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High School Student Engagement and Other Predictors of Freshman College GPA

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HIGH SCHOOL STUDENT ENGAGEMENT AND OTHER PREDICTORS OF FRESHMAN COLLEGE GPA

DISSERTATION

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by

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ABSTRACT

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Barry University, 2011

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This study was designed to provide data on certain predictors of college success. Research has focused on two areas: the importance of initial, or first-year success, and the construct of *student engagement*. A student's first semester freshman college grade point average (FR-GPA) has been linked with positive overall college outcomes (Kuh, Kinzie, Schuh, & Whitt, 2005). Student engagement has been linked with positive first-semester grades (Carini, Kuh, & Klein, 2006).

The purpose of this study was to determine the predictive value of high school student engagement, high school grade point average (HS-GPA), and college entrance exam score, on first-semester freshman college grade point average among rural Florida students. The college entrance exam score exclusively used was the formerly named American College Test (ACT). The theoretical framework for this study was student engagement theory (Kuh, 2001; Willms, 2003; Goldspink & Winter, 2009). This study used a self report questionnaire that requested respondent gender, overall high school GPA, highest composite ACT exam score, and first semester freshman college GPA, in addition to a score on a high school student engagement questionnaire. Multiple regression analysis was used to measure the strength of the correlation between the criterion variable of first semester freshman college GPA and each of the three predictor variables.

The major finding was that the three predictors had a significant positive correlation with first semester freshman college GPA. However, only one individual predictor, the high school student engagement score was significant ($p < .01$). The study also depicted positive correlations between the two independent variables of HS-GPA and ACT exam score.

The significant positive correlation between high school student engagement questionnaire scores and FR-GPA indicates that higher scores on the high school student engagement questionnaire are associated with higher FR-GPAs. This study lends further support to existing research about the predictive value of student engagement on student grade point average (Kuh, 2007; Yazzie-Mintz, 2007). The study also provides additional evidence that the more engaged a student is, the more successful he or she will be in terms of grade point average (Atweh, Bland, Carrington, & Cavanagh, 2007; Carini, Kuh, & Klein, 2006; Kuh, Kinzie, Schuh, & Whitt, 2005; Yazzie-Mintz, 2007). The analysis indicated that the high school student engagement questionnaire scores were significantly positively correlated with freshman college GPA values, $r (55) = .48$, $p < .01$, indicating that higher scores on the high school student engagement questionnaire can be associated with higher first semester freshman college GPAs.

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CHAPTER I

INTRODUCTION

Background of the Problem

Valid and reliable pre-college predictors of freshman college grade point average (FR-GPA) can be essential tools for educational leaders. Colleges and universities need more effective predictors of success in order to choose students more likely to succeed. Improving retention rates better utilizes universities' resources by allowing early intervention. It is also helpful for students to know what behaviors may increase their potential to succeed in college in order to spare unnecessary expense and sense of failure for students.

This study was designed to provide data on certain predictors of college success. Research has focused on the two areas of initial, or first-year success, and the construct of *student engagement*. A student's FR-GPA has been linked with positive overall college outcomes (Kuh, Kinzie, Schuh, & Whitt, 2005). Student engagement at the college level has been linked with positive first semester grades (Carini, Kuh, & Klein, 2006).

The purpose of this study was to explore the predictive value of high school student engagement on freshman college GPA. For this study, high school student engagement was one independent variable, along with high school grade point average (HS-GPA) and college entrance exam score, used as predictors of the dependent variable of first semester freshman college GPA. If educational leaders and students themselves, through policies and actions, can improve student engagement, research suggests that GPAs can be positively affected.

Traditionally, the strongest predictors of FR-GPA have been cumulative HS-GPA (Carini, Kuh, & Klein, 2006) and college entrance exam scores (Zwick & Sklar, 2005). The two most widely utilized college entrance exams are the formerly acronymic Scholastic Admissions Test (SAT) and American College Test (ACT). Colleges have traditionally relied on admissions tests such as the ACT and SAT to select students (Cimetta, D'Agostino, & Levin, 2010).

Research has suggested, however, that these predictors may fail to recognize the diversity of students, and has questioned the validity of standardized tests in determining FR-GPA and subsequent student success (Serow & Jackson, 1983). These traditional assessments of high school success currently predominate in the research, while emphasis on more pervasive factors has not been forthcoming. Student engagement assessment can help provide a new individualized consideration for students (Kuh & Gonyea, 2006). The ability to improve GPA at both the high school and college level can be a valuable tool for educational leaders and students themselves. Therefore, student engagement can be of tremendous importance for educational leaders and college-bound students as an appropriate strategy for intervening when necessary to improve GPA.

Research has shown the correlation between college entrance exam scores and freshman grades to be second only to HS-GPA in predicting college outcomes (Geiser, 2009). Hierarchical logistic regression analyses have demonstrated that cumulative HS-GPA and ACT scores are significant predictors of FR-GPA, and in one study they were "the only pre-college predictors significantly related to persistence" (Kahn & Nauta, 2001, p. 633). DeBerard, Spielmans, and Julka (2004) found HS-GPA and college entrance scores were predictors of FR-GPA and retention among college freshman.

College entrance exams and cumulative HS-GPA are the traditional standard for studies that attempt to successfully predict FR-GPA (Crede, Roch, & Kieszczynka, 2010). This study sought to test the predictive value of the pre-college variable of high school student engagement as a more pervasive factor of consideration for students (Kuh & Gonyea, 2006) opposed to the non-individualized, more analytical HS-GPA and ACT score.

College is beneficial, resulting in higher earnings and higher socio-economic status throughout an individual's career (Pascarella & Terenzini, 2005; Saban, 2007). Predictors of college success can therefore be useful for students to spare them from unnecessary expense and sense of failure. These predictors can also be important for educational leaders (Barefoot, 2000; U.S. Department of Education, 2006). An appropriate intervention such as increased student engagement at the high school level might better prepare students for college. Many graduating high school seniors are unprepared for their first semester of college (Kuh, 2007). In order to alleviate all these issues, leaders in education go to great efforts to promote and develop methods for predicting FR-GPA. One study of the predictive value of college entrance scores and HS-GPA on FR-GPA at the University of South Carolina (Cohn, Cohn, Balch, & Bradley, 2004) was purposefully used to study the degree to which high school students should be eligible for statewide scholarships.

The construct of student engagement at the college level has been positively correlated with FR-GPA (Kuh, 2005; Kuh, Kinzie, Schuh, & Whitt, 2005; Tinto, 2004), meaning that those students who are more engaged tend to have higher GPAs. Similarly, the construct of student engagement at the high school level has also been positively correlated with HS- GPA (Goldspink & Winter, 2009; Willms, 2003; Yazzie-Mintz,

2007). Few studies, however, have explored the predictive value of high school engagement on FR-GPA. Can increased student engagement in high school subsequently improve that student's FR-GPA, which research has shown can predict overall success? This predictive effect could be important for students and educational leaders alike. The importance of this current study is that it explores the transitional period when a high school senior moves on to the critical first semester of college, as few studies have done.

Furthermore, the evidence provided on the predictive value of high school engagement on FR-GPA might be used by leaders in education for tailoring their own leadership style and for possibly enacting needed policy changes. Research indicated that *transformational leadership* style leads to increased student engagement which along with HS-GPA and ACT score, has predicted FR-GPA, which has predicted overall college success (Leithwood & Jantzi, 2000, 2005; Printy, 2010, Stewart, 2006). This current research study can add to the body of evidence that can be applied by educational leaders at the secondary school and college levels. This study can provide a pathway for how leaders at the high school and college levels can work individually and together to increase positive student outcomes.

There have been research efforts and general commentary about determining how best to achieve the desired outcome of predicting FR-GPA. Much research and commentary focused on the inability of leaders to improve FR-GPAs (Barefoot, 2000; Pascarella & Terenzini, 2005). One of the most frequently cited reports, *An American Imperative* (Wingspread Group, 1993), suggested that the United States needs colleges and universities to improve in terms of higher FR-GPAs. Another recent and influential report commissioned by the U.S. Department of Education was the Spellings Report,

officially entitled *A Test of Leadership: Charting the Future of U.S. Higher Education* (U.S. Department of Education, 2006), commissioned by then Secretary of Education Spellings. She was formerly a principal proponent of the 2001 No Child Left Behind Act that proposed reforming primary and secondary education. As suggested by previous research and reports, the panel of business, political, and education leaders asserted that increasing FR-GPA as a means to increasing college success and retention are targeted goals for the current and future settings of higher education in the U.S. The commission stated that "most colleges and universities don't accept responsibility for making sure that those they admit actually succeed" (U.S. Department of Education, 2006, p. xii). Educators need data-driven research to assist in accurately predicting FR-GPA, and leaders in education can use reliable pre-college predictors of FR-GPA to shape policy decisions.

The literature reviewed prior to this study also examined the construct of transformational leadership and how organizational leaders can use research on student engagement to more reliably predict FR-GPA. The work of Avolio and Bass (1992), Burns (1978), and Leithwood and Jantzi (2000, 2005), has been crucial in these investigations. Transformational leadership has been quantitatively analyzed by Bass and Avolio (1992) using 12 descriptors to measure four factors. The authors' Multifactor Leadership Questionnaire Form 6S (MLQ-6S) is composed of three items for each of the four factors which are *idealized influence, inspirational motivation, intellectual stimulation,* and *individualized consideration*. Some of these factors can be matched directly with perceived criteria of student engagement. For example, *intellectual stimulation* has been regarded by researchers as a prerequisite for an individual student's

engagement (Kuh, 2005; Willms 2003; Goldspink, 2008). The construct of *individualized consideration* for students has been one premise of some student engagement assessment models (Kuh & Gonyea, 2006)

Leithwood and his associates were pioneers who applied the mainly business-grounded research of Burns (1978), Bass (1985), and Avolio (1999) to the field of leadership and education (Stewart, 2006). Research in this more recent field has demonstrated that transformational leadership tenets have a positive correlation with student engagement (Leithwood & Jantzi, 2000, 2005; Printy, 2010). Leaders in education can utilize the tenets of the transformational leadership model to assist in increasing engagement through inspirational motivation and their own *idealized influence* (Leithwood & Jantzi, 2005; Stewart, 2006).

Other researchers have shown a strong correlation between FR-GPA and overall college success (Kuh, 2005, 2007; Pascarella & Terenzini, 2005). Programs emphasizing the first-year experience (FYE) and student engagement have shown success with predicting and improving FR-GPA (Barefoot, 2000; Kuh, 2005; Kuh, Kinzie, Schuh, & Whitt, 2005; Pascarella & Terenzini, 2005). Research has suggested that the dropout rate of first year students at higher educational institutions in the United States rangeed from 33% (Barefoot, 2000) to 50% (Merrow & Tulenko, 2005). Furthermore, at four-year colleges and universities, studies have found that only 72 to 79% of first-year students persisted to a second year (Pascarella & Terenzini, 2005). For this reason this predictive study concentrated attention on the first-year experience specifically by examination of FR-GPA values.

Can increasing levels of engagement in high school positively affect GPA at the freshman college level? Positive outcomes of academic performance at the college level (Carini, Kuh, & Klein, 2006; Kuh, Kinzie, Schuh, & Whitt, 2005) and also at the high school level (Willms, 2003; Yazzie-Mintz, 2007) have been linked with increased levels of engagement. Carini, Kuh, and Klein (2006) found that "levels of student engagement were often positively related to GPA" (p. 13). Their research was done exclusively at the college level. The construct of student engagement was identified in 1996 as "the latest buzzword in education" (Kenny, Kenny, & Dumont, 1995, p. 37). Carini, Kuh, and Klein (2006) found that student engagement has been correlated with experimental and traditional measures of academic performance leading to college success, such as FR-GPA. A study that examined the predictive value of high school engagement on FR-GPA could be beneficial for educational leaders and students at both the high school and college level.

Lastly, the value of a predictor of eventual college success, such as FR-GPA, is important because the importance of that college success is "multi-dimensional, including more job opportunities, a middle class lifestyle, access to management opportunities, the background and confidence to attempt independent ventures, and avoidance of long-suffering hard labor" (Saban, 2007, p. 115). According to Hoachlander, Sikora, and Horn (2003), "roughly 9 in 10 community college students enroll intending to obtain a formal credential or to transfer to a 4-year institution." (p. 164). Predictors of their eventual success are instrumental in assisting administrators in meeting these students' needs and better delivering services. The research of Leithwood and Jantzi (2000, 2005)

demonstrated that educational leaders can use the transformational leadership model directly and indirectly to positively impact levels of student engagement.

This study focused on the transitional period from high school into the freshman year of college. Student engagement at the freshman college level has been strongly linked with FR-GPA (Kuh, 2001, 2003; Fredricks, Blumenfeld, & Paris, 2004; Kuh, Kinzie, Schuh, & Whitt, 2005; Carini, Kuh, & Klein, 2006). Student engagement at the high school and preparatory school level has also been strongly linked to high school and preparatory school GPA (Willms, 2003; Park, 2005; Yazzie-Mintz, 2007; Kuh, 2007; Goldspink, 2008; Goldspink, & Winter, 2009). There has been little, if any, research that has linked high school student engagement with FR-GPA.

While investigations into the construct of student engagement have been rigorous and data-driven (Kuh, 2003; Willms 2003), the most widespread predictors for FR-GPA continue to be college entrance exam score and cumulative HS-GPA. Research has shown, however, that these predictors may fail to recognize the true diversity of students (Serow & Jackson, 1983). These traditional assessments of high school success have predominated in the research while emphasis on more holistic factors has not been forthcoming. Student engagement assessment can help provide a new individualized consideration for students (Kuh & Gonyea, 2006) that also falls in line with the premises of transformational leadership (Bass & Avolio, 1992). Transformational leadership theory has been shown to have a positive impact on institutional leaders (Printy, 2010) and teams of leaders (Hallinger & Heck, 2010) in predicting levels of student engagement.

Can a score on a specific instrument that measures student engagement at the high school level predict FR-GPA? This study was designed to explore the predictive strength of high school student engagement. The hypothesis that high school student engagement predicts FR-GPA may have an impact on policy decisions at the secondary and higher education levels. Furthermore, given the evidence of a positive correlation between a transformational leadership style and levels of student engagement (Leithwood & Jantzi, 2005) this study can provide guidance to educational leaders for improving academic outcomes.

Problem Statement

This study explored the predictive value of HS-GPA, college entrance exam score, and high school student engagement on FR-GPA. The traditionally strongest predictors of FR-GPA have been cumulative HS-GPA (Carini, Kuh, & Klein, 2006) and college entrance exam score (Zwick & Sklar, 2005). FR- GPA is directly related to the overall success of a student in college (Raban, 2005). College success, as defined by the achievement of a bachelor's degree, is the most significant factor in the attainment of a middle-class socio-economic status (Pascarella & Terenzini, 1991; Saban, 2007). For this reason, high school and higher education leaders should go to great lengths to promote research-based indicators, such as student engagement, in their efforts to accurately predict FR-GPA.

Educational leaders need to understand the predictive value of student engagement and their role in fostering and developing it (Kuh, Kinzie, Schuh, & Whitt, 2005; Raban, 2005). Kuh (2005) contended that actions designed to promote positive measures of student engagement can provide educational institutions with the tools for

improving FR-GPA, accountability, institutional performance, and even accreditation efforts (Kuh, 2007). Goldspink and Winter (2009) expanded further on the benefits of engagement and included policy questions about the effectiveness of curriculum alternatives and interventions in addressing inequities in educational attainment, along with improved prediction of FR-GPA.

All of these factors are important to students as well as leaders in education who are attempting to predict FR-GPA. The challenge is for educational leaders to develop strategies that improve this predictive value through research-based methods such as student engagement (Kuh, Kinzie, Schuh, & Whitt, 2005). Some of the available literature on engagement focuses on positive correlations with HS-GPA (Alexivitch, Kobussen, & Stookey, 2004; Kuh, 2007; Park, 2005; Yazzie-Mintz, 2007). Most research in the field, however, has been done at the first year college level (Chickering, 1969; Kuh, 2001, 2003; Kuh, Kinzie, Schuh, & Whitt, 2005; Tinto, 1993, 1997, 1998, 2004, 2005), seen as a critical time-period for overall college success (Barefoot, 2000; Kuh, 2007).

The challenge for today and for the future is to develop and maintain institutional practices which can foster college success (Wingspread Group, 1993). For this reason more research is needed on the natural chronological link between high school student engagement, especially in the final senior year, and its predictive value for FR-GPA. In the field of student engagement, this transitional period has received little, if any, attention. For the educational leader, it can mean better service delivery at this critical juncture between the senior year of high school and the first year of college (Kuh, 2007).

For the student, it can mean greater knowledge of behaviors and actions at the high school level that can lead to higher FR-GPA, and other measures of college success.

Purpose of the Study

The purpose of this study was to determine the predictive effects of high school student engagement, HS-GPA, and college entrance exam scores on FR-GPA among rural Florida students using a standardized instrument validated in previous research. Most studies of student engagement have focused almost exclusively on either the high school (Yazzie-Mintz, 2007) or college setting (Kuh, Kinzie, Schuh, & Whitt, 2005). This has resulted in a gap in the literature on issues and concerns regarding the transitional period between high school and college and the impact that student engagement may have during this crossover period. “It is imperative that educational leaders support their theories with empirical evidence that supports student achievement. Moreover, it is necessary to collectively determine the purpose of school leadership and to make changes in our school systems that positively impact student learning” (Stewart, 2006, p. 24).

The validity of high school student engagement, along with HS-GPA and college entrance exam scores, as predictors of FR-GPA was analyzed in this study. Studies of this nature and design may be instrumental in helping leaders in education better serve the needs of students, which may have an impact on service delivery. The study was designed to investigate the predictive value of scores on an educational engagement survey completed by a sample population of students who had graduated from rural high schools in Florida, their HS-GPAs, and their ACT scores, on their FR-GPAs.

Most studies involving student engagement have tended to focus exclusively at either the high school or college level. This study endeavored to look at the transition between secondary education and higher education. Few, if any, studies have examined the predictive value of student engagement at the high school level on FR-GPA. Ensuring proper data-driven decision making by leaders for students was one of the purposes of this study.

Research has shown, additionally, that leadership style can positively impact student engagement (Leithwood, Harris, & Hopkins, 2008), and student engagement can positively impact HS-GPA (Yazzie-Mintz, 2007) and FR-GPA (Kuh, 2007), which can predict overall college success (Barefoot, 2000), which is beneficial to attaining a middle class lifestyle (Saban, 2007). Transformational leadership at the high school level can possibly influence FR-GPA by encouraging student engagement theory.

Background and Significance

This quantitative study utilized the regression analysis method to generate data about HS-GPA, ACT score, and high school student engagement to predict FR-GPA. The general purpose of this research was to add to the existing knowledge about the relationship between school engagement and college success. Additionally, this study was designed to provide evidence for or against the predictive value of high school engagement on FR-GPA. Engagement instruments have been used widely among college students and somewhat among high school and preparatory school students. Studies of this nature are instrumental in helping administrators better meet the needs of students. This is especially relevant given research that has demonstrated the ability of

transformational leadership to increase levels of student engagement (Leithwood & Jantzi, 2005).

A review of the relevant literature revealed the importance of college (Power, 2000; Saban, 2007) and the need for better college preparation (Kuh, 2007). The literature also showed the importance of student engagement at the high school level (Yazzie-Mintz, 2007; Goldspink & Winter, 2009) and also at the first year college setting (Kuh, 2007). The empirical evidence suggested that in both high school and college settings student engagement has been positively correlated with student GPA. Finally student engagement has been found to be positively correlated with the leadership style of educational leaders, especially transformational leadership (Printy, 2010). Therefore, it is in the interest of educational leaders in high school and college settings to work together with the given information to better influence and predict the FR-GPA (Alexivitch, Kobussen, & Stookey, 2004).

This study was also significant because it showed the relationship between measures of high school engagement and subsequent FR-GPA. This research can add to the body of evidence that can be applied by educational leaders at the secondary school and college levels. Given possible evidence resulting from the research hypothesis, or even the null hypothesis, leaders in education could be better equipped to make decisions regarding the effect of high school student engagement on future FR-GPA.

Theoretical Framework

The theoretical framework for this study was based on the student engagement theories of Kuh (2001), Willms (2003), and Goldspink and Winter (2009). Extensive research has demonstrated that “the time and energy students devote to educationally

purposeful activities is the single best predictor of their learning and their personal development" (Kuh, Kinzie, Schuh, & Whitt, 2005, p. 8). Research has shown "that student engagement has a significantly positive relationship with academic gains in mathematics" (Park, 2005, p. 87). Student engagement has also been linked positively with critical thinking skills and grades (Carini, Kuh, & Klein, 2006). In research over the past two decades the construct of student engagement has received substantial and increasing attention in educational discourse and practice, though not always in policy (Smyth, 2006).

The development of the construct of student engagement will be more thoroughly examined in the literature review. Further evidence will also be provided for the predictive value of student engagement on GPA. Due to increased research at both the secondary and college level that has linked high levels of engagement with positive educational outcomes, this framework and study design provided robust empirical data on the predictive value of high school student engagement on FR-GPA.

Research Question

The following research question guided this study:

> What is the predictive value of high school grade point average, composite college placement exam score, and high school student engagement on first semester college grade point average?

Research Hypotheses

The following research hypotheses were addressed by this study:

Research Hypothesis. There is predictive value in high school grade point average, composite college placement exam score, and high school student engagement on first semester college grade point average?

Null Hypothesis. There is no predictive value in high school grade point average, composite college placement exam score, and high school student engagement on first semester college grade point average?

Definition of Terms

High school student engagement was a score on the Goldspink-Winter student engagement questionnaire (2009) which ranged from a low of 52 to a high of 260. This was a self-reported questionnaire (Appendix B).

High school grade point average (HS-GPA) was a value from 0.0 to 4.0 that reflected overall grade performance during high school. In this study, since the minimum requirement to meet graduation standards is a 2.0 GPA, scores below that number were moot. Students who received perfect grades in all subjects would have a theoretical possible threshold of 4.0. Weighted grades were not calculated.

College entrance examination was a score exclusively from the ACT college entrance exam. The widely used college entrance exam SAT was not used in this study. An SAT score was reported by only two respondents, who also reported ACT scores. Scores for the ACT range from zero to 36. The low of zero can be considered an unlikely theoretical low given that someone scoring below a certain level would be unlikely to be accepted into a college. The national ACT average was 20. The respondent mean average for this study was 24.11.

First semester freshman college grade point average (FR-GPA) was a value from zero to 4.0. This was a student reported score of their first semester grade point average.

Assumptions

There were several underlying assumptions in this study. The first assumption was that all students and administrators participating in this study understood the student engagement questionnaire. It is assumed that all participants completed the instruments openly and honestly. Research has shown that student self reports can be valid and reliable when six specific conditions are met (Baird, 1976; Pace, 1984). First, the information should be known to the surveyed students. For this study, the entire engagement questionnaire was based on the students' lived experiences.

Second, phrasing of the questions should be clear and unambiguous. The engagement questionnaire was derived from previous studies (Goldspink & Winter, 2008) which found it valid and reliable with children as young as five years of age. The reading level should not have been too difficult for college freshmen.

Third and fourth, the questions should reference fairly recent events and be potentially verifiable (Pace, 1984). This criterion was reasonably met by focusing on college freshman who had most recently completed their first semester of college. As stated, two of the three independent variables, HS-GPA and ACT score, were potentially verifiable by the respondent at the survey administrator's high school site. The respondent's first-semester college freshman GPA could also be verified by the respondent if so desired.

Fifth, the respondent should consider the questions to be worthy of a concerted response. This assumes the quality of student responses was high and similar from

student to student. Sixth, the answers should in no way threaten or embarrass the respondent. It is hoped that the complete anonymity provided by the survey procedures alleviated this issue. Given these six restraints, student self reports can be valid and reliable (Pace, 1984). Therefore, another assumption was that the engagement questionnaire self report surveys were valid for their intended purpose.

The study assumed that the quality and reflectivity of each student's survey response were similar. It also assumed that the students had a minimum amount of expertise and experience to complete the survey accurately, truthfully, and insightfully. It was assumed that the engagement questionnaire was valid and reliable for its intended use. Empirical research data have suggested that it has validity and reliability (Goldspink & Winter, 2009). Furthermore, an assumption was made that the criteria for the statistical test chosen for data analysis was satisfied. The procedure of multiple regression analysis is discussed more at length in the methodology chapter, especially in the data analysis section.

Limitations of the Study

The limitations of this study involve several factors. The sample included only students who graduated from one of seven high schools in a six-county rural area of south central Florida. Results from this study may not be generalizable to other populations. The study can be accurate only to the extent that the respondents gave honest and accurate responses. The information this researcher obtained was dependent on participants' self-reported responses and was, therefore, subject to human error and bias.

Settings

The study involved sampling students who had completed their first semester at a private or public college or university. A convenience sample of these participants was obtained from students who had matriculated from rural Florida high schools located within a six-county area. This researcher was able to obtain the names and addresses of the colleges attended by the sample population through the public records of the high schools in this area. The student population was diverse, including near equal representations of both males and females, and these were the only demographic data collected. These demographic data were not, however, analyzed in the multiple regression procedures.

Summary

The need to use pre-college variables to better predict FR-GPA in the United States has been strongly articulated. Significant efforts at many colleges and universities to improve retention rates have been put forth with a focus on the first-year experience and student engagement. Research regarding the effectiveness of these strategies has been extensive. This study can contribute to the college student engagement literature and the relatively recent body of literature regarding high school engagement. It can also contribute to the ongoing exploration of how best to utilize the well-researched link between transformational leadership and student engagement. Potentially, this study can have implications for institutional practice at both the secondary and higher educational settings.

Despite the number of studies on student engagement at the high school level (Alexivitch, Kobussen, & Stookey, 2004; Kuh, 2007; Park, 2005; Yazzie-Mintz, 2007)

and the even more extensive research done at the first year college level (Chickering, 1969; Kuh, 2001, 2003; Kuh, Kinzie, Schuh, & Whitt, 2005; Tinto, 1993, 1997, 1998, 2004, 2005), there has been little research on the correlation between high school engagement and subsequent FR-GPA. The stated focus of this research was to examine the predictive value of high school student engagement on FR-GPA. Two other predictors examined were HS-GPA and ACT score.

Findings from this study may be applied to service delivery by educational leaders at both the secondary school and college levels. Students at the high school level may be able to use this information to appropriately alter their behaviors to improve their potential for higher FR-GPA outcomes. Findings may also add rationale for an adherence to transformational leadership theory in an effort to raise levels of student engagement at an institution. Pre-college prediction of college success can be a valuable tool for both students and educational leaders.

CHAPTER II

LITERATURE REVIEW

Introduction

Research has shown that FR-GPA (Belcheir, 1997; Crede, Roch, & Kieszczynka, 2010; Kuh, Kinzie, Schuh, & Whitt, 2005) appears to be the strongest predictor of overall college success. Pascarella and Terenzini (2005) concluded that FR-GPA, "may well be the single best predictor of student persistence" (p. 396). The outcome of the first year of college can predict the overall success of a college student and the attainment of a bachelor's degree (Kuh, Kinzie, Schuh, & Whitt, 2005). Student engagement has been shown to have a positive effect on FR-GPA (Kuh, 2005).

The construct of student engagement began as a more abstract concept in the work of Pascarella and Terenzini (1991) and subsequently quantitative survey instruments were developed. The work of Kuh (2001) at Indiana University was a pivotal step toward developing these quantifiable measures of college freshman student engagement. Kuh's subsequent work quantified student engagement at the high school level (Yazzie-Mintz, 2007). The later work of Willms (2003) on short-form quantifiable measures of engagement then led to the instruments of Goldspink and Winter (2009).

First Semester Freshman College GPA

FR-GPA is important because it serves as an indicator of overall college success (Belcheir, 1997; Kuh, Kinzie, Schuh, & Whitt, 2005). Research has provided various definitions of overall college success. One of the most impact-laden and valid definitions has been the attainment of a baccalaureate degree. In this study, FR-GPA was used because it is a strong indicator of overall college success (Belcheir, 1997), student

persistence (Pascarella & Terenzini, 2005), and the attainment of a bachelor's degree (Kuh, Kinzie, Schuh, & Whitt, 2005). Furthermore, it could be conveniently obtained by student self report, and fell more closely in chronology to another variable of interest, the respondents' high school student engagement level regarding their senior year of high school.

Due to the importance of college success it is important to provide data on predictors of that success. Most research has focused on the two areas of first-year success and the construct of student engagement. Students FR-GPAs have been shown to predict overall college outcomes (Kuh, Kinzie, Schuh, & Whitt, 2005). Student engagement has been linked with positive FR-GPA (Carini, Kuh, & Klein, 2006).

"Undoubtedly, school retention is associated with student engagement; the more students are engaged in their education, the greater is their tendency to stay longer in school" (Atweh, Bland, Carrington, & Cavanagh, 2007, p. 2).The retention of first year college students has been a stated goal of much research and practice in higher education (Kuh, Kinzie, Schuh, & Whitt, 2005; Wingspread Group, 1993). In the 1970s, courses designed for this population began to be referred to as first-year experience (FYE) courses. Much information has been gathered to support the contention that these courses can improve both retention and academic achievement (Barefoot, 2000). Furthermore, other targeted actions, such as learning community programs, classroom-based learning communities, living-learning communities, and freshman interest groups have been used to improve retention (Inkelas & Weisman, 2003).

There have consistently been a high number of first year students who have failed to continue into their sophomore year. The American College Testing report (2000)

provided research from 1983 to 1999 which demonstrated that the freshman non-retention rate varied from 47.7 percent at two-year public colleges, 46.6 percent at open admissions institutions, 16.8 percent at private doctoral/research institutions, to 8.8 percent at highly selective institutions. Most students attended institutions with the lowest retention rates. According to Tinto (2004), the national attrition rate has persistently remained near 45% for more than the past 100 years.

Tinto's (1993) highly influential model of voluntary student attrition reported that a student's decision to remain at or leave college was not an isolated incident. Tinto (2004) argued that students were involved in a continuous process of becoming more or less committed to higher education dependent on the degree they felt engaged with the academic and social systems. Tinto (1993) theorized that the more students perceived themselves as being fully engaged with academics and the social system of the college, the more committed they became toward success. This research co-evolved with Pascarella and Terenzini's work (1991) in the area of what was to become the student engagement model.

The outcome of the first year of college may determine a student's predisposition toward completion and attainment of a bachelor's degree (Kuh, Kinzie, Schuh, & Whitt, 2005). Barefoot (2000) concluded that most colleges and universities have some program of transitional support provided for first year students, demonstrating the importance of this first year. The research has suggested that first-year college success can be a fairly valid indicator of eventual overall college success (Atweh, Bland, Carrington, & Cavanagh, 2007).

College retention rates have been the subject of empirical research for more than 70 years according to Berger and Braxton (1998). Those authors suggested that Tinto's theory of voluntary student attrition has reached "near-paradigmatic status" (p. 104) in the literature. The essence of Tinto's (1993) theory was that when students choose to leave college, it was primarily due to a lack of social and academic student engagement.

Astin's (1997) landmark comprehensive and respected study in the field of student retention concluded that the four variables of "high school grades, admissions test scores, sex, and race . . . account for the bulk of the variance in retention that can be predicted from entering freshmen characteristics" (p. 649). Research has shown that the FR-GPA appeared to be the strongest predictor of overall college success (Belcheir, 1997; Crede, Roch, & Kieszczynka, 2010; Kuh, Kinzie, Schuh, & Whitt, 2005). Three areas that research has shown to be correlated with FR-GPA are HS-GPA, college placement exam score, and the construct of student engagement at the college level.

College Success

First semester freshman college GPA is a strong indicator of overall college success (Belcheir, 1997), student persistence (Pascarella & Terenzini, 2005), and the attainment of a bachelor's degree (Kuh, Kinzie, Schuh, & Whitt, 2005). Pascarella and Terezini (1991) suggested that attainment of a bachelor's degree might be the most vital step in an individual's occupational and economic achievement. Other research has demonstrated that college degree attainment showed positive correlations with occupational screening devices, wage stratification, wage gap, and cognitive factors (Saban, 2007). Pascarella and Terenzini (2005) argued that college teaches attitudes, behavior, cognitive skills, and values that make students more productive and, therefore,

more highly paid. These authors argued that the foundational constructs of the bachelor's degree were built on marketable abilities relevant to job performance. In summation, the value of a bachelor's degree has been found to be "multi-dimensional including more job opportunities, a middle-class life-style, access to management opportunities, the background and confidence to attempt independent ventures, and avoidance of long-suffering hard labor" (Saban, 2007, p. 115).

Economic advantages have been highly correlated with educational attainment in the United States (Pascarella & Terenzini, 2005), and lifetime earnings have been the most readily available result for those who invest in education (Perna, 2003). The attainment of a certain educational level can be, to use the phraseology of Paul Freire (1993), the "transforming action (that) can create a new situation, one which makes possible the pursuit of a fuller humanity" (p. 47). The research of Perna (2003) demonstrated that earning power was largely determined by individual productivity of the wage employee, which was a result of the investment the worker made in his or her own economic value. College success produced economic value which allowed for the attainment of more desirable jobs and produced individuals with traits that employers valued (Bowles, Gintis, & Groves, 2005).

Pascarella and Terenzini (2005) demonstrated in their research that the reasons students entered college were strongly linked to the perception that a college degree provided a clear economic advantage. A 1997 survey of college freshman at UCLA found that nearly 75 percent cited making more money and getting a better job as their most important reasons for going to college (Pascarella & Terenzini, 2005). In fact, examination of educational and occupational data from the U.S. Census Bureau

demonstrated a clear correlation between educational attainment and occupational status (Perna, 2003). Furthermore, the wages available to a college graduate as compared with a high school graduate were significantly higher and rapidly increasing (Pascarella & Terenzini, 2005). Perna (2003) demonstrated that in 2000 nearly 90% of college graduates were participating in the labor force, while only approximately 75% of high school graduates were in the work force.

This increasing wage gap has been well demonstrated in the available literature. The gap between advantaged and disadvantaged men increased steadily from the 1970s to the 1990s (Bowles, Gintis, & Groves, 2005). The value given to attainment of a bachelor's degree also increased steadily through the end of the last century (Pascarella & Terenzini, 2005). Furthermore, other research indicated that these gaps may persist into the future at an increasing rate due to the degree of rigidity at the upper and lower ends of the wage distribution (Bowles, Gintis, & Groves, 2005). As an example of this increased pace, research showed that between 1967 and 1974 wage earners with a bachelor's degree earned 49% more in average annual income over those with only a high school diploma (Pascarella & Terenzini, 2005). This rose to an 80% difference during the 5 year period between 1992 and 1996 (Pascarella & Terenzini).

Other occupational advantages were demonstrated by Perna (2003) who contended that two-thirds of managerial and professional position were held by those with a minimum of a bachelor's degree. Furthermore, competition was intense for those fewer good jobs (Lareau, 2003), and college graduates were more likely to be employed than high school graduates (Pascarella & Terenzini, 2005). The return on an investment in a college degree was beneficial across a wide spectrum of individual factors. In their

seminal work *How Colleges Affect Students: Findings and Insights from Twenty Years of Research*, Pascarella and Terenzini (1991) found that even after controlling for intelligence, socioeconomic background, and work experience, a bachelor's degree still provided a 20% to 40% earnings advantage over a high school diploma. Furthermore, as previously suggested, this economic advantage increased over time, making a college degree even more beneficial. Research by Bowles, Gintis, and Lindhal (2005) demonstrated that over the last decades of the twentieth century the value of each year of college increased.

Perna (2003) argued that individuals who earned a college degree earned more partially due to greater academic ability and higher levels of motivation. Research has shown that the lack of a college degree effectively has served as a barrier to entry into high-income careers (Pascarella & Terenzini, 2005). Many of the social gains that resulted from a college education have been shown to be passed on not only to the children of college graduates but also to the communities where the college graduates lived. Communities whose residents had higher average educational attainments had more favorable public school systems (Lareau, 2003). Middle class identity has been shown to have provided a beneficial sense of efficacy (Bowles, Gintis, & Groves, 2005). College success had a direct correlation to middle class identity which was associated with jobs that had managerial authority and required college-level skills (Lareau, 2003).

Student Engagement

Student engagement has been shown to be measurable and definable (Goldspink & Winter 2009; Kuh, 2003, 2005; Willms, 2003). Pascarella and Terenzini began in 1991 to look at student and institutional characteristics in *How Colleges Affect Students:*

Findings and Insights from Twenty Years of Research. This research was closely followed by Tinto's landmark work, *Leaving College: Rethinking the Causes and Cures of Student Attrition* (1993), which marked a move toward a holistic approach to retention because it focused on topics like student involvement and engagement. The work of Tinto and Pascarella and Terenzini can be considered as historical preludes to the quantitative measures of student engagement that followed.

Tinto's work focused on the act of leaving college and the reasons given by students for such a decision. Research over the past two decades has demonstrated that the concept of disengagement was the over-riding reason for students leaving college (Smyth, 2006). As Atweh, Bland, Carrington, and Cavanagh (2007) contended, it is clear from the research that retention has been associated with engagement. These authors noted that the more students are engaged in their high school and college education, the greater the probability of retention in an educational institution.

Still, educational leaders have focused too little attention on why students stay, and more on why students leave (Smyth, 2006). Retention has been seen as an end in itself and little focus has been devoted to why students actively decide to remain in school. This was precisely the realm of student engagement theory. A more precise investigation as to why students stay in college, rather than simply noting that retention occurred, is part of the goal of student engagement theory. As researchers in Australia have concluded, "(w)ith the absence of direct policies on student engagement in the different Australian education authorities, the constructs of retention and related school participation – in senior school and higher education – are taken at best as measures of

student engagement or, at worst, as a substitute for it" (Atweh, Bland, Carrington, & Cavanagh 2007).

The work of Tinto, Pascarella and Terenzini often considered the construct of retention as an insight into student engagement. They also, however, considered more intangible evidence, such as student self reports. These often purely qualitative approaches led to research and discussion on how best to quantify student engagement. A plethora of definitions designed to qualitatively capture the essence of student engagement appeared. Research literature commonly distinguished between conformance types of engagement such as attendance, retention, and turning in work, and more purely intellectual engagement (Goldspink & Winter, 2009; Willms, 2003).

Once qualitative definitions were identified, the research toward defining student engagement as a score on an instrument was developed. Kuh and his associates at Indiana University designed the National Survey of Student Engagement (NSSE) from which the High School Survey of Student Engagement (HSSSE) subsequently developed (Kuh, 2001, 2003; Yazzie-Mintz, 2007). The NSSE and the HSSSE looked at multiple factors shown to have correlations with the concept of student engagement. The NSSE and the HSSSE did not use purely quantitative measures. The survey results have added to the qualitative knowledge on student engagement through their use of short answer and open ended questions. The data gained from the NSSE and HSSSE have rapidly provided much useful information for the theoretical framework of student engagement theory.

The construct of student engagement has also been explored in Europe and Australia through research devoted to the effects at the secondary level. In a massive study that involved several European nations, the Organization for Economic Co-

operation and Development (OECD) questionnaire was devised for the secondary level "to measure two components of student engagement . . . sense of belonging and participation" (Willms, 2003, p. 64). Research findings from this study have been further developed in Australia (Atweh, Bland, Carrington, & Cavanagh, 2007; Goldspink & Winter, 2009; Raban, 2005; Smyth, 2006). In an effort to more clearly and precisely measure the important factors of the construct, Goldspink and Winter (2009) devised the self report student engagement questionnaire which seeks to quantify the student engagement behaviors of involvement and well-being.

These quantitative measures were developed from prior research on qualitative definitions of student engagement. The historical precedents of student engagement theory developed mainly in college-based research involving student retention. Tinto (1993, 1997, 1998, 2004, 2005) has contributed pivotal work to the field of student retention. The construct of student engagement arose in large part to address the issue of student retention. Some researchers, in fact, argued that due to an absence of direct policies on student engagement, retention has been used as a *de facto* measure of student engagement (Atweh, Bland, Carrington, & Cavanagh, 2007). At the college level, much research (Barefoot, 2000; Kuh, 2005) has provided the rationale for concentrating retention efforts on first-year students. This research has provided evidence which has supported so-called first year experience models to promote college success. Retention in the first year is important, and student engagement theory can provide the reasons for why students stay during the first year.

Pascarella and Terenzini (1991) were the forerunners in the field of what was to become the student engagement model. Their landmark work, *How Colleges Affect*

Students (1991), sparked much of the interest in linking student success with engagement. In their continued work, the slightly renamed, *How College Affects Students: A Third Decade of Research,* Pascarella and Terenzini (2005) provided an authoritative review of the literature on college retention. They argued that the literature suggested student peer groups have played a meaningful role in the intellectual side of engagement. Peer-to-peer engagement inside and outside the institution had a strong influence on retention (Pascarella & Terenzini, 1991, 2005). Research by Astin (1996) plainly stated that "the greater the interaction with peers, the more favorable the outcome" (p. 126). Quantifying engagement, interaction, and involvement with peers, instructors, and the institution itself was often the stated goal of the measuring devices that followed these seminal works (Goldspink & Winter, 2009; Kuh, 2003; Willms, 2003).

Research eventually concluded that a qualitative approach to student engagement was supportable and definitions were developed. However, student engagement was "a complex construct and the research literature . . . supports a 'multi-faceted' approach to understanding and analyzing student engagement" (Fredricks, Blumenfeld, & Paris, 2004, p. 59). Yazzie-Mintz (2007) contended that "studying student engagement . . . can seem like measuring the 'un-measurable,' as engagement is heavily dependent on interaction, collaboration, and perception" (p. 2). Other researchers have contended that the construct of student engagement remained "vague and contested . . . different authors have used different constructs to mean the same thing, or used the same construct but with different understanding" (Atweh, Bland, Carrington, & Cavanagh, 2007, p. 2). Goldspink and Winter (2008), the developers of the student engagement questionnaire

used for this study, noted that “there have been a wide variety of ways developed to measure engagement” (p. 1).

However, the research has also demonstrated that “student engagement is the most immediate and persisting issue for improving student learning . . . [and] engaged students make a psychological investment in learning” (Park, 2005, p. 87). As a result, approaches to measuring engagement have proven successful. Instruments have focused on both compliance behavior such as attendance, tests, and other purely conformance measures as defined by commitment to academic performance criteria and also intellectual engagement (Goldspink & Winter, 2009). Smyth (2006) contended that engagement should be more fully understood as a process in the relationship between young people and schools.

Conformance or compliance can be demonstrated, for example, by attendance. Academic engagement refers to a commitment to criteria such as passing tests. Compliance measures have been concerned with whether students conform to the rules of the institution. Goldspink and Winter (2008) argued that this does not properly address the processes or outcomes of learning. In contrast, intellectual engagement concentrated on a more holistic concern with the student being engaged on an emotional level. The Goldspink and Winter engagement questionnaire (2009) was purposefully restricted to the idea of purely intellectual engagement.

The NSSE identified dozens of strong indicators of student engagement throughout higher educational institutions for both compliance and intellectual measures. Research has shown that student engagement has been a strong predictor of learning and personal development (Carini, Kuh, & Klein, 2006). Student engagement has often been

used to “depict students’ willingness to participate in routine school activities such as attending class, submitting required work, and following teachers’ directions in class” (Chapman, 2003). Other definitions, such as Willms’ (2003), described student engagement in terms of favorable or unfavorable attitudes towards school.

Armed with results from the NSSE and HSSSE student engagement questionnaires, educational leaders were provided data-based rationales for enacting change. Leithwood and his associates have been instrumental in applying transformational leadership theory and student engagement theory into a cohesive guide for educational leaders (Stewart, 2006). Leithwood and Jantzi (2000) produced an article entitled *The Effects of Transformational Leadership on Organizational Commitments and Student Engagement with School*. They identified seven useful dimensions to describe transformational leadership in terms of engaging students: “building school vision and establishing school goals; providing intellectual stimulation; offering individualized support; modeling best practices and important organizational values; demonstrating high performance expectations; creating a productive school culture; and developing structures to foster participation in school decisions” (Leithwood & Jantzi, 2000, p. 114).

Drawing on 25 years of research literature on educational practices correlated with student success from researchers such as Astin, Chickering, Kuh, Pascarella, Terenzini, and the Wingspread Group, beginning in 2000 the NSSE moved from pilot-stage to operation (Sauser, 2005). The quantitative measurement of student engagement with a valid and reliable instrument had begun. Furthermore, the work of Leithwood and his associates made available to leaders the best practices for achieving this valuable entity of student engagement.

Research has provided many definitions of student engagement and several methods for the construct to be qualitatively and quantitatively measured. Some of these measures take the form of surveys, questionnaires, checklists, and ratings scales, along with direct observation, work sample analysis, and focused case studies (Chapman, 2003). Examples have included the aforementioned NSSE and the HSSSE from Indiana University, the Programme for International Student Assessment (PISA 2000) questionnaire out of Europe, and finally the Goldspink and Winter (2009) student engagement questionnaire from Australia which was used for this study.

The College Student Report has been commonly referenced in the literature by its acronym NSSE, often pronounced as Nessie. Its purpose was to provide higher education institutions data regarding the student experience (Sauser, 2005), and it was based on the theoretical assumption that student engagement was predictive of student success (Sheehan, 2005). It was expected that this information would be used to improve undergraduate education by educational leaders. As shown in the literature, measures of student engagement have been correlated with student success (Kuh, 2001, 2003, 2005; Yazzie-Mintz, 2007). Sheehan (2005) stated that the word *engagement* is an accurate descriptor because the majority of questions measure the level of student engagement or involvement.

The NSSE was developed by Kuh, Hayek, Carini, Oimet, Gonyea, and Kennedy at the Indiana University Center for Postsecondary Research and Planning, and as of its 2002 annual report, more than 285,000 students at 618 four-year colleges and universities had participated (Sauser, 2005). The NSSE was comprised of approximately 70 items that measured the extent students were engaged in purposeful activities regarding their

education. Carini, Kuh, and Klein (2006) researched results from an administration of the NSSE to 1,352 students at 14 four-year colleges that determined the linkages between engagement and success. The results "corroborated what many other researchers have found: that student engagement is linked positively to desirable learning outcomes such as critical thinking and grades" (p. 23).

Of importance for educational leaders, the analysis suggested that some institutions were more effective in converting engagement into student success (Carini, Kuh, and Klein, 2006, p. 24). Leithwood and Jantzi (2000) suggested that there has been a dearth of research regarding the effects of leadership styles on students due to these effects being indirectly influenced by teachers, peers, and others. Analyses of these indirect effects of leadership styles have proven to be a difficult field of research (Stewart, 2006). Despite this, Leithwood, Harris, and Hopkins (2008) conducted studies to examine student participation. The authors found significant indirect effects of transformational leadership on student engagement with, and identification with, the school. The NSSE focused on college, the subsequent HSSSE concentrated on secondary education.

As the literature review of instruments has demonstrated, quantitative measures of student engagement began successfully at the post-secondary level. The HSSSE was developed from the NSSE. The director of the HSSSE, Yazzie-Mintz, conducted the project from Indiana University's Center for Evaluation and Education Policy. The construct of student engagement was described by Yazzie-Mintz (2007) as "measuring the 'un-measurable,' as engagement is heavily dependent on interaction, collaboration,

and perception" (p. 2). The 2006 HSSSE surveyed 81,499 students from five regions of the U.S. at 110 schools in 26 different states

Given the stated difficulties of defining student engagement, Yazzie-Mintz (2007) suggested the finding that 72% of respondents either *agree* or *strongly agree* that they were engaged in school may be a problematic analysis. "The degree to which a student is engaged in school is dependent on the quality, depth, and breadth of the student's relationship . . . with the school community" (p. 2). The results from the HSSSE demonstrated that while more than 90% of high school students planned to attend postsecondary institutions few engaged in behaviors correlated with freshman college success (McCarthy & Kuh, 2006). Further, the overall engagement measures for high school seniors were lower than that of prior years, declining in a linear manner from the beginning to the end of high school (Kuh, 2007).

Findings from the HSSSE demonstrated that Caucasian and Asian students had higher measurements of engagement than other ethnicities, and that lower socio-economic students reported less engagement than higher socio-economic status students (Yazzie-Mintz, 2007). Yazzie-Mintz (2007) called for more research regarding linkages between the engagement and achievement gaps and suggested that "engaging students more actively in the life and work of high schools will have an effect on levels of achievement" (p. 22). The HSSSE examined student engagement with not only the principal, but equally with other school leaders such as counselors and senior teachers. Stewart (2006) examined transformational leadership and noted the dearth of research that explored non-principal leaders in the school. For example, in many schools people such as department heads and counselors provided invaluable leadership within the

school and in the community. “For the most part, research has focused on the principal as the source of power and leadership” (Stewart, 2006, p. 19).

Willms (2003) assisted with the questionnaire development, data analyses, and reporting for the immense student engagement study known as the Programme for International Student Assessment, commonly referred to by its acronym, the PISA 2000. The PISA 2000 study, under the auspices of the Organization for Economic Cooperation and Development (OECD), examined student engagement at school (Willms, 2003). The PISA 2000 used student self reports of a sense of belonging at school with attendance data to describe an index of engagement. This focus on involvement drew on Csikszentmihalyi’s (1975) concept of flow. “Flow is defined as the experience of total immersion in an activity because of the intrinsic rewards it offers . . . being in a state of flow signals enjoyment of learning” (Goldspink & Winter, 2009). As such, the PISA 2000 provided a more targeted measure of student engagement, focusing on the student exclusive of leadership and other factors, as was done in the more extensive NSSE and HSSSE instruments. The PISA 2000 attempted to omit specifically conformance and compliance measures of academic engagement (Willms, 2003).

Thirty-two countries participated in the PISA 2000 survey, including 28 countries of the OECD and four non-OECD countries. Willms (2003) stated that “this report examines students’ sense of belonging and participation at school, two of the most important measures of student engagement” (p. 9). This dichotomy fell in line with the literature’s common division between compliance measures, such as attendance, and more intellectual measures like involvement and sense of belonging. Goldspink and Winter (2010) described this division as “affect (felt belonging) and behaviour

(attendance) and these two focal points are common to many approaches" (p. 4). For the PISA 2000 study "sense of belonging was based on students' responses to six items describing their personal feelings about being accepted by their peers and whether or not they felt lonely, like an outsider or out of place" (p. 18).

The research from the PISA 2000 had a direct influence on the self-report instrument which was subsequently designed by Goldspink and Winter (2009). This current study focused on measures of high school student engagement. One of the first important high school student instruments was the HSSSE (Yazzie-Mintz, 2007). The four pages and 123 questions of the HSSSE were regarded as somewhat unwieldy for the purposes of this current study. Conversely, the six item sense of belonging instrument used by the PISA 2000 study (Willms, 2003) to define student engagement, was seen as too brief. The Goldspink and Winter questionnaire was used for this study of rural Florida students.

Continuing the exploration for targeted and appropriate measuring devices of engagement were researchers Goldspink and Winter (2009) with the development of their student engagement questionnaire. They directly acknowledged Willms and the PISA 2000 report as an impetus for their instrument's development (Goldspink & Winter, 2008).

Goldspink and Winter worked through the Department of Education and Children's Services out of Sydney, South Australia, and discussed the questionnaire development in the aptly titled article *Measuring What Matters: A Series of Instruments to Evaluate Student Engagement, Focusing on Involvement and Well-being* (2009). The authors cited Csikszentmihalyi's (1975) work on flow and the PISA 2000 work on

engagement as research precedents for the questionnaire. Drawing on the research literature, Winter argued that "in order to evaluate the degree to which a learning environment is supporting student engagement, and ultimately learning outcomes, it is useful to evaluate the behavior of involvement and students' experience of well-being while they are participating in that environment" (p. 4).

It is interesting to note the contrast in educational level and differences in time span used by two of the instruments discussed in this literature review. The NSSE was developed by Kuh and his associates to explore student engagement at the college level, and often encompassed the entire span of a college career, though usually the first-year experience (Kuh, 2005). The research of Winter, who along with Goldspink, developed the set of instruments which included the student engagement questionnaire, began with short individual classroom type lessons and explored the concept of engagement with students often as young as pre-kindergarten (Goldspink & Winter, 2008; Winter, 2003). Thus it can be said that the concept of student engagement has demonstrated positive impacts for students from pre-school to college graduates, and over lengths of time from a single lesson to an entire college career. In fact, while developing their survey Goldspink and Winter (2008) explored various instruments designed to measure the effect of engagement on students from pre-school to their final year of secondary school.

Goldspink and Winter (2008) noted that "while development is continuing, the initial results show that it feasible to measure engagement using both observation and learner self-report and that engagement is an indicator of quality of the learning environment and predicts important learning outcomes" (p. 2). Their research focused on how school environments, curriculum, and pedagogy had an impact on student

engagement and outcomes. The 2008 work was part of wider research into the effectiveness of school-based reform in South Australia. The cases studied were specific to South Australia; however, as noted, an interest in student engagement had become increasingly widespread (Zyngier, 2004). Hence, Goldspink and Winter (2008) stated that their research was "relevant to an international audience interested in the relationship between engagement and student social and academic learning achievement" (p. 1). Their engagement questionnaire completed by 2009 demonstrated integrity and was a valid and reliable measurement of student engagement.

Goldspink and Winter (2008, 2009) have stated that what led to their emphasis on engagement was a recognition that educators, leadership, and policy advocates needed evidence of the effect of specific pedagogical choices on students to guide any change processes. Their aim was to construct an instrument for measuring engagement across all age groups (2008). Calling to mind instructional versus transformational leadership styles (Hallinger & Heck, 2010), they suggested their instrument "favors direct measures collected in particular learning contexts to proxies, such as attendance, which link only weakly to learning outcomes" (Goldspink & Winter, 2008, p. 2). This was also in line with the precepts of the PISA 2000 study which Willms (2003) noted used a definition of engagement as a very emotional state, or a sense of belonging. As noted previously, the literature has often divided engagement into fields of strict conformance (e.g. attendance) as opposed to intellectual engagement. The student engagement questionnaire concerned itself exclusively with intellectual engagement.

The questions were designed to link directly to the phenomena of interest which has been "the demonstrable active participation in learning that we most often mean by

engagement" (Goldspink & Winter, 2008, p. 3). Csikszentmihalyi's concept of flow (1975) has been used for this engagement research. Goldspink and Winter (2008) contended that student engagement achieved a balance between an unknown task and the experience needed to accomplish the task via the concept of flow. They argued that being in a state of flow demonstrated enjoyment of learning. Other concepts of intellectual engagement were involvement and well-being which have been cited as two reliable indicators of quality for educational institutions and processes essential for student learning (2008). The engagement questionnaire well-being measures were developed from original work by Winter who designed a well-being scale for use with pre-school research (Winter, 2003). Thus, Goldspink and Winter (2009) demonstrated that the intertwined concepts of interest, flow, intellectual engagement, involvement, and well-being could all be used effectively to measure overall student engagement.

The results of Goldspink's and Winter's preliminary study (2008) demonstrated a significant correlation between pedagogy, the relationships teachers established with students, and the students' engagement in learning. Significant correlation was found between teacher relationships, student well-being, and involvement in learning. Their data revealed that measures of student engagement could show the impact of pedagogy and could help educators make improvements in student well-being and engagement. The study used a set of instruments which would one year later (2009) be developed and incorporated into the student engagement questionnaire. In fact, "the study was primarily designed to support the development and testing of these instruments but was also designed to establish the viability of measuring engagement of students who were assessed at greatest risk of early school leaving" (Goldspink & Winter, 2008, p. 13).

In 2009, the final development of a set of instruments designed for use independently or together to measure student engagement was released. The instrument used in this study was primarily developed by Goldspink who stated, “engagement is defined as including the behavior of involvement and well-being (which includes affective states associated with happiness and satisfaction, social functioning and positive dispositions towards learning)” (Goldspink & Winter, 2009, p. 18). The Goldspink and Winter (2009) instrument was designed to be used across all age bands. Goldspink and Winter (2009) reported that the design of the student engagement questionnaire was such that “data collected should be applicable to addressing a wide range of questions” (p. 9) that could include policy questions about interventions taken to address issues of attendance and retention.

The literature has demonstrated the student engagement questionnaire to be a well-researched, valid, and reliable measure of student engagement. It has been a valid and reliable device that followed along the well-researched paths of the NSSE, HSSSE, and PISA 2000. It is expected that results from the use of such an instrument will provide data that can positively impact the decisions of leaders in education and students themselves.

High School GPA

Research has demonstrated that high school grade point average is highly correlated with college grade point average. Garton, Dyer, and King (2000) found that “the best predictors of academic performance during the first year of college were high school core GPA and ACT score” (p. 46). High school grades can, therefore, be used as a predictor of college grades. This is a positive correlation in that “a person who has a high

GPA in high school would be likely to have a high GPA in college" (Fraenkel, & Wallen, 2006, p. 340). Carini, Kuh, and Klein (2006) found that "levels of student engagement were often positively related to GPA" (p. 13).

The variable which research has shown to have the strongest positive correlation with college retention is prior academic achievement (Ishler & Upcraft, 2005). The operational definitions normally used to measure prior academic achievement are standardized college admissions tests (ACT and SAT) and HS-GPA (Pascarella & Terenzini, 2005). The research of Astin (1997) suggested that high school GPA was the most useful in predicting retention. He further argued that performance on college entrance exams (ACT and SAT) added little to predictions based on HS-GPA. In fact, HS-GPA accounted for 8.6% of variance in student retention, and the amount of variance increased to just above 10% after including SAT scores (Astin, 1997). Robbins et al. (2004) found that study skill factors could predict college outcomes. The PISA 2000 study found "that levels of participation were strongly associated with the mean grade point average of the school" (Willms, 2003, p. 11).

A meta-analysis of 109 studies concluded that HS-GPA was a stronger predictor of college retention compared to college entrance examination scores. Other research has suggested, however, that college entrance exam performance might be useful when predicting the retention of college students from certain minority groups (Zwick & Sklar, 2005).

College Entrance Examinations (ACT/SAT)

College entrance exams have been another traditional predictor of college performance. Research has shown that "students with higher ACT scores are more likely

to achieve a first-year college GPA of 2.0 or higher or 3.0 or higher than students with lower ACT scores, regardless of gender, race/ethnicity, or family income" (American College Testing, 2008, p. 13).

While various forms of student success assessment instruments are available, the most widespread type of instruments have been standardized test data. In line with much of the research that has demonstrated the importance of student engagement, more than 25 years ago Serow and Jackson (1983) pointed out that test data failed to recognize the diversity of schools and the student experience. Interestingly, in the results from a major NSSE study, college students with the lowest SAT scores benefited more from student engagement than the group with the highest SAT scores (Carini, Kuh, & Klein, 2006).

As evidenced in the research high school grades and college entrance examinations have been demonstrated to be useful predictors of college success. The use of high school engagement as a predictor of first-semester freshman college GPA was not predominating in the literature.

Transformational Leadership

Research has demonstrated that the theory and style of transformational leadership has been the most relevant leadership theory for addressing the issue of student engagement (Hallinger & Heck, 2010). It has been positively correlated with measures of student engagement. FR-GPA has been shown to positively correlate with measures of overall student engagement. Transformational leadership theory has a positive impact on student engagement (Leithwood & Jantzi, 2000, 2005), and student engagement has a positive impact FR-GPA (Kuh, 2005; Yazzie-Mintz, 2007).

For more than three decades, researchers examined the construct of transformational leadership (Avolio & Bass, 1999; Bass, 1985, 1998; Bass & Avolio, 1992; Burns, 1978; Leithwood & Jantzi, 2000, 2005; Northouse, 2004). In fact, Ozaralli (2003) contended that more scholarly research has been done on transformational leadership than on all other leadership theories combined. Research on Bass's (1985) theory of transformational leadership focused on examining the effects on individual performance, satisfaction, and effectiveness. Bass and Avolio (1992) demonstrated that transformational leadership had a positive impact on employee satisfaction. Bass (1998) and Ozaralli (2003) found positive relationships between theory and leadership effectiveness, quality improvement, innovation, and performance ratings.

The concept of transformational leadership was first proposed by Burns in his seminal work, *Leadership*, in 1978. He divided leadership theories into the traditional transactional theories and the concept of transformational theories. Transactional leadership focused on exchanges between leaders and followers, and comprised the majority of leadership models (Northouse, 2004). Burns (1978) defined transformational leadership as the process in which an individual engaged with others and created a connection. It has been defined as "a process in which leaders and followers raise one another to higher levels of morality and motivation" (Northouse, 2004, p. 170).

Burns (1978) argued that leadership must be aligned with a collective purpose and that effective leaders should be judged by their ability to make social changes. Burns (date) suggested that leadership theories have overemphasized the role of power. He suggested that theorists must see power and leadership not as things but as relationships. "It lies in seeing that most powerful influences consist of deeply human relationships in

which two or more persons engage with one another" (Burns, 1978, p. 11). The work of Bass began to quantify measures of transformational leadership styles.

Many revisions have been made to the transformational leadership theory over the course of scholarly research. Bass found evidence that transformational leadership was a powerful construct which had the ability to move followers beyond what was expected (Stewart, 2006). Bass (1985) provided one of the first, and most widely used valid quantitative measurements of the concept. Bass developed his original version of the Multifactor Leadership Questionnaire (MLQ) based on interviews with 70 South African senior executives. The leaders provided information regarding their experiences with inspirational leaders and how those leaders were able to effect changes in their organizations.

Bass and Avolio (1992) most notably developed the MLQ Form 6S which included 12 items designed to measure the perceived four factors of transformational leadership: (a) idealized influence; (b) inspirational motivation; (c) intellectual stimulation; and (d) individualized consideration. These factors were seen as four distinct factors by the authors. High scores on the MLQ Form 6A appeared to indicate the level to which a leader held followers' trust, maintained their respect, showed them dedication, was a role model, provided vision, appealed to their hopes and dreams, and other positive attributes. Scores ranged from 12 to 60. Many studies of the MLQ's relationship to leadership effectiveness have suggested that the factors of charisma and motivation, followed by individualized consideration and intellectual stimulation, are most closely related to positive outcomes (Northouse, 2004).

Avolio and Bass (1999) defined each of the four factors in terms of leadership behaviors. Leaders who appeared as very powerful role models for their followers were described as having idealized influence. Followers wanted to emulate them while also strongly identifying with them. Inspiring followers through motivation and communicating high expectations to followers were some of the characteristics of inspirational motivation. Followers were inspired to become a part of the shared vision of the organization. Leadership behaviors which increased followers' awareness of problems and influenced innovation and creativity were defined as intellectual stimulation. Finally, individual consideration was defined as leadership behavior that gave encouragement and support to followers.

"Transformational leadership, emerging from the fields of management and the military, is now a widely accepted approach for educational leadership" (Stewart, 2006, p. 14). The research of Leithwood focused on links between student engagement and transformational leadership. Leithwood's earliest endeavor with transformational leadership in 1992 was specifically to apply the MLQ to an educational setting.

The landmark works and continued research of Burns (1978) and Bass (1985, 1998) have focused on leadership in the military, business, and industrial fields. "Leithwood and his colleagues have been instrumental in bridging the work of Burns and Bass into the field of educational administration" (Stewart, 2006, p. 15). The conceptual model designed by Leithwood provided empirical studies and research investigation in the area of educational leadership (Stewart, 2006). His model has been seminal in linking transformational leadership with leadership in education and demonstrated the linkages with student engagement theory.

Research in combining transformational leadership style in the educational arena with student engagement theory could provide needed data for school restructuring initiatives. Transformational approaches to leadership have been seen as productive in these situations (Leithwood & Jantzi, 2000). Data from one survey of 1,762 teachers and 9,941 students in a large public school district were examined by Leithwood and Jantzi (2000) for correlations between transformational leadership practices and student engagement in school. The authors suggested that this research showed such leadership to have significant effects on student engagement. “Transformational leaders focus on restructuring the school by improving school conditions” (Stewart, 2006, p. 4). This statement underscored the need for educational leaders to have at their disposal reliable data to effectively guide their restructuring initiatives.

A larger meta-analysis by Leithwood and Jantzi (2005) looked at the evidence from 32 different studies published between 1996 and 2005 that examined transformational leadership in education. The authors suggested that more research was needed on the moderating effects of transformational leadership in schools. These moderators included school culture, teacher commitment, job satisfaction, and other variables. Their meta-analysis indicated a significant positive correlation between transformational leadership and student engagement (Leithwood & Jantzi, 2005).

Leithwood, Harris, and Hopkins (2008) conducted another meta-analysis that involved successful school leadership. This analysis drew on the international literature and was designed to summarize major findings from the extensive cache of empirical studies on leadership. These authors also cited significant effects of transformational leadership on student engagement (Leithwood, Harris, & Hopkins, 2008).

Other studies have examined the specific areas of leadership that effect student outcomes. Hallinger and Heck (2010) suggested that instructional versus transformational leadership have become the most frequently studied pair of models. Transformational leaders, as stated previously, focused on restructuring by improving school conditions. Instructional leaders concentrated on school goals, curriculum, and instruction (Stewart, 2006). In contrast, some studies have found the average effect of instructional leadership to actually be greater than transformational leadership (Robinson, Lloyd, & Rowe, 2008). Other research has tended to divide the effects on engagement between principals and college presidents alone (Printy, 2010) versus a leadership team (Hallinger & Heck, 2010) and has found positive correlations with each paradigm over purely instructional models.

Research has shown little empirical data on how transformational leadership and instructional leadership have complemented each other and contributed to student engagement (Marks & Printy, 2003). Marks and Printy (2003) suggested a need for additional research to evaluate how leadership has contributed to the quality of student engagement. These authors conducted a quantitative, non-experimental study that explored transformational leadership and attempted to measure how leadership affected school performance. The study sample consisted of 24 nationally selected restructuring schools from the elementary, middle, and high school levels. Transformational leadership and instructional leadership were studied in relation to the quality of teaching and its effect on student learning and engagement. The authors concluded that to improve student engagement and other positive factors, instructional leadership was needed to complement the tenets of transformational leadership (Marks & Printy, 2003).

Printy (2010) reviewed research published since 2000 on ways in which leadership impacted the quality of instruction, including the construct of student engagement. The author found a positive link between principal leadership that used transformational concepts and increased levels of student engagement. Hallinger and Heck (2010) looked at 50 years of research regarding not only principal leadership but also collaborative leadership. Their research supported the prevailing view that both a single-leader approach and a team leadership approach positively impacted student learning and engagement (Hallinger & Heck, 2010). Pollard (2009) suggested in a study entitled *Student Engagement in Interprofessional Working* that moderating factors needed to be examined. In that study, the author found student engagement depended mainly on the individual level of confidence (Pollard, 2009). Transformational leadership is a well researched field and has been shown to have significant links to positive outcomes in education. Specifically, it has been shown to be positively correlated with levels of student engagement.

Summary of the Literature

The relevant research regarding the importance of college was explored. The research showing the predictive value of FR-GPA on overall measures of college success was also explored. These studies often focused on student retention and the rationale behind the data-driven emphasis on the first year of college, as demonstrated in the first-year experience models and the seminal work of Barefoot (2000), Tinto (1993), and Pascarella and Terenzini (1991). College student engagement was positively linked with measures of college success, and high school engagement was also positively linked with measures of high school success. It has been shown that little research has examined the

transition between high school and college and the effect of high school engagement on future college outcomes. Therefore, the literature gap perceived by this study was determined to be that little research has examined the correlation between high school student engagement and FR-GPA.

Weaved throughout this review was the rationale for this study as it can be applied to educational leadership. The link between transformational leadership style and student engagement theory was explored. It was necessary to begin with the work of Burns (1978), Bass (1995, 1998), and Avolio (Avolio & Bass, 1999) in the business arena. The next step was to examine Leithwood (1992), and his associates (Leithwood & Jantzi, 2000, 2005; Leithwood, Harris, & Hopkins 2008), research that linked transformational theory to the field of education. This research provided a clear link between a transformational leadership style and a positive impact on student engagement.

The literature review focused additionally on developing the student engagement model and its subsequent quantitative measurability. This literature review followed the student engagement construct from its origins as an abstract concept in the works of Tinto (1993) and Pascarella and Terenzini (1991) to operational definitions and quantitative instruments. The links between college retention and leaving college defined by student engagement and student disengagement were also explored. Kuh of Indiana University was identified as having provided a landmark step toward quantifiable measures of college freshman student engagement via the NSSE (Kuh, 2001). The work at Indiana University on quantifying high school student engagement via the HSSSE was then discussed (Kuh, 2007; Yazzie-Mintz, 2007). Finally, the work of Willms (2003) with the

PISA 2000 and short-form quantifiable measures of engagement which led to the work of Goldspink (2008), and Goldspink and Winter (2008, 2009) was examined.

This review demonstrated through the relevant literature that college can be beneficial (Saban, 2007). Retention of students in college has been an ongoing problem, and the first-year success of students has been a strong indicator of overall college success (Barefoot, 2000; Kuh, 2005). Student engagement has been positively linked with college retention (Kuh, 2005). Transformational leadership has been positively linked with student engagement (Leithwood & Jantzi, 2000, 2005). Furthermore, the data gathered from this type of study can be used by educational leaders to enact positive change (Hallinger & Heck, 2010) and students can identify engagement behaviors seen as predictive of their own success (McCarthy & Kuh, 2006).

The research on student engagement has predominantly examined either engagement in high school or engagement in college, but little attention has been paid to the transitional period between high school and college. This literature review demonstrated that there has been much research on the effects of high school student engagement on HS-GPA, and much research on the effects of first-year college engagement on FR-GPA. College student engagement has been used to research and predict college grades, and high school engagement has been used to research and predict high school grades. There has been little research on the predictive value of high school engagement on FR-GPA.

Lastly, having examined the work of Burns, Bass, and Avolio on transformational leadership, it was demonstrated that this powerful model could be applied to the field of education. Research by Leithwood and his associates made evident the positive impact

that transformational leadership can have in the field of education. This was shown to be relevant to the goal of student success and to a positive impact on student engagement.

CHAPTER III

METHODOLOGY

Introduction

What is the predictive value of high school grade point average, composite college placement exam score, and high school student engagement on first semester college grade point average? This study was a prediction study. “If a relationship of sufficient magnitude exists between two variables, it becomes possible to predict a score on one variable if a score on the other variable is known” (Fraenkel & Wallen, 2003, p. 337). This prediction study used self report data about respondent gender, highest composite college entrance exam score, overall HS-GPA, and first-semester freshman college GPA, in addition to scores on a high school student engagement questionnaire. Multiple regression analysis was used to determine if a correlation existed between the criterion variable of FR-GPA and each of the three predictor variables of HS-GPA, ACT score, and high school student engagement score. Each independent variable was correlated with the dependent variable.

Research Design

This study used the analytical procedure of multiple regression to determine whether high school student engagement, HS-GPA, and highest composite college entrance exam score can predict a student’s FR-GPA. Multiple regression is a well-accepted technique to determine a correlation between a chosen criterion variable and the combination of two or more predictor variables (Fraenkel & Wallen, 2003). There were three predictor variables in this study: high school student engagement, HS-GPA, and composite ACT exam score.

The data gathered for this study were used to create a prediction study. Fraenkel and Wallen (2006) defined a prediction study as "an attempt to determine variables that are related to a criterion variable" (p. 340). This technique uses the correlation between variables and the concept of a straight line to develop a prediction equation such that each independent variable is assigned a weight based on its individual correlation to the dependent variable. The goal of the design was to obtain a coefficient of multiple correlation indicating the strength of the correlation between the combination of the three independent variables and the dependent variable of first-semester freshman college GPA.

Setting for the Study

Within a population of rural Florida high schools, recent high school graduates who had gone to four year colleges and universities were identified and contacted for voluntary participation in the study. Addresses were collected for each higher educational institution identified by each student. Subjects were distributed variously at private and public colleges and universities of their choice. The population consisted of all graduates who had self reported admission to a college from a total of seven rural south central Florida high schools located in a six-county area. Each county operated as a separate school district.

Sampling Procedures

The population for this study was recent high school graduates from a rural area of Florida who had recently completed their first-semester of college. Each participant received a packet containing the survey questionnaire along with a self-addressed stamped envelope to return the completed instrument. The researcher mailed the

instruments to the college location of each participant. To assure anonymity, the surveys contained no identifying names or identifying information. The sample consisted of the 55 volunteers who responded.

The high school student engagement questionnaire was accompanied by a recruitment letter (Appendix A) which introduced the study and explained the confidentiality of the responses. The purpose of the study was explained and students were allowed to decline participation if they so chose. No adverse affect occurred due to non-participation. The letters and the survey questions were assembled in packets distributed by mail to each individual student who met the study criteria. The high school student engagement questionnaire could be completed in a private location and should have taken approximately 15 to 20 minutes to complete. To ensure that each student received identical information and directions, written guidelines were enclosed for survey respondents (Appendix B).

The dependent variable of this study was first-semester college grade point average. The independent variables were high school student engagement, HS-GPA, and ACT score. Although the researcher collected gender, no attempt was made to analyze this trait as a predictor of college success. The research question examined was: what is the predictive value of high school grade point average, composite college placement exam score, and high school student engagement on first-semester college grade point average?

Instrument

The instruments used for this study have been attached in Appendix B. The demographic information of gender, along with the highest composite ACT score, HS-

GPA, and FR-GPA were requested. The remainder of the survey used the 52-question high school student engagement questionnaire developed by Goldspink and Winter (2009). The students were asked to score the self-report instrument on a five point Likert scale indicating the extent to which they agreed with each statement presented.

The student engagement questionnaire was designed to provide an overall index of student engagement. In order to control for an agreement response bias, Goldspink (2009) phrased some of the statements in the survey questionnaire positively, such as "I felt proud of what I achieved". Others were worded negatively, such as "I felt as though no one cared about me." Both positively and negatively worded items explored the extent to which the respondent felt engaged in his or her learning. Scores on the questionnaire ranged from a low of 52 to a high of 260, giving a range of 208 points.

The questionnaire was designed to be "used where measures of differences between groups are required as it provides a relatively cheap and easy means for collecting data from a larger sample. The disadvantage with self-report data is that the final scores need to be compiled by summing scores from each of the statements in the questionnaire" (Goldspink & Winter, 2009, p. 18). There were five sub-scales within the engagement questionnaire. They have been divided into scales for involvement, happiness, social functioning, dispositions to learning, and interest. Goldspink and Winter (2009) recommended calculating these scales from the individual questions by entering the data in a statistical analysis package. The scores were hand calculated and entered from the questionnaires with the score value corresponding to each response category (e.g. agree, disagree). The score values range from 1 for strongly agree to 5 for strongly disagree.

For the purposes of this study the five sub-scales were not separately examined. A single final score representing the level of overall student engagement was calculated. The overall score was calculated by totaling the scores for all 52 questions. However, each subscale contains several positively and negatively worded questions that became of consequence when scored. For example there were five questions on the involvement subscale. They were: “I was concentrating and hard to distract,” “I took a lot of care with what I was doing,” “I was working hard on the learning,” “I was very focused on the learning,” and “I gave up trying to do the work before I was finished.” The final question was worded in the negative. Thus, the score on this question, and all questions posed negatively, needed to be inverted. A 5 became a 1 and vice versa, a 4 became a 2 and vice versa, while a 3 stayed a 3.

Goldspink and Winter (2009) contended that the construct of happiness has been studied in a multitude of ways. “Most commonly happiness is described as the presence of positive affect and the absence of negative affect” (2009, p. 41). These opposing affects have been shown to correspond to different aspects of environment. Due to inclusion of positively and negatively worded questions the researcher found it necessary to make two separate scales for this construct: a positive one and a negative one. The three questions that formed the positive affect scale were: “I felt proud of what I achieved,” “I was very happy with what I did,” and “I felt content with my learning.” Four questions made up the negative affect subscale; they were: “I was nervous,” “I was/felt ashamed of what I did,” “I was unhappy with what I did,” and “I was afraid in case I got things wrong.” The numbered responses for these four questions needed to be inverted for proper scoring.

The subscale of social functioning was comprised of both positive and negative questions. The four positives ones were: “I worked with others whenever I could,” “I offered to help others,” “I felt included,” and “I was treated with respect.” The six negatively phrased questions necessitated inverting their scores. These six questions were: “I was nervous and distressed,” “What I did upset others,” “I was frustrated with others,” “I felt alone,” “I didn‘t like being told what to do,” and “I felt as though no one cared about me.”

There were five questions related to dispositions to learning, with the first and final ones negatively worded. They were: “I waited to be shown what to do,” “I did more than I was asked to do,” “I came up with new ideas on my own,” “When I found something hard, I tried another way,” and “I did only what was asked but no more.” The last subscale pertained to interest, and only the final survey question was negatively phrased. The questions were: “The subject we were doing is very interesting to me,” “I wanted to know more about what we were learning,” “I have always been curious about what we were learning,” and “I was bored.”

The final twenty questions were comprised of one word descriptors which the students responded to on the Likert scale. They, too, were a combination of negative and positive words. The ten positive words were: interested, active, excited, strong, enthusiastic, proud, alert, inspired, determined, and attentive. The ten negative words, which were inverted for proper calculation, were: distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid.

Reliability

Reliability can be defined as the extent that some change in value of a certain indicator was caused by a change in what it measured and not simply due to measurement error. Fraenkel and Wallen (2006) stated that “a reliable instrument is one that gives consistent results” (p. 119). Further, reliability makes reference “to the consistency of the scores obtained” (p. 165). The student engagement questionnaire instrument has been used in several research projects and been assessed to have a reasonable level of internal reliability (Goldspink & Winter, 2009). It has been found that with minimal training, scorers readily “converge in their assessments of common situations” (Goldspink & Winter, p. 8). The inter-scorer correlations for the involvement instrument have been found to be as high as 0.91 (Laevers, 1994). The forerunner to the instrument under development in 2008 “applied to this older age group (high school age) . . . the observation instruments confirmed the validity of the conceptual framework used for the measures” (Goldspink & Winter, 2008, p. 15).

Reliability regarding the self-report instrument was demonstrated by use of a coefficient of internal consistency; that is, Chronbach's alpha. In one trial, a diverse sampling of 270 students was used and an alpha score of .86 was obtained. Validity and reliability received ongoing attention as the instrument was refined. The instrument has been tested “three times in three different contexts” and was “ready for a major application” (C. Goldspink, personal communication, June 23, 2009).

The data show that the SAT has been a reliable test and that an individual test taker would earn similar scores on repeated testing. The SAT has been demonstrated to have reliability in each of its four sections. The Critical Reading and Mathematics

sections both have reliability coefficients of .91-.93, the Writing section has a reliability coefficient of .89-.92, while the Writing Composite section has a reliability coefficient of .89-.91 (Carini, Kuh, & Klein, 2006). Similarly, the data show that the ACT has been a reliable test, with a significant test-retest reliability of .81 (N = 211,624) (American College Testing, 2008).

Validity

Fraenkel and Wallen (2006) suggested that a good old-fashioned definition of a valid instrument was "that it measures what it is supposed to measure" (p. 119). More recently descriptors of validity have encompassed the "appropriateness, correctness, meaningfulness, and usefulness of the specific inferences researchers make based on the data they collect" (p. 158). For the instrument presented here, validity has been established in several ways. There has been demonstrated a high level of internal consistency (Goldspink, 2009). The construct of student engagement used to collect responses from students "cover the field of responses considered within the literature as relevant and are conceptually consistent, an expert would claim that these constructs are relevant to the scope of phenomena to be measured" (Goldspink & Winter, 2009, p. 8).

The PISA 2000 survey was a forerunner to this instrument. Much of the evidence that supported construct validity for the student engagement questionnaire was derived indirectly from construct validation studies of the PISA 2000 based on student engagement theory. The hypothesis under investigation was that success at a learning endeavor was a function of the correspondence between the individual's engagement and the pedagogical setting.

The construct of student engagement which made up the scale has been shown through factor analysis following trials to be empirically linked to the concept used to derive the questionnaire. Factor analysis revealed that the data collected showed a structure consistent with that predicted by the theory and anticipated in the design of the measure. Use of method triangulation via observation and self-report confirmed that the concept can be "empirically confirmed using several different scales derived from the same conceptual or theoretical basis" (Goldspink & Winter, 2009, p. 8).

The college entrance examinations of SAT and ACT have been shown to be valid predictors of FR-GPA (American College Testing, 2008; Carini, Kuh, & Klein, 2006). The validity of the SAT as a predictor of FR-GPA has been demonstrated (R = .35, N = 151, 316) (Carini, Kuh, & Klein, 2006). The validity of the ACT as a predictor of FR-GPA has also been demonstrated (R = .42, N = 211, 624) (American College Testing, 2008). The SAT Writing section has had the highest correlation with FR-GPA among the individual sections (r = .33). SAT Writing alone has shown the same correlation with FR-GPA as has SAT Critical Reading and SAT Mathematics taken together (Carini, Kuh, & Klein, 2006).

Data Analysis

The data from the questionnaires were analyzed using the non-acronymic PSPP, a software application designed for sampled data analysis. The statistical procedure of multiple regression was used to analyze the multiple influences of the independent variables of high school student engagement, HS-GPA, and ACT score. A correlation can be defined as a statistical test used to determine the tendency for two or more variables to

vary consistently (Creswell, 2002; Fraenkel & Wallen, 2003). This procedure can determine if two variables share common variance (Cronk, 2008).

The multiple correlation coefficient was used to indicate the degree of linear relationship between each independent variable and the dependent variable (Creswell, 2007). It was developed by Pearson from a similar idea introduced in the 1880's by Galton. It is also called the bivariate correlation and is commonly represented by the letter *r*. It is commonly defined as the covariance of the two or more variables divided by the product of their standard deviations (Cronk, 2008). Creswell (2002) argued that this procedure can be used to detect the magnitude of association between variables and to show the direction of the relationships.

The value of *r* varies between -1 and +1, inclusive. If one variable increases while the other variable increases, the value of *r* will be negative and the variables will be said to be negatively correlated (Creswell, 2007). The closer the absolute value is to 1, the stronger the association, while weaker associations are indicated by the approach of the value to 0. Correlations that are equal to 1 or -1 can correspond to data points that are exactly on a line.

This study examined the relationship of three independent variables: HS-GPA, ACT score, and high school student engagement as defined as a score on the student engagement questionnaire. The dependent variable was FR-GPA. A multiple regression analysis was conducted. Multiple regression can be defined as "a statistical procedure for examining the combined relationship of multiple independent variables with a single dependent variable" (Creswell, 2002, p. 376). Various techniques are available for determining relationship (Creswell, 2007). Multiple regression analysis was chosen for its

strength in providing the efficient degree of multiple correlations needed for this study. Many of the correlations between student engagement and student success have been demonstrated by the use of multiple regression (Kuh, 2003; Yazzie-Mintz, 2007). The procedure has been widely used in decision making, in the business industry, and in educational fields (Cronk, 2008). The technique of multiple regression enables researchers to determine a correlation between a criterion variable and the most favorable combination of the predictor variables (Fraenkel & Wallen, 2003).

In addition to the variable of primary interest, researchers often include other variables in their regression models. This is done to reduce confounding correlations when analyzing the data. The variable of primary interest for this study was high school student engagement. For example, suppose that the regression model contained the high school engagement construct as the only independent variable of interest, and the dependent variable was FR-GPA. Research has suggested it would be wise to include other dependent variables, such as HS-GPA or ACT score, to be assured that any observed effect of engagement on FR-GPA is not due to some additional variable (Creswell, 2007). It is important to note that it is never possible in a study to include all possible relevant confounding variables in the analysis.

Multiple regression analysis was used to explore the strength between the independent variables of high school student engagement (X1), overall high school grade point average (X2), and highest composite college entrance exam score (X3), and the dependent variable of first-semester college grade point average (Y1). The alpha significance level of .05 was used for all statistical analyses in this study.

A multiple correlation coefficient (R) was used to determine if there was any significant relationship between the dependent variable of FR-GPA and the three independent variables of HS-GPA, ACT score, and high school student engagement. Correlational analysis of each independent variable paired with the dependent variable was conducted. If the regression analysis between FR-GPA and high school engagement yielded a significant positive correlation, that is, a significant positive *r* value, then it would be possible to extract a number represented by squaring the *r*. This square *r* is thus said to represent the proportion of the total variance explained by high school student engagement (Fraenkel & Wallen, 2003).

Further, an analysis of variance (ANOVA) table was obtained to provide the F statistic, which tested the probability that the slope of the regression was zero (Cronk, 2008). Given this analysis, the researcher may be able to reject the hypothesis that the regression line slope was zero, which can confirm the utility of the regression model for each independent variable. This analysis was accomplished for each of the three independent variables.

As stated, the data from the questionnaires were analyzed using PSPP. The two values (HS-GPA and FR-GPA) and the two scores (ACT and high school student engagement score) for each respondent, were fed into this program for the above mentioned analyses.

Ethical Considerations

Use of survey instruments requiring no personally identifying data should have assured anonymity. The data will be kept under lock and key by the researcher for a period of five years and will remain confidential. All forms and survey data submitted

will then be destroyed. There were no known risks to volunteers and those choosing not to participate. The researcher respected the right of an individual to refuse to participate in this study or withdraw their data at any time. Participants were advised on procedures to contact the researcher within a reasonable time period for any reason.

Summary

This predictive study employed a self report survey which requested respondent gender, ACT score, HS-GPA, and FR-GPA, in addition to a high school student engagement questionnaire. Multiple regression analysis enabled this study to determine if there was a multiple correlation between the dependent variable of FR-GPA and the three independent predictor variables of HS-GPA, ACT score, and high school student engagement. Additionally, the Pearson product-moment correlation coefficient (r) was used to indicate the degree of linear relationship between the independent variables and the dependent variable. The purpose of this study was to determine the predictive value of high school student engagement and two other variables on first-semester college grade point average.

CHAPTER IV

ANALYSIS

This study examined the predictive values of high school student engagement, high school grade point average, and college entrance examination score on first-semester freshman college grade point average. This information was measured by the Goldspink-Winter student engagement questionnaire and self reported data from participants. The analyses were conducted by computer software designed for social sciences statistics.

Research Question

This study sought to answer the following research question:

What is the predictive value of high school grade point average, composite college placement exam score, and high school student engagement on first-semester college grade point average?

Descriptive Data for Demographic Information

The data analyzed were based on surveys completed by 55 graduates of rural Florida high schools who had completed their first-semester at a college or university. A total of 172 questionnaires were distributed to the target population. A total of 68 or 39.5% completed surveys were returned to the researcher. The only demographic datum collected was gender. Of the study sample, 69% (n=38) of the students were female and 31% (n=17) were male (Table 1).

Table 1

Demographic Characteristics: Frequencies and Percentages

Demographic	Variables	Frequency	Percent
Gender	Female	38	69%
	Male	17	31%

Research Findings

Pearson product-moment correlation coefficients (*r*) were conducted to determine whether a relationship existed between the dependent variable of first-semester freshman college GPA and the independent variables HS-GPA, ACT score, and high school student engagement. Additionally, a multiple regression analysis was conducted to evaluate the predictive values of HS-GPA, ACT score, and high school student engagement. All analyses were conducted at the .05 level of significance.

Pearson correlation coefficients were computed to determine the relationship between FR-GPA, HS-GPA, ACT score, and high school student engagement. Among the three independent variables, only high school student engagement (HSSE) was significantly correlated with the dependent variable of FR-GPA. The results are shown in Table 2.

Table 2

Pearson Correlation of Freshman College GPA, HS-GPA, ACT Score, and High School Student Engagement (HSSE) Questionnaire Score

		HSSE	ACT	HS-GPA	FR-GPA
HSSE	Pearson Correlation	1	-.13	-.01	.48
	Sig. (2-tailed)	.	.35	.93	.00
	N	55	55	55	55
ACT	Pearson Correlation		1	.54	.06
	Sig. (2-tailed)		.	.00	.65
	N		55	55	55
HS-GPA	Pearson Correlation			1	.14
	Sig. (2-tailed)			.	.32
	N			55	55
FRGPA	Pearson Correlation				1
	Sig. (2-tailed)				.
	N				55

The correlation matrix in Table 2 shows the correlation for each predictor with the dependent variable, first-semester freshman college GPA. Only one predictor, the high school student engagement score was significant. The correlation matrix depicts a correlation of $r(55) = .14$, $p > .05$ between the independent variable of HS-GPA and the dependent variable of FR-GPA. This suggests that approximately 2% of variance of FR-GPA was accounted for by the predictor, HS-GPA. Table 2 also demonstrates a correlation of $r(55) = .06$, $p > .05$ between the independent variable of college entrance

exam score and the dependent variable of FR-GPA. This indicates that less than 1% of the variance of FR-GPA can be accounted for by ACT score.

High school student engagement questionnaire scores positively correlated with FR-GPA values, $r\ (55) = .48$, $p < .01$. This suggests that higher scores on the high school student engagement questionnaire are associated with increased FR-GPAs. Table 2 also depicts positive correlations between the independent variables of HS-GPA and ACT score, $r\ (55) = .54$, $p < .01$. However, the variable of high school student engagement questionnaire score shows no significant correlation with the variable of ACT score, $r\ (55) = -.13$, $p > .05$, and no significant correlation, $r\ (55) = -.01$, $p > .05$, with the variable of HS-GPA values.

The descriptive statistics for the predictors and the outcome variable are shown in Table 3. These statistics include the mean, standard deviation, minimum, maximum, and range for each of the variables.

Table 3

Means, Standard Deviations, Maximums, Minimums, and Ranges for High School GPA, ACT Score, High School Student Engagement Score, and Freshman College GPA

	HS-GPA	ACT Score	HSSE Score	FR-GPA
N	55	55	55	55
Mean	3.57	24.11	194.89	3.21
Standard Deviation	.52	4.97	30.85	.66
Minimum	2.00	16.00	98.00	1.90
Maximum	4.00	36.00	250.00	4.00
Range	2.00	20.00	152.00	2.10

In response to HS-GPA, three respondents (5.45%) reported their high school GPA as greater than 2.0 but less than or equal to 2.5. Four respondents (7.27%) reported their HS-GPA as greater than 2.5 but less than or equal to 3.0. Twelve respondents (21.82%) reported a HS-GPA greater than 3.0 but less than or equal to 3.5. Twenty-two (40.00 %) reported a HS-GPA greater than 3.5 but less than 4.0. Fourteen (25.45%) reported a HS-GPA at 4.0 (Table 4). The average HS-GPA reported was 3.57 with a range of 2.00. The minimum was 2.00 (lowest value) while the maximum was a 4.00 (highest value), as shown in Table 4.

Table 4

High School GPA

	Frequency (N)	Percent
$\geq$ 2.0 but $\leq$ 2.5	3	5.45 %
> 2.5 but $\leq$ 3.0	4	7.27 %
> 3.0 but $\leq$ 3.5	12	21.83 %
> 3.5 but < 4.0	22	40.00 %
4.0	14	25.45 %

Answers to the ACT question resulted in 17 respondents (30.91%) reporting cumulative ACT scores between 16 and 20; 18 respondents (32.73%) reported a score between 21 and 25; 14 (25.45 %) reported between 26 and 30; and six respondents (10.91 %) reported a score between 31 and 36 (Table 5). The average ACT score was 24.11, with a range of 20 points. The minimum was 16 (lowest score) and the maximum was 36 (highest score), as shown in Table 5.

Table 5

ACT Score

	Frequency (N)	Percent
16-20	17	30.91 %
21-25	18	32.73 %
26-30	14	25.45 %
31-36	6	10.91 %

Participants in the study responded to the high school student engagement questionnaire with the following results: 17 respondents (30.91%) demonstrated an engagement score between 98 and180; 15 respondents (27.27%) scored between 181 and 200; 13 respondents (23.64%) scored between 201 and 225; and 10 respondents (18.18%) scored between 226 and 250 (Table 6). The average score on the engagement instrument was 194.89 with a range of 152 points. The minimum was 98 points (lowest score), and the maximum was 250 points (highest score), as shown in Table 6.

Table 6

High School Student Engagement Score

	Frequency (N)	Percent
98-180	17	30.91 %
181-200	15	27.27 %
201-225	13	23.64 %
226-250	10	18.18 %)

Finally, the response rates for the dependent variable of first-semester freshman college grade point average are shown in Table 7. Fifteen respondents (27.27%) reported a first semester freshman college GPA equal to or greater than 1.9 but at or below 2.9. Twenty respondents (36.36%) reported a FR-GPA above 2.9 but at or below 3.5. Ten respondents (18.18%) reported a FR-GPA above 3.5 but at or below 3.9. And, 10 respondents (18.18 %) reported a perfect 4.0 GPA for their first semester of college (Table 7). The average first semester freshman college GPA was 3.21 with a range of 2.10. The minimum was 1.90 (lowest value), while the maximum was a perfect 4.00 (highest value) (Table 7).

Table 7

First-semester Freshman College GPA

	Frequency (N)	Percent
≥ 1.90 but ≤ 2.90	15	27.27 %
> 2.90 but ≤ 3.50	20	36.36 %
> 3.40 but ≤ 3.90	10	18.18 %
4.0	10	18.18 %

The correlation matrix (Table 2) produced for each predictor with the dependent variable, first-semester freshman college GPA, resulted in only one predictor, the high school student engagement score, being significant. Therefore, a model summary, coefficients for the regression table, and an analysis of variance were not produced for each single independent variable. These analyses were seen as redundant given the significance of only one independent variable.

When using the three independent variables of high school GPA, ACT score, and high school student engagement score together as predictors of first semester freshman college GPA, the model summary (Table 8) indicated an R value of .50 and an R square of .25. This indicates that 25% of the variance of freshman college GPA can be accounted for by the variance of the three independent variables: HS-GPA, ACT, and HSSE.

Table 8

Model Summary: High School GPA, ACT Score, and High School Student Engagement Score

R	R Square	Adjusted R Square	Std. Error of the Estimate
.50	.25	.22	.58

The coefficients for the regression equation using the three independent variables of high school grade point average, ACT score, and high school student engagement score are shown in Table 9.

Table 9

Coefficients: High School GPA, ACT Score, and High School Student Engagement Score

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Constant	.49	.78		.63	.64
HS-GPA	.13	.18	.10	.73	.47
ACT	.01	.02	.07	.48	.64
HSSE	.01	.00	.49	3.98	.00

Note: Dependent variable: first semester freshman college grade point average

These results indicate that the equation for the regression line is as follows: predicted FR-GPA score = .49 + .13 (HS-GPA) + .01 (ACT) + .01 (HSSE) (Table 9). Based on these findings the null hypothesis was rejected.

The analysis of variance in Table 10 shows the sum of squares (between variation) and the residual (within variation). It also shows the mean square and the F ratio. The linear combination of the three independent variables was significantly related to the dependent variable of first-semester freshman college grade point average [$F(3, 51) = 5.71$, $p < .01$]. Table 10 gives the results for the analysis of variance.

Table 10

ANOVA Table Providing F Statistics for Regression Model: HS-GPA, ACT, and HSSE

	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.86	3	1.95	5.71	.00
Residual	17.45	51	.34		
Total	23.31	54			

Summary of Results

In summary, the null hypothesis that predicted no multiple correlation between the three predictors (HS-GPA, ACT, and HSSE) and first semester freshman college GPA was rejected. A correlation matrix was produced for each predictor with the dependent variable, first-semester freshman college GPA. Only one predictor, the high school student engagement score was significant. The correlation matrix also depicted positive correlations between the two independent variables HS-GPA and ACT score.

However, the high school student engagement questionnaire score variable shows no significant correlation with the ACT score variable and no significant correlation with the HS-GPA variable. In conclusion, since high school student engagement questionnaire scores positively correlated with first semester freshman college GPA, this suggests that higher scores on the high school student engagement questionnaire are associated with higher first semester freshman college GPAs.

CHAPTER V

CONCLUSION

Introduction

This study attempted to add to the general body of knowledge surrounding student engagement at both the high school and college levels. The study particularly concentrated on the transition between a student's senior year of high school and the beginning semester of college. Few studies, if any, have investigated the effect of high school student engagement on first semester college grade point average.

A multiple correlation was conducted to determine whether relationships existed between students' FR-GPA and the three variables of HS-GPA, ACT score, and high school student engagement score. Some of the findings of this study go against the traditional research regarding HS-GPA and college entrance scores as significant predictors of FR-GPA.

The data were collected from 55 students who had recently completed their first semester of college. The data provided an answer to the research question: what is the predictive value of high school grade point average, composite college placement exam score, and high school student engagement on first-semester college grade point average?

The information for this study was gathered through questionnaires mailed with self-addressed stamped envelopes to 172 students who had recently completed their first semester of college. The student engagement questionnaire designed by Goldspink and Winter (2009) served as the instrument in this study to assess the extent to which students felt engaged during their senior year of high school. The student engagement questionnaire was designed to provide an overall index of student engagement. There

were five sub-scales within the instrument which measured involvement, happiness, social functioning, dispositions to learning, and interest. For the purposes of this study, the five sub-scales were not separately examined. A single final score which represented the level of overall student engagement was calculated. The overall score was calculated from the total of the scores for all 52 questions.

The literature review suggested that student engagement can be an important factor in determining a student's overall success (Atweh, Bland, Carrington, & Cavanagh, 2007; Carini, Kuh, & Klein, 2006; Kuh, Kinzie, Schuh, & Whitt, 2005; Kuh, 2007, Yazzie-Mintz, 2007). It is noteworthy that ample research has been conducted demonstrating the positive correlation between college student engagement and FR-GPA, and research has also been conducted demonstrating the positive correlation between high school student engagement and overall HS-GPA. There has been little or no research that has demonstrated the effect of high school student engagement on FR-GPA.

The dependent variable for this study was first semester college grade point average. The independent variables were high school student engagement, overall high school grade point average, and highest composite college entrance exam score. The study also collected demographic information about gender although no attempt was made to categorize this distinction as a predictor of college success. The dependent variable of FR-GPA, along with the independent variables of overall HS-GPA and college entrance examination score were obtained through a self-report section distributed with the engagement questionnaire.

The data analyzed were based on surveys completed by 55 graduates of rural Florida high schools who had recently completed their first semester at a four-year

college or university. A total of 172 questionnaires were distributed to the target population. A total of 68 or 39.5% completed surveys were returned to the researcher. The only demographic datum collected was gender. Of the study sample, 69% (n=38) of the students were female and 31% (n=17) were male.

Conclusions

This study lends further support to existing research about the predictive value of student engagement on school success, specifically in the area of grade point average (Kuh, 2007; Yazzie-Mintz, 2007). The study also provides continued evidence that the more engaged a student is, the more successful he or she will be in terms of grade point average (Atweh, Bland, Carrington, & Cavanagh, 2007; Carini, Kuh, & Klein, 2006; Kuh, Kinzie, Schuh, & Whitt, 2005; Yazzie-Mintz, 2007). As discussed previously, research demonstrates the predictive value for high school student engagement on HS-GPA (Yazzie-Mintz, 2007), and research also demonstrates the predictive value of college student engagement on FR-GPA (Atweh, Bland, Carrington, & Cavanagh, 2007; Kuh, Kinzie, Schuh, & Whitt, 2005; Kuh, 2007). These studies were institution-specific, focusing on the effect of engagement at the current institutional level, either high school or college. This study bridged the transition from the secondary school institution into the collegiate institution. It provided a clear message to all education leaders working in high school and college level institutions to acknowledge the issue of high school student engagement in regard to college performance.

The analysis indicated that high school student engagement questionnaire scores positively correlated with FR-GPA values, $r(55) = .48$, $p < .01$. This finding suggested that higher scores on the engagement questionnaire can be associated with higher FR-

GPAs. The study also suggested positive correlations between the independent variables of HS-GPA and ACT score. However, the variable of high school student engagement questionnaire score showed no significant correlation with the variable of ACT score, $r(55) = -.13$, $p > .05$, and no significant correlation, $r(55) = -.01$, $p > .05$, with the variable of HS-GPA.

Discussion

The literature review revealed ample research on student engagement, especially at the college level. The reviewed research, however, was overwhelmingly site specific; i.e., studies were conducted at either the high school level or the college level exclusively. These studies all sought to measure the effect of engagement at the specific institutional site, high school or college, on student success at that specific institutional level (Kuh, Kinzie, Schuh, & Whitt, 2005; Kuh, 2007; Yazzie-Mintz, 2007). This current study sought to provide data regarding a carry-over effect of high school engagement on to the next level, college outcomes. Specifically, it analyzed engagement scores focused on the student's final year of high school and sought to identify any relationship with the student's first semester at the next institutional level, a four-year college or university.

The results of this study demonstrated that a positive correlation exists between the dependent variable, first semester freshman college GPA, and the independent variable high school student engagement. In fact, correlational and multiple regression analyses indicated that only the independent variable of high school student engagement was significantly associated with students' FR-GPA. Given some research literature it was surprising that only one predictor, the high school student engagement score, was significant. However, other research has questioned the validity that HS-GPA and ACT

score have as predictors in determining FR-GPA and subsequent student success (Serow & Jackson, 1983), and some research has suggested that student engagement assessment can help provide a new individualized consideration for students (Kuh & Gonyea, 2006).

The correlation matrix depicted a correlation, $r(55) = .14$, $p > .05$, between the independent variable HS-GPA and the dependent variable FR-GPA. The data also depicted a correlation, $r(55) = .06$, $p > .05$, between the independent variable college entrance exam score and the dependent variable FR-GPA. These findings suggest that there was no significant correlation between the two independent variables HS-GPA and college entrance exam score.

Positive correlations between student engagement and grade point averages were consistent with the results of previous studies (Atweh, Bland, Carrington, & Cavanagh, 2007; Carini, Kuh, & Klein, 2006; Kuh, 2001, 2003; Yazzie-Mintz, 2007). Once again, it is noteworthy that previous studies focused on of the effect of college engagement on college success (Kuh, 2001, 2003) or on high school engagement on high school success (Yazzie-Mintz, 2007). This study was different in that it analyzed the relationship between high school engagement and college grade point average. The finding that the relationship between high school student engagement and FR-GPA was positive and significant indicated that students who were engaged at the high school level may experience a carry-over effect toward college success. This study suggests that student engagement at the high school level can positively impact college grades.

Previous research has indicated that high school grade point average can be used as a predictor of college grades. There is a positive correlation in that “a person who has a high GPA in high school would be likely to have a high GPA in college” (Fraenkel, &

Wallen, 2006, p. 340). Other research also suggests this correlation between HS-GPA and college success as determined by grades (Ishler & Upcraft, 2005) and by retention (Astin, 1997).

The research also suggested that college entrance examinations are significant predictors of freshman college success. The reviewed research suggests that "students with higher ACT scores are more likely to achieve a first-year college GPA of 2.0 or higher or 3.0 or higher than students with lower ACT scores, regardless of gender, race/ethnicity, or family income" (American College Testing, 2008, p. 13). It was therefore expected that this study's sampled students would have high school GPAs and ACT scores that would demonstrate a positive correlation with their first-semester freshman GPA. In fact, the prior research of Garton, Dyer, and King (2000) found that "the best predictors of academic performance during the first year of college were high school core GPA and ACT score" (p. 46).

Other research suggested, however, that these predictors may have failed to recognize the diversity of students, and questioned the validity of standardized tests in determining freshman college GPA and subsequent student success (Serow & Jackson, 1983). These traditional assessments of high school success currently predominate in the research, while emphasis on more pervasive factors has not been forthcoming. Student engagement assessment can help provide a new individualized consideration for students (Kuh & Gonyea, 2006). This study provided results that indicated ACT and HS-GPA were not significant predictors. Only the independent variable of student engagement showed a significant correlation with the dependent variable of FR-GPA.

Limitations

The limitations of this study included several factors, some of which related to all leadership and student engagement research. The sampled subjects included only students who had graduated from high schools in a six-county area in rural Florida. Therefore, results from the present study may not be generalizable to other populations. Furthermore, the study can be accurate only to the extent of each respondent's honest and accurate responses. The data obtained were dependent on participants' self-reported responses and were, therefore, subject to human error and bias.

Research has suggested, however, that self reports could be valid and reliable when six conditions were met (Baird, 1976; Pace, 1984). First, the information should be known to the survey sample. Second, the phrasing of the questions should be clear and unambiguous. The engagement questionnaire was derived from previous studies (Goldspink & Winter, 2008) which found it valid and reliable with children as young as age five. Third and fourth, the questions should reference recent events and be potentially verifiable (Pace, 1984). Fifth, the subject should consider the questions to be worthy of a concerted response. Finally, the answers should not be threatening or embarrassing to the subject. These conditions were each met to varying degrees, as detailed in the methodology section. Therefore, an assumption of this study was that the engagement questionnaire self report surveys were valid for their intended purpose.

This study included a greater number of female than male respondents. A future study involving other students may produce different results. All of the respondents to the engagement questionnaires participated voluntarily. The effects of any potential systemic

bias among non-responders remain unknown. Voluntary participation may contribute to a selection bias.

Implications

Research suggested that FR-GPA has been positively related to the overall success of a student in college (Raban, 2005). The research also suggested that college success, defined by the achievement of a bachelor's degree, can be a significant factor toward the attainment of a middle class socio-economic status (Pascarella & Terenzini, 1991; Saban, 2007). The literature review revealed the importance of college (Power, 2000; Saban, 2007) and the necessity for better preparation for college (Kuh, 2007). For this reason, high school and higher educational leaders should promote research-based methods such as student engagement in their efforts to achieve accurate prediction of FR-GPA. These education leaders should strive to understand the predictive value of student engagement and their own role, through transformational leadership, in developing engagement (Kuh, Kinzie, Schuh, & Whitt, 2005; Raban, 2005). Furthermore, the research of Hallinger and Heck (2010) suggested that transformational leadership had a positive correlation with student engagement.

The challenge is to develop and maintain institutional practices which can foster college success (Wingspread Group, 1993). More research is needed focusing on the transitional period between student engagement in the final year of high school and its predictive value for FR-GPA. The research regarding student engagement gave little attention to this critical transitional period. For educational leaders, research in this area can translate into better service delivery at the critical juncture between the senior year of

high school and the first year of college (Kuh, 2007). Therefore, educational leaders must work harder to promote and develop methods for building student engagement.

A study of this nature brings attention to the methods which educational leaders employ to observe and identify factors that may increase or decrease student engagement. Educational leaders should stay aware of the current trends and factors that contribute to student engagement. Issues such as involvement, happiness, social functioning, disposition to learning, and interest should be addressed by leaders at both the secondary and collegiate levels. Improving student engagement in an effort to improve educational success also requires adoption of the appropriate leadership behavior in order to improve the level of engagement and, subsequently, college success.

Recommendations

Practical measures can be taken by both educational leaders and prospective students. From the organizational side education leaders should ramp up the level of faculty engagement with new students (J. Gardner, personal communication, November 16, 2006). Future research is needed to investigate the relationship between student engagement and college success on a wider and more inclusive scale. Future studies should consider other independent variables that might be considered along with high school student engagement as predictors of FR-GPA. Instead of overall HS-GPA, a future study may concentrate on specific areas of core mathematics or science coursework. Variables such as the rigor of course work, as indicated by honors, advanced placement, or international baccalaureate studies, could be useful in further studies. Research suggested that many incoming students were not well prepared for college (Kuh, 2007); therefore, a more targeted consideration of variables could be helpful.

A future study may examine the role of leadership on high school student engagement. Transformational leadership has been positively linked with improved student engagement (Hallinger & Heck, 2010). Further empirical exploration, therefore, may examine the role of the transformational leadership style of a high school principal or a district superintendent on the engagement levels of students in the chosen population. Looking into the impact of transactional leadership at the high school level on future college success seems worthy of further exploration.

Analysis of the data suggested other possible improvements on similar future research. Replicating this study in suburban or urban areas could be beneficial. It is important to note that this study used a sample of rural Florida high school students who attended mostly Florida four-year colleges and universities. This may not accurately represent the larger national population of first-year college students. Differences among high schools and colleges of choice could also be possibly mitigated for by including only a sample of students from one college, who had all graduated from the same high school.

This study used Likert-style questions to measure student engagement. It would be interesting to explore the sensitivity of this study's results by using other measures of engagement or to use more than one measure. This study could be altered in structure to use a mixed-methods analysis as well as a purely qualitative analysis. The sub-scales of the Goldspink-Winter questionnaire also could be utilized as separate variables for a future quantitative study. The use of qualitative research could be used to gain insight into the attitudes of students regarding engagement and college success. Does engagement at the high school level as measured by the HSSSE have a positive

correlation with engagement as measured by the NSSE? That is, does engagement in high school lead to engagement in college? Can a high school administrator with a more transformational leadership style have a more positive effect on his or her students' future college success? Are there better academic predictors of college success other than overall HS-GPA, such as core math or science classes?

Since higher education research has an impact on society in general, these and future findings can be disseminated through local school districts and higher education institutions. Professional journals and various media outlets can be used for dissemination of these and future findings and recommendations. The results of these studies can be disseminated via multiple institutions and organizations whose mission is to increase college success rates. Organizations of high school and college administrators, counselors, and teachers can collaborate with each other for timely submissions of results to be included in juried journals. Journals that could assist in the dissemination of such research could include the *Journal of College Student Development*, *Educational Leadership, Journal of Educational Administration, School Leadership & Management, Guidance & Counseling, Research in Higher Education, Review of Educational Research,* and *School Leadership & Management*.

Summary

There remains much to be learned about the relationship between student engagement and school success at all educational levels. It is hoped that this current study will add to and encourage further research in the area of educational leadership. Hopefully, it will encourage more attention to the relationship between student engagement at the high school level and future college success.

The overall findings of this research provided support for the proposed hypothesis. The data showed a significant relationship between student engagement in the final year of high school and first semester college grade point average. However, as noted, there was not a significant correlation with the two independent variables, college entrance exam score and overall high school grade point average. This result was contrary to much of the research literature. In fact, HS-GPA and ACT score were purposefully selected as traditional predictors of college outcomes. However, other research has suggested that perhaps ACT score and HS-GPA were not holistic enough as predictors of FR-GPA.

Student engagement has been researched at the high school and college levels. This current study addressed a gap in the student engagement literature by attempting to study the transitional period between a student's final year of high school and his or her first semester of college. Research literature reflected a continuing concern that high school students were not adequately prepared for their freshman year of college (Kuh, 2007). The national attrition rate for all college students remained near 45% over the past 100 years (Tinto, 2004).

The current study has practical implications for educational leaders who want to increase college retention rates. Measures of student engagement have been correlated with student success (Kuh, 2001, 2003, 2005; Yazzie-Mintz, 2007). Due to the finding that high school engagement can be a valid predictor of FR-GPA, interventions aimed at increasing student engagement in high school could result in higher college retention rates. Such interventions should concentrate on fostering meaningful participation with peers, staff, and faculty at high schools. Some institutions have shown greater success in

converting engagement into student success (Carini, Kuh, & Klein, 2006). Efforts to increase student engagement should also focus on transformational leadership. Research suggested that transformational leadership behaviors can have a significant effect on student engagement (Hallinger & Heck, 2010; Leithwood, Harris, & Hopkins, 2008).

The success of leaders in higher education and the effectiveness of educational institutions as a whole depend greatly on student levels of success. Leaders' ability to prepare and retain students at the highest levels can be served by adhering to the research-based findings regarding student engagement. In conclusion, although much research has been conducted in the area of student engagement, most studies have tended to focus on site-specific predictors, resulting in a gap in the literature regarding the transitional period between high school and college. More experimental research may contribute to a better understanding of how leadership styles can affect student engagement.

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APPENDIX A

Cover Letter

Dear Research Participant,

Your voluntary participation in a research project is requested. The research is being conducted by Peter Preston, a doctoral student at Barry University. The purpose of this research is to focus on the predictive effects of student engagement, high school grade point average, and college entrance exam scores on first semester college grade point average. Although there might be no direct benefit to you, there are no known risks. It is hoped that this research will improve understanding of predictors of college success. In accordance to this purpose participants will be recruited, data will be collected from the participants by questionnaire surveys, and feedback will be provided on the research findings.

If you decide to participate you will be asked to fill out a questionnaire that should take about 20 minutes to complete. Some of the questions will be about demographic variables, high school engagement your senior year, college entrance exam score (ACT or SAT), and grade point averages for your high school coursework and your first-semester of college. Your consent is strictly voluntary and you may decline to participate at any time. You do not have to answer any questions which may make you uncomfortable.

The information you provide will be kept anonymous. No names or other identifiers will be collected on the questionnaire. Any published results of this study will refer to group average only. Data will be kept in the researcher's care for five years in a locked drawer. After this time all data will be shredded. By completing and returning this survey you have shown your agreement to participate.

If you are satisfied with the information provided to you and are willing to participate, please complete the attached questionnaire. Do not put your name or address on any of the forms. If you have any questions or concerns regarding the study you may contact Peter Preston at (863) 767-0319, Dr Edward Bernstein, faculty sponsor, at (305) 899-3861, or the Institutional Review Board at (305) 899-3020.

Thank you for your participation.

Sincerely,

Peter Preston

APPENDIX B

STUDENT QUESTIONNAIRE PAGE ONE OF TWO

Part A: Demographic and Student Information
Directions: Please answer the following questions to the best of your knowledge.

1. What is your gender? a. Female ____ b. Male ____

2. What was your un-weighted overall High School GPA? _____

3. What was your highest combined ACT or SAT score? _____

4. What was your First Semester College GPA? _____

Part B: Engagement Questionnaire
Directions: Using the scale please circle the number before each statement that best describes your feeling regarding your senior year of high school.

Strongly Agree (1), Agree (2), Neutral (3), Disagree (4), Strongly Disagree (5).

1. I was hard to distract as I was concentrating	1 2 3 4 5
2. I took a lot of care with what I was doing	1 2 3 4 5
3. I was working hard on the learning	1 2 3 4 5
4. I was very focused on the learning	1 2 3 4 5
5. I gave up trying to do the work before I was finished	1 2 3 4 5
6. I felt proud of what I achieved	1 2 3 4 5
7. I was very happy with what I did	1 2 3 4 5
8. I felt satisfied with my learning	1 2 3 4 5
9. I was nervous about what might be expected	1 2 3 4 5
10. I was felt ashamed of what I did	1 2 3 4 5
11. I told myself “I can’t do this” and felt unhappy	1 2 3 4 5
12. I was afraid in case I got things wrong	1 2 3 4 5
13. I was nervous and distressed.	1 2 3 4 5
14. What I did upset others	1 2 3 4 5
15. I was frustrated with others	1 2 3 4 5
16. I felt alone	1 2 3 4 5
17. I didn‘t like being told what to do	1 2 3 4 5
18. I felt as though no one cared about me	1 2 3 4 5
19. I worked with others whenever I could	1 2 3 4 5
20. I offered to help others	1 2 3 4 5
21. I felt included	1 2 3 4 5
22. I was treated with respect	1 2 3 4 5
23. I was invited to join and contribute	1 2 3 4 5
24. I waited to be shown what to do	1 2 3 4 5
25. I did more than I was asked to do	1 2 3 4 5

PAGE TWO OF TWO

26. I came up with new ideas on my own	1 2 3 4 5
27. When I found something hard I tried another way	1 2 3 4 5
28. I did only what was asked but no more	1 2 3 4 5
29. The subject we were doing is very interesting to me	1 2 3 4 5
30. I wanted to know more about what we were learning	1 2 3 4 5
31. I have always been curious about what we were learning	1 2 3 4 5
32. I was bored	1 2 3 4 5

Directions:
In this section please indicate to what extent you generally felt, that is, how you felt on the average both during your senior year of high school and when you were at home or in your community. Circle the number that corresponds to how you generally felt.

Very slightly (1), A little (2), Moderately (3), Quite a bit (4), Extremely (5)

33. Interested	1 2 3 4 5
34. Distressed	1 2 3 4 5
35. Excited	1 2 3 4 5
36. Upset	1 2 3 4 5
37. Strong	1 2 3 4 5
38. Guilty	1 2 3 4 5
39. Scared	1 2 3 4 5
40. Hostile	1 2 3 4 5
41. Enthusiastic	1 2 3 4 5
42. Proud	1 2 3 4 5
43. Irritable	1 2 3 4 5
44. Alert	1 2 3 4 5
45. Ashamed	1 2 3 4 5
46. Inspired	1 2 3 4 5
47. Nervous	1 2 3 4 5
48. Determined	1 2 3 4 5
49. Attentive	1 2 3 4 5
50. Jittery	1 2 3 4 5
51. Active	1 2 3 4 5
52. Afraid	1. 2 3 4 5

Thank you!