consecutively, than were the state averages from 2003 to 2006. For students in TP

schools, the average percentages were 2.4%, 3.5%, and 0.9% higher, consecutively, than were the state averages from 2003 to 2006 (see Table 25).

Table 26

Mean Attendance Rates and Standard Deviations by Peer Mentoring Program and New Jersey State Averages

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	92.0	2.30	92.5	2.32	92.0	3.03
All mentoring programs	68	92.5	2.51	92.8	2.60	92.4	2.98
NJ state	-	94.3	-	94.4	-	94.5	-

Over the 3-year period, the state average attendance rates of 94.3%, 94.4%, and 94.5%, consecutively, were higher than were the average attendance rates for students in all peer-mentoring schools of 92.5%, 92.8%, and 92.4%, consecutively. The average attendance rates for students in TP schools were 92.0%, 92.5%, and 92.0%, consecutively. From 2003 to 2006, the average attendance rates of all peer-mentoring schools were 1.8%, 1.6%, and 1.3% lower, consecutively, than were state average attendance rates. Over the 3-year period, the average rates for TP schools were 2.3%, 1.9%, and 2.1% lower, consecutively, than were state average rates. Over this same period, the average attendance rates of students in TP schools and all peer-mentoring schools showed little fluctuation (see Table 26).

Table 27

Mean Student Suspension Rates and Standard Deviations by Peer-Mentoring Program and New Jersey State Averages

Type	N	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	34	11.9	10.84	10.4	9.60	11.3	10.17
All mentoring programs	68	14.6	11.30	12.2	9.63	13.3	10.04
NJ state	-	14.9	-	13.6	-	14.0	-

Over the 3-year period, the average suspension rates for students in all peer-mentoring schools were lower than were the state average rates. The average suspension rates for students in all peer-mentoring schools were 14.6%, 12.2%, and 13.3%, consecutively, which were 0.3%, 1.4%, and 1.3% lower, consecutively, that were the state average suspension rates. In the 2003-2004 school year, the average suspension rate of 11.9% for students in TP schools was 3.0% lower than was the state mean student suspension rate of 14.9%. In the 2005-2006 school year, the average suspension rate of 11.3% for students in TP schools was 2.7% lower than was the state average suspension rate of 14.0%. In the same year, the average suspension rate of 13.3% for students in all

peer-mentoring schools was 0.7% lower than was the state average suspension rate of 14.0% (see Table 27).

Table 28

Mean Student Dropout Rates and Standard Deviations by Peer-Mentoring Program and New Jersey State Averages

Type	*N*	2003-2004		2004-2005		2005-2006	
		M	SD	M	SD	M	SD
TP	30	2.4	2.54	2.4	2.65	2.3	3.14
All mentoring programs	63	2.0	2.42	2.3	2.24	2.1	2.60
NJ state	-	1.9	-	1.9	-	1.8	-

Over the 3-year period, the average dropout rates for students in all peer-mentoring schools were 2.0%, 2.3%, and 2.1%, consecutively, and 2.0%, 2.3%, and 2.1%, consecutively for students in TP schools. From 2003 through 2006, students in all peer-mentoring schools had average dropout rates of 0.1%, 0.4%, and 0.3% higher, respectively, than state average dropout rates. Students in TP schools had an average dropout rate that was 0.5% higher each year than was the state average dropout rate. Over the 3-year period, the state average dropout rates of 1.9%, 1.9%, and 1.8%, consecutively, showed virtually no change.

Over the 3-year period, the average dropout rates for students in all peer-mentoring schools and TP schools were higher than were the state average dropout rates.

The average dropout rates for students in TP schools were higher than were both the average dropout rates for students in all peer-mentoring schools and the state average dropout rates (see Table 28).

Repeated analysis found no significant differences among the outcomes of traditional, TP, and PGC schools over the 3-year period. Only one measure, school suspension rate, came close to significance.

<div align="center">Inferential Statistics Results and Analysis</div>

This study conducted a one-way ANOVA to draw conclusions based on statistical analysis about the impact of type of school on the academic and nonacademic performance of students. Null hypotheses were formulated for the main effects of each dependent variable. Changes in the dependent variables were presumed to be the result of the independent variable, the type of mentoring program. In addition, a univariate analysis was performed to determine whether there was a significant interaction between organizational type and SES level for academic and nonacademic performance variables.

Research Question 1

This question addressed the impact of peer mentoring on the academic and nonacademic performance of high school students. The null hypotheses were tested by a one-way ANOVA (see Table 29).

Table 29

One-Way ANOVA Results for Peer-Mentoring and Traditional Schools for the 2005-2006

School Year

Variable	df	F	p	Null hypothesis
HSPA-LA	1, 100	.088	.787	Accept
HSPA-M	1, 100	.109	.742	Accept
Graduation rate	1, 100	.004	.952	Accept
Percentage plan to attend 4-yr colleges	1, 100	.377	.541	Accept
Attendance rate	1, 100	.010	.922	Accept
Suspension rate	1, 100	.825	.366	Accept
Dropout rate	1, 91	.882	.350	Accept

The first null hypothesis stated that there is no difference between the HSPA-LA passing rates of students in peer-mentoring and traditional schools. The mean HSPA-LA performance for students in peer-mentoring schools was 83.01 (SD 14.98, $N = 68$) compared to a mean of 82.04 (SD 16.91, $N = 34$) for students in traditional schools. Because the impact of mentoring on HSPA-LA student performance was not found to be significant ($F = 0.88$; df at 1,100; $p = .767$), the first null hypothesis was accepted (see Table 29).

Testing of the second hypothesis found no difference between the HSPA-Math passing rates of peer-mentoring and traditional schools. The mean HSPA-Math student performance was 74.90 (SD = 19.42, N = 68) for peer-mentoring schools and 73.53 (SD = 20.75, N = 34) for traditional schools. Because the impact of mentoring type on HSPA-Math performance for was not found to be significant (F = .109; df at 1,100; p = .742), the second null hypothesis was accepted (see Table 29).

No significant difference was found between the student graduation rates of peer-mentoring and traditional schools. The mean student graduation rate was 93.85 (SD = 8.49, N = 68) for peer-mentoring schools and 93.96 (SD = 8.81, N = 34) for traditional schools. Because the impact of mentoring on the student graduation rate was not found to be significant (F = .004; df at 1, 100; p = .952), the third null hypothesis was accepted (see table 29).

The fourth null hypothesis stated that there is no difference between the percentages of graduates who plan to attend 4-year colleges in peer-mentoring and traditional schools. The mean percentage of graduates of peer-mentoring schools who planned to attend 4-year colleges was 54.33 (SD = 19.75, N = 34) compared to a mean of 56.89 (SD = 21.14, N = 34) for graduates of traditional schools. Because the impact of mentoring on student graduation rate was not found to be significant (F = .377; df at 1, 100; p = .541), the fourth null hypothesis was accepted (see Table 29).

The fifth null hypothesis stated that there is no difference between the student attendance rates of peer-mentoring and traditional schools. The mean of student attendance rate for peer-mentoring schools was 93.12 (SD = 3.00, N = 68) compared to the mean of 93.19 (SD = 4.00, N = 34) for traditional schools. Because the impact of

mentoring on student graduation rate was not found to be significant (F = .010; df at 1, 100; p = .922), the fifth null hypothesis was accepted (see Table 29).

The sixth null hypothesis stated that there is no difference between the student suspension rates of peer-mentoring and traditional schools. The mean student suspension rate of peer-mentoring schools was 13.21 (SD = 10.18, N = 68) compared to the mean of 15.31 (SD = 12.48; N = 34) for traditional schools. Because the impact of mentoring type on student suspension rate was not found to be significant (F = .825; df at 1, 100; p = .366), the sixth null hypothesis was accepted (see Table 29).

The seventh null hypothesis stated that there is no difference between the student dropout rates of peer-mentoring and traditional schools. The mean student dropout rate of peer-mentoring schools was 2.13 (SD = 2.64, N = 63) compared to the mean of 2.76 (SD = 3.74, N = 30) of traditional schools. Because the impact of mentoring on student graduation rate was not found to be significant (F = .882; df at 1, 91; p = .350), the seventh null hypothesis was accepted (see Table 29).

The impact of the main effect of type of school on the variables was not found to be significant (p > .05) for the 2005-2006 school year. All of the null hypotheses were accepted. Peer-mentoring schools did not differ significantly in the variable measured from traditional schools. However, several mean differences indicated more favorable outcomes for peer-mentoring schools.

Research Question 2

The second research question addressed the impact of the TP and PGC programs on the academic and nonacademic performance of high school students. Seven null hypotheses were tested by performing a one-way ANOVA to determine the impact of the

type of peer-mentoring program on the academic and nonacademic performance of high school students.

Table 30

One-Way ANOVA Analysis of Student Performance by Peer-Mentoring Program for the 2005-2006 School Year

Variable	df	F	p	Null hypothesis
HSPA-LA score	1, 66	1.721	.194	Accept
HSPA-M score	1, 66	1.276	.263	Accept
Graduation rate	1, 66	.247	.621	Accept
Percentage plan to attend 4-year college	1, 66	.403	.528	Accept
Attendance rate	1, 66	.685	.411	Accept
Suspension rate	1, 66	2.545	.115	Accept
Dropout rate	1, 61	.159	.691	Accept

The first null hypothesis stated that there is no difference between the HSPA-LA passing rates of students in TP and PGC schools. The mean student HSPA-LA passing rate for students in TP schools was 85.39 (SD = 14.11, N = 34) compared to a mean of 80.65 (SD = 15.64, N = 34) for students in PGC schools. Because the impact of type of peer-mentoring program on student HSPA-LA passing rate was not found to be significant (F = .685; df at 1, 66; p = .411), the first null hypothesis was accepted (see

Table 30). The mean student HSPA-LA passing rate for TP schools was 4.74% lower than that for PGC schools.

The second null hypothesis stated there is no difference between the HSPA-Math passing rates of students in TP and PGC schools. The mean student HSPA-Math passing rate in TP schools was 77.56 (SD = 18.23, N = 34) compared to the mean student HSPA-Math passing rate of 72.24 (SD = 20.46, N = 34) in PGC schools. Because the impact of type of peer-mentoring program on the student HSPA-Math passing rate was not found to be significant (F = 1.276; df at 1, 66; p = .263), the second null hypothesis was accepted (see Table 30). As in the HSPA-LA means, the HSPA-Math means in the TP schools were 5.32% lower than were those of the PGC schools.

The third null hypothesis stated that there is no difference between the graduation rates of students in TP and PGC schools. The mean student graduation rate in TP schools was 94.36 (SD = 8.99, N = 34) compared to the mean student graduation rate of 93.33 (SD = 8.05, N = 34) in PGC schools. Because the impact of type of peer-mentoring program on graduation rate was not found to be significant (F = .247; df at 1, 66; p = .621), the third null hypothesis was accepted (see Table 30). In the 2005-2006 school year, the graduation rate of students in TP schools was 1.03% higher than that of students in PGC schools.

The fourth null hypothesis stated that there is no difference between the percentage of graduates who planned to attend 4-year colleges in TP and PGC schools. The percentage of graduates who planned to attend 4-year colleges in TP schools was 55.86 (SD= 18.75, N = 34) compared to the mean of 52.80 (SD = 20.86, N = 34) for students in PGC schools. Because the impact of type of peer-mentoring program on the

percentage of students who planned to attend 4-year colleges was not found to be significant (F = .403; df at 1, 66; p = .528), the fourth null hypothesis was accepted (see Table 30). The percentage of graduates who planned to attend 4-year colleges was 3.06% higher for students in TP schools than for students in PGC schools.

This fifth null hypothesis stated that there is no difference between the attendance rates of students in TP and PGC schools. The mean attendance rate of TP schools was 93.42 (SD = 3.06, N = 34) compared to the mean attendance rate of 92.81 (SD = 2.95, N = 34) of PGC schools. Because the impact of type of peer-mentoring program on student attendance rate was not found to be significant (F = .685; df at 1, 66; p =. 411), the fifth null hypothesis was accepted (see Table 30). The attendance rate of students in TP schools was 0.61% higher than that of students in PGC schools.

The sixth null hypothesis stated that there is no difference between the suspension rates of students in TP and PGC schools. The mean suspension rate for students in TP schools was 11.26 (SD = 10.17, N = 34) compared to the mean suspension rate of 15.16 (SD = 9.96, N = 34) for students in PGC schools. Because the impact of type of peer-mentoring program on the student suspension rate was not found to be significant (F = 2.545; df at 1, 66; p = .115), the sixth null hypothesis was accepted (see Table 30). The mean suspension rate for students in TP schools was 3.6% lower than that of students in PGC schools.

The seventh null hypothesis stated that there is no difference between the dropout rates of students in TP and PGC schools. The mean dropout rate for TP schools was 2.27 (SD = 3.25, N = 30) compared to the mean dropout rate of 2.01 (SD = 1.89, N = 33) for PGC schools. Because the impact of type of peer-mentoring program on student dropout

rate was not found to be significant ($F = .159$; df at 1, 61; $p = .691$), the seventh null hypothesis was accepted (see Table 30). Unlike the mean suspension rate, the mean dropout rate of PGC schools was 0.26% lower than that of TP schools.

In the 2005-2006 school year, the impact of the main effect on the variables was not significant ($p > .05$). None of the null hypotheses was rejected because the type of peer-mentoring program had no significant impact on performance. The small differences in the means of the outcome variables, including the HSPA-LA and HSPA-Math passing rates, graduation rates, percentages of graduates who planned to attend 4-year colleges, attendance rates, and suspension rates, indicated more favorable outcomes for TP schools. Only the mean dropout rates indicated a more favorable outcome for PGC schools. The TP schools showed outcomes more favorable for 6 of the 7 variables.

Research Question 3

The third research question sought to determine whether the interaction between organizational structure and SES status impacts student academic and nonacademic performance. The DFG variable was recoded into two SES levels. Level one included schools in the DFG of A, B, CD, and DE and level two included schools in the DFG of FG, GH, and I (see Table 6).

SES has been shown to impact school performance (Pomeroy, 2004). A one-way ANOVA analysis of the student measures of performance showed the significant impact of SES on academic and nonacademic student performance of the schools in this study. The basic null hypothesis for each variable stated that students at a low SES level perform no differently than do students at a high SES level.

Table 31

One-Way ANOVA of SES Impact on Student Performance for the 2005-2006 School Year

Performance	R squared	F	Sig
HSPA-LA	.700	36.924	.000*
HSPA-Math	.672	32.488	.000*
Graduation rate	.494	15.458	.000*
Percentage plan	.552	19.494	.000*
to attend 4-year college			
Attendance rate	.487	15.004	.000*
Suspension rate	.219	4.437	.000*
Dropout rate	.425	10.587	.000*

* $p \leq .05$

The impact of SES was found to be significant for each dependent variable. The results of the one-way ANOVA concurred with previously cited research that found that SES influences school performance (see Table 31).

The third research question employed a two-way analysis of variance to account for the impact of peer mentoring and its interaction with SES on the dependent variables.

Table 32

Two-Way Analysis of Interaction Between Organizational Type and SES on Student

Performance for the 2005-2006 School Year

Performance	R squared	F	Sig
HSPA-LA	.359	.421	.770
HSPA-Math	.366	.262	.855
Graduation rate	.247	.157	.855
Percentage plan	.359	.064	.938
to attend 4-year college			
Attendance rate	.275	.014	.986
Suspension rate	.161	1.172	.314
Dropout rate	.334	6.396	.003*

*$p \leq .05$

The interaction between organizational type and SES was found to be significant

for the dropout rate only ($F = 6.369$, df at 3, $p = .003$; see Table 32). The interaction plot

is displayed in Figure 1. Irrespective of SES, the dropout rates of peer-mentoring schools

was significantly lower than were the dropout rates of schools without these programs.

Figure 1. Interaction between organizational type and SES level on dropout rate.

Estimated Marginal Means of drp05-06
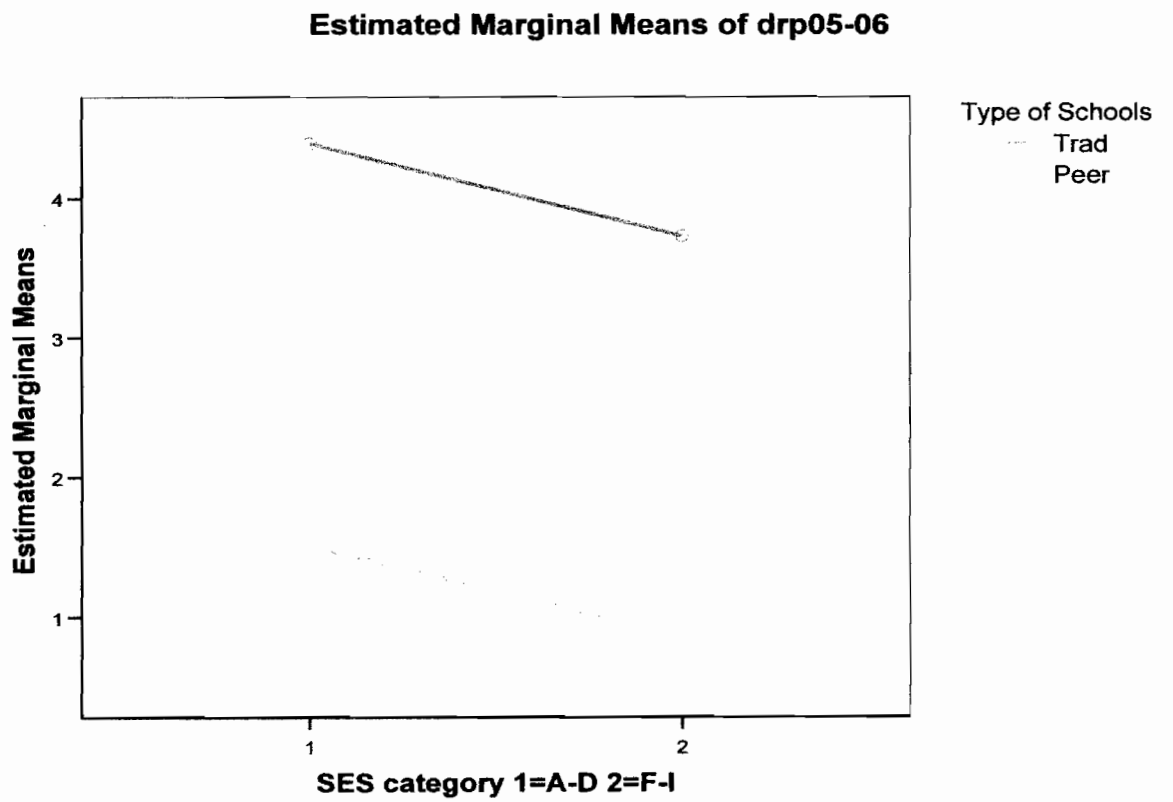
Summary of Analysis and Results

Descriptive statistics were calculated to examine the means of the measures of academic and nonacademic performance over a 3-year period to identify differences, if any, between students in peer-mentoring and traditional schools. A one-way ANOVA analysis and two-way interaction analysis were conducted to test the statistical significance of peer-mentoring programs with regard to impact on the academic and nonacademic performance of high school students and address the three research questions.

To address the first research question, descriptive statistics were calculated to compare the means for student performance in peer-mentoring schools to those of students in traditional schools. The means for four of the measures of student performance—HSPA-LA and HSPA-Math passing rates, suspension rates, and dropout rates—were slightly higher for peer-mentoring schools than were the means for traditional schools. Graduation rates were virtually identical for students in both types of schools. The attendance rates and percentages of graduates who planned to attend 4-year colleges were higher for students in traditional schools than for students in peer-mentoring schools throughout the 3-year period. Because the ANOVA analysis used to address the first research question found no significant differences in the variables studied between students in peer-mentoring and traditional schools and schools without mentoring programs, all of the null hypotheses were accepted.

The second research question separated out and compared the performance means for students in TP schools and PGC schools. Over the 3-year period, the HSPA-LA and HSPA-Math passing rate means, graduation rates, and the percentages of graduates who

planned to attend 4-year colleges of students in TP schools exceeded the means of all of these measures of students in PGC schools. However, the means of the attendance and suspension rates for students in TP schools were lower than were the means of the attendance and suspension rates for students in PGC Schools. Over the 3-year period, the means of the dropout rates for students in PGC schools were lower than the means for students in TP schools. Because the ANOVA analysis found no significant differences among the measures between students in TP and PGC schools, all of the null hypotheses were accepted.

The third research question compared means of performance of students in TP schools, students in all mentoring programs, and state of New Jersey student data. Over the 3-year period, the HSPA-LA mean passing rates, graduation rates, and percentages of graduates who planned to attend 4-year colleges of students in TP schools and in all mentoring programs exceeded state of New Jersey means for these same measures. The only state of New Jersey measure that exceeded a mentoring-school measure was the 2005-2006 HSPA-Math mean passing rate. The means of the suspension rates for students in TP schools and in all mentoring schools were lower than were the state of New Jersey means.

Over the 3-year period, the mean state of New Jersey attendance rates were higher than were the means for students in TP schools and all mentoring programs. In addition, the mean state of New Jersey dropout rates were lower than were the mean dropout rates of students in TP schools and all mentoring schools. A two-way analysis of interaction found that for the dropout rate, the interaction between organizational type and SES level was significant. The dropout rates of schools with mentoring programs were significantly

lower than were those of schools without mentoring program, regardless of the schools' SES level.

Chapter 4 presented the descriptive and inferential statistical analyses conducted in this study. The three research questions and their null hypotheses were presented, tested, accepted or rejected, and discussed. Chapter 5 discusses the findings in light of the conceptual frameworks, the contribution of this study to the literature on peer mentoring, future areas of study, and the implications of this research for peer mentoring in schools.

CHAPTER V

SUMMARY OF STUDY, FINDINGS AND IMPLICATIONS, AND

RECOMMENDATIONS FOR FUTURE RESEARCH

Summary of Study

New Jersey public high schools report one of the highest graduation rates, lowest

dropout rates, and highest percentages of graduates attending 4-year colleges in the

nation (NCES, 2006; New Jersey Education Association, 2006). Despite this record, New

Jersey also has its share of public high schools that underserve students (see Table 1).

Some high schools fail where they have always failed—their students have low

expectations, lack academic and social preparedness, receive little parental involvement,

and are not interested in the traditional educational environment (Schargel & Smink,

2001). The high schools with low student performance reflect changes in New Jersey

demographics and broader societal shifts (Pomeroy, 2004; Ponessa, 1991; Rury, 2002;

Rutgers University, 2006).

In 2001, New Jersey state agencies sponsored the Transition Project, a peer-

mentoring program for 9th-grade students. The design of the TP was based upon another

peer-mentoring model, the Peer Group Connection, that had been implemented

previously by a number of high schools. The Princeton Center for Leadership Training

developed both programs, hence the two programs have similar core activities and

objectives. The time provided for mentor training and support by school advisors and the

frequency of peer-group meetings distinguishes the two programs. This study attempted

to determine the impact of peer-mentoring type on the academic and nonacademic performance of high school students in New Jersey. The schools investigated in this study were (a) schools that offered no peer-mentoring program (traditional schools), (b) schools that offered the TP program, and (c) schools that offered the PGC program. The attendance, suspension, and dropout rates were the measures assessed to determine nonacademic performance (sense of belonging or connectedness). The HSPA-LA and HSPA-Math student passing rates, graduation rates, and percentages of graduates planning to attend 4-year colleges were the measures assessed to determine academic performance. The New Jersey School Report Card, a Web-based, uniform reporting tool, provided New Jersey state data.

This study hoped to shed light on peer mentoring as one strategy to transform high schools into schools that work for students. Specifically, this study asked the following three research questions:

1. What is the impact of the type of peer mentoring on the academic and nonacademic performance of high school students?

2. What is the differential effect of the TP and the PGC programs on the academic and nonacademic performance of high school students?

3. How does the interaction between organizational structure and SES influence the academic and nonacademic performance of high school students?

Findings and Implications

The relationship between sense of belonging and adolescent social and academic success provided the framework for this study. A review of the literature attested to the

educational value of concentrating on 9th-grade programs to assist student transition into a more complex high school environment and more successfully support students during the adolescent phase of social development (Alspaugh, 1998; Kerr & Letgers, 2004; Roderick & Camburn, 1999). Beyond the successful transition of ninth graders, high schools also have the long-term objectives of raising test scores and decreasing dropout rates. The ultimate goal for all high schools are students who graduate prepared for their future roles (Bryk & Schneider, 2002; Harris, 2004)

Policy makers, theorists, and practitioners have focused on high school reform to transform schools into more caring communities (Cotton, 1996; NASSP, 2004; Sergiovanni, 1994: Splittgerber & Allen, 1996). Traditionally, high school introduces a more competitive environment in which more students feel a limited sense of belonging and academic success. Some high school students disengage from school to the extent that they drop out of school (Anderman & Midgley, 1996; McNeeley, Nonnemaker, & Blum, 2002). The interaction between achievement and sense of belonging affects the long-term decision of students to drop out of high school (Rumberger, 2001; Rumberger & Palardy, 2002).

Motivational theorists accept the premise that fulfilling Maslow's hierarchy of needs leads to self-efficacy. Researchers and theorists contend that academic achievement is built upon the social-emotional context of the learner (Comer, 2005; McCombs, 2004). In school settings, motivational theory posits that students must feel safe and have a sense of belonging before they can attend to the need to learn (Deci & Ryan, 2000). Schools can support these prepotent needs and address the learning climate through strategies that encourage the development of prosocial skills and positive peer-

group interactions (Henry, 2000; Sallee & Tierney, 2007). Peer mentoring has been shown to be one strategy that decreases the tendency to drop out of school (Schargel & Smink, 2001). In New Jersey, the TP program for high schools originated from the Safe Schools Initiative. Although this study investigated the impact of peer mentoring on students in New Jersey public high schools, its findings are useful to all high school principals seeking to increase student social and academic success by changing school organizational structure and researchers who wish to study further the impact of peer mentoring.

With regard to the first research question, an ANOVA analysis found no significant differences between the outcomes of students in peer-mentoring and traditional schools. However, peer-mentoring schools showed more favorable outcomes in four areas: HSPA-Math passing rates, HSPA-LA passing rates, suspension rates, and dropout rates. Graduation rates were virtually identical for peer-mentoring and traditional schools. The outcomes for attendance rates and percentages of graduates who planned to attend 4-year colleges were more favorable for students in traditional schools.

In general, the research findings accorded with previous research that showed the positive influence of peer mentoring on sense of safety and sense of belonging as measured by suspension and dropout rates (NRC, 2004; Stader & Gagnepain, 2000). In addition, the trends in student performance on the state exit exams support an interpretation of Maslow's theory that greater student achievement occurs when the prepotent needs of safety and sense of belonging have been met.

Research studies have weakly supported the connection between peer mentoring and achievement. Because of the limits of this study, the connection continues to remain

unclear. Other researchers have theorized that prosocial settings, including those supported by peer mentoring, promote social networks conducive to academic learning (Caprara et al., 2000; Stader & Gagnepain, 2000). The positive performance achieved by students in peer-mentoring schools in this study accords with this theory. Trends in attendance rates and percentages of graduates who planned to attend 4-year colleges were more favorable for traditional schools, possibly confirming that traditional schools continue to succeed in what they have done well for years–preparing highly motivated young people for postsecondary schools and careers (Schargel & Smink, 2001).

With regard to the second research question, this study compared the performance of students in TP and PGC schools. It was expected that there would be no significant differences in impact on student performance between TP and PGC schools. The results of a one-way ANOVA analysis led to the acceptance of all of the null hypotheses. This outcome suggests significance within both the social context, which scrutinized the finding for its relevance to sense of belonging and the nature of adolescence, and the academic context, which examined the finding for its relevance to loss of instructional time.

The different outcomes for attendance, suspension, and dropout rates were not found to be significant. This finding accords with other research that found that peer mentoring creates a positive climate not directly related to frequency of contact between mentors and mentees (Dubois & Neville, 1997; Pitts, 2005). Researchers have accepted that the suspension rate reflects a lowered sense of student belonging that impacts the school climate for learning (Osterman, 2000; Wilson, 2004). Furthermore, a rise in suspension rates implies that schools may be showing symptoms of climate shift related

to population size, diversity, or SES (Ladd, 1999; McEvoy & Welker, 2000; Sallee & Tierney, 2007).

Although not found to be significant, trends in suspension rates showed more favorable outcomes for students in TP schools, suggesting that schools should consider implementing the TP to decrease the need for disciplinary action. Although the findings related to the first research question showed lower suspension rates for students in all peer-mentoring schools, the findings related to the second research question showed lower suspension rates for students in TP schools. As noted previously, the four academic measures addressed in the first research questions were more favorable for all peer-mentoring schools whereas the four academic measures addressed in the second research questions were more favorable for TP schools. This observation led this researcher to question further the significance of the loss of instructional time of students in peer-mentoring programs.

By nature, adolescents seek out peers to develop a sense of belonging and identity (McNeely et al., 2002; Scales & Taccagnoa, 2000). Schools should have the flexibility to provide a deliberate, prosocial peer-mentoring program to assist ninth graders' development of social skills and provide an antidote to deviant peer groups that foster antisocial behaviors (DuBois, Holloway, Valentine, & Cooper, 2002; Gordon et al., 2000; Henry, 2000; McLean, 2004; Pattillo, 1998). The New Jersey Safe Schools Initiative was designed to reduce factors that place students at risk for substance abuse and other negative behaviors when they transition from middle school to high school. Peer-mentoring programs provide information and facilitate discussions on substance abuse,

gang avoidance, bullying prevention, and coping (New Jersey Department of Education, 2006).

Research points to the pre- and early adolescent years as times when students may choose peer groups, especially gangs, that reinforce antisocial behaviors and challenge the norms of their schools. Deviant socialization that leads to peer delinquency is becoming a mechanism of socialization with an increasingly negative impact. A longitudinal study of gangs in Chicago found that gang-related homicides increased from 10% in 1965 to 25% in 1994 and that gangs have expanded their geographical areas from large metropolitan settings to mid-sized cities and suburban settings (Gordon et al., 2004).

Studies have revealed that adolescents base peer affiliations on aggression and attractiveness rather than academics. Studies have also noted that youths, especially African American males, are more likely to be influenced by deviant peers if they attend lower-quality schools located in poorer, high-crime neighborhoods (Eamon & Altschuler, 2004). Gangs exacerbate antisocial behavior, contribute to student school failure, and are associated strongly with students dropping out of school (Henry, 2000; Sallee & Tierney, 2007).

Antisocial behavior and academic failure reinforce one another. An effective school climate promotes widely shared beliefs to assist even the fragile culture of urban schools struggling with antisocial and/or gang behaviors (McEvoy & Welker, 2000). Because the nature of adolescents is to seek out and join peer groups, high school principals should promote prosocial groups and consider implementing peer-mentoring programs. In particular, principals of urban and low-SES high schools should implement

peer-mentoring programs to provide scaffolding that promotes a sense of identity, shared values, and sustained interactions (Sallee & Tierney, 2007).

Although adolescents have a need to belong to peer groups, a need to balance autonomy and competence influences student sense of belonging (Certo et al., 2003). The outcomes of students in TP schools suggest that the TP program better balances a sense of belonging than does the PGC program by providing an internal locus that allows students to find themselves and trust their ability to make decisions regarding their lives (Deci & Ryan, 2000; Dubois et al., 2002). The TP program, with its more limited number of required meetings, provides for positive peer influence while better accommodating the nature of adolescent development than does the PGC program

Because 4 measures of performance were found to be more favorable for students in TP schools, this researcher questions the significance of the loss of instructional time necessitated by the PGC program. The TP program requires one peer-group meeting per month and trains mentors after school. Assuming schools follow the programs' design, the TP requires 800 minutes (ten 80-minute peer-group meetings) or 13.3 hours of lost instructional time per year whereas the PGC program requires 2,560 minutes (thirty-two 80-minute peer-group meetings) or 42.6 hours of lost instructional time per year. Research has shown that more instructional time leads to higher achievement and the loss of instructional time leads to the loss of learning opportunities. However, a loss of instructional time does not always lead to lower achievement because academic success is based on other factors, including relationships and school climate (Carroll, 1994; Chaille, 2002; Kelly, 2004; Kubitschek et al., 2001).

Students in TP schools lose less than one third of total instructional time and gain 13.3 hours of positive social interaction. TP mentors are trained after school whereas PGC mentors take a course for mentor development during instructional time. Senior PGC mentors attend a daily peer group class related to learning skills and content for leadership. Consequently, PGC mentors have one less opportunity in their schedule for an academic course. A comparison of the two programs suggests that the TP program might lead to significant improvement of student performance if given more years for implementation. When the social and academic contexts are considered in tandem, the findings suggest schools should examine implementation of peer mentoring in light of the positive tradeoff between loss of instructional and prosocial gains. This and other studies suggest that there is a point of diminishing returns in performance with increased instructional time.

The comparison of the types of programs and their comparison to traditional schools leads to consideration of the *Goldilocks concept* (Gribben, 1993; Lovelock, 1970). Similar to the temperature of porridge chosen by Goldilocks and the physical conditions for Earth in the solar system, this concept suggests that extreme conditions are not favored. In the case of peer-mentoring programs, two extremes may be too much time for students in peer group and too little time for their self-guidance. The reasoning is that whereas traditional schools offer no positive peer-mentoring programs, and so lie at one extreme, PGC schools offer too much mentoring to ninth graders who seek to be more independent. The TP program, on the other hand, offers just the right amount of positive prosocial time and type of contact and requires just the loss of instructional time needed for the transition of adolescents into high school. Students in traditional schools

often have too little time for positive socialization whereas students in PG schools lose too much instructional time. The value of peer mentoring lies in its low-cost, low-maintenance design along with its positive outcomes for sense of belonging and academic performance. Research suggests that the TP program offers a more efficient and effective type of peer mentoring that results in higher student performance than does the PGC program. However, more research is still needed into the impact of the two programs.

The final research question addressed the impact of the interaction between organizational type and SES level on the academic and nonacademic performance of high school students. A univariate analysis found that the interactions between organizational type and SES level were not significant for 6 measures of performance. The interaction between organizational type and SES level was only significant for the dropout rate. Specifically, the dropout rate of schools with peer-mentoring programs was significantly lower than that of traditional schools, regardless of SES level (see Figure 1).

Research has repeatedly shown that poverty impacts performance and that peer mentoring positively affects student sense of belonging. A lack of a sense of belonging is a direct cause of dropping out of high school (Brendtro et al.; Dopp & Block, 2004; Dubois & Neville, 1997; Ma, 2003). Studies controlling for ethnicity or family structure have found that students from low SES levels have a greater risk of leaving school prematurely (Finn, 1989; Lee & Burkam, 2003; Rumberger, 2001, 2002). Although researchers acknowledge that SES gives students a social address, they also acknowledge that low SES alone may or may not be predictive of student performance (Catterall, 1998).

Other researchers have found that sense of belonging and the behavioral and psychological attributes of students who drop out, such as their perceptions of teachers, schools, peers, and themselves, impact dropout rates (Goodenow, 1993; Kagan, 1990; Lan & Lanthier, 2003). Leaving high school before graduation has long-lasting effects on the social and economic level of dropouts (Alexander et al., 1997; Scharkel & Smink, 2001). This study suggests that New Jersey schools with unacceptable dropout rates could decrease the dropout rate by implementing peer-mentoring programs.

Additional findings reinforce a limit of the study, in particular the limitation of the years of implementation of the TP program. The TP program was first implemented in 2001. Students who were ninth graders in TP schools in 2001 were the juniors who took the HSPA-Math and HSPA-LA in 2003. Collecting data over a 3-year period shows the emergence of trends but does not allow for a fuller analysis of peer mentoring on student performance or school climate (McEvoy & Welker, 2000). The favorable outcomes observed in peer-mentoring schools only suggest that peer mentoring provides social and academic benefits to students (NRC, 2004; Roderick & Camburn, 1999: Sarma & van der Hoed, 2004).

The other limitation of trend analysis relates to the *agency problem. Agency theory* recognizes the gap between a principal's design and the agency's implementation of that design. In this study, the agents, which were the schools, might not have or could not have fully implemented the design of the peer-mentoring programs. The reasons for a lack of fidelity to a peer-mentoring program design could be differences in values, demands of work on school personnel, adverse risk to the agents, fear of change, or little reward or support for the program (Rowan & Miller, 2007).

Recommendations and Future Research

This researcher recognizes that peer mentoring could be an appropriate local strategy for schools. This study found that peer mentoring could lead to positive nonacademic and academic student performance as measured by several outcomes. Considered alone, this study does not provide sufficient data to recommend the implementation of peer-mentoring programs. However, viewing this study alongside a growing body of research on the merits of peer mentoring and noting that the trends found in this study align with other studies on the impact of peer mentoring lead to the suggestion of several recommendations. These recommendations are directed at school administrators and local policy makers considering the implementation of peer-mentoring programs in their high schools. Additional recommendations are directed to researchers for future studies on the impact of peer mentoring.

The TP program is part of New Jersey's Safe Schools Initiative. The state of New Jersey recognizes that peer mentoring is a low-cost, low-maintenance strategy that could assist schools in providing a safe environment and developing a sense of belonging among students. After their needs for safety and a sense of belonging have been fulfilled, students may proceed to fulfill their academic needs. One recommendation, in light of the nature of adolescents and the role of climate on learning, is that school administrators and policy makers consider peer mentoring a positive strategy to create safer schools.

Some school officials may approach a peer-mentoring strategy from the prescriptive perspective of responding to evidence of a poor school climate, as measured by low attendance and graduation rates and high suspension and high dropout rates. Other school officials may approach a peer-mentoring strategy from the preventive perspective

of preserving a particular school climate despite anticipated demographic shifts, such as a projected increase in high school population or diversity. From either a prescriptive or preventive perspective, school climate requires a period for transition that probably aligns with the 4-year progression of students both as mentees and possible mentors.

Regardless of the rationale, a second recommendation is for administrators to develop an implementation plan at least 5 years in duration that includes monitoring, feedback, and evaluation. The plan should include specific measures related to each school's rationale for the peer-mentoring strategy. For example, annual tracking of attendance, suspension, and dropout rates could be set up to serve as a valid proxy for school climate. One implication of this study is that peer mentoring has relevance to local school environments and needs. Although proxies are recognized as useful measures of school climate and student sense of belonging, local schools could gather other meaningful data on the impact upon their schools. Recommendations to local districts include collecting direct measures of student sense of belonging using valid and reliable survey instruments and broadening program evaluation by collecting qualitative data from focus groups or interviews. A qualitative component to the evaluation could provide insights that had not been anticipated.

With regard to evaluation, another recommendation is ongoing monitoring of the program by administrators, policy makers, and the principals. The peer-mentoring programs investigated in this study were based upon an outside program. Recognizing the existence of agency-principal tensions, organizational theorists suggest that schools (agents) overtly mitigate agency problems to ensure fidelity of implementation. For a more effective evaluation, a program should be implemented according to its design to

achieve its stated objectives. Local districts should compare the stated goals and objectives of a peer-mentoring program to their own goals, objectives, and hopes for the outcomes of peer mentoring on student and school performance.

This researcher recommends that school administrators and local policy makers consider the tradeoff between the loss of instructional time required and the gains of a peer-mentoring program. Student achievement has become the measure of school effectiveness. School officials are recommended to consider a peer-mentoring program that balances their academic needs with other needs that are in line with their core values. With this recommendation in mind, this researcher recommends that districts consider implementing the TP project even though this study found no significant differences among the 7 dependent variables for TP and PGC schools. The TP program allows school officials to attend directly to prosocial skills, ease the transition of ninth graders, and provide more instructional time for academics.

At this juncture, as schools officials consider additional frameworks in their decision to adopt or implement a peer-mentoring strategy, they are recommended to broaden their use of quantitative measurements to include 2 measures of this study, the HSPA-achievement data and postsecondary plans of graduates. A second conceptual framework of this study was the nature of the adolescents, who often become wary of adults and therefore seek out peer groups. Adolescents sometimes join informal, deviant peer groups in which antisocial behaviors dominate. A third conceptual framework of the study is the critical role of the transition of students from middle school into the new, more complex social and academic world of high school. Ninth graders could become mired in their simultaneous need to achieve a sense of belonging and increase academic

performance. Students with little sense of belonging tend to exhibit low academic performance. Similarly, students who exhibit low academic performance tend to have little sense of belonging. Each factor could be the initial cause or subsequent effect.

Using peer mentoring to promote 9th-grade transition into high school is another goal of the TP program. Based on its more limited loss of instructional time, positive outcomes in this study, and impact at least equivalent to that of the PGC program on the dependent variables, this researcher recommends the TP program as a means to promote the successful transition of students into high school and encourage the deliberate, prosocial influence of peer groups.

The last conceptual framework of SES relates to the finding of the interaction between organizational type and SES to reduce dropout rates significantly and its subsequent recommendations. Students in urban and low SES settings have been found particularly vulnerable to informal peer groups that increase the likelihood of antisocial behavior, including behaviors that challenge the norms of schools and merits of education. In New Jersey, many urban schools exist in low SES settings. For decades, policymakers have stressed the need to reduce the dropout rate of students. Their studies and other research studies have shown the subsequent economic and social disadvantages associated with the lack of a high school diploma. Local school officials should be aware of their schools' dropout rate. Schools with high dropout rates are recommended to adopt a peer-mentoring program analogous to the TP program. This recommendation recognizes the achievement gap associated with students in urban, low-SES settings in New Jersey public high schools and the limited loss of instructional time required for the TP program.

In line with this discussion and its recommendations, future researchers wishing to explore the impact of peer mentoring should conduct a longitudinal, quantitative study to determine if the positive trends found in this study continue and lead to significant outcomes on student and school performance, as well as investigate why peer mentoring leads to these outcomes. If using a qualitative approach, future researchers should include the participants' point of view. This added aspect could further delineate the impact of peer mentoring on the various participants, including the mentees, mentors, and graduates, from their transitional year into their postsecondary years. This study has specific recommendations regarding the local conditions that schools consider in their decision-making process to implement a peer-mentoring program. Future researchers should develop a case-study approach to examine, in greater detail, the impact of peer mentoring on the school climate and student achievement.

The peer-mentoring programs in this study were the products of the Princeton Center for Leadership Training. The state of New Jersey approached PCLT to design the TP program and the state provided grants to public high schools to implement it. The findings of this study suggest that high school students in peer-mentoring schools, and more specifically in TP schools, benefit academically in their math and language arts performance, have higher graduation rates, and lower dropout rates. The schools in this study included a range of public schools of different sizes in different settings with different levels of SES and diversity. The 68 public high schools with peer-mentoring programs in this study reflect the types of high schools found in the nation. Although this study examined only New Jersey schools, it has implications for public high schools across the nation, specifically schools with unacceptable dropout rates, regarding the

implementation of peer mentoring and its impact on the academic and nonacademic

performance of students.

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