**TRADITIONAL AND BLOCK SCHEDULING:**

**A COMPARISON OF COLLEGE ACADEMIC PERFORMANCE LEVELS OF FIRST-YEAR STUDENTS WHO REPORT DIFFERENT HIGH SCHOOL ACADEMIC SCHEDULING PLANS**

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# ABSTRACT

TRADITIONAL AND BLOCK SCHEDULING: A COMPARISON OF COLLEGE ACADEMIC PERFORMANCE LEVELS OF FIRST-YEAR STUDENTS WHO REPORT DIFFERENT HIGH SCHOOL ACADEMIC SCHEDULING PLANS

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The importance of investigating the relationship of the high school scheduling plan and academic performance, spans across the high school grades, and into college. The implementation of block scheduling as a means to address concerns in declining high school performance has been widely regarded as an effective strategy. The connection between the high school scheduling plan and collegiate performance has received little attention. High school administrators desiring to best equip students for success beyond graduation would do well to understand the relationship the school’s scheduling plan may have on its students in their collegiate futures. Likewise, colleges desiring to best support first-year students to assimilate to collegiate academics would do well to understand the background from which students come, and the relationship the high school scheduling plan may have to academic performance. This study examined the relationship between the high school scheduling plan experienced by 203 first-year college students from a population of 320, and each students’ academic performance during the first year of college, as defined by a self-report survey, including these areas: college grade point average [GPA]; test anxiety; academic competence; test competence; study strategies; and time management. Previous research studies show a mix of academic performance levels of high school students in block scheduling, some doing better and some doing more poorly, but studies on academic performance at the collegiate level relative to high school scheduling are limited. Limitations of this study included the use of one institution in population sampling, and an inability to control the instructional practices and classroom routines and practices that participants may have experienced in high school. Results of this quantitative study, concluded that test anxiety, academic competence and time management each have a statistically significant relationship with high school schedule, and in each case those participants coming from a block schedule in high school are doing more poorly than those students coming from a traditional high school schedule. These results imply that experiencing a block schedule in high school may result in poorer academic performance in those areas.

# 

# PREFACE

This basis for this research originally stemmed from my work with my advisees at Concordia University Nebraska; in helping them map out a degree-plan for their college years. Several years in a row I had freshmen students who struggled academically, several of whom ultimately decided to attrition from our university. In casual observation it became clear to me that a majority of these students had come from a block schedule in high school. The coincidence led to a curiosity, and ultimately to this study.

# ACKNOWLEDGEMENTS

As a forgiven and redeemed child of God, my first thanks goes to my Savior, Jesus. There is only One Thing needful, despite all the requirements of life on this earth, and even as I work to fulfill those requirements, I know my life here is nothing compared to what Jesus has gained and secured for me in heaven.

To my kids, Tara and Tim, your patience with your Mom through all this has been remarkable, and to my husband, H, for the time to get this done. Let’s all go to Hawaii!

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# CHAPTER I

INTRODUCTION

The problem of non-completion on post-secondary campuses persists as an area of interest to those in higher education; and student success in college, as a deterrent to attrition, remains a significant focus of most institutions of higher education (Gilmore, 2014). This study investigated the relationship between the high school scheduling plan, and the academic performance of first-year college students. The knowledge gap exists because little research has been done to investigate collegiate academic performance in light of the high school academic schedule. In the study conducted by Dexter, Tai and Sadler (2006), the researchers examined the academic performance of first-year college Science students reporting different academic schedules. Their results showed that block scheduling does not appear to offer better preparation than traditional scheduling, but that additional study may show an impact in other disciplines, or in general academic performance (Dexter, Tai, & Sadler, 2006). From that study, the existing gap in research concerning how high school academic schedules and the academic performance of first-year college students may be related is exposed; and this quote can be retrieved,

In general, for schools considering college preparation in science as an important goal, block-scheduling plans do not appear to offer a better option than a traditional plan. Might there be positive impacts in other disciplines? This study does not have the scope to address that question (Dexter, Tai & Sadler, 2006).

## Purpose

The purpose of this study was to investigate the relationship of a block scheduling high school plan on the academic performance of students in their first year of college. This study used a self-report survey of first-year college students to assess academic performance, and investigated the relationship between the high school scheduling plan and first-year academic performance. Research studies and data exist (Trenta & Newman, 2002; Gruber & Onwuegbuzie, 2001; Lewis et al., 2005; Washington, 2011) on the academic performance of high school students participating in the block schedule; however, studies directly related to investigating the relationship of a block scheduling high school plan on the academic performance of students in their first year of college are limited. This study addressed that void, and helped to fill the knowledge gap.

## Problem Statement

This research study examined the relationship of academic schedules and the academic performance of first-year college students at Concordia University Nebraska. By conducting a quantitative study, gathering information through a self-report survey, data was collected to investigate the relationship between first-year college academic performance and the high school scheduling plan students experienced.

Researching the existence of a significant relationship between first-year college student general academic performance and the high school scheduling plan from which they come is primarily uncharted study. Studies on the academic performance of high school students in block and traditional schedules are plentiful (Trenta & Newman, 2002; Gruber & Onwuegbuzie, 2001; Lewis et al., 2005; Washington, 2011), as schools work to reform and strive to find ways to improve academic performance. However, studies on the academic performance of college students as that relates to high school scheduling plans are limited.

The importance of investigating the relationship of the high school scheduling plan on academic performance, spans across the high school grades and into college. High school administrators desiring to best equip students for success beyond graduation would do well to understand the possible relationship the school’s chosen scheduling plan may have to its students in their futures. Likewise, colleges desiring to best support first-year students to assimilate to collegiate academics would do well to understand the background from which students come, and the possible relationship the high school scheduling plan may have to academic performance. Because a statistically significant relationship was found in this study, colleges may decide to implement measures to help support first-year students toward academic success, relative to the high school scheduling plan experienced.

Mentoring first-year students and providing a network of support tailored to the specific needs of an individual aid in helping students achieve academic success, and thereby aid in lowering attrition rates, increasing viability for the university as a whole. Knowing that students coming from different high school scheduling plans may need different or additional support to achieve will benefit students and mentors alike in their common goal of academic success.

## Research Questions

**RQ1:** Is there a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan?

**RQ2:** Is there a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan?

**RQ3:** Is there a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan?

**RQ4:** Is there a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan?

**RQ5:** Is there a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan?

**RQ6:** Is there a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan?

## Definition of Terms

Although block scheduling has been prevalent in education since the 1980s, there is a need to define certain terms used throughout this study to ensure a commonality of knowledge among readers.

First-Year College Students: Students, both traditional and non-traditional in age, attending college for the first time, in the first year of attendance.

Academic Competence: The ability to manage course load, understand material, and enjoy and find interesting course curriculum (see Appendix A).

Academic Performance: The level of achievement reached by students in academic courses defined by grades/scores earned, as defined by the self-reported perceptions of college students academically, related to these areas (see Appendix A): academic competence; test competence; time management; study strategies; and test anxiety.

Academic Schedule: The time schedule for courses offered in a school.

Block Scheduling: Block Schedules include the A/B or Alternating Block and are three to four classes every other day for an entire year with class time spanning seventy-five to ninety minutes. Intensive Block is four classes that meet every day for half a year for seventy-five to ninety minutes. Also classified as Block Scheduling are schedules that blend the Traditional and Block plans and often are classified as a modified block (Canady & Rettig, 1995).

Study Strategies: The ability to plan for and review course material, summarizing material in one’s own words; test knowledge before taking exams; and seek to find out what questions may be asked and how they may be asked in an effort to learn most effectively (see Appendix A).

Test Anxiety: Feelings of inadequacy, panic, depression and nervousness associated with taking an exam, which interfere with performance on exams (see Appendix A).

Test Competence: The ability to prepare for an examination, manage the required material, and cope with tension associated with taking an exam (see Appendix A).

Time Management: The ability to organize and balance study and leisure time and prepare for examinations well in advance to avoid cramming (see Appendix A).

Traditional Scheduling: Traditional schedules range from six to eight periods a day for an entire year, with the length of time in class spanning from forty-five to fifty-five minutes.

# CHAPTER II

LITERATURE REVIEW

## Purpose

The literature review for this research study includes: 1) history of block scheduling; 2) academic outcomes of students in block scheduling; 3) factors that contribute to the general performance of first-year college students; 4) factors that contribute to the academic performance of first-year college students; and 5) relationship between block scheduling and the academic performance of first-year college students. The purpose of this literature review was to investigate the research that exists on the relationship between block scheduling and academic performance in students, both at the high school and college levels. This investigation led to the exposure of a knowledge gap in research on the relationship between the high school academic schedule and college academic performance.

## History of Block Scheduling

In the mid-eighties and nineties, many changes in schools included: middle school concepts of team teaching; thematic approaches to instruction; interdisciplinary instruction; and scheduling teams of teachers and students in large blocks of time; these changes began to appear in schools as elements of the restructuring movement (Hallock, 2001). In 1994, the National Education Commission on Time and Learning published *Prisoners of Time*, which encouraged schools to focus on learning rather than time, and stressed block scheduling to be an effective and appropriate way for teachers to engage students in active instruction (Kee, 2011). Block scheduling is a type of academic schedule in which students have fewer classes than in a traditional schedule, and the classes last for a longer period of time (Harris, 2014). Block scheduling has been employed in some form or other in school systems for decades, dating back to the early 1960s (Gruber & Onwuegbuzie, 2001). In 2012, the National Education Association reported that there had been a dramatic increase in the number of schools using a block schedule. The primary purpose for this change in scheduling was to maximize instructional time, which would then increase academic achievement for students (Harris, 2014). Interestingly, most block schedules result in a loss of allocated instructional time, but less time is lost to administrative tasks, and the goal of the block schedule is to increase engaged time (Center for Public Education, 2006). Within the context of education reform, one of the specifics of the traditional education system that has been a focus for systematic change is the use and organization of time within the school’s schedule (Trenta & Newman, 2002). Efforts have focused on both adding time to the academic year and to the academic day, but efforts have also focused on modifications to the daily schedule in a manner now commonly referred to as “block scheduling” (Trenta & Newman, 2002).

The use of block scheduling has become a popular method for attempting reform in a number of areas, both academic and environmental, including: a) improving student academic performance; b) reducing discipline problems; c) enhancing the learning process through longer class periods; d) addressing governmental accountability demands; e) simplifying the school structure; and f) providing flexibility and organization needed to produce the best schools in the world (Gruber & Onwuegbuzie, 2001). Currently, approximately 30% of secondary schools in the United States use some form of block scheduling (Rettig, 2017).

## Academic Outcomes of Students in Block Scheduling

One of the most important concerns in educational reform in recent history was related to how effectively classroom instructional time was being used in schools (Gullatt, 2006). During the last three decades, block scheduling has been one of the fastest growing reform initiatives in high schools in order to address the concern of effective classroom instructional time (Lewis et al., 2005). In the study conducted by Lewis, et al. (2005), the researchers found that block scheduling may provide students with an advantage over students in a traditional schedule with regard to reading and mathematics achievement; while Norton’s (2010) study indicated no significant difference in English and math scores among students from different scheduling types. Many schools have met with great success in the transition from traditional to block scheduling, and have recorded measurable academic gains for their students (Gullatt, 2006). However, it should be noted, in Gullatt’s (2006) study, there was evidence that block scheduling had the most positive academic impact on general courses, but had less academic benefit for higher level courses for college bound students. In a study conducted by Harris (2014), the researcher sought to determine the impact of scheduling on academic achievement of high school students in algebra, biology and English. The study yielded mixed results, finding that student achievement was higher in the traditional schedule for biology in all five years of the study; but higher in algebra and English in the block schedule for four of the five years (Harris, 2014). Results from a study conducted by the Center for Public Education (2006), looking specifically at ACT scores of high school students over the course of seven years, indicate that the mean ACT scores for students in a traditional eight-period schedule increased each year, while the scores for students in block scheduling fluctuated, with a gradual decline, possibly indicating a decline in the effectiveness of instruction in the block schedule format. Effective instructional strategies in any classroom are necessary for best learning, and the unique environment of a block class period requires the use of different strategies to take advantage of the instructional time. Block schedules are intended to provide time to develop depth of instruction in curricular concepts especially through social interaction (Bonner, 2012). Hurley (1997) reported students’ perceptions of more time for learning as an overwhelmingly positive response to the implementation of block scheduling and its effect on time management for those students. A known characteristic of a block schedule is that it results in less total class time per course, so while class periods are longer, total instructional time available per course is reduced (Banicky, 2012). This reduction in course time often causes concern for teachers in covering required curriculum, and thus less effective instructional strategies, in a rush to completely cover required curriculum. In a study conducted by Washington (2011) on high school academic achievement in different schedules, the results indicated that a hybrid schedule was the most effective plan for academic success. When students participate in a block schedule, and teachers effectively use the time for greater instruction, deeper learning, and curriculum coverage, theoretically, the block schedule should be effective in increasing academic performance (Hurst, Wallace, & Nixon, 2013). However, when instructional strategies revert to longer or more frequent lecturing, students become saturated more quickly and attention, thus learning, decreases (Banicky, 2012).

These mixed results, in differing subjects and differing schedule plans, leave room for further investigation into the benefit of scheduling for high school academic success and further into collegiate academic success.

## Factors Contributing to General Performance of First-Year College Students

The list of factors that may have an effect on the performance of first-year college students is extensive. There are most certainly both cognitive and inter-personal factors that play a role in collegiate performance, whether academic or social. Understanding the factors that affect the performance of first-year college students is vital for mentoring students toward success, as well as ensuring low attrition rates, which effect the viability of smaller liberal arts universities.

Many studies (Brady-Amoon & Fuertes, 2011; Usher & Kober, 2013; Andress-Martin, 2012; Wright, Jenkins-Guarnieri & Murdock, 2013) have shown that successful students usually maintain a balance between social and academic aspects of school, they expect to succeed, and they are socially proficient, goal-oriented and intrinsically motivated (Scheuermann, as cited by Li, 2012). Dr. Nan Li (2012) found that in order to promote student success, it is crucial that teachers and counselors help students develop positive self-concepts, including some successful personal factors, within supportive learning environments, in addition to cognitive aspects, to support student general success. The result of research and analysis conducted by Brady-Amoon and Fuertes (2011) indicated that both self-efficacy (belief that one can accomplish a task or reach a future goal), and self-rated abilities (belief that one can accomplish a task or reach a current goal), are positively associated with adjustment of college students (Brady-Amoon & Fuertes, 2011).

## Factors Contributing to Academic Performance of First-Year College Students

Leaders in student development theory, Chickering and Reisser (1993) in their Seven Vectors of Identity Development, indicate that intellectual competence development, which influences academic performance, includes building skills to comprehend, analyze and synthesize, and mastering content while gaining intellectual sophistication. First- year college students have many experiences before and during the first year that influence the ability to develop intellectually.

Traditional predictors of college persistence and academic performance center on a student’s high school grade point average [GPA] and standardized test scores, these data have yielded modest prediction results, so many scholars have called for more focus on non-traditional predictors of college performance (Sparkman, Maulding, & Roberts, 2012). College preparation has been prominent among a number of concerns that have arisen in higher education regarding the performance of colleges and universities (Burhanna & Jensen, 2006). Higher education is experiencing pressure to provide “practical majors” that will bring a quick return on an educational investment (Ream, 2012); while at the same time recent research has strongly challenged higher education, revealing that students are making little gains in critical thinking, complex reasoning and written communication during their first two years of college (Arum & Roksa, 2011). Among those concerns are also: declining retention rates; rising levels of remediation; and a greater focus on first-year college students’ academic success (Burhanna & Jensen, 2006; Karaivanova, 2016; Malik, 2011).

The need to examine factors in first-year college academic performance exists, and is a topic that continues to be studied. In research conducted by Erica Dion Powell (2013), skills beyond grade point average [GPA] and ACT scores were examined in an effort to more accurately predict the academic achievement of college freshmen. Powell’s (2013) study found that the strongest predictor of first-semester college GPA was a student possessing a strong sense of responsibility. In further study conducted by Sheri Glick-Cuenot (2014), the researcher attempted to find if strategic thinking skills in college freshmen were as accurate a predictor of first-year college academic success as grade point average and standardized test scores. Glick-Cuenot’s (2014) study found significant positive correlations among the use of strategic thinking skills, high school grade point average and college grade point average.

Krumrei-Mancuso, Newton, Eunhee and Wilcox (2013) conducted a study to further research factors that were critical to first-year college student academic performance. Their review of related literature lead to the identification of three types of predictors of college success: (a) traditional predictors such as standardized test scores, high school rank and GPA; (b) demographic predictors: and (c) psychosocial predictors (Krumrei-Mancuso et al., 2013). Because traditional and demographic predictors offered little room for intervention to help students succeed, the study focused on psychosocial factors and the effect on student academic success (Krumrei-Mancuso et al., 2013). The results of the study indicated that participants’ psychosocial variables were relevant to outcome measures of success, and academic self-efficacy (a student’s beliefs about his or her ability to reach desired academic goals) was the strongest predictor of first-year college student academic success (Krumrei-Mancuso et al., 2013). Walker (2012) concurred that understanding a student’s psychological adjustment to college is critical to helping students succeed academically. Engagement within the study environment both physically and psychologically (Walker, 2012), as well as classroom participation (Rocca, 2010), can contribute to academic success. Entering college does not necessarily equate to successfully graduating from college, which means seeking the relationship between secondary school [high school] factors and persisting in college is critical (Hayali, 2013). One of the most disturbing premises of the study done by Arum and Roksa (2010) is that students come to college poorly prepared for demanding academic tasks (Ream, 2012), further emphasizing the need to investigate the relationship between high school factors and collegiate academic success. One of the factors that may be related to first-year academic success is the high school scheduling plan students experience as the results of this study have shown.

## Block Scheduling and Academic Performance of First-Year College Students

Research studies (Gansemer et al., 2014; Grebennikov & Shah, 2012; Martinez et al., 2009) indicate that academic performance and academic advancement are two components highly involved in first-year college student attrition. This has resulted in heightened awareness of the academic success of students both in the final year of high school, and first year of college. Since the mid 1990s, many states have shifted from existing traditional scheduling systems to block scheduling, with many voices on each side (Dexter, Tai, & Sadler, 2006). Educators, administrators and students strive to find a time schedule that allows for greater retention, provides for adequate instructional time, and produces high academic achievement across all subject areas (Dexter, Tai, & Sadler, 2006). A number of studies have compared traditional and block scheduling plans in terms of students’ test scores and GPAs, two measures of academic performance (Dexter, Tai, & Sadler, 2006). The results of the study conducted by Trenta and Newman (2002), indicate that the students who were being educated in a block-scheduling environment appeared to do as well as students in the traditional environment in most indicator areas, including ACT scores and GPAs. However, in the study conducted by Dexter, Tai and Sadler (2006), the authors examined the academic performance of first-year college Science students reporting different high school scheduling plans, and the results showed that block scheduling does not appear to offer better preparation than traditional scheduling in Science, but that additional study may show an impact in other disciplines, or in general academic performance (Dexter, Tai, & Sadler, 2006).

## Summary of the Literature

Within the context of education reform, one of the specifics of the traditional education system that has been a focus for systematic change is the use and organization of time within the school’s schedule (Trenta & Newman, 2002). Efforts have focused on modifications to the daily schedule now commonly referred to as “block scheduling” (Trenta & Newman, 2002). Block scheduling is a type of academic schedule in which students have fewer classes than in a traditional schedule, and the classes last for a longer period of time (Harris, 2014). In an effort to ensure that students are prepared to participate in the academic rigor of a university, many secondary [high] schools have increased academic rigor and raised standards (Campbell, 2010). Some secondary schools chose to realign the academic schedule to a block schedule to allow for longer class periods, which possibly could offer more depth of study, and in an effort to follow what is considered to be a more university-like model (Zepeda & Mayers, 2006). During the last three decades, block scheduling has been one of the fastest growing reform initiatives in high schools in order to address the concern of effective classroom instructional time (Lewis et al., 2005). The mixed results of the success of block scheduling leave room for further investigation into the impact of scheduling on high school academic performance, and its further impact into collegiate academic performance.

The subject areas that have received the most attention relative to academic performance in block or traditional schedules are Math and Science. Salvaterra, Lare, Gnall and Adams (1999) conducted a qualitative study to assess the perceptions of college students on their preparation for college math, science and foreign language, specifically. Dexter, Tai and Sadler (2006) surveyed students enrolled in introductory college Biology, Chemistry and Physics, and the findings of the study by Lawrence and McPherson (2000) examined scores in Algebra I, Biology, English I and U. S. History. The limited scope of content areas, and the lapse of time since adequate studies have been conducted, particularly at the college level, supported the need for a more recent and broader study of general academic performance rates relative to the high school scheduling plan. The evidence, that factors outside of GPAs and ACT scores can be predictors of academic success, supported the study of another factor outside scores being relative, specifically, the high school scheduling plan.

## Theoretical Orientation

Block scheduling was developed in response to educators believing that more time, and additional student interactions in the classroom would lead to better learning (Bonner, 2012). The concept of additional time and increased social interaction leading to better learning is based on Vygotsky’s Theory of Social Development. Social Development Theory is a general theory of cognitive development with the major theme of the theoretical framework being that social interaction is fundamental to the development of cognition (Culatta, 2015).

Within Vygotsky’s Theory of Social Development two themes emerge: the need for a more knowledgeable other (MKO) in the cognitive development process, and the existence of the Zone of Proximal Development. The Zone of Proximal Development (ZPD) is a concept related to the difference between what a student can achieve independently, and what he can achieve with encouragement and guidance from a skilled partner (McLeod, 2014). The MKO can be a peer, a teacher or other invested adult, or even an electronic tutor (McLeod, 2014). The ZPD is integrally connected to the presence of an MKO in the cognitive development of a student as the need for an encourager and guide is necessary for a student to fully achieve what is possible within his ZPD (McLeod, 2014).

The use of social interaction and cooperative learning is at the core of the value and reasoning behind block scheduling, as collective learning is integral to implementation of a class period in block scheduling (Hurst, Wallace, & Nixon, 2013). Within a block schedule class period, students are given the time and encouraged to collaborate with one another, and are intentionally grouped with mixed-cognitive-ability members to encourage one another in practices that lead to more effective learning (McLeod, 2014). Educators have effectively transformed their classrooms into socially engaging and creative places of learning as a result of teaching in a block schedule (Flannery, 2008). Vygotsky’s model for learning suggests that social interaction precedes development (Bonner, 2012). A block schedule offers the time necessary for students to become engaged with their learning, while teachers develop an environment where students can interact with one another actively and creatively, increasing effective learning (Bonner, 2012). A basic tenet of block scheduling includes expanded time as an integral part of the success of the scheduling plan. This additional time allows for the use of cooperative instructional strategies based on Vygotsky’s Theory of Social Development.

Educational and developmental theories (Carroll, 1963; Chickering & Reisser, 1993; Vygotsky, 1978) suggest that students participating in block scheduling in high school should have experienced an environment conducive to better learning because of increased social interaction; and thus be well prepared for collegiate academics. The absence of research on the existence of statistically significant data linking academic performance of first-year college students and the high school scheduling plan provided rationale to investigate the possible relationship, and this study addressed that absence.

## Conceptual Framework

**Dependent Variable:**

First-year College

Academic Performance

**Independent Variable:**

High School Scheduling Plan

Traditional

Schedule

**Covariates:**

Parent Education Level, Gender

First-year college GPA

Test Anxiety

Test Competence

Academic Competence

Block

Schedule

Study Strategies

Observations of first-year college student academic performance relative to the high school scheduling plan.

Time Management

*Figure 1.* Conceptual Framework

## Hypotheses

It is hypothesized that there is not a statistically significant relationship between the academic performance of first-year college students coming from a block-schedule high school academic schedule compared to the academic performance of first-year college students coming from traditional high school schedules.

Relative to the literature (Dexter, Tai, & Sadler, 2006; Krumrei-Mancuso et al., 2013; Harris, 2014; Washington, 2011), it is hypothesized that there is a statistically significant relationship between the academic performance of first-year college students coming from a block-schedule high school academic schedule compared to the academic performance of first-year college students coming from traditional academic schedules.

**RQ1:** Is there a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan?

**H1null:** There is not a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan.

**H1alt:** There is a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan.

**RQ2:** Is there a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan?

**H2null:** There is not a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan.

**H2alt:** There is a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan.

**RQ3:** Is there a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan?

**H3null:** There is not a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan.

**H3alt:** There is a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan.

**RQ4:** Is there a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan?

**H4null:** There is not a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan.

**H4alt:** There is a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan.

**RQ5:** Is there a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan?

**H5null:** There is not a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan.

**H5alt:** There is a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan.

**RQ6:** Is there a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan?

**H6null:** There is not a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan.

**H6alt:** There is a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan.

# CHAPTER III

RESEARCH METHODOLOGY

## Research Design

The research design for this study was a quantitative, quasi-experimental design. The independent variable in this study was the high school scheduling plan. The conceptual dependent variable was first-year college student academic performance, as defined by the first-year college grade point average [GPA]. The test instrument in five areas of academic performance (see Definition of Terms): a) test anxiety; b) academic competence; c) test competence; d) study strategies; and e) time management (Sansgiry, Bhosle & Sail, 2006). Control variables included common demographics of gender, and highest level of parent education. See Table 1.

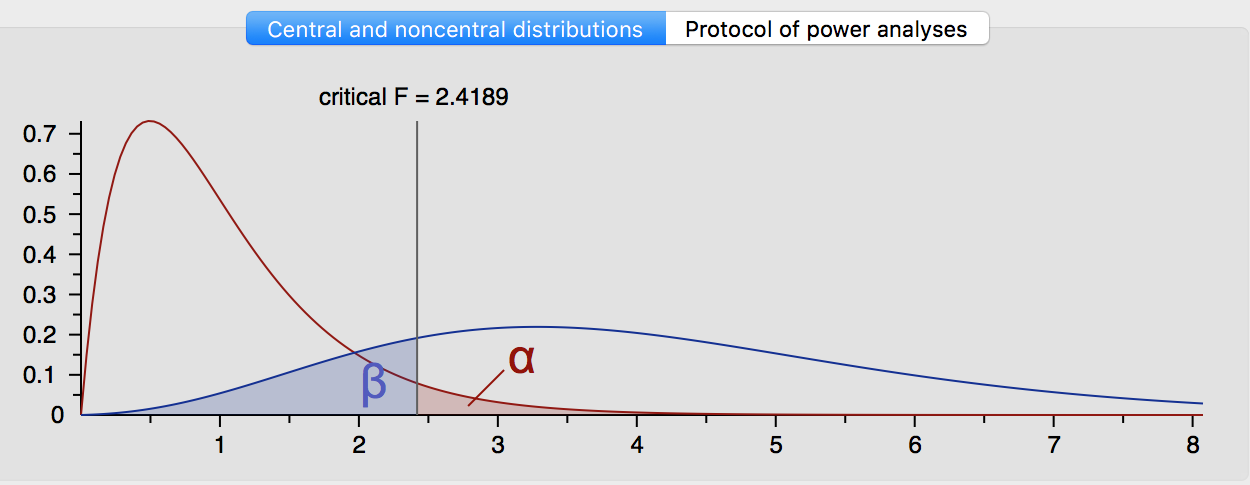
Table 1

Definitions of the Variables

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable Type** | **Conceptual Variable** | **Measurement** | **Measurement Question** |  |
| IV | HS Schedule Plan | Block/  Traditional  Schedule | Participant will select from block or traditional schedule |  |
| DV | Academic Performance | TA, AC, TC  SS, TM, GPA | See Appendix A |  |
| Control variables | Demographic Information | Gender  Parent Ed Level | Common demographic questions |  |

## Power Analysis

In order to decrease the possibility of false-positive results, a multivariate analysis of covariance omnibus test was conducted first, followed by individual ANCOVA tests for each of the six dependent variables. A power analysis in G\*Power was conducted, in order to calculate the minimum sample size needed for significance in statistical analyses, using a moderate effect size, F2 = 0. 0625,  level = 0.05, Power = 0.80 in two groups and six dependent variables. According to the results, a minimum sample size of 196 study participants was required to detect a significant global effect of an omnibus test. See Figure 2.



*Figure 2.* Minimum Sample Size for Significant Global Effect

In addition, a second power analysis was conducted using a moderate effect size, f = 0.25,  level = 0.05, Power = 0.80, with the degrees of freedom for the Numerator = 1, in two groups with two covariates. According to the results, a minimum sample size of 128 study participants was required to detect significance in a univariate analysis of covariance (ANCOVA).

Based on these analyses and in order to ensure the sample is a good representation of the population while taking steps to decrease the possibility of false-positive results, this study used a non-random, convenience sample goal of 196 students, which was representative, with a confidence level of 95% with a margin of error of 5. The sample of the population completing the survey in its entirety was 203 students, exceeding the goal for significance indicated by the G\*Power analysis of 196.

## Study Population

The population selected for this research study was the freshman population at Concordia University Nebraska. Concordia University is a small liberal arts institution in a rural community in southeastern Nebraska. The institution has a student body of approximately 1,200 students, with 320 freshman students eligible for the study. A convenience sample was selected from the freshman population with recruitment of the entire freshman population being exercised. Recruitment began with an email invitation issued from the Concordia University President’s Office including the contact information for the primary researcher, and the link to the self-report survey. Follow up emails and personal invitations were delivered through offices of first-year advisors, coaches and introductory general education course instructors to the freshman population. These efforts for recruitment resulted in a 72% response rate from the freshman population, with 63% being completed entirely and viable for analysis. The instrument was administered electronically through Qualtrics to the sampling of the student population.

## Measurement Instrument for Data Collection

After approval by the Institutional Review Boards for Trident University International and Concordia University Nebraska, the measurement instrument used for this study was a self-report survey completed by the sample of the population. The instrument was preexisting from a study published by Sansgiry, Bhosle, and Sail (2006). The overall reliability for the scores for each of the 5 subsections: a) test anxiety; b) academic competence; c) test competence; d) strategic studying; and e) time management, were comparable to those previously reported in literature. The Cronbach's coefficient alpha values for the scales measuring: test anxiety (= 0.9), academic competence (= 0.7), test competence (= 0.8), strategic studying (= 0.7), and time management (= 0.7), from previous studies, indicated acceptable reliability.

Test Anxiety was measured in questions 1-10 under the heading Test Anxiety, using five measurement criteria: 1 = Not at all typical of me; 2 = Not very typical of me; 3 = Somewhat typical of me; 4 = Fairly typical of me; 5 = Very much typical of me (see Appendix A). Academic Competence was measured in questions 1-5 under the heading Academic Competence, using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Test Competence was measured in questions 1-4 under the heading Test Competence using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Strategic Studying was measured in questions 1-5 under the heading Study Strategies using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Time Management was measured in questions 1-5 under the heading Time Management using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Some answers were reverse coded during statistical analysis (see Appendix A). All subsection headings were defined previously in the Definition of Terms section of this study.

## Independent and Dependent Variables and Covariates

The independent variable of High School Schedule Plan was measured under the heading Additional Information (see Appendix A), according to these definitions:

Block Scheduling: Block Schedules include the A/B or Alternating Block and are three to four classes every other day for an entire year with class time spanning seventy-five to ninety minutes. Intensive Block is four classes that meet every day for half a year for seventy-five to ninety minutes. Also classified as Block Scheduling are schedules that blend the Traditional and Block plans and often are classified as a modified block (Canady & Rettig, 1995).

Traditional Scheduling: Traditional schedules range from six to eight periods a day for an entire year, with the length of time in class spanning from forty-five to fifty-five minutes.

The measurement instrument included additional demographic information serving as a dependent variable of Grade Point Average (GPA), and the covariates in this study included: a) Gender; and b) Parent Highest Level of Education completed. Parent Highest Level of Education had six options: Some High School/GED; High School; Some College/Associate’s Degree; Bachelor’s Degree; Master’s Degree; Doctorate or Terminal Degree. Information on covariates was collected under the heading Additional Information (see Appendix A).

In addition to Grade Point Average, the other five dependent variables comprising Academic Performance were measured within the self-report survey, according to these definitions:

Academic Competence: The ability to manage course load, understand material, and enjoy and find interesting course curriculum (see Appendix A).

*Study Strategies:* The ability to plan for and review course material, summarizing material in one’s own words; test knowledge before taking exams; and seek to find out what questions may be asked and how they may be asked in an effort to learn most effectively (see Appendix A).

Test Anxiety: Feelings of inadequacy, panic, depression and nervousness associated with taking an exam, which interfere with performance on exams (see Appendix A).

Test Competence: The ability to prepare for an examination, manage the required material, and cope with tension associated with taking an exam (see Appendix A).

Time Management: The ability to organize and balance study and leisure time and prepare for examinations well in advance to avoid cramming (see Appendix A).

Table 2

Definitions of the Research Data

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Research**  **Question** | **Covariates** | **Independent**  **Variable** | **Dependent Variable** | **Statistical Analysis** | | |  |
| RQ 1 | Gender,  Parent Ed Level  (categorical) | HS Schedule Plan  (dichotomous categorical) | Grade Point Average [GPA]  (continuous) | ANCOVA |  |
| RQ 2 | Gender,  Parent Ed Level  (categorical) | HS Schedule Plan  (dichotomous categorical) | Test Anxiety  (continuous) | ANCOVA |  |
| RQ 3 | Gender,  Parent Ed Level  (categorical) | HS Schedule Plan  (dichotomous categorical) | Academic Competence  (continuous) | ANCOVA |  |
| RQ 4 | Gender,  Parent Ed Level  (categorical) | HS Schedule Plan  (dichotomous categorical) | Test Competence  (continuous) | ANCOVA |  |
| RQ 5 | Gender,  Parent Ed Level  (categorical) | HS Schedule Plan  (dichotomous categorical) | Study Strategies  (continuous) | ANCOVA |  |
| RQ 6 | Gender,  Parent Ed Level  (categorical) | HS Schedule Plan  (dichotomous categorical) | Time Management  (continuous) | ANCOVA |  |

## Statistical Analysis

Data was analyzed first using a global effects multivariate analysis of variance test, controlling for covariates (omnibus test). The omnibus test was used to test the effects of a categorical variable on a continuous variable when two or more dependent variables exist, controlling for covariates. The use of an omnibus test first decreased the possibility of obtaining false-positives in the subsequent ANCOVA tests. Assumptions were tested, including: normality; homogeneity; linearity; multicollinearity; testing for multivariate outliers; and control for covariates was practiced. Because significance was found using the omnibus test, a univariate analysis of covariance (ANCOVA) test was used to test the significance of each dependent variable. ANCOVA tests are used to test the effects of a categorical variable on a continuous variable while controlling for an additional variable. In this study a categorical independent variable, six dependent continuous variables, and covariates were present, providing rationale for the use of the ANCOVA for specific analysis of data relative to each research question.

# CHAPTER IV

DATA ANALYSIS AND RESULTS

## Background

The following information is a report of the results from the data collected to investigate the relationship between the academic performance of first-year college students and the high school scheduling plan each student experienced. Descriptive statistics are reported for each variable. Bivariate and multivariate statistics are reported for each dependent variable and its related research question and hypothesis.

## Data Collection and Survey Instrument

Recruitment for participation in this study began with an email invitation issued from the Concordia University President’s Office including the contact information for the primary researcher, and the link to the self-report survey. Follow up emails and verbal invitations were delivered through offices of first-year advisors, coaches and introductory general education course instructors to the freshman population. These efforts for recruitment resulted in a 72% response rate from the freshman population, with 63% being completed entirely and viable for analysis. The instrument was administered electronically through the survey host site Qualtrics to the sampling of the student population.

The survey instrument was preexisting from a study published by Sansgiry, Bhosle, and Sail (2006), and included 5 subsections: a) test anxiety; b) academic competence; c) test competence; d) strategic studying; and e) time management. Test Anxiety was measured in questions 1-10 under the heading Test Anxiety, using five measurement criteria: 1 = Not at all typical of me; 2 = Not very typical of me; 3 = Somewhat typical of me; 4 = Fairly typical of me; 5 = Very much typical of me (see Appendix A). Academic Competence was measured in questions 1-5 under the heading Academic Competence, using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Test Competence was measured in questions 1-4 under the heading Test Competence using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Strategic Studying was measured in questions 1-5 under the heading Study Strategies using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Time Management was measured in questions 1-5 under the heading Time Management using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Also included in the survey were additional demographic information questions including a dependent variable of Grade Point Average [GPA], and an independent variable of High School Schedule; and the covariates in this study included Gender and Parent Highest Level of Education completed. This information was collected under the heading Additional Information (see Appendix A).

## Population and Sample

Two hundred thirty-one first-year students attempted the survey, from a recruited population of 320 students, resulting in a response rate of 72%. Due to a number of students not completing the survey in its entirety, the resulting N for this research study was N = 203, a response rate of 63%, surpassing the G\*Power recommendation for significance of 196 participants. Descriptive statistics for each of the variables can be found in this chapter.

## Reliability

The overall reliability scores for each of the factors of Academic Performance in this study were comparable to those previously reported in the literature. In previous studies, the overall reliability values for each of the 5 subsections were: Test Anxiety (= 0.9), Academic Competence (= 0.7), Test Competence (= 0.8), Strategic Studying (= 0.7), and Time Management (= 0.7), indicating acceptable reliability. The Cronbach’s coefficient alpha values for this study were: Test Anxiety (= 0.927), Academic Competence (= 0.784), Test Competence (= 0.770), and Time Management (= 0.815); each indicated acceptable reliability, with the exception of Study Strategies (= 0.576), which fell below an acceptable alpha value in this use of the test instrument, but also did not return a significant result.

## Descriptive Analysis

### Descriptive Analysis of Independent Variable

The independent variable in this study is High School Scheduling plan. It was measured under the heading Additional Information (see Appendix A), according to these definitions:

Block Scheduling: Block Schedules include the A/B or Alternating Block and are three to four classes every other day for an entire year with class time spanning seventy-five to ninety minutes. Intensive Block is four classes that meet every day for half a year for seventy-five to ninety minutes. Also classified as Block Scheduling are schedules that blend the Traditional and Block plans and often are classified as a modified block (Canady & Rettig, 1995).

Traditional Scheduling: Traditional schedules range from six to eight periods a day for an entire year, with the length of time in class spanning from forty-five to fifty-five minutes.

Table 3

Descriptive Statistics of Independent Variable

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Group** | **Frequency** | **Percent** |
| High School Schedule | Block | 70 | 34.5% |
|  | Traditional | 133 | 65.5% |
|  | Total | 203 | 100% |

Among the participants, 70 of them recorded experiencing a block schedule in high school, which was 34.5% of the sample. 133 participants recorded experiencing a traditional schedule in high school, which was 65.5% of the population.The frequency of each high school schedule (block or traditional) that was experienced mirrors the current national average that approximately 30% of the United States’ secondary schools are currently using block scheduling (Rettig, 2017).

### Descriptive Analysis of Dependent Variables

The data for each dependent variable associated with the survey (Test Anxiety, Academic Competence, Test Competence, Study Strategies, and Time Management), was first coded into a total score for each factor. Test Anxiety was measured in questions 1-10 under the heading Test Anxiety, using five measurement criteria: 1 = Not at all typical of me; 2 = Not very typical of me; 3 = Somewhat typical of me; 4 = Fairly typical of me; 5 = Very much typical of me (see Appendix A). Academic Competence was measured in questions 1-5 under the heading Academic Competence, using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Test Competence was measured in questions 1-4 under the heading Test Competence using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Strategic Studying was measured in questions 1-5 under the heading Study Strategies using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Time Management was measured in questions 1-5 under the heading Time Management using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). Some answers were reverse coded during statistical analysis to indicate the higher the score the more positive the outcome (see Appendix A). After coding, the resulting means and standard deviations are reported as follows.

Table 4

Descriptive Statistics of Dependent Variables

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Min** | **Max** | **N** | **M (SD)** | **95% CI [LB, UB]** |
| GPA | 1.24 | 4.00 | 199 | 3.536 (0.484) | [3.566, 3.649] |
| Test Anxiety | 1.00 | 5.00 | 203 | 3.331 (0.990) | [3.135, 3.416] |
| Academic Competence | 2.40 | 5.00 | 203 | 3.896 (0.536) | [3.792, 3.941] |
|  |  |  |  |  |  |
| Test Competence  Study Strategies  Time Management | 1.25  1.60  1.00 | 5.00  5.00  4.80 | 203  203  203 | 3.293 (0.744)  3.379 (0.597)  2.820 (0.817) | [3.171, 3.389]  [3.269, 3.443]  [2.656, 2.889] |
|  |  |  |  |  |  |

*Note.* All variables conformed to a normal distribution.

The mean Grade Point Average [GPA] for the participants was 3.536 with a standard deviation of 0.484 and a 95% CI of [3.566, 3.649]. The n for this factor was 199 as a result of inaccurate grade point averages being entered that exceeded the 4.0 scale used by the university. See Table 4.

Test Anxiety was measured in questions 1-10 under the heading Test Anxiety using five measurement criteria: 1 = Not at all typical of me; 2 = Not very typical of me; 3 = Somewhat typical of me; 4 = Fairly typical of me; 5 = Very much typical of me (see Appendix A). The mean Test Anxiety score for the participants (n=203) was 3.331 with a standard deviation of 0.990 and a 95% CI of [3.135, 3.416]. See Table 4.

Academic Competence was measured in questions 1-5 under the heading Academic Competence using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). The mean Academic Competence score for the participants (n=203) was 3.896 with a standard deviation of 0.536 and a 95% CI of [3.792, 3.941]. Academic Competence recorded the highest mean score among all dependent variables. See Table 4.

Test Competence was measured in questions 1-4 under the heading Test Competence using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). The mean Test Competence score for the participants (n=203) was 3.293 with a standard deviation of 0.744 and a 95% CI of [3.171, 3.389]. See Table 4.

Strategic Studying was measured in questions 1-5 under the heading Study Strategies using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). The mean Study Strategies score for the participants (n=203) was 3.379 with a standard deviation of 0.597 and a 95% CI of [3.269, 3.443]. See Table 4.

Time Management was measured in questions 1-5 under the heading Time Management using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). The mean Time Management score for the participants (n=203) was 2.820 with a standard deviation of 0.817 and a 95% CI of [2.656, 2.889]. The mean score for time management was notably lower than mean scores for the other dependent variables. See Table 4.

### Descriptive Analysis for Covariates

Covariates for this study included the common demographics of gender, and highest level of parent education. The levels of parent education included: Some High School or GED; High School; Associate’s Degree or Some College; Bachelor’s Degree; Master’s Degree; and Doctorate or Terminal Degree.

Table 5

Descriptive Statistics of Covariates

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Group** | **Frequency** | **Percent** |
| Gender | Male | 79 | 38.9% |
|  | Female | 124 | 61.1% |
| Parent Education Level | Total  Some HS/GED  High School  Assoc/Some College  Bachelor’s  Master’s  Doctorate/Terminal  Total | 203  4  22  33  70  64  10  203 | 100%  1.9%  10.8%  16.4%  34.5%  31.5%  4.9%  100% |

Among the participants, 79 of them were male, representing 38.9% of the sample. 124 participants were female, representing 61.1% of the population. The frequency for female participants was slightly higher than the average for the first-year college student population as a whole.

Parent education level was divided into six different groups: Some High School or GED; High School; Associate’s Degree or Some College; Bachelor’s Degree; Master’s Degree; and Doctorate or Terminal Degree. Some High School or GED had 4 participants reporting, representing 1.9% of the population. Those participants with parents completing High School represented 10.8% of the population. Thirty-three participants reported parents who completed some college or hold an Associate’s Degree, representing 16.4% of the population. The highest represented group was of participants with parents completing a Bachelor’s Degree. This group represented 34.5% of the population, with 70 participants reporting. Those participants with parents who hold a Master’s Degree represented 31.5% of the population, with 64 participants reporting. The final group of participants reported parents who hold a terminal degree or doctorate in their field. This group had 10 participants reporting, representing 4.9% of the population.

### Descriptive Analysis of Dependent Variables by Independent Variable

The data for each dependent variable associated with the survey (Test Anxiety, Academic Competence, Test Competence, Study Strategies, and Time Management), was first coded into a total score for each factor. Descriptive statistics for each dependent variable relative to the independent variable of High School Schedule (Block, Traditional), can be viewed in Table 6. Narrative information follows.

Table 6

Descriptive Statistics of Dependent Variables relative to High School Schedule (IV)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable Name** | **Group** | **N (%)** | **M (SD)** | **95% CI [LB, UB]** |
| GPA | Block | 68 (34.2 %) | 3.446 (0.508) | [3.358, 3.566] |
|  | Traditional | 131 (65.8%) | 3.583 (0.466) | [3.499, 3.649] |
|  | Total | 199 (100%) | 3.536 (0.484) | [3.566, 3.649] |
| Test Anxiety | Block | 70 (34.5 %) | 3.128 (1.108) | [2.866, 3.324] |
|  | Traditional  Total | 133 (65.5%)  203 (100%) | 3.438 (0.908)  3.331 (0.990) | [3.290, 3.621]  [3.135, 3.416] |
| Academic Competence | Block  Traditional | 70 (34.5 %)  133 (65.5%) | 3.757 (0.564)  3.968 (0.508) | [3.653, 3.896]  [3.872, 4.047] |
|  | Total | 203 (100%) | 3.896 (0.536) | [3.792, 3.941] |
|  |  |  |  |  |
| Test Competence | Block  Traditional | 70 (34.5 %)  133 (65.5%) | 3.239 (0.779)  3.322 (0.726) | [3.060, 3.414]  [3.195, 3.451] |
|  | Total | 203 (100%) | 3.293 (0.744) | [3.171, 3.389] |
| Study Strategies | Block | 70 (34.5 %) | 3.281 (0.583) | [3.142, 3.423] |
|  | Traditional | 133 (65.5%) | 3.430 (0.600) | [3.328, 3.531] |
|  | Total | 203 (100%) | 3.379 (0.597) | [3.269, 3.443] |
|  |  |  |  |  |
| Time Management | Block  Traditional | 70 (34.5 %)  133 (65.5%) | 2.604 (0.809)  2.934 (0.801) | [2.430, 2.808]  [2.789, 3.063] |
|  | Total | 203 (100%) | 2.820 (0.817) | [2.656, 2.889] |

*Note.* All variables conformed to a normal distribution.

The GPA of students relative to the high school scheduling plan they experienced were as follows: 34.2% of the sample attended a block schedule for high school and entered a mean GPA of 3.446 with a standard deviation of 1.508, and a 95% CI of [3.358, 3.566]. Earning 0.137 points higher on average was the 65.8% of the population that attended a traditional schedule for high school. Traditional schedule students entered a mean GPA of 3.583 with a standard deviation of 0.466 and a 95% CI of [3.499, 3.649]. The n for this factor was 199 as a result of inaccurate grade point averages being entered that exceeded the 4.0 scale used by the university. See Table 6.

Test Anxiety scores of students relative to the high school scheduling plan they experienced were as follows. 34.5% of the sample attended a block schedule for high school and entered a mean Test Anxiety score of 3.128 with a standard deviation of 1.108 and a 95% CI of [2.866, 3.324]. Scoring 0.310 points higher on average was the 65.5% of the population that attended a traditional schedule for high school. Traditional schedule students entered a mean Test Anxiety score of 3.438 with a standard deviation of 0.908 and a 95% CI of [3.290, 3.621]. See Table 6.

Academic Competence scores of students relative to the high school scheduling plan they experienced were as follows. 34.5% of the sample attended a block schedule for high school and entered a mean Academic Competence score of 3.757 with a standard deviation of 0.564 and a 95% CI of [3.653, 3.896]. Scoring 0.211 points higher on average was the 65.5% of the population that attended a traditional schedule for high school. Traditional schedule students entered a mean Academic Competence score of 3.968 with a standard deviation of 0.508 and a 95% CI of [3.872, 4.047]. The total for Academic Competence was reported as the highest mean among all factors of academic performance. See Table 6.

Test Competence scores of students relative to the high school scheduling plan they experienced were as follows. 34.5% of the sample attended a block schedule for high school and entered a mean Test Competence score of 3.239 with a standard deviation of 0.779 and a 95% CI of [3.060, 3.414]. Scoring 0.083 points higher on average was the 65.5% of the population that attended a traditional schedule for high school. Traditional schedule students entered a mean Test Competence score of 3.322 with a standard deviation of 0.726 and a 95% CI of [3.195, 3.451]. See Table 6.

Study Strategies scores of students relative to the high school scheduling plan they experienced were as follows. 34.5% of the sample attended a block schedule for high school and entered a mean Study Strategy score of 3.281 with a standard deviation of 0.583 and a 95% CI of [3.142, 3.423]. Scoring 0.149 points higher on average was the 65.5% of the population that attended a traditional schedule for high school. Traditional schedule students entered a mean Study Strategy score of 3.430 with a standard deviation of 0.600 and a 95% CI of [3.328, 3.531]. See Table 6.

Time Management scores of students relative to the high school scheduling plan they experienced were as follows. 34.5% of the sample attended a block schedule for high school and entered a mean Time Management score of 2.604 with a standard deviation of 0.809 and a 95% CI of [2.430, 2.808]. Scoring 0.330 points higher on average was the 65.5% of the population that attended a traditional schedule for high school. Traditional schedule students entered a mean Time Management score of 2.934 with a standard deviation of 0.801 and a 95% CI of [2.789, 3.063]. The total for Time Management was reported as the lowest mean score among all Academic Performance factors. See Table 6.

### Descriptive Analysis of Dependent Variables by Parent Education Level

The data for each dependent variable associated with the survey (Test Anxiety, Academic Competence, Test Competence, Study Strategies, and Time Management), was first coded into a total score for each factor. Parent education level consists of six different groups: Some High School or GED; High School; Associate’s Degree or Some College; Bachelor’s Degree; Master’s Degree; and Doctorate or Terminal Degree. The descriptive statistics for the dependent variables by the covariate of parent education level are as follows.

Table 7

Descriptive Statistics of Dependent Variables by Parent Education Level (CV)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable Name** | **Group** | **N (%)** | **M (SD)** | **95% CI**  **[LB, UB]** |
| GPA | Some HS/GED | 4 (2.0%) | 2.678 (1.054) | [0.999, 4.356] |
|  | High School  Assoc/Some College  Bachelor’s  Master’s  Doctorate/Terminal  Total | 21 (10.6%)  32 (16.1%)  69 (34.7%)  63 (31.7%)  10 (4.9%)  199 (100%) | 3.130 (0.752)  3.341 (0.500)  3.594 (0.425)  3.703 (0.331)  3.519 (0.464)  3.517 (0.519) | [2.805, 3.455]  [3.158, 3.525]  [3.493, 3.696]  [3.622, 3.784]  [3.187, 3.851]  [3.445, 3.589] |
|  |  |  |  |  |
| Test Anxiety | Some HS/GED | 4 (1.9%) | 3.125 (0.660) | [2.075, 4.176] |
|  | High School  Assoc/Some College  Bachelor’s  Master’s  Doctorate/Terminal  Total | 22 (10.8%)  33 (16.4%)  70 (34.5%)  64 (31.5%)  10 (4.9%)  203 (100%) | 3.280 (1.160)  3.097 (0.928)  3.391 (0.999)  3.461 (0.948)  2.980 (0.928)  3.329 (0.984) | [2.789, 3.769]  [2.768, 3.426]  [3.154, 3.628]  [3.228, 3.694]  [2.316, 3.644]  [3.194, 3.463] |
| Academic Competence | Some HS/GED  High School  Assoc/Some College  Bachelor’s  Master’s  Doctorate/Terminal  Total | 4 (1.9%)  22 (10.8%)  33 (16.4%)  70 (34.5%)  64 (31.5%)  10 (4.9%)  203 (100%) | 3.900 (0.683)  3.725 (0.556)  3.770 (0.489)  3.907 (0.584)  4.027 (0.498)  3.700 (0.424)  3.892 (0.540) | [2.813, 4.987]  [3.490, 3.960]  [3.560, 3.940]  [3.769, 4.045]  [3.905, 4.150]  [3.397, 4.004]  [3.819, 3.966] |
|  |  |  |  |  |
| Test Competence | Some HS/GED  High School  Assoc/Some College  Bachelor’s  Master’s  Doctorate/Terminal  Total | 4 (1.9%)  22 (10.8%)  33 (16.4%)  70 (34.5%)  64 (31.5%)  10 (4.9%)  203 (100%) | 3.688 (0.375)  3.250 (0.672)  3.144 (0.710)  3.247 (0.767)  3.444 (0.774)  3.050 (0.643)  3.292 (0.744) | [3.091, 4.284]  [2.966, 3.534]  [2.892, 3.396]  [3.065, 3.428]  [3.254, 3.635]  [2.590, 3.510]  [3.191, 3.394] |
| Study Strategies | Some HS/GED  High School  Assoc/Some College  Bachelor’s  Master’s  Doctorate/Terminal  Total | 4 (1.9%)  22 (10.8%)  33 (16.4%)  70 (34.5%)  64 (31.5%)  10 (4.9%)  203 (100%) | 3.200 (0.653)  3.321 (0.515)  3.352 (0.570)  3.301 (0.618)  3.473 (0.611)  3.440 (0.602)  3.371 (0.595) | [2.161, 4.239]  [3.103, 3.538]  [3.149, 3.554]  [3.155, 3.448]  [3.322, 3.623]  [3.009, 3.871]  [3.289, 3.452] |
| Time Management | Some HS/GED  High School  Assoc/Some College  Bachelor’s  Master’s  Doctorate/Terminal  Total | 4 (1.9%)  22 (10.8%)  33 (16.4%)  70 (34.5%)  64 (31.5%)  10 (4.9%)  203 (100%) | 2.750 (1.518)  2.780 (0.806)  2.764 (0.780)  2.673 (0.786)  3.052 (0.805)  2.640 (0.672)  2.820 (0.811) | [0.335, 5.165]  [2.439, 3.120]  [2.487, 3.040]  [2.487, 2.859]  [2.854, 3.249]  [2.159, 3.121]  [2.709, 2.931] |

*Note.* All variables conformed to a normal distribution.

For all dependent variables, parent education level was divided into six different groups: Some High School or GED; High School; Associate’s Degree or Some College; Bachelor’s Degree; Master’s Degree; and Doctorate or Terminal Degree. For five of the six factors of academic performance measured, the frequencies of Parent Education Level were as follows:

Some High School or GED had 4 participants reporting, representing 1.9% of the population. Those participants with parents completing High School represented 10.8% of the population. Thirty-three participants reported parents who completed some college or hold an Associate’s Degree, representing 16.4% of the population. The highest represented group was of participants with parents completing a Bachelor’s Degree. This group represented 34.5% of the population, with 70 participants reporting. Those participants with parents who hold a Master’s Degree represent 31.5% of the population, with 64 participants reporting. The final group of participants report parents who hold a terminal degree or doctorate in their field. This group had 10 participants reporting, representing 4.9% of the population.

For GPA, the frequencies were slightly different as a result of the total number of participants being 199. This total was a result of four participants recording GPAs outside of the 4.0 scale used by the university. See Table 7 for additional information.

The mean GPA of students relative to the highest level of parent education they reported was as follows. Reporting the lowest mean GPA was 2.0% of the sample who reported parents who attended some high school or completed a GED and entered a mean GPA of 2.678 with a standard deviation of 1.054, and a 95% CI of [0.999, 4.356]. Reporting the highest mean GPA was 31.7% of the sample who reported parents who had earned a Master’s Degree, and entered a mean GPA of 3.703, with a standard deviation of 0.331 and a 95% CI of [3.622, 3.784]. The difference from highest to lowest mean GPAs reported was 1.025, a considerable difference in Grade Point Average. The n for this factor was 199 as a result of inaccurate grade point averages being entered that exceeded the 4.0 scale used by the university. See Table 7 for additional data.

The Test Anxiety scores of students relative to the highest level of parent education they reported were as follows. Reporting the lowest mean score was 4.9% of the sample who reported parents who had earned a doctorate or terminal degree in their field and entered a mean score of 2.980 with a standard deviation of 0.928, and a 95% CI of [2.316, 3.644]. Reporting the highest mean score was 31.5% of the sample who reported parents who had earned a Master’s Degree, and entered a mean score of 3.461, with a standard deviation of 0.948 and a 95% CI of [3.228, 3.694]. A notable difference in highest and lowest scores was reported; more notable, was that the lowest mean score thus the highest level of test anxiety, was reported by students whose parents held the highest level of education. See Table 7 for additional data.

Academic Competence scores of students relative to the highest level of parent education they reported were as follows. Reporting the lowest mean score was 10.8% of the sample who reported parents who had completed high school and entered a mean score of 3.725 with a standard deviation of 0.556, and a 95% CI of [3.490, 3.960]. Reporting the highest mean score was 31.5% of the sample who reported parents who had earned a Master’s Degree, and entered a mean score of 4.027, with a standard deviation of 0.498 and a 95% CI of [3.905, 4.150]. The difference in means from highest to lowest for this factor of academic performance was smaller than the two factors reported previously. See Table 7 for additional data.

Test Competence scores of students relative to the highest level of parent education they reported were as follows. Reporting the lowest mean score was 4.9% of the sample who reported parents who had earned a doctorate or terminal degree in their field and entered a mean score of 3.050 with a standard deviation of 0.643, and a 95% CI of [2.590, 3.510]. Reporting the highest mean score was 1.9% of the sample who reported parents who had attended some high school or earned a GED and entered a mean score of 3.688, with a standard deviation of 0.375 and a 95% CI of [3.091, 4.248]. The difference in means from highest to lowest for test competence was 0.638 and was reported by students whose parents had earned the lowest and highest levels of education. See Table 7 for additional data.

Study Strategies scores of students relative to the highest level of parent education they reported were as follows. Reporting the lowest mean score was 1.9% of the sample who reported parents who had attended some high school or earned a GED and entered a mean score of 3.200 with a standard deviation of 0.653, and a 95% CI of [2.161, 4.239]. Reporting the highest mean score was 31.5% of the sample who reported parents who had earned a Master’s and entered a mean score of 3.473, with a standard deviation of 0.611 and a 95% CI of [3.322, 3.623]. The difference in means from highest to lowest for study strategies was minimal at 0.273. See Table 7 for additional data. Time Management scores of students relative to the highest level of parent education they reported were as follows. Reporting the lowest mean score was 4.9% of the sample who reported parents who had earned a doctorate or terminal degree in their field and entered a mean score of 2.640 with a standard deviation of 0.672, and a 95% CI of [2.159, 3.121]. Reporting the highest mean score was 31.5% of the sample who reported parents who had earned a Master’s and entered a mean score of 3.052, with a standard deviation of 0.805 and a 95% CI of [2.854, 3.249]. The difference in means from highest to lowest for test competence was 0.412, a modest difference. However, this difference was reported by participants whose parents had earned the two highest levels of education. See Table 7 for additional data.

### Descriptive Analysis of Dependent Variables by Gender

The data for each dependent variable associated with the survey (Test Anxiety, Academic Competence, Test Competence, Study Strategies, and Time Management), was first coded into a total score for each factor. Gender was dummy coded for female = 0 and male = 1. The descriptive statistics for the dependent variables by the covariate of gender are as follows.

Table 8

Descriptive Statistics of Dependent Variables by Gender (CV)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable Name** | **Group** | **N (%)** | **M (SD)** | **95% CI [LB, UB]** |
| GPA | Male | 81 (40.7 %) | 3.337 (0.641) | [3.197, 3.476] |
|  | Female | 118 (59.3%) | 3.644 (0.366) | [3.577, 3.710] |
|  | Total | 199 (100%) | 3.517 (0.519) | [3.445, 3.589] |
| Test Anxiety | Male | 84 (40.4 %) | 3.513 (0.968) | [3.303, 3.723] |
|  | Female  Total | 124 (59.6%)  208 (100%) | 3.204 (0.980)  3.329 (0.984) | [3.030, 3.378]  [3.194, 3.463] |
| Academic Competence | Male  Female | 84 (40.4 %)  124 (59.6%) | 3.743 (0.532)  3.994 (0.523) | [3.627, 3.858]  [3.901, 4.087] |
|  | Total | 208 (100%) | 3.892 (0.540) | [3.819, 3.966] |
|  |  |  |  |  |
| Test Competence | Male  Female | 84 (40.4 %)  124 (59.6%) | 3.290 (0.719)  3.294 (0.762) | [3.134, 3.446]  [3.159, 3.430] |
|  | Total | 208 (100%) | 3.293 (0.744) | [3.191, 3.394] |
| Study Strategy | Male | 84 (40.4 %) | 3.330 (0.608) | [3.198, 3.462] |
|  | Female | 124 (59.6%) | 3.398 (0.587) | [3.294, 3.503] |
|  | Total | 208 (100%) | 3.371 (0.595) | [3.289, 3.452] |
|  |  |  |  |  |
| Time Management | Male  Female | 84 (40.4 %)  124 (59.6%) | 2.682 (0.827)  2.913 (0.791) | [2.503, 2.862]  [2.772, 3.054] |
|  | Total | 208 (100%) | 2.820 (0.811) | [2.701, 2.931] |

*Note.* All variables conformed to a normal distribution.

For all dependent variables, the covariate of gender included two groups, male and female. The frequency of each group was the same for five of the six dependent variables (Test Anxiety, Academic Competence, Test Competence, Study Strategies and Time Management). The male population represented 40.4% of the total, and the females represented 59.6% of the population.

For GPA, the frequencies were slightly different as a result of the total number of participants being 199. This total was a result of four participants recording GPAs outside of the 4.0 scale used by the university. Males represented 40.7% and females represented 59.3% for this factor of academic performance. See Table 7 for additional information.

The mean GPA of students relative to gender was as follows. Reporting the lower mean GPA were males, 40.7% of the sample, who entered a mean GPA of 3.337 with a standard deviation of 0.641, and a 95% CI of [3.197, 3.476]. Reporting the higher mean GPA were females who entered a mean GPA of 3.644, with a standard deviation of 0.366 and a 95% CI of [3.577, 3.710]. The difference in mean GPAs reported was 0.307. The n for this factor was 199 as a result of inaccurate grade point averages being entered that exceeded the 4.0 scale used by the university. See Table 8 for additional data.

The mean Test Anxiety score of students relative to gender was as follows. Reporting the lower mean Test Anxiety score were females, 59.6% of the sample, who entered a mean Test Anxiety score of 3.204 with a standard deviation of 0.980, and a 95% CI of [3.030, 3.378]. Reporting the higher mean Test Anxiety score were males who entered a mean Test Anxiety score of 3.513, with a standard deviation of 0.968 and a 95% CI of [3.303, 3.723]. The difference in mean Test Anxiety scores reported was 0.309. See Table 8 for additional data.

Academic Competence score of students relative to gender was as follows. Reporting the lower mean Academic Competence score were males, 40.4% of the sample, who entered a mean Academic Competence score of 3.743 with a standard deviation of 0.532, and a 95% CI of [3.627 3.858]. Reporting the higher mean Academic Competence score were females who entered a mean score of 3.994, with a standard deviation of 0.523 and a 95% CI of [3.901, 4.087]. The difference in mean Academic Competence scores reported was 0.251. Academic Competence scores across both groups were highest of all the mean scores reported among the dependent variables. See Table 8 for additional data. Test Competence score of students relative to gender was as follows. Reporting the lower mean Test Competence score were males, 40.4% of the sample, who entered a mean Test Competence score of 3.290 with a standard deviation of 0.719, and a 95% CI of [3.134 3.446]. Reporting the higher mean Test Competence score were females who entered a mean score of 3.294, with a standard deviation of 0.762 and a 95% CI of [3.159, 3.430]. The difference in mean Test Competence scores reported was 0.004, which was the least difference in mean scores recorded for all dependent variables relative to gender. See Table 8 for additional data. Study Strategies score of students relative to gender was as follows. Reporting the lower mean Study Strategies score were males, 40.4% of the sample, who entered a mean score of 3.330 with a standard deviation of 0.608, and a 95% CI of [3.198, 3.462]. Reporting the higher mean Study Strategies score were females who entered a mean score of 3.398, with a standard deviation of 0.587 and a 95% CI of [3.294, 3.503]. The difference in mean Study Strategies scores reported was 0.068. See Table 8 for additional data. The mean Time Management score of students relative to gender was as follows. Reporting the lower mean Time Management score were again males, who represent 40.4% of the sample, and entered a mean Time Management score of 2.682 with a standard deviation of 0.827, and a 95% CI of [2.503, 2.862]. Reporting the higher mean Time Management score were females who entered a mean score of 2.913, with a standard deviation of 0.791 and a 95% CI of [2.772, 3.054]. Time Management scores across both groups were lowest of all the mean scores reported among the dependent variables. See Table 8 for additional data.

### Descriptive Analysis of Covariates by Group and Independent Variable

Descriptive statistics for each covariate relative to the independent variable of High School Schedule can be viewed in Table 9. The covariate Gender was dummy coded for female = 0 and male = 1. The covariate Parent Education Level consists of six different groups: Some High School or GED; High School; Associate’s Degree or Some College; Bachelor’s Degree; Master’s Degree; and Doctorate or Terminal Degree.

Table 9

Descriptive Statistics of Covariates by Group and High School Schedule

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable Name** | **Group** | **N (%)** | **Block** | | **Traditional** | |
| Gender | Male  Female  Total | 79 (38.9%)  124 (61.1%)  203 (100%) | | 33 (47.1%)  37 (52.9%)  70 (100%) | | 46 (34.6%)  87 (65.4%)  133 (100%) | |
| Parent Ed Level | Some HS/GED | 4 (1.9%) | | 1 (1.4%) | | 3 (2.3%) | |
|  | High School  Assoc/Some College  Bachelor’s  Master’s  Doctorate/Terminal  Total | 22 (10.8%)  33 (16.4%)  70 (34.5%)  64 (31.5%)  10 (4.9%)  203 (100%) | | 9 (12.9%)  8 (11.4%)  27 (38.6%)  22 (31.4%)  3(4.3%)  70 (100%) | | 13 (9.8%)  25 (18.8%)  43 (32.3%)  42 (31.6%)  7 (5.2%)  133 (100%) | |

With a total of 203 in the sample of the population, 79 participants were male, 38.9% of the population, and 124 were female, 61.1% of the population. Within those groups, 33 males participated in block schedule, 47.1% of the males, and 46 participated in traditional schedule in high school, 34.6% of the males. Within the female population, 37 participated in block scheduling, 52.9%, and 87 participated in traditional scheduling, 65.4% of the population of females. See Table 9.

Highest Level of Parent Education results indicate 1.9% of the participants’ parents completed some high school education or earned a GED; 10.8% of the participants’ parents earned a high school diploma; 16.4% of the participants’ parents completed an Associate’s Degree or some college; 34.5% of the participants’ parents completed a Bachelor’s Degree; 31.5% of the participants’ parents completed a Master’s Degree; and 4.9% of the participants’ parents completed a doctorate or terminal degree. The highest number of participants in this study for both block and traditional schedules had parents who completed either a Bachelor’s or a Master’s Degree. The percentages of students participating in the study are similar across both block and traditional schedules, indicating good representation. See Table 9.

## Bivariate Statistical Analysis

Correlation analyses were used for bivariate statistical analysis to examine the relationship between High School Schedule and the Academic Performance factors of: Grade Point Average [GPA], Test Anxiety, Academic Competence, Test Competence, Study Strategies, and Time Management. Point-Biserial Correlation, a special case of Pearson Correlation analysis, was exercised. Point-Biserial Pearson Correlation is used to measure the direction and strength of the relationship that exists between a dichotomous categorical variable and continuous variables (Laerd Statistics, 2018). It allows for a correlation between a dichotomous categorical variable (High School Schedule) and continuous variables (Academic Performance factors) after coding of the categorical variable is exercised.

A Point-Biserial Pearson Correlation was calculated after the dichotomous categorical independent variable of High School Schedule was dummy coded, using 0/1 coding for the categories (see Table 10). Results reported in Table 10 indicate a statistically significant relationship between High School Schedule and three investigated Academic Performance factors, while indicating a non-significant relationship between High School Schedule and three other investigated Academic Performance factors. Results are reported in Table 10.

Table 10

Point-Biserial Pearson Correlation of Academic Performance Factors and High School Schedule (N=203)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| 1. HS Schedule*a* | 1.00 | **.149\*** | **.188\*** | .053 | .119 | **.192\*** | .134 |
| 2. Test Anxiety |  | 1.00 | .268\*\* | .641\*\* | -.030 | .179\*\* | .212\*\* |
| 3. Academic Competence |  |  | 1.00 | .465\*\* | .320\*\* | .444\*\* | .360\*\* |
| 4. Test Competence |  |  |  | 1.00 | .199\*\* | .406\*\* | .243\*\* |
| 5. Study Strategies  6. Time Management |  |  |  |  | 1.00 | .440\*\*  1.00 | .259\*\*  .192\*\* |
| 7. GPA |  |  |  |  |  |  | 1.00 |

\*. Correlation is significant at the .01 level (2-tailed)

\*\*. Correlation is significant at the .05 level (2-tailed)

*a.* HS Schedule was dummy coded (0=Block, 1=Traditional)

The results of the bivariate statistical analysis, using Point-Biserial Pearson correlation values, suggest that High School Schedules have a statistically significant correlation with Test Anxiety, Academic Competence and Time Management. Because the correlation value is positive, and referencing the dummy coding of 0=Block and 1=Traditional, the analysis shows that participants who indicated they experienced a traditional schedule in high school scored higher in each of the three statistically significant Academic Performance areas.

Within the group of six dependent variables (GPA, Test Anxiety, Academic Competence, Test Competence, Study Strategies and Time Management), there was a significant correlation level at the .05 level (2-tailed) for each variable relative to each other with only one exception. Test Anxiety and Study Strategies were the only factors outside of the significant correlation level. Because each factor represents a component of academic performance, and each is measured separately within the survey, this level of correlation is acceptable and expected.

## Assumption Checking

Assumption checking was conducted before statistical analysis in order to avoid violations during analysis.

### Normality

Histograms were checked for bell–shaped curves. Q-Q Plots were checked for a 45-degree angle plot line. Shapiro-Wilk’s values were calculated for each dependent variable, returning non-significant results for all dependent variables except Test Anxiety. Box-Plots were checked for outliers, and none were present.

Normality was confirmed by examination of histograms, Q-Q Plots, Shapiro-Wilk’s values and Box-Plots. Normality was confirmed for Test Anxiety as a result of histograms, Q-Q Plots and Box Plots.

### Homogeneity of Covariance

Assumption checking revealed the covariance of the dependent variables is equal between groups. The Box’s M value of 11.008 was associated with a *p* value of .776, which is non-significant. Thus, the covariance matrices between groups were assumed to be equal for the multivariate analysis of covariance (omnibus) test.

### Homogeneity of Variance

Testing for homogeneity of error variance, Levene’s Test was conducted on all academic performance measures, between the two groups. The error variance was equivalent across all groups except Test Anxiety. Levene’s scores for each DV: Test Anxiety, *p* = .014; Academic Competence, *p* = .441; Test Competence, *p* = .439; Study Strategies, *p* = .453; Time Management, *p* = .950. Given the other measures of academic performance show adequate error variance (*p*>.05), and the Levene’s Test is sensitive to sample size, the statistics are reported in Table 11. Levene’s Test was also conducted for Grade Point Average (GPA) returning a value of *p =* .079, which is non-significant, indicating that the error variance between groups for GPA was equal.

## Multivariate Statistical Analysis

A multivariate analysis of variance (omnibus test) was conducted to test the hypotheses that there would be significant mean differences between each factor representing academic performance (GPA, Test Anxiety, Academic Competence, Test Competence, Study Strategies, and Time Management) and the high school scheduling plan, controlling for Gender and Parent Level of Education. There was a statistically significant difference in academic performance measures, based on participants’ high school schedule, *F* (5,195) = 3.859, *p* = .002, Wilk's λ = .910.

The main effect of high school schedule on Test Anxiety, controlling for Gender and Parent Level of Education, was significant, *F* (1, 199) = 6.273, *p* = .013. The main effect of high school schedule on Academic Competence, controlling for Gender and Parent Level of Education, was significant, *F* (1, 199) = 5.907, *p* = .016. The main effect of high school schedule on Time Management, controlling for Gender and Parent Level of Education, was significant, *F* (1, 199) = 6.669, *p* = .011 (see Table 11).

### Quantitative Analysis for Research Questions

After running the multivariate analysis of covariance (omnibus) test, which returned significance, individual ANCOVA tests were conducted for each dependent variable. Significance in mean difference across the two groups of the independent variable controlling for Gender and Parent Level of Education, was found in Test Anxiety, Academic Competence and Time Management (see Table 11).

Table 11

Analysis of Covariance (ANCOVA) Summary for Academic Performance by Gender and Parent Education Level

ANCOVA

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | Observed Mean | Adjusted  Mean (SD) | *SS* | *df* | *MS* | *F* | *p* |
| Test Anxiety  Gender  Parent Education  Error  Academic Competence  Gender  Parent Education  Error | 3.331  3.896 | 3.275 (0.990)  3.867 (0.536) | 7.009  1.268  185.789  2.162  1.155  52.310 | 1  1  1  199  1  1  1  199 | 5.587  7.009  1.268  0.934  1.553  2.162  1.155  0.263 | 6.273  7.508  1.359  5.907  8.224  4.392 | **.013**  **.016** |
| Test Competence  Gender  Parent Education  Error  Study Strategies  Gender  Parent Education  Error | 3.293  3.379 | 3.280 (0.744)  3.356 (0.597) | 0.014  0.403  111.090  0.020  0.741  70.193 | 1  1  1  199  1  1  1  199 | 0.330  0.014  0.403  0.558  0.975  0.020  0.741  0.353 | 0.592  0.025  0.721  2.764  0.056  2.101 | .443  .098 |
| Time Management  Gender  Parent Education  Error | 2.820 | 2.773 (0.817) | 1.651  1.002  127.006 | 1  1  1  199 | 4.257  1.651  1.002  0.638 | 6.669  2.587  1.571 | **.011** |

*Note.* Mean adjustments based on Parent Education Level = 3.98. Gender = .6108

*Note.* Multivariate statistics for all measures of academic performance, *F* (5,195) = 3.859, *p* = .002; Wilk's λ = .910.

Summary ANCOVA results show that there are statistically significant differences in academic performance between block and traditional schedule participants, adjusting for covariates, in three different academic areas: Test Anxiety, Academic Competence and Time Management.

An individual ANCOVA test was conducted for the dependent variable Grade Point Average (GPA) as a result of the variable being of different measure than the five dependent variables measured within the Academic Performance Self-Report Survey (Appendix A). See Table 12.

Table 12

Analysis of Covariance (ANCOVA) Summary for Grade Point Average (GPA) by Gender and Parent Education Level

ANCOVA

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | Observed Mean | Adjusted  Mean (SD) | *SS* | *df* | *MS* | *F* | *p* |
| GPA  Gender  Parent Education  Error | 3.536 | 3.518 (0.484) | 2.170  5.824  36.573 | 1  1  1  195 | 0.551  2.170  5.824  0.188 | 2.940  11.567  31.050 | .088 |

*Note.* Mean adjustments based on Parent Education Level = 3.98. Gender = .6108

*Note.* Multivariate statistics for all measures of academic performance, *F* (5,195) = 3.859, *p* = .002; Wilk's λ = .910.

Summary ANCOVA results show that there is no statistically significant difference in GPA between block and traditional schedule participants, adjusting for covariates. Further analysis follows.

### Quantitative Analysis for Research Question 1 (RQ 1)

Grade Point Average was collected in the self-report survey under the heading Additional Information (see Appendix A). The mean Grade Point Average [GPA] for the participants was 3.536 with a standard deviation of 0.484 and a 95% CI of [3.566, 3.649]. The n for this factor was 199 as a result of inaccurate grade point averages being entered that exceeded the 4.0 scale used by the university.

In response to research question 1 (RQ1): Is there a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan?

**H1null:** There is not a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan.

**H1alt:** There is a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan.

#### Bivariate statistics.

The Point-Biserial Pearson correlation value between Grade Point Average of students and the high school scheduling plan they experienced, *r* (202) = +.134. This indicates a non-significant relationship between the independent variable of high school schedule and the dependent variable of GPA. See Table 13.

Table 13

Point-Biserial Pearson Correlation of GPA and High School Schedule (N=203)

|  |  |  |
| --- | --- | --- |
| **Variables** | **1** | **2** |
| 1. HS Schedule*a* | 1.00 | .134 |
| 2. GPA |  | 1.00 |

\*. Correlation is significant at the .01 level (2-tailed)

*a*. HS Schedule was dummy coded (0=Block, 1=Traditional)

#### Multivariate analysis.

An ANCOVA was run to compare the means of GPAs among students of two high school scheduling plans: Block = 3.446 (0.508) and Traditional = 3.583 (0.466), controlling for covariates of Gender and Parent Highest Level of Education, resulting in a non-significant statistical difference with F (1, 195) = 2.940, *p* = .088.

Table 14

ANCOVA Summary for GPA by Gender and Parent Education Level

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ANCOVA | | | | | | |
| Variable | Mean (SD) | |  |  | *MS* | *F* | *df* | *p* |
| GPA  Block  Traditional | 3.446 (0.508)  3.583 (0.466) | |  |  | 0.551 | 2.940 | 1, 195 | .088 |
| Covariates | SS | | df |  | MS |  | F |  |
| Gender  Parent Education  Error | 2.170  5.842  36.563 | | 1  1  195 |  | 2.170  5.842  0.188 |  | 11.567  31.050 |  |

*Note.* R2=.211, Adj. R2=.199, adjustments based on Parent Education Level = 3.98. Gender = .6108

#### Response to Hypothesis 1.

The main effect of high school schedule on GPA, controlling for Gender and Parent Education, was non-significant. Therefore H1null is not rejected.

### Quantitative Analysis for Research Question 2 (RQ 2)

Test Anxiety was measured in questions 1-10 under the heading Test Anxiety using five measurement criteria: 1 = Not at all typical of me; 2 = Not very typical of me; 3 = Somewhat typical of me; 4 = Fairly typical of me; 5 = Very much typical of me (see Appendix A). The mean Test Anxiety score for the participants (n=203) was 3.331 with a standard deviation of 0.990 and a 95% CI of [3.135, 3.416].

In response to research question 2 (RQ2): Is there a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan?

**H2null:** There is not a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan.

**H2alt:** There is a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan.

#### Bivariate statistics.

The Point-Biserial Pearson correlation value between Test Anxiety scores of students and the high school scheduling plan they experienced, *r* (202) = +.149. This indicates a significant relationship between the independent variable of high school schedule and the dependent variable of Test Anxiety. Because the correlation value is positive, and referencing the dummy coding of 0=Block and 1=Traditional, the analysis shows that participants who indicated they experienced a traditional schedule in high school had better scores in Test Anxiety than those is block scheduling. The scores for Test Anxiety questions were reverse coded (see Appendix A) so higher scores indicate less test anxiety, and lower scores indicate greater test anxiety.

Table 15

Point-Biserial Pearson Correlation of Test Anxiety and High School Schedule (N=203)

|  |  |  |
| --- | --- | --- |
| **Variables** | **1** | **2** |
| 1. HS Schedule*a* | 1.00 | **.149\*** |
| 2. Test Anxiety |  | 1.00 |

\*. Correlation is significant at the .01 level (2-tailed)

*a*. HS Schedule was dummy coded (0=Block, 1=Traditional)

#### Multivariate analysis.

An ANCOVA was run to compare the means of Test Anxiety scores among students of two high school scheduling plans: Block = 3.128 (1.108) and Traditional = 3.438 (0.908), controlling for covariates of Gender and Parent Highest Level of Education, resulting in a significant statistical difference with F (1, 199) = 6.273, *p* = .013

Table 16

ANCOVA Summary for Test Anxiety by Gender and Parent Education Level

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ANCOVA | | | | | | |
| Variable | Mean (SD) | |  |  | *MS* | *F* | *df* | *p* |
| Test Anxiety  Block  Traditional | 3.128 (1.108)  3.438 (0.908) | |  |  | 5.587 | 6.273 | 1, 199 | .013 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Covariates | SS | df |  | MS |  | F |  |
| Gender  Parent Education  Error | 7.009  1.268  185.789 | 1  1  199 |  | 7.009  1.268  0.934 |  | 7.508  1.359 |  |

*Note.* R2=.062, Adj. R2=.047, adjustments based on Parent Education Level = 3.98. Gender = .6108

#### Response to Hypothesis 2.

The main effect of high school schedule on Test Anxiety, controlling for Gender and Parent Education, was significant, *F* (1, 199) = 6.273, *p* = .013. Therefore H2null is rejected.

### Quantitative Analysis for Research Question 3 (RQ 3)

Academic Competence was measured in questions 1-5 under the heading Academic Competence using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). The mean Academic Competence score for the participants (n=203) was 3.896 with a standard deviation of 0.536 and a 95% CI of [3.792, 3.941]. Academic Competence recorded the highest mean score among all dependent variables.

In response to research question 3 (RQ3): Is there a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan?

**H3null:** There is not a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan.

**H3alt:** There is a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan.

#### Bivariate statistics.

The Point-Biserial Pearson correlation value between Academic Competence scores of students and the high school scheduling plan they experienced, *r* (202) = +.188. This indicates a significant relationship between the independent variable of high school schedule and the dependent variable of Academic Competence. Because the correlation value is positive, and referencing the dummy coding of 0=Block and 1=Traditional, the analysis shows that participants who indicated they experienced a traditional schedule in high school had better scores in Academic Competence than those is block scheduling.

Table 17

Point-Biserial Pearson Correlation of Academic Competence and High School Schedule (N=203)

|  |  |  |
| --- | --- | --- |
| **Variables** | **1** | **2** |
| 1. HS Schedule*a* | 1.00 | **.188\*** |
| 2. Academic Competence |  | 1.00 |

\*. Correlation is significant at the .01 level (2-tailed)

*a*. HS Schedule was dummy coded (0=Block, 1=Traditional)

#### Multivariate analysis.

An ANCOVA was run to compare the means of Academic Competence scores among students of two high school scheduling plans: Block = 3.757   
(0.564) and Traditional = 3.968 (0.508), controlling for covariates of Gender and Parent Highest Level of Education, resulting in a significant statistical difference with F (1, 199) = 5.907, *p* = .016.

Table 18

ANCOVA Summary for Academic Competence by Gender and Parent Education Level

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ANCOVA | | | | | | |
| Variable | Mean (SD) | |  |  | *MS* | *F* | *df* | *p* |
| Academic Competence  Block  Traditional | 3.757 (0.564)  3.968 (0.508) | |  |  | 1.553 | 5.907 | 1, 199 | .016 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Covariates | SS | df |  | MS |  | F |  |
| Gender  Parent Education  Error | 2.162  1.155  52.310 | 1  1  199 |  | 2.162  1.155  0.253 |  | 8.224  4.392 |  |

*Note.* R2=.099, Adj. R2=.085, adjustments based on Parent Education Level = 3.98. Gender = .6108

#### Response to Hypothesis 3.

The main effect of high school schedule on Academic Competence, controlling for Gender and Parent Education, was significant, *F* (1, 199) = 5.907, *p* = .016. Therefore H3null is rejected.

### Quantitative Analysis for Research Question 4 (RQ 4)

Test Competence was measured in questions 1-4 under the heading Test Competence using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). The mean Test Competence score for the participants (n=203) was 3.293 with a standard deviation of 0.744 and a 95% CI of [3.171, 3.389].

In response to research question 4 (RQ4): Is there a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan?

**H4null:** There is not a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan.

**H4alt:** There is a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan.

#### Bivariate statistics.

The Point-Biserial Pearson correlation value between Test Competence scores of students and the high school scheduling plan they experienced, *r* (202) = +.053. This indicates a non-significant relationship between the independent variable of high school schedule and the dependent variable of Test Competence.

Table 19

Point-Biserial Pearson Correlation of Test Competence and High School Schedule (N=203)

|  |  |  |
| --- | --- | --- |
| **Variables** | **1** | **2** |
| 1. HS Schedule*a* | 1.00 | .053 |
| 2. Test Competence |  | 1.00 |

\*. Correlation is significant at the .01 level (2-tailed)

*a*. HS Schedule was dummy coded (0=Block, 1=Traditional)

#### Multivariate analysis.

An ANCOVA was run to compare the means of Test Competence scores among students of two high school scheduling plans: Block = 3.239 (0.779) and Traditional = 3.322 (0.726), controlling for covariates of Gender and Parent Highest Level of Education, resulting in a non-significant statistical difference with F (1, 199) = 0.592, *p* = .443.

Table 20

ANCOVA Summary for Test Competence by Gender and Parent Education Level

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ANCOVA | | | | | | |
| Variable | Mean (SD) | |  |  | *MS* | *F* | *df* | *p* |
| Test Competence  Block  Traditional | 3.239 (0.779)  3.322 (0.726) | |  |  | 0.330 | 0.592 | 1, 199 | .443 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Covariates | SS | df |  | MS |  | F |  |
| Gender  Parent Education  Error | 0.014  0.403  111.090 | 1  1  199 |  | 0.014  0.403  0.558 |  | 0.025  0.721 |  |

*Note.* R2=.006, Adj. R2=-.009, adjustments based on Parent Education Level = 3.98. Gender = .6108

#### Response to Hypothesis 4.

The main effect of high school schedule on Test Competence, controlling for Gender and Parent Education, was non-significant. Therefore H4null is not rejected.

### Quantitative Analysis for Research Question 5 (RQ 5)

Strategic Studying was measured in questions 1-5 under the heading Study Strategies using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). The mean Study Strategies score for the participants (n=203) was 3.379 with a standard deviation of 0.597 and a 95% CI of [3.269, 3.443].

In response to research question 5 (RQ5): Is there a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan?

**H5null:** There is not a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan.

**H5alt:** There is a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan.

#### Bivariate statistics.

The Point-Biserial Pearson correlation value between Study Strategy scores of students and the high school scheduling plan they experienced, *r* (202) = +.119. This indicates a non-significant relationship between the independent variable of high school schedule and the dependent variable of Study Strategies.

Table 21

Point-Biserial Pearson Correlation of Study Strategies and High School Schedule (N=203)

|  |  |  |
| --- | --- | --- |
| **Variables** | **1** | **2** |
| 1. HS Schedule*a* | 1.00 | .119 |
| 2. Study Strategies |  | 1.00 |

\*. Correlation is significant at the .01 level (2-tailed)

*a*. HS Schedule was dummy coded (0=Block, 1=Traditional)

#### Multivariate analysis.

An ANCOVA was run to compare the means of Study Strategy scores among students of two high school scheduling plans: Block = 3.281 (0.583) and Traditional = 3.430 (0.600), controlling for covariates of Gender and Parent Highest Level of Education, resulting in a non-significant statistical difference with F (1, 199) = 2.764, *p* = .098.

Table 22

ANCOVA Summary for Study Strategies by Gender and Parent Education Level

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ANCOVA | | | | | | |
| Variable | Mean (SD) | |  |  | *MS* | *F* | *df* | *p* |
| Study Strategies  Block  Traditional | 3.281 (0.583)  3.430 (0.600) | |  |  | 0.975 | 2.764 | 1, 199 | .098 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Covariates | SS | df |  | MS |  | F |  |
| Gender  Parent Education  Error | 0.020  0.741  70.193 | 1  1  199 |  | 0.020  0.741  0.353 |  | 0.056  2.101 |  |

*Note.* R2=.025, Adj. R2=-.010, adjustments based on Parent Education Level = 3.98. Gender = .6108.

#### Response to Hypothesis 5.

The main effect of high school schedule on Study Strategies, controlling for Gender and Parent Education, was non-significant. Therefore H5null is not rejected.

### Quantitative Analysis for Research Question 6 (RQ 6)

Time Management was measured in questions 1-5 under the heading Time Management using five measurement criteria: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree (see Appendix A). The mean Time Management score for the participants (n=203) was 2.820 with a standard deviation of 0.817 and a 95% CI of [2.656, 2.889]. The mean score for Time Management was notably lower than mean scores for the other dependent variables.

In response to research question 6 (RQ6): Is there a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan?

**H6null:** There is not a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan.

**H6alt:** There is a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan.

#### Bivariate statistics.

The Point-Biserial Pearson correlation value between Time Management scores of students and the high school scheduling plan they experienced, *r* (202) = +.192. This indicates a significant relationship between the independent variable of high school schedule and the dependent variable of Time Management. Because the correlation value is positive, and referencing the dummy coding of 0=Block and 1=Traditional, the analysis shows that participants who indicated they experienced a traditional schedule in high school had better scores in Time Management than those is block scheduling.

Table 23

Point-Biserial Pearson Correlation of Time Management and High School Schedule (N=203)

|  |  |  |
| --- | --- | --- |
| **Variables** | **1** | **2** |
| 1. HS Schedule*a* | 1.00 | **.192\*** |
| 2. Time Management |  | 1.00 |

\*. Correlation is significant at the .01 level (2-tailed)

*a*. HS Schedule was dummy coded (0=Block, 1=Traditional)

#### Multivariate analysis.

An ANCOVA was run to compare the means of Time Management scores among students of two high school scheduling plans: Block = 2.604 (0.809) and Traditional = 2.934 (0.801), controlling for covariates of Gender and Parent Highest Level of Education, resulting in a significant statistical difference with F (1, 199) = 6.669, *p* = .011.

Table 24

ANCOVA) Summary for Time Management by Gender and Parent Education Level

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ANCOVA | | | | | | |
| Variable | Mean (SD) | |  |  | *MS* | *F* | *df* | *p* |
| Time Management  Block  Traditional | 3.604 (0.809)  3.934 (0.801) | |  |  | 4.257 | 6.669 | 1, 199 | .011 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Covariates | SS | df |  | MS |  | F |  |
| Gender  Parent Education  Error | 1.651  1.002  1.00627 | 1  1  199 |  | 1.651  1.002  0.638 |  | 2.587  1.571 |  |

*Note.* R2=.059, Adj. R2=-.045, adjustments based on Parent Education Level = 3.98. Gender = .6108

#### Response to Hypothesis 6.

The main effect of high school schedule on Time Management, controlling for Gender and Parent Education, was significant, *F* (1, 199) = 6.669, *p* = .011. Therefore H6null is rejected.

## Findings for Research Questions

### Findings for Research Question 1

**RQ1:** Is there a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan?

The significance of the relationship between Grade Point Average [GPA] and the high school schedule from which participants come was first evaluated using a Pearson Correlation (see Table 10), and then was tested using a univariate analysis of covariance (ANCOVA) test (see Table 12). The result of this test indicated that there was not a significant relationship between the two variables.

From previous studies and literature, it was noted that results from a study conducted by the Center for Public Education (2006), looking specifically at ACT scores (which have a high correlation with grade point averages) of high school students, over the course of 7 years, indicate that the mean ACT scores for students in a traditional eight-period schedule increased each year, while the scores for students in block scheduling fluctuated, with a gradual decline. Also from the literature, it is important to note that many schools have met with great success in the transition from traditional to block scheduling, and have recorded measurable academic gains for their students (Gullatt, 2006). Among the six investigated academic performance factors: GPA, Test Anxiety, Academic Competence, Test Competence, Study Strategies and Time Management, three of the six were significant, and three were not. Participants who reported experiencing a block schedule reported lower scores for all six factors, though only three returned statistically significant lower scores. The lack of statistical significance does support previous literature that suggests that students record gains in academic performance while participating in block schedule as well as those participating in a traditional schedule (Gullatt, 2006).

### Findings for Research Question 2

**RQ2:** Is there a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan?

The significance of the relationship between Test Anxiety and the high school schedule from which participants come was first evaluated using a Pearson Correlation (see Table 10), and then was tested using a univariate analysis of covariance (ANCOVA) test (see Table 11). The result of this test indicated that there was a significant relationship between the two variables.

From previous studies and literature, the primary purpose for changing to block scheduling was to maximize instructional time, which would then increase academic achievement for students (Harris, 2014). The findings about the relationship between test anxiety and high school scheduling indicate that there is a significant difference in mean scores between students participating in block and traditional schedules. The scores for Test Anxiety questions were reverse coded (see Appendix A) so higher scores indicate less test anxiety, and lower scores indicate greater test anxiety. Those students coming from a block schedule are more anxious taking tests (Block = 3.128, Traditional = 3.438). This difference is perhaps related to the reduced amount of time most students have for test taking in the collegiate environment and an absence of the possibility of retaking tests (Baylor University, 2018). In a block schedule, students often have the entire block to complete a test, even if the class continues on to a new topic, and the possibility of retaking tests when one does poorly is a common opportunity. Within the college schedule, students often have only a 50-minute class period to complete a test, resulting in an increase in test anxiety for those students coming from a block schedule. Students also may have come to rely on retaking test opportunities. This discounts the previous literature that changing to block scheduling would maximize time, and then increase academic achievement for students, through more effective time use, also providing more time for test taking (Harris, 2014). Maximizing effective instructional time also provides more test-taking time, thus developing a security in test-taking time that does not typically continue into college.

### Findings for Research Question 3

**RQ3:** Is there a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan?

The significance of the relationship between Academic Competence and the high school schedule from which participants come was first evaluated using a Pearson Correlation (see Table 10), and then was tested using a univariate analysis of covariance (ANCOVA) test (see Table 11). The result of this test indicated that there was a significant relationship between the two variables.

In previous studies, it was researched that changing to block scheduling was to maximize instructional time, which would then increase academic achievement for students (Harris, 2014). The literature suggests that block scheduling is an effective and appropriate way for teachers to engage students in active instruction increasing learning (Kee, 2011). However, also relevant was that in Gullatt’s (2006) study, while there was evidence that block scheduling had the most positive academic impact on general courses, block schedules also had less academic benefit for higher-level courses for college bound students. In this study, students in traditional schedules had a statistically significantly higher mean average score for Academic Competence (Block = 3.757, Traditional = 3.968), supporting the research by Gullatt (2006) that perhaps block schedules do not benefit those students who are college bound (see Figure 3, Table 6).

### Findings for Research Question 4

**RQ4:** Is there a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan?

The significance of the relationship between Test Competence and the high school schedule from which participants come was first evaluated using a Pearson Correlation (see Table 10), and then was tested using a univariate analysis of covariance (ANCOVA) test (see Table 11). The result of this test indicated that there was not a significant relationship between the two variables.

Test Competence, is highly correlated with grade point average (see Table 10), and, as previously stated, the literature suggests that many schools have met with great success in using block scheduling, and have recorded measurable academic gains for their students (Gullatt, 2006). Among the six investigated academic performance factors: GPA, Test Anxiety, Academic Competence, Test Competence, Study Strategies and Time Management, three of the six were significant, and three were not. Participants who reported experiencing a block schedule reported lower scores for all six factors, though only three returned statistically significant lower scores. The lack of statistical significance indicates that students’ test taking abilities are less affected by differences in schedules in high school than other factors. This lack of difference in scores may be relative to test taking abilities being less affected by instructional strategies and length of time for instruction (Bonner, 2012).

### Findings for Research Question 5

**RQ5:** Is there a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan?

The significance of the relationship between Study Strategies and the high school schedule from which participants come was first evaluated using a Pearson Correlation (see Table 10), and then was tested using a univariate analysis of covariance (ANCOVA) test (see Table 11). The result of this test indicated that there was not a significant relationship between the two variables.

In review of previous studies in the literature, engagement while studying (Walker, 2012), as well as classroom participation (Rocca, 2010), contributes to academic success. Engaged studying and study skills are important to academic success. This study did not reveal a statistically significant difference in Study Strategies scores. The lack of statistical significance between the mean scores from each schedule type is likely a result of necessary study skills being similar across high school schedules (Williams, 2011).

### Findings for Research Question 6

**RQ6:** Is there a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan?

The significance of the relationship between Time Management and the high school schedule from which participants come was first evaluated using a Pearson Correlation (see Table 10), and then was tested using a univariate analysis of covariance (ANCOVA) test (see Table 11). The result of this test indicated that there was a significant relationship between the two variables.

From previous literature, it was reported that changing to block scheduling was to maximize instructional time, which would then increase academic achievement for students (Harris, 2014). Many studies (Brady-Amoon & Fuertes, 2011; Usher & Kober, 2013; Andress-Martin, 2012; Wright, Jenkins-Guarnieri & Murdock, 2013) have also shown that successful students usually maintain a balance between social and academic aspects of school, which is one of the most important parts of the Time Management factor of academic performance (see Appendix A). Educational and developmental theories (Carroll, 1963; Chickering & Reisser, 1993; Vygotsky, 1978) suggest that students participating in block scheduling in high school should have experienced an environment conducive to better learning because of increased social interaction; and thus be better prepared for collegiate academics. However, this study does not support the theories that those students participating in a block schedules are better prepared (see Figure 3; Table 6). While all participants report Time Management scores lower than all other academic performance factor scores, indicating an overall difficulty with managing time, those students coming from a block schedule report statistically significantly lower Time Management scores than those coming from a traditional schedule. This difference is an indication that a block schedule may actually be more poorly preparing students than a traditional schedule.

# CHAPTER V

DISCUSSION AND CONCLUSIONS

## Introduction

The importance of investigating the relationship of the high school scheduling plan and students’ academic performance levels spans across the high school grades and into college. The implementation of block scheduling as a means to address concerns in declining high school performance has been widely regarded as an effective strategy. The connection between the high school scheduling plan and collegiate performance has received little attention. High school administrators desiring to best equip students for success beyond graduation would do well to understand the relationship the school’s scheduling plan may have on its students in their collegiate futures. Likewise, colleges desiring to best support first-year students to assimilate to collegiate academics would do well to understand the background from which students come, and the relationship the high school scheduling plan may have to academic performance and the perceptions of academic performance.

The population used for this research study was the freshman class at Concordia University Nebraska. Concordia University is a small liberal arts institution in a rural community in southeastern Nebraska. The institution has a student body of approximately 1,200 students, with 320 freshman students eligible for the study. A convenience sample was selected from the freshman population with recruitment of the entire freshman population being exercised. These efforts for recruitment resulted in a 72% response rate (231 participants) from the freshman population, with 63% (203 participants) of the surveys being completed entirely and viable for analysis.

The independent variable for this study was the High School Scheduling plan (Block or Traditional), the dependent variables were six factors of Academic Performance, including: Grade Point Average [GPA], Test Anxiety, Academic Competence, Test Competence, Study Strategies and Time Management. Covariates in this study were Gender and Parent Level of Education. Appropriate and necessary coding was conducted on the High School Scheduling plan and Gender responses, and scores given for the questions associated with five of the factors of academic performance were coded into a total score for each factor.

## Discussion

The purpose of this study was to examine the relationship between first-year college students’ academic performance and the high school schedule a student experienced. By first using a multivariate analysis of covariance (omnibus) test in analysis of the data, a significant result was returned (see Table 11; Table 12), giving basis for continued analysis. The study included six factors of academic performance, grade point average [GPA], and five factors included in a self-report study: Test Anxiety, Academic Competence, Test Competence, Study Strategies and Time Management (see Appendix A). In continued analysis each factor of academic performance was tested using a univariate analysis of covariance (ANCOVA) test. These tests found statistically significant differences in mean scores in three of the six investigated factors, Test Anxiety, Academic Performance and Time Management (see Figure 3; Table 11). The previous chapter provides statistical analysis for each of the research questions.

General findings for this study indicate that across all six factors of academic performance, study participants who experienced a block schedule in high school reported performing more poorly in each of the six areas (see Figure 3). Reasons for poorer performance across all six areas for those coming from a block schedule are certainly complex, and while this study did not address causation, some possibilities for poorer scores coming from block schedule participants may include: the use of effective instructional strategies and curriculum coverage; common classroom practices; and the nature of time management within the block schedule.

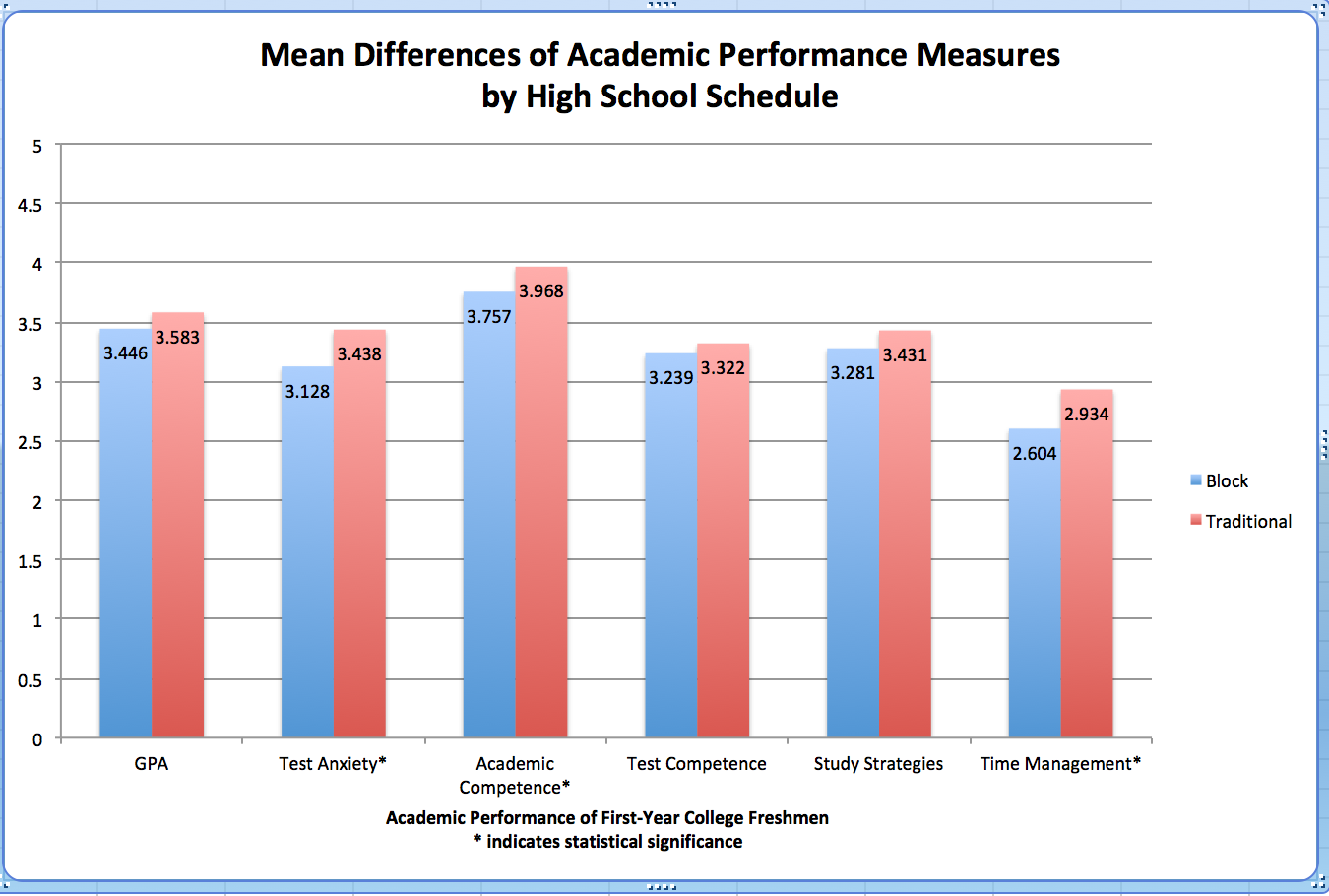
From previous research (Campbell, 2010; Lewis et al., 2005; Zepeda & Mayers, 2006), the more significant reason for decline in GPA and poorer performance in Academic Competence has been speculated to be the use of effective instructional strategies in the block classroom. Effective instructional strategies in any classroom are necessary for best learning, and the unique environment of a block class period requires the use of different strategies to take advantage of the instructional time. Block schedules are intended to provide time to develop depth of instruction in curricular concepts especially through social interaction (Bonner, 2012). However, in some classrooms, teachers use the time to cover more material on a surface level, in order to fulfill needs for curriculum coverage within school and district requirements. A known characteristic of a block schedule is that it results in less total class time per course, so while class periods are longer, total instructional time available per course is reduced (Banicky, 2012). This reduction in course time often causes concern for teachers in covering required curriculum, and thus less effective instructional strategies, in a rush to completely cover required curriculum. The use, or lack, of effective instructional strategies in a block schedule high school may be a reason for lower first-year college GPAs, and lower academic performance scores as student experience collegiate academics.

It is prudent to note that the grand GPA across all study participants was 3.536 with a standard deviation of 0.484 (see Table 4). The students participating in the study were on average very good students, rather than students with generally poor academic performance. This is interesting to note particularly because the results of this study indicate that students in block schedules are reporting lower academic performance scores across all six measured academic factors, and these self-reported scores are coming from what most would consider “good students”. When good students are reporting poorer performance overall, the relationship between academic performance and high school schedule may hold more merit.

Common classroom practices may also be a reason for a difference in mean academic performance scores of participants, and lower scores across all six areas for those experiencing a block schedule. The findings about the relationship between test anxiety and high school scheduling indicate that there is a significant difference in means, and those students coming from a block schedule are more anxious taking tests (see Figure 3; Table 6). This difference is perhaps related to the reduced amount of time most students have for test taking in the collegiate environment. A common practice among teachers within a block schedule allows students to complete tests during the class period of 90 minutes, even if the class continues on to a new topic within that period (K. Bockelman, personal communication, April 19, 2018). Within the college schedule, students often have only a 50-minute class period to complete a test, resulting, perhaps, in an increase in test anxiety for those students coming from a block schedule who may have become accustomed to a longer class period for completing exams.

General management of the additional time allotted by a block schedule may be a reason for students reporting lower scores in the academic performance factor of Time Management. While all participants report Time Management scores lower than all other academic performance factor scores, indicating an overall difficulty with managing time, those students coming from a block schedule report statistically significantly lower Time Management scores than those coming from a traditional schedule. The additional daily time allowed for in a block schedule is a primary reason listed for schools initiating block scheduling (Harris, 2014). When students participate in a block schedule, and teachers effectively use the time for greater instruction, deeper learning and curriculum coverage, theoretically, the block schedule should be effective in increasing academic performance (Hurst, Wallace, & Nixon, 2013). As previously noted, instructional strategies and curriculum coverage often are not used as effectively as perhaps possible. When instructional strategies revert to longer or more frequent lecturing, students become saturated more quickly and attention, thus learning, decreases (Banicky, 2012). Students are typically able to give attention to an instructional experience for about ten minutes, after which engagement decreases significantly, and thus learning decreases (Medina, 2009). This limited attention span within a block schedule, when coupled with instructional strategies that are lecture-intensive, may affect academic competence as well as time management abilities. When teachers perceive that students are becoming disengaged and tired of instruction, teachers will revert to allowing for independent work time, also known as homework time (K. Bockelman, L. Sommerer, personal communication, April 19, 2018). This allowing for homework to be completed in class, which is a common practice of teachers in block scheduling, may contribute to the reason that students in block scheduling struggle with time management in college. Collegiate courses often consist of a 50-minute class period leading to additional homework that must be completed outside of the class time. Students coming from a block schedule where homework was largely completed during class have developed homework habits that are not effective in collegiate academics, and this may be a reason for poorer scores being reported by participants experiencing a block schedule in high school.

An additional time management difficulty may be tied to the number of courses a student must simultaneously manage during college as compared to the block schedule formation known as Intensive Block (see Definitions of Terms). This form of block scheduling includes taking four courses, meeting each day for an entire semester. The management of four courses at a time is a difference from a collegiate academic experience where students typically manage from 5-8 courses at a time, typically meeting every other day.



*Figure 3.* Mean Difference of Academic Performance Measures by High School Schedule

## Significant Results Related to the Research Questions

After review of the literature and theories, significant results related to this study were evident. Block scheduling was developed in response to educators believing that more time and additional student interactions in the classroom would lead to better learning (Bonner, 2012). The concept of additional time and increased social leading to better learning is based on Vygotsky’s Theory of Social Development. Theoretically, students who participated in a block schedule in high school should be performing better academically than their peers who experienced a traditional schedule.

### Research Question 1

In response to research question 1 (RQ1): Is there a statistically significant relationship between the grade point average [GPA] of first-year college students coming from a block schedule high school academic plan, compared to the grade point average [GPA] of first-year college students coming from a traditional high school academic scheduling plan?

There is not a statistically significant relationship between GPA and high school schedule. This result may support previous literature from Gullatt (2006) that suggests students record gains in academic performance while participating in block schedule just as well as those participating in a traditional schedule.

### Research Question 2

In response to research question 2 (RQ2): Is there a statistically significant relationship between the test anxiety level of first-year college students coming from a block schedule high school academic plan, compared to the test anxiety level of first-year college students coming from a traditional high school academic scheduling plan?

The scores for Test Anxiety questions were reverse coded so higher scores indicate less test anxiety, and lower scores indicate greater test anxiety. This study revealed that there is a statistically significant difference in mean scores between participants experiencing a block schedule and those experiencing a traditional schedule in high school, and students experiencing a block schedule have higher levels of anxiety in taking tests. This significance may be related to the amount of time most students have for taking tests in the collegiate environment being reduced to a class period of 50 minutes rather than a blocked class period of 90 minutes (K. Nugent, personal communication, March 23, 2018). Also different at the college level is the absence of make-up test opportunities (Baylor University, 2018). The reduced amount of time and knowledge of having only one opportunity to complete a test may be a cause for increased anxiety for those participants experiencing a block schedule in high school.

### Research Question 3

In response to research question 3 (RQ3): Is there a statistically significant relationship between the academic competence level of first-year college students coming from a block schedule high school academic plan, compared to the academic competence level of first-year college students coming from a traditional high school academic scheduling plan?

This study revealed a statistically significant difference in mean scores between participants experiencing a block schedule and those experiencing a traditional schedule in high school. Students experiencing a block schedule in high school have poorer academic performance score than those participating in a traditional schedule. This significant difference in means supports the literature that suggests that students coming from a block schedule do not have increased levels of academic competence (Center for Public Education, 2006; Gullatt, 2006; Harris, 2014; Washington, 2011), as results indicate that students coming from a traditional schedule report higher mean average in academic competence than those coming from a block schedule (Block = 3.757, Traditional = 3.968).

### Research Question 4

In response to research question 4 (RQ4): Is there a statistically significant relationship between the test competence level of first-year college students coming from a block schedule high school academic plan, compared to the test competence level of first-year college students coming from a traditional high school academic scheduling plan?

This study did not reveal a statistically significant difference in Test Competence scores, and the mean scores of students coming from a block schedule were only minimally different than those coming from a traditional schedule (Block = 3.239, Traditional = 3.322). The lack of statistical significance between scores may be relative to test taking abilities being less affected by instructional strategies and length of time for instruction (Bonner, 2012).

### Research Question 5

In response to research question 5 (RQ5): Is there a statistically significant relationship between the study strategy ability of first-year college students coming from a block schedule high school academic plan, compared to the study strategy ability of first-year college students coming from a traditional high school academic scheduling plan?

This study did not reveal a statistically significant difference in Study Strategy scores. The scores of students coming from a block schedule were minimally different than those coming from a traditional schedule (Block = 3.281, Traditional = 3.431). The lack of statistical significance between the mean scores from each schedule type is likely a result of necessary study skills being similar across high school schedules (Williams, 2011).

### Research Question 6

In response to research question 6 (RQ6): Is there a statistically significant relationship between the time management ability of first-year college students coming from a block schedule high school academic plan, compared to the time management ability of first-year college students coming from a traditional high school academic scheduling plan?

Students coming from a block schedule report statistically significantly lower Time Management scores than those coming from a traditional schedule. This difference is an indication that a block schedule may actually be more poorly preparing students than a traditional schedule for managing their time in a collegiate environment. This difference does not support the educational and developmental theories (Carroll, 1963; Chickering & Reisser, 1993; Vygotsky, 1978) that suggest that students participating in block scheduling in high school should have experienced an environment conducive to better learning because of increased time and social interaction. The lack of data in support of the theories may be a result of mismanaged time within a block schedule classroom. Poorly managed class time is common among teachers in block scheduling and may contribute to the reason that students in block scheduling struggle with time management in college (K. Bockelman, L. Sommerer, personal communication, April 19, 2018).

Results in the areas of test anxiety, academic competence and time management did not fully support the theory that students in block schedules should be performing better, showing statistical significance in those three academic performance areas that students in block schedule are doing more poorly.

## Theoretical Implications

Block scheduling was developed based on the concept of additional time and increased social interaction leading to better learning, which is based on Vygotsky’s Theory of Social Development. Social Development Theory is a general theory of cognitive development with the major theme of the theoretical framework being that social interaction is fundamental to the development of cognition (Culatta, 2015). Theoretically, block scheduling provides the time necessary for social interaction that should lead to better learning. However this study provided data suggesting that the additional time may not lead to better academic performance, and in fact may result in difficulties in time management for first- year college students, returning a statistically significant difference in mean scores between block and traditional participants, block being poorer in time management.

Educational and developmental theories (Carroll, 1963; Chickering & Reisser, 1993; Vygotsky, 1978) suggest that students participating in block scheduling in high school should have experienced an environment conducive to better learning, and thus be better prepared for collegiate academics, but the results of this study suggest this is not the always the case. The results of this study do appear to support the findings of the study conducted by Dexter, Tai and Sadler (2006), which found that in college preparation for science, block scheduling did not prepare students better than traditional scheduling plans, as indicated by the results of this study (see Figure 3).

## Limitations and Delimitations

The most notable limitation to this study was the use of one institution in the population and sampling. The population was a convenience sample relative to the availability of the population to the researcher. Concordia University Nebraska is a small, Christian, liberal arts institution in a rural community. Its student body is predominantly white, Christian students, and thus the sample of the population of first-year students was also predominantly white, Christian students. According to the National Center for Education Statistics (2017), the student population of Concordia University Nebraska is slightly less diverse than the average enrollment at other universities, with fewer students of color. As a result of this, generalizability to other populations may be limited. However the delimitation of the high response rate among the population does give opportunity for generalizing to other first-year college populations, especially in smaller liberal arts colleges within the Great Plains and mid-west states whose demographics may be similar.

Limitations of this study also included an inability to control the instructional practices and classroom routines and practices that participants may have experienced in high school. The study did not address the differing experiences that each participant may have had in high school classroom instruction or practice that may have affected the scores reported.

An additional limitation to this study was that the quantitative statistical model selected for analysis of the data was able to show correlation among the data, but not causation. While showing causation was desirable, the results that showed a statistically significant relationship among three dependent variables and the absence of a statistically significant relationship among three others still provided valuable information. The existence of three statistically significant differences in mean, and all mean differences showing lower scores for those participants experiencing a block scheduling high school plan gives insight into the possibility of investigating the cause behind all means being lower.

## Recommendations for Future Research

Because this study was a self-report survey, it is important to note that the academic performance factor of grade point average [GPA], did not return statistically significant differences in mean scores between the two schedules (*p* = .088). GPA is widely used as a primary indicator of academic performance (Sansgiry, Bhosle & Sail, 2006), while the other five investigated factors were self-reported rankings in each of the academic areas researched. It is reasonable to consider that because of the nature of the survey that it may be that students participating in a block schedule had a poorer perception of their academic performance than those participating in traditional schedules. It is recommended that if further research would be conducted, researchers could examine the perceptions of students coming from block and traditional schedules, how they perceive their performance, and why perceptions among students in their first-year of college may be different according to the high school schedule they experienced.

It is also prudent to note that all students participating in the study reported lower grand mean scores in ability to manage their time effectively during their first year of college (Grand Means: Test Anxiety = 3.331; Academic Competence = 3.896; Test Competence = 3.293; Study Strategies = 3.379 and Time Management = 2.820). The mean scores for the four academic performance factors other than time management were higher on a scale of 1-4 evaluating academic performance, while the mean score for time management was the lowest (Grand Mean of Time Management = 2.820), indicating a general report of time management being a more difficult task among first-year college students. Hurley (1997) reported students’ perceptions of more-time for learning as an overwhelmingly positive response to the implementation of block scheduling and its effect on time management for those students, however the results of this study indicate that students coming from a block schedule find time management to be a most difficult task, even significantly more so than those coming from traditional schedules. It is recommended that further study investigate the specific factor of time management among first year college students experiencing different high school schedules. Looking at time management more specifically, and the factors that may effect time management, including social interactions, extra-curricular participation and homework requirements may help students develop better time management skills, leading to better academic performance.

Also recommended is the need to specifically investigate test anxiety, academic competence and time management performance levels of first-year college students, as those factors returned statistically significant differences relative to the high school schedule. Future studies may investigate the possibility of causation as related to the high school schedule, as the scope of this study investigated a correlational relationship.

Further study in these areas may be helpful in assisting first-year college students in best assimilating to collegiate academics, and in so doing may help with decreasing attrition rates among those first-year students.

## Implications for the Field of Education

The results of this study and possible future studies help to fill the existing gap in research on the effect of the high school scheduling plan on academic performance in college. Studies on the academic performance of high school students in block and traditional schedules are plentiful (Trenta & Newman, 2002; Gruber & Onwuegbuzie, 2001; Lewis, et al., 2005; Washington, 2011). However, studies on the academic performance of college students as that relates to high school scheduling plans are limited, and this study helps to fill that gap. In the study conducted by Dexter, Tai and Sadler (2006), the researchers examined the academic performance of first-year college students reporting different academic schedules, looking specifically at academic performance in science. Their results showed that block scheduling does not appear to offer better preparation than traditional scheduling. This study had similar findings.

A statistically significant relationship was found in this study. This study revealed that students coming from a block schedule have poorer academic performance scores in the three academic performance areas of test anxiety, academic competence and time management during their first year of college. Because of these results, colleges may decide to implement measures to help support first-year students toward academic success in those areas, relative to the high school scheduling plan experienced. Additionally, high schools considering options for scheduling may consider more intentionally the effect the high school schedule may have on the academic performance of graduates continuing their education at a college or university.

## Summary

The final conclusion of this study reveals that first-year college students coming from a block schedule in high school have poorer academic performance scores than those students coming from a traditional schedule in three of the six measured areas of academic performance, during their first year of college. Among the six investigated areas of academic performance: GPA, Test Anxiety, Academic Competence, Test Competence, Study Strategies and Time Management, participants coming from a block schedule reported statistically significantly lower scores in Test Anxiety, Academic Competence and Time Management during their first year of college.

Results of this study highlighted the importance of investigating the academic performance of first-year college students relative to the high school scheduling plan those students experienced. Also highlighted was the importance of evaluating academic factors including test anxiety, academic competence, test competence, study strategies and time management as they relate to the overall academic performance of first-year college students. Mentoring first-year students, and providing a network of support tailored to the specific needs of an individual aids in helping students achieve academic success, and thereby aids in lowering attrition rates, increasing viability for the university as a whole.

Focusing efforts to understand each of these factors would be helpful in mentoring, advising and supporting first-year students as they assimilate to collegiate academic rigor in their first year of college, hopefully leading to both better perceptions of, and better academic performance, assisting in achieving academic success.

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# APPENDIX A: Self-report Survey items used to measure academic performance

Items used to measure cognitive domains and academic performance on the measurement instrument (Sansgiry, Bhosle & Sail, 2006). The Cronbach's coefficient alpha values for the scales measuring test anxiety (=0.9) academic competence (=0.7), test competence (=0.8), strategic studying (=0.7), and time management (=0.7) indicate acceptable reliability (Sansgiry, Bhosle & Sail, 2006).

The material presented in this study represents the opinions of the author and does not necessarily represent the views of Concordia University Nebraska.

**Test Anxiety**

**For the following statements please rate yourself according to how well the statements describe you. 1 = Not at all typical of me; 2 = Not very typical of me; 3 = Somewhat typical of me; 4 = Fairly typical of me; 5 = Very much typical of me**

1. Thoughts of doing poorly interfere with my performance on examinations\*
2. During an examination I frequently get so nervous that I forget facts I really know\*
3. While taking an important exam, I perspire a great deal\*
4. During examinations, I find myself thinking of things unrelated to the actual study material\*
5. I feel very panicky when I have to take an exam\*
6. After important tests, I am frequently so tense that my stomach gets upset\*
7. I usually feel my heart beating very fast during an exam\*
8. I usually get very depressed after taking an exam\*
9. I wish examinations did not bother me so much\*
10. Even when I'm well prepared for a test, I feel very anxious about it\*

**Please indicate your agreement or disagreement regarding the statements below using the scale provided by circling the number that best represents your opinion.**

**1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree**

**Academic Competence**

1. I am able to manage the academic course load in school so far\*
2. I can easily understand course material taught in school\*
3. I find the courses taught in school interesting\*
4. I am enjoying the classes offered in the curriculum\*
5. I always do my best to understand the course material taught in school\*

**Test Competence**

1. I can easily manage the amount of study material taught for an exam\*
2. I do not find it difficult to prepare for examinations\*
3. I can easily cope with examination tension\*
4. I have great difficulty managing the amount of study material for examination

**Time Management**

1. I find it very difficult to combine my study and leisure time.
2. I find it difficult to study regularly
3. I usually end up “cramming” for examinations
4. I can organize my study and leisure time easily\*
5. I always start preparing for an examination well in advance\*

**Study Strategies**

1. While I am studying, I regularly try to find out what questions professors may ask and how they may ask examination questions\*
2. I plan well in advance for the best way of handling a study subject\*
3. I review course material with my classmates while studying for examinations\*
4. I test my knowledge before taking an examination by means of mock examinations, tests, asking questions, etc.\*
5. While studying I regularly summarize the course material in my own words\*

\*= Reverse coded during statistical analysis to indicate that the higher the score the better the outcome.

**Additional Information**

According to the definitions listed below, what high school schedule did you experience?

Block Scheduling: Block Schedules include the A/B or Alternating Block, and are three to four classes every other day for an entire year with class time spanning seventy-five to ninety minutes. Intensive Block is four classes that meet every day for half a year for seventy-five to ninety minutes. Also classified as Block Scheduling are schedules that blend the Traditional and Block plans and often are classified as a modified block (Canady & Rettig, 1995).

Traditional Scheduling: Traditional schedules range from six to eight periods a day for an entire year, with the length of time in class spanning from forty-five to fifty-five minutes.

1 Block Schedule

2 Traditional Schedule

Gender

* + - * 1. Male

Female

Highest Level of Education completed by parent

Some High School and/or GED

High School

Associate’s Degree or some college

Bachelor’s Degree

Master’s Degree

Doctorate or other terminal degree

College GPA

0.00-4.00 scale

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