

The Relationship Between Wellness and Academic Success in First-year College Students

Howard Monroe Ballentine

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Steven M. Janosik - Chair
Joan B. Hirt
Elizabeth G. Creamer
Diana M. Ridgwell

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ABSTRACT

Persistence is an important issue in higher education (Tinto, 1987a). Although social and economic benefits of a college education are well documented (Baum & Ma, 2007; Institute for Higher Education Policy, 2004), during the last 100 years the college graduation rate has remained at approximately 50% (Education Policy Institute, 2004). While prior academic achievement has proven to be a successful predictor of success in college (Camara & Echternacht, 2000; Sadler, Cohen, & Kockesen, 1997; Tinto, 1993), it does not account for all the variability in student retention. Research has shown that other factors, including social adaptation, physical fitness, and emotional stability can contribute to whether an individual continues to persist past the first year of college (Astin, 1993; McClanahan, 2004; Tinto, 1987b).

The purpose of this study was to examine the relationship between self-reported wellness and academic success in first-year health science college students. In addition the study sought to determine if the relationship between wellness and academic success differs by gender, academic program, or ethnicity. Also examined was whether the factors of wellness could be used to predict academic success. Wellness was defined using the Myers and Sweeney (2005) conceptual framework, as measured in a series of constructs, including the coping self, creative self, essential self, physical self, social self and an overall wellness score. Academic success was defined as first semester grade point average. The study also controlled for high school grade point average (HSGPA) and scholastic aptitude test score (SAT) as factors of prior academic achievement that may affect academic success in college.

The findings suggest that the impact of wellness differs by ethnicity and academic program. In addition, certain factors of wellness can be used to help predict academic success in the first semester of college. Finally, overall wellness had little if any bearing on academic success in first-time, first-year students.

Dedication

I would like to dedicate this dissertation to my children John Connor and Christopher Norman Ballentine. May this serve as an example that you can achieve whatever you desire.

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CHAPTER ONE - INTRODUCTION

Persistence is an important issue in higher education (Tinto, 1987a). There are well documented benefits to successful completion of a post-secondary degree (Institute for Higher Education Policy, 2004). These benefits can be viewed from the public or individual perspectives. Within each of these viewpoints the benefits may be reviewed in terms of economic and social impacts (Baum & Ma, 2007).

There are public economic benefits to increasing persistence within higher education. Individuals who are more educated earn higher salaries. Individuals with bachelor's degrees earn 65% more per week than individuals with a high school diploma (Bureau of Labor Statistics, 2008). This in turn creates increased tax revenues. Higher revenues are realized through increased disposable income spent on consumer products at both the federal level and local level (Baum & Ma, 2007). Another benefit from an educated workforce is the decreased need for government assistance. Individuals who have a high school diploma receive government assistance at twice the rate of those with Bachelor's degrees (Institute for Higher Education Policy, 2004).

There are also individual economic benefits to increasing higher education success. Individuals with college degrees earn more throughout a lifetime than those who complete high school only (Baum & Ma, 2007; Bureau of Labor Statistics, 2008). In addition, individuals with more education have greater flexibility within the workforce (Watts, 2001). This means that they are more easily able to change jobs and have increased professional opportunities.

Benefits to increasing persistence within higher education may be social as well. From a public standpoint, increased education translates into lower crime rates (Institute for Higher Education Policy, 2004). In addition, people with more education tend to give more to charity

and participate in more community service (Baum & Ma, 2007). Increased education levels also create social benefits for the individual. Those with more education tend to report better health and higher quality of life than their less educated counterparts (Baum & Ma). In addition, they often have more hobbies and increased personal status (McClanahan, 2004). Persistence is also of benefit to the higher education system. Institutions with higher persistence rates are more stable in terms of their enrollment and finances. Administrators at these institutions are able to more efficiently plan for course offerings, services, faculty contracts and programs based on stable enrollment.

Factors that Influence Persistence

There are many factors that influence persistence. Students who do not feel that they belong at college are more likely to drop out (Tinto, 1987a). This lack of belonging could be in either the social or academic setting. Students who have fewer social relationships are also less likely to persist past the first year (Astin, 1993). These students may feel isolated, or have fewer opportunities to discuss personal and academic problems that they may have.

One of the most highly correlated factors affecting persistence in higher education is prior academic success. Grade point average in high school has been associated with success in college (Adebayo, 2008; Camera & Echternacht, 2000; Tinto, 1993). This is true across all age groups, gender, and ethnicity. Performance on standardized tests such as the Scholastic Aptitude Test (SAT) is also highly correlated with success in the first year of college (Camera & Echternacht; Eno, McLaughlin, Brozovsky, & Sheldon, 1998; Tinto). These factors are important to consider when discussing persistence in higher education.

Academic success in college is an important factor when considering persistence. Academic success can be defined as grade point average in college. A student who is successful

in the classroom will have higher self-esteem and is more likely to persist into the subsequent semester (Bank, Biddle, & Slavings, 1994). Since one of four first-year students drop out after the first year (McClanahan, 2004), it is important to consider grade point average during that period. Students face a myriad of changes during their transition to higher education and that may have an effect on their performance within the classroom environment.

There are several factors that can influence academic success. As previously noted, academic achievement in high school can be a powerful predictor of success in higher education (Tinto, 1993). However, there are other factors that may be involved. First-time, first-year students face changes in lifestyle, authority, environment, social life, and relationships in addition to the rigors of academic responsibilities. One's ability to cope and manage these changes can affect the ability to be successful (Astin, 1993). Students who are successful within higher education typically have more social relationships than those who are not successful. These students may have a larger support network, and have an increased sense of belonging with their environment.

Stress is another factor that can affect an individual's persistence in higher education. Students who have better stress management skills are more successful in college, as stress has a negative influence on academic performance (Zajacova, Lynch, & Espenshade, 2005). It is also important for students who are transitioning to college to take care of themselves physically. Illness or lack of fitness may contribute negatively to academic performance (Zhang & RiCharde, 1998).

The Concept of Wellness

Wellness is a concept that combines many of these factors. The connection between the mind and body has been written about for centuries (Myers & Sweeney, 2005). This link has

grown to include the spiritual well-being as well (Larson, 1999). The modern wellness movement has been championed by Halbert Dunn, who defined wellness as “an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable. It requires that the individual maintain a continuum of balance and purposeful direction within the environment where he (sic) is functioning” (Dunn, 1961, p. 4). Dunn’s work was followed by that of Bill Hettler, who in the 1970s established the National Wellness Institute. Hettler defined wellness as “an active process through which people become aware of, and make choices about, a more successful existence” (Hettler, 1984, p. 14). Other authors and scholars have followed and expanded on the literature concerning the correlation between wellness and success.

Several wellness models have been developed. Many early models of wellness came from the perspective of the medical field (Myers & Sweeney, 2005). These models focused on establishing a differentiation between being a lack of illness and being well. The area of wellness was then addressed in the mental health professions, specifically counseling, beginning in the early 1990s. These models focused on positive psychology and attempted to determine correlates between health, quality of life, and longevity (Myers & Sweeney). These early models have given way to more evidence-based models intended to inform clinical practice.

The Indivisible Self Model of Wellness

One framework for measuring wellness is the Indivisible Self Model (ISM) developed by Myers and Sweeney (2005). The ISM model was developed by analyzing results of more than a decade of wellness studies based on a prior model. Assessment data gathered through the use of this prior model led to the creation of a comprehensive, evidence-based model of wellness that could be applied to multiple settings (Myers & Sweeney). The ISM accounts for the fact that

humans do not function in isolation but rather that context has a large influence on behavior (Myers & Sweeney). The ISM includes a general measurement of overall wellness as well as five, second-order factors that make up an individual's overall well-being. The five second-order factors include the coping self, creative self, essential self, physical self, and social self (Myers & Sweeney).

Each second-order factor evaluates distinct elements of an individual's environment. The coping self evaluates the ability to respond to life events and manage the negative aspects of those events. This could be accomplished through stress management techniques, leisure time, or having realistic beliefs. The creative self evaluates attributes that make individuals unique and able to contribute to the world around them. This may involve work, humor, thinking, or emotions. The essential self describes the ability to make meaning of the world and events that surround an individual. Included in this context are an individual's gender and cultural identity, spirituality, and self-care. The physical self is concerned with biological and physiological functioning that determines an individual's development, including exercise and nutrition. The social self evaluates an individual's ability to connect with others through relationships. Family ties, friendships, and emotional relationships are assessed within this factor.

To measure individual wellness using the ISM, Myers developed the Five-Factor Wellness Inventory (5F-WEL). The 5F-WEL is an instrument that was created based on a normative sample of 3,343 adult participants (Abrahams & Balkin, 2006). The items are grouped into areas related to creative, coping, essential, physical, and social wellness. A full profile based on the 5F-WEL contains 23 factor scores, four context scores, and one overall life satisfaction index. Different versions of the 5F-WEL have been developed to account for reading level (third-grade, sixth-grade, and ninth-grade) and for use with cultures outside the United States.

Applying the Indivisible Self Model to Higher Education

To date, the ISM (Myers & Sweeney, 2004) has not been extensively used in higher education. However, studies using the ISM have shown that lower wellness scores are related to fewer social relationships and increased stress in college students (Myers & Betchel, 2004). In addition, increased overall levels of wellness may be related to successful social relationships (Shurts & Myers, 2005). The number of social relationships within higher education may have an effect on how well a student adjusts to the environment. Students with increased levels of stress or decreased outlets for coping with a changing environment may have more difficulty in the classroom (Astin, 1993; Hermon & Hazler, 1999).

Statement of the Problem

There are many factors that influence persistence. High school grade point average is positively correlated with a student's grade point average in college (Adebayo, 2008; Camera & Echternacht, 2000; Tinto, 1993). Standardized tests, including the scholastic aptitude test (SAT), are also positively correlated with college grade point average (Camera & Echternacht; Eno, et al., 1998; Tinto). Prior academic performance is not the only factor to consider when predicting academic success in college. A student's ability to pay for college, prior and current social relationships, and fit within an institution's culture are items that can significantly impact the transition from high school to college (Astin, 1993; Horn & Peter, 2003).

Once in college, one of the largest influences on persistence is academic success in the classroom (Bank, et al., 1994). Students who have lower grade point averages after the first semester return at a lower rate than those with higher grade point averages (Bank, et al.). The ability to achieve success in the classroom can be influenced by many things. Institutional fit,

social relationships, self perception of health, and stimulation within the classroom can have an effect on persistence.

Wellness is a concept that combines many of these factors. Often, wellness is considered to be limited to physical well-being (Myers & Sweeney, 2005). However, more recent literature suggests that the term wellness also encompasses social relationships, mental well-being, and satisfaction with the surroundings (Larson, 1999; Myers & Sweeney). The ISM (Myers & Sweeney) can be used to assess an individual's level of wellness. It focuses on areas related to coping self, creative self, essential self, physical self, and social self to determine how well people interact with and function within their environment. The ISM measures wellness via the 5F-WEL and it has been adapted for use with various educational levels and cultures.

The ISM has not been applied extensively in higher education. Prior studies (Myers & Betchel, 2004; Shurts & Myers, 2005) have focused on overall wellness and its relationship to social relationships. It has been shown that wellness is related to the ability of an individual to initiate and maintain these relationships (Shurts & Myers). However, little is known about how overall wellness or factors of wellness contribute to academic success in college students.

While there is a variety of literature concerning wellness (Hettler, 1984; Larson, 1999; Myers & Betchel, 2004; Myers & Sweeney, 2005; Shurts & Myers, 2005), academic success (Adebayo, 2008; Astin, 1993; Camera & Echternacht, 2000; Tinto, 1993), and higher education, there has yet to be a comprehensive study that integrates these concepts. The current study addressed this area of need within the literature.

Purpose Statement

The purpose of this study was to examine the relationship between self-reported wellness and academic success in first-year health science college students. In addition, the study sought

to determine if the relationship between wellness and academic success differs by gender, academic program, or ethnicity. Also examined was whether the factors of wellness could be used to predict academic success. Wellness was defined using the Myers and Sweeney (2005) conceptual framework, as measured in a series of constructs, including the coping self, creative self, essential self, physical self, social self and an overall wellness score. Academic success was defined as first semester grade point average. The study also controlled for high school grade point average (HSGPA) and scholastic aptitude test score (SAT) as factors of prior academic achievement that may affect academic success in college.

The sample used in this study included first-time, first-year college students attending a small, private institution, specializing in allied health education, in the southeast United States. The institution annually enrolls more than 1,200 students with 15% of those being minorities. Programs are offered in such health care areas as nursing, occupational therapy, and physician assistant. For the purposes of this study first-time, first-year college student refers to individuals who had not previously attended any higher education institution.

Data for this study included responses to the five-factor wellness (5F-WEL) questionnaire. Additional metrics collected included academic success as measured through first semester college grade point average, academic program information, and demographic data.

Research Questions

1. What is the relationship between the factors of wellness and academic success in first-time, first-year college students as defined by first-semester grade-point average?
2. Is the relationship between the factors of wellness and academic success in first-time, first-year college students as defined by first-semester grade-point average different based on gender?

3. Is the relationship between the factors of wellness and academic success in first-time, first-year college students as defined by first-semester grade-point average different based on academic department?
4. Is the relationship between the factors of wellness and academic success in first-time, first-year college students as defined by first-semester grade-point average different based on ethnicity?
5. Do the factors of wellness, in addition to high school grade-point average and SAT score, predict academic success in first-time, first-year college students as defined by first-semester grade-point average?

Significance of the Study

The results of this study were significant for several constituencies with respect to future practice, research, and policy.

Future Practice

One group that could take advantage of the findings includes those individuals who work in campus wellness programs. The results of this study provided program coordinators with information regarding areas of wellness that have an influence on first-time, first-year student's academic performance. This information could be used to examine the content of wellness programs that are offered to first-year students.

A second group that may be interested in the findings include high school administrators. The results of this study provided information regarding areas of wellness that may affect the ability of high school students to be academically successful in college. This information could be used to assist students as they prepare to transition from the secondary school environment to the higher education environment.

A third group that may be interested in the findings is first-year college students. The results of this study provided information regarding areas of wellness and how they relate to success in higher education. Individual students could use this information during their transition to college.

Future Research

The present study also had significance for future research. I investigated how different factors of wellness are related to academic success in first-time, first-year college students. Future studies could include a qualitative exploration of how students and parents feel different aspects of wellness contribute to their academic success. This type of study would increase the information available concerning wellness and academic success among college students.

Future studies could also include a longitudinal analysis of multiple cohorts of first-time, first-year students. This could be performed in a similar manner to the current study using the 5F-WEL questionnaire. This type of study would increase the available information regarding how wellness factors are associated with academic success over the course of the undergraduate career.

The current study included an institution from a single state. Future studies could focus on other geographic areas. This would broaden the information available concerning whether the relationships between wellness factors and academic success are similar across different locations.

Future Policy

This study was also significant for future policy. The results provided policymakers involved in K-12 education with information about how first-time, first-year students are

prepared for college. Policymakers might use this information when assessing physical education policies intended to help students prepare for higher education.

Policymakers from other areas could also use the information from the current study. The results provided policymakers in higher education with information regarding how recent high school graduates are prepared for the transition to college. The study provided information related to first-time, first-year students' level of coping ability, physical fitness, and social relationship skills. Policymakers might use this information when assessing policies related to helping first-time, first-year students become successful.

Higher education policymakers would also be able to use this information in other areas. The results provided policymakers with information regarding which areas of wellness had the highest impact on academic success in first-time, first-year college students. Policymakers might use this information when reviewing policies related to identifying at-risk students in their first semester.

Delimitations

The current study had some initial delimitations. The first dealt with the institution involved. The institution was a small private college. It is possible that students at this institution differed in some important way from students at other types of institutions, such as public institutions. This would limit the scope to which results of the current study could be applied.

A second delimitation was related to the geographic location of the institution. The institution was located in one state in the southeastern region of the United States. It is possible that these students would not share the same experiences as those in other geographic regions. Surveying students from a different geographic area might have led to different results.

A third delimitation related to the definition of academic success in the study. The current study defined academic success as grade-point average at the end of the first semester. There are other definitions of academic success, such as graduation, persistence, or satisfaction with the curriculum. Using some other measure of success might have led to different results.

Despite these delimitations the current study made a valuable contribution to the literature. Previous research has focused on the role of wellness in social relationships. However, there was limited information regarding how factors of wellness contributed to the academic success of first-year college students. This study was designed to provide more information this topic.

Organization of the Study

The present study is organized in five chapters. The first chapter included an introduction to the topic as well as research questions, significance of the study, and delimitations. Chapter Two offers a summary of literature related to the topic. Chapter Three describes the methodology involved in the study, including sampling technique, and data collection and analysis procedures. Chapter Four explains the results of the study. The final chapter discusses the results in more detail along with implications for future research, policy, and practice.

CHAPTER TWO - REVIEW OF LITERATURE

The purpose of this study was to examine whether wellness affects academic success. To examine this relationship, first it was necessary to examine the literature on factors that influence academic success. Two groups of studies emerged in this review: studies related to academic factors that affect success such as high school grade point average and standardized test scores, and studies related to students' non-academic factors such as gender, ethnicity, and academic program.

To understand fully the relationship between academic success and wellness, it was also necessary to explore the literature related to wellness. The literature in this area is extensive and therefore an exhaustive review was not possible. However, literature related to the specific aspects of wellness addressed in my study was reviewed, including studies related to coping ability, creativity, essential meaning (self-identity, spirituality), physical well-being, and social support. These five areas are the focus of the Indivisible Self Model (ISM) described by Myers and Sweeney (2005). Therefore, this review included literature describing how the ISM has been applied to studies about college students.

Factors that Influence Academic Success

Many things can influence a college student's academic success. Some of these are related to prior academic achievement. However, there are also non-academic factors that can contribute to how a college student performs in the classroom. Both academic and non-academic factors have been shown to be related to overall achievement as well as persistence in higher education.

Academic Factors

Academic factors, specifically prior academic achievement, can help predict the future academic success of a student in higher education (Camara & Echnernacht, 2000). There have been several studies that discuss the effect that high school grade point average has on academic success in higher education (Camara & Echnernacht; Harackiewicz, Barron, & Tauer, 2002; Reese & Dunn, 2008; Sadler, et al., 1997; Tinto, 1993). The consensus of this literature is that students with high aptitude in high school have higher grade-point averages in college. Recently, Adebayo (2008) continued this research by surveying 147 students who were accepted to a public university's conditional acceptance program. Similar to previous findings, the results indicated that high school grade point average was one of the best predictors of first semester college grade point average ($r = 0.36, p < 0.01$). Students who performed well in high school were more likely to perform well in college (Adebayo).

It has also been suggested that students with higher grade point averages in high school are more likely to persist in college (Tinto, 1993). Ishitani (2003) followed 1,747 college students for a period of five academic years in an effort to develop a longitudinal model of student attrition. The data showed that higher high school grade point average was significantly related to decreased attrition during the first year. The author concluded that this information can be used to help develop a time-dependent model of student attrition.

Standardized test scores have also been shown to be a strong predictor of success in higher education (Camara & Echnernacht, 2000; Eno, et al., 1998; Harackiewicz, et al., 2002). This was validated in a study by Johnson (2006), which followed almost 4,000 entering first year students at a public university for 12 consecutive semesters. The results revealed that those individuals with higher SAT Reasoning (SAT) scores were more likely to persist throughout the

study ($p < 0.01$). Similarly, a study of more than 6,800 college students by Allen, Robbins, Casillas, and Oh (2008) showed that higher American College Testing Assessment (ACT) scores were related to higher college grade-point averages.

Although it has been shown that prior academic achievement can be a strong predictor of success in college, other factors may have an impact on a student. Non-academic factors such as gender, ethnicity, and academic program have been shown to play a role in a student's college achievement.

Non-Academic Factors

Many factors outside of the classroom have been shown to be predictors of student achievement in higher education. Authors such as Astin (1993) and Tinto (1993) have emphasized the need to look beyond prior academic success when determining students who may be at risk for not continuing in college. Distinct differences have been drawn between students based on characteristics such as gender and ethnicity (DeBerard & Julka, 2000; DeBerard, Speilmans, & Julka, 2004; Postsecondary Education Opportunity, 2009), and academic program (Leppel, 2001).

Studies have demonstrated that gender plays a role in a student's achievement in higher education. During the last 20 years, women who begin college are more likely to obtain a bachelor's degree than men (Postsecondary Education Opportunity, 2009). However, differences between men and women can be seen long before graduation. Gender is also related to academic performance throughout the college years. For example, men are more likely than women to have low first semester grade point averages (DeBerard & Julka, 2000). DeBerard, et al. (2004), who studied 204 private university students in an attempt to determine risk factors for attrition and low academic performance, substantiated this. The results indicated that women are more

likely to perform well academically during the first year in college. However, the authors noted that this may be due to the types of courses taken rather than gender alone. Indeed, these differences are not universal across all types of courses. Men tend to have greater success than women in certain types of courses such as business and engineering (Leppel, 2001; Schram, 1996). However, the literature in this area is not conclusive. For example, Keller, Crouse, and Trusheim (1993) studied 3,304 first-year students entering a mid-atlantic university to determine if gender influenced academic performance. The results indicated that there is no significant difference in first semester grade point average based on gender.

Another non-academic factor that has been shown to differentiate students is ethnicity. Students of Hispanic heritage or African Americans are less likely to graduate than those of other ethnicities (Postsecondary Education Opportunity, 2009). Cabrera, Nora, Terenzini, Pascarella, and Hagedorn (1999) used data from 18 colleges and universities that participated in the National Study of Student Learning to examine the role of discrimination in the transition of college students. The authors concluded that the reason students decide not to persist in higher education varies significantly according to ethnicity. There have been many theories as to why this difference occurs. Prior educational experiences may lead to a lack of preparedness among minorities (Tinto, 1987b). Other research has shown that students who experience prejudice on campus are more likely to drop-out (Cabrera, et al., 1999; Hurtado, Carter, & Spuler, 1996). These experiences can place additional psychological and social stress on individuals and subsequently reduce the sense of belonging students have with the institution (Cabrera, et al.).

The academic program chosen by students when entering college can have a profound impact on their future academic success, although research on the topic is mixed. Prior research has emphasized the need to fit the student's educational aspirations with the mission of the

institution (Tinto, 1993). Some models emphasize pre-college programming to ensure that students choose the correct program for their interests (Educational Policy Institute, 2004). This is because students who are undecided when they begin college may be less likely to remain at the institution. St. John, Hu, Simmons, Carter, and Weber (2004) analyzed data from 264,142 students enrolled in the Indiana public higher education system. The authors analyzed data pertaining to financial aid, major, ethnicity, and prior academic achievement to determine factors that influenced persistence. The data showed that there is a difference in the influence that major has on persistence based on ethnicity. In addition, the authors concluded that students who did not declare a major prior to enrollment were less likely to continue beyond the first year. This is similar to a study performed by Graunke and Woosley (2005), who analyzed data from 1,093 college sophomores to determine factors that affected persistence. The authors concluded that commitment to academic major was significantly correlated with higher grade point averages and persistence. This is in direct contrast to studies showing that there is no difference in the persistence rate between students who have chosen a major and those that have not (Lewallen, 1993; Pascarella & Terenzini, 1991).

Academic success may not be based only on specific academic and non-academic factors. Studies have shown that a student's social relationships and stress management techniques may also help determine their success at the college level (Astin, 1993; Tinto, 1993). Many of these factors are associated with the concept of "wellness."

Wellness

Wellness is a concept that has been described for centuries, beginning with Aristotle and other Greek philosophers (Myers & Sweeney, 2005). Aristotle described the individual's ability to live and fare well, an idea identified as eudaemonia (Myers & Sweeney). Modern definitions

of wellness include those offered by the World Health Organization (WHO) in 1947. The WHO described wellness as “physical, social, and mental well being, not just the absence of disease” (WHO, 1964, p.1). This implies a broader context that extends beyond physical health alone. The definition of wellness was further broadened by Halbert Dunn in the 1970s. He described wellness as “an integrated method of functioning that is oriented toward maximizing the potential of which an individual is capable” (Dunn, 1961, p. 4). There are several models that attempt to standardize the concept of wellness, but no one definition currently exists (Roscoe, 2009).

On college campuses wellness is increasingly used to describe programs that promote student health and well-being (Granello, 1999). These programs promote the concept that an individual’s wellness goes beyond the physical to encompass multiple factors that all contribute to overall functioning. In concept, students who have a high level of overall functioning are more likely to have success in the classroom.

There are many concepts that can be described by the term wellness. These may include people’s ability to cope with stressful situations, how they view their contributions to the world (creativity), their self-identity (essential self), their physical well-being, or the amount of support they have from other individuals (social self). Each of these factors can contribute to how individuals function and helps determine their overall level of wellness (Myers & Sweeney, 2005).

Coping Skills

The ability to manage high-stress situations through the use of coping skills is a common component of wellness models. Even in early writings, authors such as Hettler (1980) reported the importance of the ability to constructively express, manage and integrate feelings. The model

created by Crose, Nicholas, Gobble, and Frank (1992) also included coping as a component of emotional wellness. This is similar to other wellness models that have emphasized the importance of managing one's feelings in a given situation (Roscoe, 2009).

The concept of managing stress through coping skills has also been applied to higher education. This may be in response to the fact that there has been an increase in the level of stress reported by college students during the past 30 years (Sax, 1997). This increase in stress contributes to individuals' academic performance, as well as their choice of whether to remain at an institution. This may be especially true for students transitioning from high school to college. Those students who cannot manage the change in environment may have difficulty in the classroom (Wang, Chen, Zhao, & Xu, 2006). In addition, students often engage in unhealthy behaviors (overeating, excessive alcohol consumption, etc.) in response to increased stress levels (Pritchard, Wilson, & Yamnitz, 2007).

Effective coping strategies may help ease transition and help students be more successful in college. Individuals who have experienced active family coping strategies have higher levels of positive self-adjustment during the first year of college (Feenstra, Banyard, Rines, & Hopkins, 2001). In addition, individual coping strategies also have a positive impact on transition from high school to college. Wang, et al. (2006) gathered data from 311 first-year students in an effort to determine how coping and social support affected the transition from high school to college. Each student completed the Adaptation Behavior to College Questionnaire, Mental Health Scale, Simple Coping Style Questionnaire, and Social Support Subscale. The results indicated that students with well-developed individual coping strategies have a faster transition from high school to college. The authors concluded that students would benefit from added social and institutional support related to development of coping strategies.

The effect of coping strategies has also been directly tied to grade point average in college students. Struthers, Perry, and Menec (2000) studied 203 college students to determine if stress and coping strategies were related to academic success. Using a structural equation model, the authors concluded that stress levels were inversely related to grades in the course. In addition, students' grades were positively correlated to their problem-focused coping and emotion-focused coping. These findings were echoed by Clifton, Perry, Roberts, and Peter (2008), who investigated the relationship between psychological dispositions and academic achievement in 854 college students. The authors concluded that coping strategies significantly affected the grade point averages of the participants.

The positive effect of coping strategies has been demonstrated after the first-year of college. Beddoe and Murphy (2004) followed 23 nursing students during a voluntary eight-week course on mindful stress reduction techniques. The authors concluded that the introduction of mindfulness education is related to an increase in coping skills among nursing students. This increase in turn leads to a reduction in overall stress and an increase in empathy towards patients (Beddoe & Murphy).

Creativity

The contributions made by individuals as to how they can contribute to the world is another concept central to wellness. Alder (1954) referred to the creative self as how individuals make a unique place among others. This can be through their emotions, humor, or work (Myers & Sweeney, 2005). Positive experiences or control of these areas in turn affect the overall sense of wellness within the individual. Those who can use positive humor, control their emotions, and have a sense of a positive contribution through work are more likely to be healthy (Myers & Sweeney, 2005).

Aspects of creativity and wellness have been explored in college students. Sinclair and Myers (2004) studied 272 female students from a college in the Midwest. Instrumentation included an objectified body consciousness questionnaire and the Five-Factor Wellness Inventory. The results indicated that students who have lower assessment scores in areas related to creativity are more likely to have a poor body image. Similar research has shown that positive work and leisure activities are correlated with psychological well-being. Hermon and Hazler (1999) assessed 155 undergraduate students to investigate the relationship between work and self-reported wellness. The data showed that “the variables of self-regulation and work, recreation, and leisure of the wellness model seem to be the best predictors of a college students’ psychological well-being” (Hermon & Hazler, 1999, p. 341). Those students who are not happy with aspects of their lives related to work and/or recreation have more trouble concentrating in the classroom, and therefore could have a decrease in academic success.

Humor is another factor that can contribute to an individual’s psychological well-being. Humor in the classroom has been shown to increase content retention (Garner, 2006). This may occur by creating a more relaxed atmosphere that allows students to better assimilate information (Korobkin, 1989). Students who are better able to retain information have an increased chance of academic success.

There is limited information associating aspects of creativity and academic achievement. Richards and Casey (1975) found a weak positive correlation between creativity variables and grade point average in 278 first-year college students. This was contradictory to the work by Stallings (1969), who reported that the Torrance Figural Test of Creative Thinking had little value when attempting to predict course grades.

Essential Self

Another factor described by the term wellness is an individual's ability to make meaning of processes related to life (Myers & Sweeney, 2005). This includes such items as self-identity, cultural identity, self-care, and spirituality (Myers & Sweeney). Some literature in this area has focused on the developmental aspects of wellness. This includes continual learning by individuals that allows them to "live freely and fully in a complex world" (Hatfield & Hatfield, 1992, p.1). This train of thought is an extension of the work published by John Dewey, who believed that it should be a life goal for individuals to develop to their fullest capacity (1968).

The idea of self-identity, cultural identity, and spirituality in education has been explored in the context of retention and transition to college. Authors have noted that educational goals may be affected if gay, lesbian, and bi-sexual students are concerned about acceptance in society (Zubernis & Snyder, 2007). These students have added stressors that may affect their performance in the classroom. The overall campus climate may also contribute to the stress perceived by sexual minority students. Evans and Broido (1999) described the coming out process of 20 gay, lesbian, and bi-sexual students. Several participants noted that the institutional environment did not make them feel comfortable with their identity. The authors concluded that the development of sexual minority students is affected by how they feel about their overall environment.

These environmental issues also extend to cultural identity. Minority students may not be prepared for the cultural difference they experience in college (Education Policy Institute, 2004). Students who are not comfortable in their environment may reduce the number of interactions they have with faculty, staff, and other students. This contributes to the fact that fewer than 40% of Hispanic and African American students who entered college between 1993 and 2007

graduated with a bachelor's degree (Postsecondary Education Opportunity, 2009). In addition, ethnicity has been correlated to differences in grade point average and overall academic achievement (Cabrera, et al., 1999).

This area of wellness is not limited to issues related to culture or sexuality. Sinclair and Myers (2004) found that body consciousness is related to wellness in college women. Those with more concern about their appearance have lower overall wellness scores.

Other areas related to the essential self may affect a student's ability to cope with the college environment. A study aimed at validating the Coping with the College Environment Scale showed that spirituality was one of six areas that contributed significantly to the variance in scores (Ackerman & Morrow, 2007). This corresponds to other literature that has shown that individuals with higher levels of spirituality have improved social relationships and coping skills (Koenig, 2001). Spirituality has also been related to grade point average in college. George, Dixon, Stansal, Gelb, and Pheri (2008) investigated factors that contributed to the academic success of 231 private, liberal arts college students. The authors concluded that there was a positive correlation between greater reported spirituality and overall grade point average.

Physical Well-being

Although the modern concept of wellness expands upon areas outside of an individual's physical state, it remains an essential component to overall functioning. Individuals who live longer put an emphasis on good nutrition and exercise (Myers & Sweeney, 2005). This has traditionally been the focus of wellness models based in medicine. However, newer models of wellness come from a psychological perspective and include physical wellness as a single component of the overall model rather than its focus.

Physical fitness has been shown to affect the academic performance as well as the retention of college students. However, research has shown mixed results. Some researchers have found a positive relationship between fitness and retention. Zhang and RiCharde (1998) studied 462 first-year students at a public university to determine whether fitness played a role in academic success. The data showed that students with higher fitness scores are significantly more likely to remain at the institution. However, co-variances were not included in the analysis and the institution required a vigorous physical fitness regimen as part of the first-year student experience. In addition, Trockel, Barnes, and Egget (2000) studied 200 resident students at a large private university to determine whether there was a relationship between grade-point average and certain healthy behaviors. The authors concluded that there was a positive relationship between strength training and grade-point average.

Other studies have found that an increased tendency towards physical activity is related to lower grade-point averages. Mansfield, Pinto, Parente, and Wortman (2004) disseminated questionnaires to 304 undergraduate students at a public university in a study designed to investigate the relationship between self-control and retention. The authors noted that students who performed more poorly academically have higher physical activity scores. They indicated that this may be due to student's propensity for physical activity (an enjoyable activity) rather than academic activity (a rigorous activity). In another study, Turbow (1985) studied 851 college students and found that those who exercised seven or more hours per week had lower grade-point averages than those who exercised less than seven hours per week or not at all.

Physical activity typically tends to diminish during the summer before and the first semester of college (Han, Dinger, & Hull, 2008). In fact, the majority of college students may not engage in enough physical activity to be considered healthy (Irwin, 2007). However, there is

evidence that fitness education can make a difference in physical health. Even short-term courses produce a change in attitude about physical fitness (Mack & Shaddox, 2004).

While there is no doubt that an increase in physical activity can lead to fewer health problems, the research has shown mixed results concerning the relationship between physical activity and healthy behaviors (Seo, Nehl, Agle, & Ma, 2007). Wilson, Pritchard, and Schaffer (2004) studied 218 undergraduate students at a midwestern university and found that participation in sports is related to an increase in alcohol consumption. Others have found the opposite effect. Carlini-Cortium & de Carvalho (1993) gathered data from more than 16,000 high school students throughout Brazil. The authors concluded that there is no association between sports-related activity and substance abuse. Similarly, some literature suggests that increased physical activity is associated with a decrease in smoking (Vickers, et al., 2003), while others have found no relationship (Johnson, Nichols, Sallis, Calfas, & Hovell, 1998).

Social Self

The support that individuals have through family, friends, and other social contacts plays a large role in how they view their situation. Appropriate social support is “positively correlated with both physical and emotional health and provides a buffer against stress” (Myers & Sweeney, 2005, p. 27). Some authors have concluded that social support is critical to many areas of health, including reduced mortality (Pagel, Erdly, & Becker, 1987). However, others have downplayed the role of social relationships. Thoits (1995) reported that while there are benefits to strong social relationships, they do not protect an individual against major life events. The area of social wellness has appeared in many models, including those by Hettler (1984), and Ardell (1977). These models stress the importance of social relationships and how they can lead to a healthier life.

Much of the literature concerning transition to college discusses the importance of social integration (also called social capital). Interaction with a peer group may be the largest factor contributing to student's academic success (Astin, 1993). This indicates that students who are able to form lasting social relationships are more likely to be successful. This was reinforced in a study of first-year student interest groups by Tinto and Goodsell (1993). The authors concluded that individuals who participated in these interest groups had higher grade-point averages than their peers who did not participate. In addition, the authors noted that the positive benefit may be due to the increase in social relationship of participants.

Other studies have found that interaction with faculty members also has a significant effect on persistence and student success (Astin, 1993; Educational Policy Institute, 2004; Tinto, 1987b). Faculty members can have profound affects on a student's performance through mentoring and guidance.

Social relationships affect not only persistence in higher education, but overall student health as well. Some literature suggests that increased student interaction is related to a better sense of well-being (Reifman & Dunkel-Schetter, 1990). Those who are able to navigate the social network at their institution may feel a sense of fit that results in higher self-esteem and a positive outlook. However, it is important to consider the quality of interaction as well as the frequency. Negative interactions may be associated with greater health problems. Edwards, Hershberger, Russell, & Markert (2001) studied 206 undergraduate students to determine the effects of positive and negative social interaction. The data showed individuals who noted negative social interaction also had a greater number of physical health problems. The authors concluded that negative social interactions are associated with lower physical wellness.

These five factors create an overall picture of how individuals manage the different situations that they encounter on a daily basis. They are also the basis for the Indivisible Self Model (ISM) of wellness (Myers & Sweeney, 2005). This model has been applied in multiple studies in an attempt to create a way of describing how individuals are affected by their environment (Myers & Sweeney, 2005).

The Indivisible Self Model of Wellness

The ISM is an extension of a previous model of wellness, the Wheel of Wellness that was first developed in 1991 (Myers & Sweeney, 2005). The ISM uses multiple contexts to create an overall profile of an individual's wellness. Studies have employed the ISM in a variety of areas including higher education.

The ISM in Higher Education

Wellness is a concept that is not new to higher education. Individuals' overall wellness may play a key role in their academic success and adjustment to college. While the ISM has not been used extensively in higher education, previous studies using the ISM have shown that students who live in residence halls have higher wellness levels than those who live off-campus (Enochs, 2001). This may be due to the relationships formed while living on-campus. Friendships and the ability to create social networks may contribute to the well-being of undergraduate students (Hermon & Hazler, 1999).

However, students believe that the physical component of wellness has the highest impact on their overall satisfaction and success in college (Archer, Probert, & Gage, 1987). Students' physical and leisure activities contribute significantly to their overall psychological well-being (Hermon & Hazler, 1999). Whether this has an affect on academic achievement is debatable. However, instruments have been developed that show a relationship between grade-

point average and the different areas of wellness. Becker, et al. (2009) surveyed 2149 undergraduate students to provide validity data for the Salutogenic Wellness Promotion Scale. The authors concluded that there was a positive relationship between several areas of wellness (social, intellectual, physical, emotional, environmental, spiritual, vocational) and grade point average.

In addition, stress has a negative affect on overall wellness in college students. Myers and Bechel (2004) studied the responses of 179 first-year cadets to a wellness inventory. The authors concluded that those who feel more connected with others experience a greater buffer against stress.

The Indivisible Self Model in Other Contexts

The ISM has proven to be a useful tool when applied to areas outside of higher education. It has been used to help understand areas of need for different populations, including counseling clientele, corporate, and medical patient populations. In counseling, the research using the ISM has shown that there is a relationship between marital satisfaction, wellness, and race (Myers, et al., 2005). This suggests that the effect of wellness on relationships is a complex concept that cannot be defined by a single differentiating characteristic. In the corporate environment, research using the ISM has shown that wellness is related to job satisfaction (Connolly, 2000). In the medical field studies using the ISM have shown that patients suffering from extreme headaches report higher stress levels and lower levels of nutrition compared to an adult norm (Degges-White, Myers, Adelman, & Pastoor, 2003).

The literature shows that the components of wellness do have an impact on the experience of students in college. These components vary slightly depending on the source, but generally include the ability to cope with stressful situations, the ability to control emotions,

physical health, how people feel about their contributions to society, and the ability to forge and maintain social relationships. It has been shown that these factors can contribute to a student's academic success. Higher levels of coping skills (Clifton, et al., 2008), spirituality (George, et al., 2008), physical fitness (Turbow, 1985), social activity participation (Tinto & Goodsell, 1993), and creativity (Richards & Casey, 1975) have all been associated with higher grade-point averages in college.

Conclusion

Student success is an important issue in higher education. The United States lags behind many other countries when it comes to the percentage of college students who eventually graduate (Postsecondary Education Opportunity, 2009). There are many factors that can influence the success a student has within the higher education environment, including academic and non-academic factors.

Academic factors can be predictors of future academic success in higher education. Academic success in high school can be a predictor of success in college (Camara & Echnernacht, 2000). Several studies have shown that students with higher grade point averages in secondary school are more likely to perform well in the higher education environment (Camera & Echnernacht, 2000; Reese & Dunn, 2009; Sadler, et al., 1997; Tinto, 1993). This trend has also been demonstrated using standardized test scores. Performance on such examinations as the SAT and the ACT are related to academic success in college (Camera & Echnernacht, 2000; Eno, et al. 1998).

Non-academic factors such as gender, ethnicity, and major have also been shown to affect academic success in college (Astin, 1993; Tinto, 1993). Gender has been shown to be related to the long-term success of students in higher education (Postsecondary Education

Opportunity, 2009). In addition, men may be more likely to have low grade-point averages during the first year (DeBerard & Julka, 2000). However, this difference may differ based on the types of courses taken (Keller, et al., 1993; Leppel, 2001; Schram, 1996). The long-term graduation rate of students is also influenced by ethnicity (Postsecondary Education Opportunity, 2009). Hispanic and African American students are less likely to graduate than other ethnicities (Cabrera, et al., 1999; Postsecondary Education Opportunity, 2009). Academic success is also affected by the major chosen by students. Students who do not have a chosen major when they begin college are less likely to persist to graduation (St. John, et al., 2004).

The concept of wellness encompasses many of the non-academic factors associated with academic success. These areas may include the ability to cope with stressful situations, creativity, self-identity, physical well-being, and supportive relationships (Myers & Sweeney, 2005). Highly developed coping mechanisms allow students to manage the increased stress that comes with a new environment. This may allow new college students to focus more on their academic success and less on the other stresses that come with transition to higher education. It is important that new college students also have a sense of their place within the environment. Students who do not have the ability to manage their emotions are more likely to have lower scores associated with psychological well-being (Sinclair & Myers, 2004). This holds true for the ability of individuals to be comfortable with their self, cultural, and spiritual identity as well. Students who have concerns in these areas have increased stressors and therefore may not be able to focus on other areas such as academic performance (Evans & Broido, 1999; Zubernis & Snyder, 2007). Physical health is another important component of overall wellness. Research on the effect of physical fitness on college students reveals mixed results. Students who have increased physical fitness may have less stress and increased retention rates (Zhang & RiCharde,

1998). However, student involvement in athletics has been shown to be associated with lower grade point averages (Mansfield, et al., 2004). A final component of wellness is social support. Social support can provide a buffer against stress (Myers & Sweeney, 2005). In addition, social support is an important component of transition models used in higher education. It has been reported that interaction with peers may have a large influence on a student's academic success (Astin, 1993).

The Indivisible Self Model of wellness combines many of these areas into a comprehensive assessment of overall wellness (Myers & Sweeney, 2005). The ISM has been used to explore the experience of college students as they transition from high school to the higher education environment. The ISM has been used in higher education to study the effect of relationships, stress and living conditions (Enochs, 2001) on the college experience. In addition, students feel that their physical wellness plays a large role in their overall wellness (Archer, Probert, & Gage, 1987). The ISM of wellness has also been used to show that stress levels are lower in students with strong social relationships (Myers & Bechel, 2004). Although scores on the 5F-WEL have not been compared to grade-point average, similar models of wellness have shown a positive relationship (Becker, et al., 2009).

The ISM has been used outside of higher education as well. For example, in the counseling arena there is a relationship between wellness and marital satisfaction (Myers, et al., 2005; Powers, Myers, Tingle, & Powers, 2003). Corporate wellness programs typically focus on the physical aspect of health. The ISM has been used to describe how other factors of wellness may also affect job satisfaction and work performance (Hutchinson, 1996). In addition, the ISM provides a method for researchers to explore patient needs (Degges-White, et al., 2003).

The ISM has been used to show how stress and relationships may affect college students. More research needs to be done to examine how wellness impacts a student's ability to be successful and ultimately persist in higher education. To date, however, no studies have been conducted using the ISM to examine the relationship between wellness and academic success, or to predict student success based on the components of the model. The current study seeks to address this gap in the literature.

CHAPTER THREE - METHODOLOGY

The following chapter describes the methodology used to conduct the study. The purpose of this study was to examine the relationship between self-reported wellness and academic success in first-year college students. In addition, the study sought to determine if the relationship between wellness and academic success differs by gender, academic program, or ethnicity. Also examined was whether the factors of wellness could be used to predict academic success. Specifically, five research questions guided the study:

1. What is the relationship between the factors of wellness and academic success in first-year college students as defined by first-semester grade-point average?
2. Is the relationship between the factors of wellness and academic success in first-year college students as defined by first-semester grade-point average different based on gender?
3. Is the relationship between the factors of wellness and academic success in first-year college students as defined by first-semester grade-point average different based on academic department?
4. Is the relationship between the factors of wellness and academic success in first-year college students as defined by first-semester grade-point average different based on ethnicity?
5. Do the factors of wellness, in addition to high school grade-point average and SAT score, predict academic success in first-year college students as defined by first-semester grade-point average?

Included in the methodology are sample selection, instrumentation, data collection, and data analysis procedures. Each section provides a description of the steps taken to ensure the study provided accurate, reliable results that applied directly to the research questions.

Sample Selection

The sample was a convenience sample from a small, private college specializing in healthcare education. The college was located in a state in the southeastern region of the United States. A single private college was chosen to ensure that students were in the same educational setting while ensuring reasonable costs for scoring and analysis of the 5F-WEL. An invitation was sent to the Director of Counseling and Wellness at the institution. The invitation included a description of the study, requirements for participation, and a description of the incentive.

All first-time, first-year students at the institution were eligible to participate in the study. Participants self-selected after receiving an invitation that outlined the study design, requirements, and incentives. More details about the selection of student participants are described in the Data Collection section of this chapter.

Instrumentation

The present study used the Indivisible Self (IS) model of wellness to determine individual levels of wellness. Levels of wellness based on the IS model are assessed using the Five-Factor Wellness Inventory (5F-WEL).

The Five-Factor Wellness Inventory

The 5F-WEL measures the original 17 factors described by the Wheel of Wellness model, as well as five secondary factors (Creative Self, Coping Self, Essential Self, Physical Self, Social Self). Scores for 22 subscales and an overall wellness score are calculated for each respondent (Myers & Sweeney, 2005). Most of the factors are determined by a series of four to

six items. Responses are gathered using a four-point Likert-type scale with the following options: (a) strongly agree, (b) agree, (c) disagree, and (d) strongly disagree. The 5F-WEL includes two sections, with 73 items in section one and 9 items in section two.

The first section of the 5F-WEL consists of items focused around the area of wellness. The items appear in random order and each is answered using the aforementioned scale. These items elicit information from individuals about behaviors, emotions, and feelings. For example, respondents are asked if they are satisfied with the way in which they cope with stress and whether they eat a balanced diet.

The second section of the 5F-WEL consists of demographic items used to gather background information regarding the participants. Section 2 includes nine items, with answers to each question driven by the subject matter. For example, participants are asked to indicate their gender (male or female), ethnicity (Native American, Caucasian, Asian or Pacific Islander, Hispanic/Latino/Latina or African American), and marital status (married/partnered, divorced, single, widowed, or separated).

For the purposes of this study, the five secondary factors and overall wellness score were used to examine the relationship between wellness and academic success. Each factor was designed to examine wellness based on a specific definition (Table 1).

The five secondary factors were determined using items surrounding specific behaviors, feelings, or emotions. The first of the five factors is called the creative self. This factor includes questions related to the individual's thinking ability, work situation, control, and positive humor. Items related to this ask whether respondents have a great deal of control over conditions affecting the work they do or whether they seek ways to stimulate their thinking and increase their learning.

Table 1

Definition of the Overall Wellness Score and Five Second Order Factors

Factor	Definition
Overall Wellness Score	The sum of all items on the 5F-WEL that indicates a measure of an individual's general well-being or total wellness.
Creative Self	The combination of attributes that each of us forms to make a unique place among others in our social interactions and to interpret our world.
Coping Self	The combination of elements that regulate our responses to life events and provide a means for transcending their negative effects.
Essential Self	Our essential meaning-making processes in relation to life, self, and others.
Physical Self	The biological and physiological processes that comprise the physical aspects of our development and functioning.
Social Self	Social Support through connections with others in our friendships and intimate relationships, including family ties.

The second factor measured by the 5F-WEL is the coping self. This factor is assessed by items related to leisure time, stress management, self worth, and realistic beliefs. For example, the survey asks whether respondents make time for leisure activities.

The third factor measured by the 5F-WEL is the essential self. Questions related to the essential self include areas such as gender and cultural identity, spirituality, and self-care. For example, individuals are asked whether being a male/female is a source of satisfaction and pride to them or whether their cultural heritage enhances the quality of their life.

The fourth factor measured by the 5F-WEL is the physical self. Questions related to exercise and nutrition habits are used to assess this area. For example, respondents are asked if they are satisfied with the quality and quantity of foods in their diet.

The fifth factor measured by the 5F-WEL is the social self. Questions associated with this factor are related to friendship and love. An example of a question related to this factor would be whether respondents have friends who would do most anything for them if they were in need.

Validity and Reliability

Reliability can be defined as the consistency of the instrument (Creswell, 2005). In other words, reliability determines whether the instrument yields similar results after repeated responses by the same individual. Validity can be defined as the degree to which the instrument measures what is intended (Creswell, 2005). In this study validity is the extent to which the 5F-WEL measures overall wellness or any of the secondary wellness factors based on the definitions provided.

Two types of reliability were important to this study. Internal consistency is concerned with whether a grouping of questions within the instrument measure what was intended (Creswell, 2005). Analysis of consistency (using Cronbach's alpha) performed during the

development of the 5F-WEL supports each of secondary factors as well as the overall wellness score (see Table 2).

Stability reliability was a second type of reliability that was important in this study. Stability reliability (also called test-retest reliability) is concerned with the consistency of the instrument over time. The 5F-WEL is a relatively new instrument and there has been no direct analysis of stability reliability. However, the 5F-WEL is based on the prior WEL model. The reliability for the new instrument was determined by examining 3,043 responses to the prior WEL instrument. Only items used in the 5F-WEL were examined. Reliability scales were established (using correlations) that ranged from 0.68 to 0.99 (Myers, 1998). In addition, once the new instrument was developed, five years of responses were logged into a database to determine internal consistency (Table 2).

Validity is another measure of instrument precision. Several types of validity were important to this study. The first of these was construct validity. This refers to the ability of an instrument to measure the intended theoretical concept (Creswell, 2005). The 5F-WEL instrument was adapted from the WEL questionnaire. The WEL questionnaire had been used in several studies during a period of more than 10 years. Review of these results along with the factor analysis used to develop the 5F-WEL ensured a high degree of construct validity (Myers & Sweeney, 2005). The 5F-Wel was developed using structural equation modeling. The factors of wellness have been compared in several studies to other related constructs. The model has been examined in terms of areas such as ethnic identity (Dixon Rayle, 2002), acculturation (Mitchell, 2001), spirituality (Gill, 2004), moral identity and social interest (Makinson, 2001), academic self concept (Mitchell), mattering (Dixon Rayle), transitions, chronological age,

Table 2

Reliability Coefficients for the Overall Wellness Score and Five Second Order Factors

Factor	Reliability Coefficient	Internal Consistency
Overall Wellness Score	0.94	0.98
Creative Self	0.93	0.96
Coping Self	0.92	0.89
Essential Self	0.94	0.95
Physical Self	0.90	0.90
Social Self	0.91	0.96

subjective age, and life satisfaction (Degges-White, et al., 2003), family environment and adolescent delinquency (Hartwig & Myers, 2003), and relationship self-efficacy (Shurts, 2004).

A second type of validity important to this study was external validity. This concept refers to whether the results of a study are applicable to external constituents (Creswell, 2005). The current study employed a small subset of respondents in the higher education arena. However, the sample was representative of the overall population within the institution. Therefore, the current results may be useful for administrators, students, and legislators in similar higher education institutions.

One potential issue involving reliability and validity was the scoring of the survey results. All scoring was performed by a third party. The method used to obtain overall and wellness factor scores was not released to the researcher. Therefore individual factor analysis of the current results could not be obtained. This limited the ability to compare the current results with the normative population.

Data Collection Procedures

Data collection occurred in several steps, including the approval of the research proposal, collection of the survey data, and collection of secondary data.

Institutional Review Board Approval

The first step included submission of the research proposal to the Institutional review board (IRB) at Virginia Polytechnic Institute and State University. The purpose of the IRB is to protect the rights and ensure the safety of human subjects participating in research conducted by faculty, staff and students of the University (Virginia Tech, 2009). The submitted proposal was reviewed by the appropriate committee and approved. A copy of the approval letter can be found in Appendix A.

Survey Data Collection

Once the Director of Counseling and Wellness agreed to participate, I sent her an outline of the study procedure. This initial contact occurred during the first half of October, 2009. The study procedure documentation included guidance concerning the study design, requirements, and timeline for data collection and analysis.

The Director of Counseling and Wellness agreed to provide me a list of instructors responsible for the oversight of the institution's required first-time student seminar. This is a required course for all first-time, first-year students at the institution (approximately 150 students). The course covers items such as study skills, time management, and other topics designed to help students transition to college. I contacted each instructor and identified an appropriate time to administer the survey to students. It was decided that the best method to collect data was to use an on-line survey format. Therefore, I worked with the Director of Institutional research to create an electronic version of the instrument using the institution's survey software, Instant Survey™. Once the instrument was prepared, I sent an e-mail message to each potential participant with an invitation to participate, a description of the study, a description of the incentive (each participant was entered into a drawing for a \$50 gift certificate as well as receiving extra credit in their seminar) and the link to the electronic survey (see Appendix B).

If respondents were interested in participating, they were directed to click on the provided link. This link directed them to the main survey page, which contained the informed consent. They were directed to read the informed consent and then indicate their willingness to participate by clicking "continue" at the bottom of the page. They were then directed to complete the subsequent electronic survey. If they were unwilling to participate, they were redirected to

another website that contained a thank-you message as well as information stating they could reconsider their decision as long as the survey was open to respondents (approximately 8 weeks). Two follow-up messages were sent via electronic mail during the survey period. Each message included a reminder of their eligibility to participate, a description of the study, a description of the incentive (each participant was entered into a drawing for a \$50 gift certificate as well as receiving extra credit in their seminar) and the link to the electronic survey (see Appendix C).

Secondary Data Collection

To collect grade information, at the end of the fall semester, I sent a list of e-mail addresses for those students who participated to the Director of Institutional Research. The Director of Institutional Research then provided me with additional metrics (gender, ethnicity, academic program, first semester grade point average, scholastic aptitude test score, high school grade point average) for each participant to be appended to the survey data. Follow-ups were sent to the Director of Counseling and wellness as necessary until all data were received.

Data Analysis

To address the research questions several steps of analysis occurred. These steps included organization and scoring of the survey data, appending the secondary data, and statistical analysis. All data were analyzed using SPSS™ statistical software.

Organization and Scoring of the Survey Data

Data from the electronic surveys needed to be coded and entered into an electronic format. The responses from the survey were downloaded in a comma delimited ext file containing the responses and e-mail address of each participant. Once the survey responses were downloaded, each individual was assigned a random research identification number to be used throughout the study. The responses to the surveys were then coded with the appropriate research

identification number and all other identifying information was removed from the electronic record. Subsequently, a master data file was created by entering the raw data into SPSS™ based on research identification number. Each question on the survey was represented by a single column in the master data file, and each respondent was represented by a single row of data.

Prior to the data from the 5F-WEL being scored it was necessary to clean the data to ensure accurate and valid results. List-wise deletion was used to eliminate respondents who did not include enough information to calculate the five context scores and the overall wellness score. This included those who did not respond to more than 50% of the questions. Finally, the data were reviewed to determine any errant patterns that would affect the overall analysis, such as a respondent marking a single response for all questions. No such patterns were found. Once the data were cleaned, the remaining responses were sent in a comma delimited text file to be scored by Jane E. Myers, Ph.D. who serves as Professor of Counseling and Educational Development at the University of North Carolina Greensboro and is also the co-author of the 5F-WEL.

Survey responses were returned in a comma-delimited file. In addition to the raw survey data the file included one column for each of the five wellness factor scores as well a column for the overall wellness score. Again, the data were reviewed to ensure that each response included the appropriate wellness factor scores, as well as to ensure the data were appropriate for further analysis. Respondents were removed from the analysis if wellness factor scores could not be obtained because they omitted questions crucial to calculating those scores.

Appending of Secondary Data

Once the respondents were assigned identification codes an electronic request was sent to the Director of Counseling and Wellness requesting the additional data from the participating

institution. The request included a list of students who had completed the survey, along with their assigned research identification number. The Director of Counseling and Wellness then provided me with a comma-delimited text file containing the respondent's research identification number, first-semester grade point average, ethnicity, gender, program of study, SAT score, and high school grade-point average. In addition, the institution provided a "data map" that included any codes used by that institution for each item. The additional data were appended to the master data file with one column representing each variable. Once the data were appended, they were reviewed to ensure that all variables contained the correct type of information and to flag any extraneous values. Respondents were removed from the analysis if they did not have a final grade-point average, or if they were not a first-time first-year student. The data for ethnicity, gender, and program of study were then re-coded into numerical values if needed.

Statistical Analysis

The statistical analysis performed was based on the study's research questions. Initially, the data were examined using frequencies and descriptive statistics.

This was done to ensure that the continuous variables were normally distributed and that the sample was a valid approximation of the population. In addition, this step allowed identification of outliers that may have affected the subsequent analysis. Cross validation was performed using chi-square analysis ($p < .05$) on the basis of gender, ethnicity, and academic department.

The initial research question addressed by this study involved the relationship between the factors of wellness and academic success. To answer this question correlations ($p < .05$) were used between each factor of wellness and academic success.

The second research question examined whether there were differences in the factors of wellness based on gender. To answer this question, respondents were sorted into two groups:

men and women. Next, I calculated a mean score for each factor of wellness for each group. The mean scores and variances were then compared using a standard t-test ($p < .05$) between groups to determine if there were differences based on gender. In addition, correlations ($p < .05$) to first semester grade-point average were performed for each group separately to determine if there were additional differences based on a single group. Where significant differences were found the Cohen's d was calculated to determine effect size and practical significance. Levels of practical significance were aligned with those reported by Cohen (1988), where .20 was considered small, .50 was considered medium, and .80 was considered large. This can be interpreted to mean that the larger the practical significance, the less overlap between the distributions of the two comparison groups.

To address the third research question a similar process was followed. In this case, it was necessary to assign respondents to groups by academic program. There were 12 different academic programs. Programs were grouped according to their overarching academic department (Arts and Sciences, Community Health Sciences, Nursing, Rehabilitation and Wellness). Once this was completed, I calculated mean scores for each factor of wellness for each group. Finally, I conducted a one-way ANOVA ($p < .05$) to determine if there were differences based on academic department. Post-hoc tests (Tukey, S-N-K) were then performed on significant findings to determine the difference between groups. In addition, correlations ($p < .05$) were performed for each individual academic program to determine if there was a significant relationship to the factors of wellness. Where significant differences were found the Cohen's d was calculated to determine size effect and practical significance.

The fourth research question explored the relationship between the factors of wellness and academic program based on ethnicity. To perform the analysis it was first necessary to sort

the participants into groups according to ethnicity. Due to the low number of minority respondents, only two groups were used (minority and non-minority). Following this step I calculated the means for each group. Finally, I conducted a t-test ($p < .05$) to determine if the relationship was affected by ethnicity. In addition, correlations ($p < .05$) were performed separately for each group to determine if there were additional differences. Where significant differences were found the Cohen's d was calculated to determine size effect and practical significance.

The final research question addressed whether the factors of wellness could be used to predict academic success. To answer this question I used multiple regression analysis ($p < .05$). This showed how much each variable contributed to the variance in academic success. Control variables (standardized test scores and high school grade point average) were entered into the equation. These variables influence academic success in college, so it was important to control for them in the regression analysis. Regression analysis was chosen because the dependent variables were continuous rather than categorical. In addition, the regression analysis allowed me to determine whether a model could be developed that would help predict first semester grade-point average using the independent variables.

Two types of regressions analysis were performed. First, I used simple or enter method of regression to enter all variables concurrently. This was done because there was no assumption of hierarchical importance when it came to the factors of wellness. Following this, I performed step-wise regression. This was done to determine if a subset of the variables could be used to create a more definitive predictive model.

To answer the research question the regression model was constructed using "overall" to denote overall wellness score, "coping" to denote the coping self sub-factor score, "creative" to

denote the creative self sub-factor score, “essential” to denote the essential self sub-factor score, “physical” to denote the physical self sub-factor score, “social” to denote the social self sub-factor score, “HSGPA” to denote high school grade-point average, and “SAT” to denote SAT score. Therefore the formula for the regression analysis was:

$$Y_i = b_0 + b_1(\text{overall}) + b_2(\text{coping}) + b_3(\text{creative}) + b_4(\text{essential}) + b_5(\text{physical}) + b_6(\text{social}) \\ + b_7(\text{HSGPA}) + b_8(\text{SAT})$$

where Y_i represents the grade point average, b_0 represents the constant of the regression equation assuming all others values are zero. The regression coefficients are represented by b_1, b_2, \dots, b_8 .

Conclusion

Determining whether there is a relationship between academic success in college and factors of wellness could have a large impact on policy and practice. In this study, I used first-semester grade-point average to measure academic success. Through use of the 5F-WEL instrument, I obtained individuals scores for several factors of wellness. This allowed me to determine if relationships existed between these two areas. In addition, the data elicited sufficient information to review this relationship based on other characteristics. The analysis provided appropriate information that allowed me to answer each of the stated research questions.

CHAPTER FOUR - RESULTS

In this chapter I present the results of the study. This chapter includes a description of the participants and results of the analysis. The results of the analysis are organized in accordance with the research questions.

The survey was sent to 127 first-time, first-year students enrolled in the first-year seminar course. Of these, 82 (65%) participated in the study. Prior to scoring the results of the survey it was necessary to clean the data. This involved reviewing the data to ensure an adequate number of responses were provided by each participant. Since the survey was a proprietary instrument, the scoring methodology was not available. Therefore, a cut score was established that allowed the maximum opportunity to obtain wellness scoring. If it was found that participants did not complete more than 50% of the survey, they were eliminated from the analysis.

It was also important to establish how missing academic and demographic data would be handled. Some individuals were missing data for some of the variables associated with specific research questions. Individuals that were missing data were eliminated from the analysis associated with individual research questions.

Description of the Sample

Two individuals did not complete enough of the survey for total wellness and wellness factor scores and therefore were eliminated. In addition, 13 respondents indicated that they had completed some other college coursework. Since the purpose of this study was concerned with the experience of first-time, first-year students, those individuals were eliminated. Therefore, 67 participants were included in the final analysis. Of these, 83.6% were female, which mirrored the population of the institution as a whole (78% female). Most of the participants were Caucasian (79.1%), which also was similar to the overall population (84% Caucasian). Due to the low

number of minority respondents, ethnicity was classified into only two categories, Caucasian and minority. The respondents came from four academic departments. Most respondents were from the Nursing department (52.2%), and most were pursuing a baccalaureate degree (92.5%). Table 3 lists the frequencies for demographics of the sample. Cross-validation using chi-squared analysis showed no significant differences between the respondents and population in terms of gender, ethnicity, or academic department. Thus, the sample was representative of the population.

In addition to the frequency tables, descriptive statistics were obtained for continuous variables used in the study (Table 4). Each factor of wellness was compared to normative data to determine if there were significant differences. One-sample t-tests were used to determine differences in the mean scores for each factor of wellness as well as total wellness. All of the factors of wellness as well as total wellness were significantly higher ($p < .05$) in those who responded to the survey than those found in the normative population (Table 5). Cohen's d analysis showed moderate to high levels (Cohen, 1998) of practical significance ($d > .05$) in all areas except physical wellness.

The variables were further analyzed by gender and ethnicity to form a better understanding of the data. There were few significant differences observed between groups. Men had a significantly lower variance in their physical wellness factor score than women ($F(62) = 6.91, p < .05$).

Table 3

Frequency Tables for Demographic Characteristics of Participants

Demographic	Response	Sample N	Sample %
Gender	Male	11	14.40%
	Female	56	83.60%
Ethnicity	Black Non-Hispanic	8	11.90%
	White/Caucasian	53	79.10%
	Other Minority	3	4.50%
	Not Reported	3	4.50%
Academic Department	Arts and Sciences	11	16.40%
	Community Health Sciences	15	22.40%
	Nursing	35	52.20%
	Rehabilitation and Wellness	5	7.50%

Table 4

Descriptive Statistics for Continuous Variables

Data Element	N	Min	Max	<i>M</i>	<i>SD</i>
High School Grade Point Average	67	2.00	4.20	3.23	.43
SAT Score	55	1150	1730	1410	152.61
Factors of Wellness:					
Total Wellness	67	56.51	92.01	79.45	6.61
Coping Wellness	67	51.32	93.42	74.27	7.85
Creative Wellness	67	53.75	100.00	82.04	8.40
Essential Wellness	67	57.81	98.44	82.05	9.64
Physical Wellness	67	38.89	97.50	69.97	13.15
Social Wellness	67	50.00	100.00	91.88	9.13
First Semester Grade Point Average	67	.07	4.00	2.83	.94

Table 5

Wellness Score Comparisons for Sample Population to Normative Population

Data Element	Sample <i>M</i> (<i>N</i> = 67)	Norm <i>M</i> (<i>N</i> = 3,343)	<i>df</i>	<i>t</i>	Cohen's <i>d</i> [†]
Total Wellness	79.45	71.63	66	9.68 **	.50
Coping Wellness	74.27	68.73	66	5.78 **	.44
Creative Wellness	82.04	73.18	66	8.63 **	.55
Essential Wellness	82.05	73.38	66	7.37 **	.44
Physical Wellness	69.97	66.56	66	2.12 *	.19
Social Wellness	91.88	77.35	66	13.03 **	.62

Note. * $p < .05$. ** $p < .01$. [†]Cohen's $d = .20$ is considered a small effect, Cohen's $d = .50$ is considered a medium effect, Cohen's $d = .80$ is considered a large effect (Cohen, 1988).

Minority students showed a significantly lower essential factor of wellness score compared to Caucasian students ($t(62) = -2.10, d = 0.77, p < .05$). There were no differences in any of the continuous variables based on academic department. Details of the continuous variables by gender, ethnicity, and academic department are found in Table 6. Correlations were obtained to determine if there was a relationship between the factors of wellness and academic success as defined by first semester grade point average.

The coping factor of wellness had an inverse relationship to first semester grade-point average. All other factors of wellness had a positive relationship to first semester grade-point average. However, none of these relationships were significant.

Further tests were performed to determine if there was a difference in the relationship of the factors of wellness to grade-point average with respect to gender, ethnicity, and academic program. Overall, male respondents had a negative relationship between all wellness areas except the essential factor of wellness and first semester grade-point average. By contrast, female respondents had positive relationships between all wellness areas and first semester grade-point average. However, none of these relationships reached a level of significance.

With respect to ethnicity, there was a significant relationship between grade-point average and the essential factor of wellness for Caucasian respondents ($r(55) = .30, p < .05$). There was also a significant inverse association between the social factor of wellness and first semester grade-point average for minority students ($r(11) = -.64, p < .05$).

Differences were also found with respect to academic department. Analysis of variance showed there was no difference in mean scores based on academic department. However, correlations based on academic department revealed individual departmental relationships. Nursing students also showed significant relationships between multiple factors of wellness and

Table 6

Mean and Standard Deviation for Continuous Variables by Gender, Ethnicity, and Academic Department

Demographic		Variable								
		1 st Sem GPA	HS GPA	SAT Score	Total Wellness	Coping Factor	Creative Factor	Essential Factor	Physical Factor	Social Factor
Gender										
Male	<i>M</i>	2.90	3.05	1456.00	80.01	75.66	83.18	80.82	72.05	90.63
(<i>N</i> = 11)	<i>SD</i>	1.22	.50	186.10	4.37	6.52	5.40	11.14	7.57 *	8.50
Female	<i>M</i>	2.81	3.26	1402.00	79.34	74.00	81.81	82.29	69.56	92.13
(<i>N</i> = 11)	<i>SD</i>	.89	.41	146.90	6.99	8.10	8.89	9.41	14.00 *	9.30
Ethnicity										
Caucasian	<i>M</i>	2.93	3.33 **	1437.00 **	79.83	75.23	82.40	81.26 *	70.96	92.45
(<i>N</i> = 53)	<i>SD</i>	.97	.40	153.00 *	6.24	7.39	7.90	9.89	12.29	9.60
Minority	<i>M</i>	2.48	2.85 **	1261.00 **	80.61	73.21	83.75	87.85 *	69.09	90.34
(<i>N</i> = 11)	<i>SD</i>	.82	.37	61.10 *	6.90	7.86	9.30	6.72	16.10	7.19

Table 6 (continued)

Mean and Standard Deviation for Continuous Variables by Gender, Ethnicity, and Academic Department

Demographic	Variable									
	1 st Sem GPA	HS GPA	SAT Score	Total Wellness	Coping Factor	Creative Factor	Essential Factor	Physical Factor	Social Factor	
Academic										
Department										
Arts and Sciences (<i>N</i> = 11)	<i>M</i>	2.55	3.14	1405.00	83.0	77.87	83.86	86.93	76.36	93.75
	<i>SD</i>	1.24	.42	175.00	6.52	7.67	8.07	7.00	14.20	5.41
Community Health Sci (<i>N</i> = 15)	<i>M</i>	2.43	3.12	1470.00	79.4	74.50	81.75	80.66	73.25	90.49
	<i>SD</i>	1.04	.50	132.50	8.54	9.69	10.77	9.07	10.02	13.07
Nursing (<i>N</i> = 35)	<i>M</i>	3.01	3.33	1390.00	78.1	73.08	80.79	80.94	66.47	91.57
	<i>SD</i>	.76	.37	154.60	5.79	7.10	7.54	.43	13.63	8.10

Table 6 (continued)

Mean and Standard Deviation for Continuous Variables by Gender, Ethnicity, and Academic Department

Demographic	Variable									
		1 st Sem GPA	HS GPA	SAT Score	Total Wellness	Coping Factor	Creative Factor	Essential Factor	Physical Factor	Social Factor
Rehab & Wellness	<i>M</i>	3.42	2.89	1300.00	81.2	75.12	85.77	82.35	73.00	92.50
	<i>SD</i>	.58	.54	153.40	4.34	7.44	7.21	10.40	10.37	10.50
<i>(N = 5)</i>										

Note. *Difference between groups is significant at the $p < .05$ level. **Difference between groups is significant at the $p < .01$ level.

†Cohen's $d = .20$ is considered a small effect, Cohen's $d = .50$ is considered a medium effect, Cohen's $d = .80$ is considered a large effect (Cohen, 1988).

grade-point average. Total wellness ($r(35) = 0.46, p < .01$), essential wellness ($r(35) = 0.35, p < .05$), and physical wellness ($r(35) = 0.47, p < .01$) all showed significant positive relationships. Correlations are shown in Table 7.

To determine whether the factors of wellness could help predict first semester grade-point average, the data were analyzed using linear regression. The factors of wellness, total wellness score, high school grade-point average, and SAT score were used as variables in the equation. Using the enter method, a significant model emerged using only high school grade-point average and SAT score ($F_{2,52} = 9.27, p < .001$; adjusted R -square = .23). When the factors of wellness were added to the model, the predictive value of the model increased ($F_{8,46} = 4.58, p < .001$; adjusted R -square = .35). The results of the enter method regression model are presented in Table 8. Although the second model that included the factors of wellness was significant, only high school grade-point average was a significant predictor in the model.

The variables were then entered into the regression equation in a step-wise manner. Once again a significant model emerged ($F_{3,51} = 12.14, p < .001$; adjusted R -square = .38). It was determined that high school grade-point average was the largest predictor, accounting for 24% of the variance in first-semester grade-point average. However, when the essential factor of wellness and the coping factor of wellness were added to the equation, the equation accounted for 38% of the variance. No other factor of wellness significantly increased the accuracy of the predictive model. The results of the regression model are presented in Table 9. Statistics for the non-significant variables are presented in Table 10.

Table 7

Correlations for Continuous Variables by Gender, Ethnicity, and Academic Department

	Pearson Correlation to first semester grade-point average								
	N	HS GPA	SAT Score	Total Wellness	Coping Factor	Creative Factor	Essential Factor	Physical Factor	Social Factor
All Respondents	67	.51 **	.32 *	.12	-.03	.08	.23	.10	.02
Gender									
Male	11	.14	.11	-.20	-.37	-.11	.18	-.20	-.34
Female	56	.55 **	.39 **	.17	.03	.11	.25	.14	.100
Ethnicity									
Caucasian	53	.47 **	.26	.20	-.06	.14	.30 *	.21	.07
Minority	11	-.14	.49	-.52	-.42	-.44	-.01	-.52	-.64 *
Academic Department									
Arts and Sciences	11	.57	.45	-.21	-.20	-.07	.13	-.44	-.27
Community Health Sci	15	.63 *	.37	.15	.01	.10	.40	.21	-.08

Table 7

Correlations for Continuous Variables by Gender, Ethnicity, and Academic Department

	Pearson Correlation to first semester grade-point average								
	N	HS GPA	SAT Score	Total Wellness	Coping Factor	Creative Factor	Essential Factor	Physical Factor	Social Factor
Nursing	35	.38 *	.35	.46 **	.12	.25	.35 *	.47 *	.23
Rehab & Wellness ^{††}	5	.12	N/A	-.65	-.23	-.71	-.28	.24	-.68

Note. ^{††}Due to lack of responses Rehabilitation and Wellness was analyzed using pair-wise deletion. * Correlation is significant at the $p < .05$ level. ** Correlation is significant at the $p < .01$ level.

Table 8

Summary of Simultaneous Regression Analysis for Variables Predicting First Semester Grade-Point Average (N = 55)

Independent Variable	R^2	Adjusted R^2	β	F	F Change	df
Model Summary	.44	.35		4.58 ***	4.58 ***	46
High School GPA			.50 ***			
SAT Score			.19			
Total Wellness Score			-1.07			
Coping Factor Score			.04			
Creative Factor Score			.42			
Essential Factor Score			.76			
Physical Factor Score			.25			
Social Factor Score			.19			

Note. Total respondents = 67. ***Significant at the $p < .001$ level.

Table 9

Summary of Stepwise Regression Analysis for Variables Predicting First Semester Grade-Point Average (N = 55)

Independent Variable	R^2	Adjusted R^2	β		F		F Change		df
Step 1	.26	.24			18.46	***	18.46	***	53
High School GPA			1.21	***					
Step 2	.37	.35			15.30	***	9.26	**	52
High School GPA			1.31	***					
Essential Factor			.04	**					
Step 3	.42	.38			12.14	***	4.04	*	51
High School GPA			1.31	***					
Essential Factor			.04	**					
Coping Factor			-.03	*					

Note. Total respondents = 67. *Significant at the $p = .05$ level. **Significant at the $p < .01$ level. ***Significant at the $p < .001$ level. Excluded variables are not included in the model summary.

Table 10

Statistics for Variables Excluded from Step-Wise Regression Analysis (N = 55)

Independent Variable	β	t	Sig.	Partial Correlation
Step 1				
SAT Score	.08	.56	.58	.08
Total Wellness	.09	.77	.45	.10
Creative Factor	.04	.33	.74	.05
Coping Factor	-.07	-.59	.56	-.08
Social Factor	.07	.60	.55	.08
Essential Factor	.34	3.04	.00 †	.39
Physical Factor	-.04	-.35	.73	-.05
Step 2				
SAT Score	.13	1.03	.31	.14
Total Wellness	-.24	-1.64	.11	-.22
Creative Factor	-.12	-1.01	.32	-.14
Coping Factor	-.23	-2.01	.05 *	-.27
Social Factor	-.10	-.78	.44	-.11
Physical Factor	-.10	-.89	.38	-.12

Note. †Significant at the $p < .001$ level. *Significant at the $p = .05$ level.

Table 10 (continued)

Statistics for Variables Excluded from Step-Wise Regression Analysis

Independent Variable	β	t	Sig.	Partial Correlation
Step 3				
SAT Score	.18	1.46	.15	.20
Total Wellness	.01	.02	.98	.00
Creative Factor	.02	.16	.88	.02
Social Factor	.03	.22	.83	.03
Physical Factor	-.03	-.23	.82	-.03

Note. †Significant at the $p < .001$ level. *Significant at the $p = .05$ level.

The information was also compared to high school grade-point average and SAT score since these are variables that are known to be related to first-semester grade-point average. Overall, high-school grade point average and SAT score were correlated with first semester grade-point average ($r(67) = .51, p < .01$ and $r(55) = .32, p < .05$, respectively). Minority students as a whole had significantly lower high school grade-point averages than Caucasian students ($t(62) = 3.64, d = 1.24, p < .01$). Minority students also had significantly lower SAT scores than Caucasian students ($t(50) = 3.19, d = 1.53, p < .01$). However, minority students had a significantly lower amount of variation in SAT scores than Caucasian students ($F(52) = 6.79, p < .01$). Caucasians had a significant relationship between high school grade-point average and first semester grade-point average ($r(53) = .47, p < .01$). For female respondents there was a significant relationship between both high school grade-point average and SAT score and first semester grade-point average ($r(56) = .55, p < .01$ and $r(47) = .39, p < .01$, respectively). Respondents from the Community Health Sciences Department and the Nursing Department showed significant correlations between high school grade-point average and first semester grade-point average ($r(11) = .63, p < .05$ and $r(35) = .38, p < .05$, respectively).

CHAPTER FIVE - DISCUSSION

This chapter includes a discussion of the findings. The relevant information is discussed in relation to the sample as well as the five research questions. In addition, findings are compared to current literature. Also discussed are implications for future practice, research, and limitations to the study.

Overall, the sample was similar to that of the student population in terms of gender, ethnicity, and academic department. The factors of wellness as well as overall wellness were significantly higher than those found in the normative population (Table 5). This could have been due to the fact that the normative population included individuals of all ages. It is possible that this reduced the mean score for each section as younger individuals may have a higher level of self-reported wellness. Younger individuals may be more physically and socially active, resulting in higher scores for those sections of the survey. In addition, all the participants were students enrolled in health-related curriculum. It may be that these students already possess a sense of the importance of wellness that is then reflected in their responses. The amount of variance in scores for the sample population was similar for each factor of wellness.

The first research question examined the relationship between the factors of wellness as outlined by the 5F-WEL inventory and first semester grade-point average. I generated descriptive statistics and correlations to explore this relationship. First semester grade-point average spanned a wide range across participants. This was to be expected as the students were all first-time, first-year students who typically have a wide variance in academic success in the first semester (Tinto, 1993). Total wellness and the other factors of wellness were similar in their mean score as well as their variance. The lowest scores were found in the area of physical wellness ($M = 69.96$), while the highest scores were in the area of social wellness ($M = 91.88$).

None of the factors of wellness was significantly related to academic success as defined by first semester grade-point average. It is worth noting that the coping factor of wellness, although not significant, had a slightly negative relationship to first semester grade-point average. This is opposite of the expected outcome that individuals with higher levels of coping skills perform well in the classroom environment.

The second research question sought to determine if the relationship between the factors of wellness and first semester grade-point average differed by gender. To explore this question I executed t-tests to compare the means scores of men and women participants. In addition, I scrutinized correlations between the factors of wellness and first semester grade-point average for men and women separately to determine if any difference existed. There was no significant difference in the factors of wellness between groups. However, women ($SD = 14.00$) respondents had a significantly greater variance than men ($SD = 7.57$) in the physical factor of wellness ($p < .05$). This may imply that the male participants were more likely to be physically active, or that they were more comfortable with their physical condition than female participants. Male students showed a negative correlation between first semester grade-point average and many of the factors of wellness. This was an unexpected result and was than that of female participants. This could be due the low number of male participants ($N = 11$). It could also be that male participants had a skewed sense of their own wellness, which could have affected how they answered the survey. It could also reveal that high scores in some areas of wellness (physical, social) may actually prove to be a detriment to academic success. Success in health and wellness requires a balance of many different areas. An individual who focuses too heavily in any one area may then fall out of balance due to lack of time or resources for other areas. For example, an overt focus on physical health may reduce the amount of time an individual has to focus on

academic performance. Many of the male participants were enrolled in majors that require a large amount of physical exertion (Emergency Services). These students may therefore feel pressure to be more physically active, and may spend less time devoted to studying.

The third research question was concerned with the relationship between the factors of wellness and first semester grade-point average as it relates to ethnicity. To answer this question I performed t-tests to compare the mean scores of minority and Caucasian participants. Minority students ($M = 87.85$, $SD = 6.72$) had significantly higher mean scores than Caucasian respondents ($M = 81.26$, $SD = 9.89$) for the essential factor of wellness ($p < .05$). In addition, Cohen's d analysis showed a high level of practical significance ($d = 0.77$), indicating that the distribution between the two groups had minimal overlap. This could mean that minority students are more comfortable with their self-identity than Caucasian students. Correlation analysis revealed that first semester grade-point average was negatively associated with all the factors of wellness in minority students. With exception of the coping factor of wellness, this was in direct opposition to Caucasian students. Minority students showed a significant negative association between the social factor of wellness and first semester grade-point average ($r(11) = -0.64$, $p < .05$). This was an unexpected outcome and could indicate that in this population minority students focus too much on areas of wellness, to the detriment of academic performance. Some areas of wellness (social, physical, essential) could be seen as a detriment if taken to an excessive level. Students who spend too much time in physical or social activity may feel that they have high functioning in these areas but conversely may not have time to focus on areas that include academic achievement. Similarly, achieving high scores in more intangible areas such as essential wellness, coping wellness, and creative wellness may indicate a sense of dedication or increased time spent focusing on those areas. This in turn may lead to a decrease in

academic performance due to lack of focused time. Caucasian students had a significant relationship between the essential factor of wellness and first semester grade-point average ($r(53) = 0.30, p < .05$). This could indicate that for Caucasian students a higher level of spirituality or self-identity made them more comfortable and confident in the classroom. Another explanation could be that students who are more comfortable in these areas more easily adjust to the changes associated with attending college for the first time. They therefore are more at ease and can devote more time to academic endeavors rather than those associated with adjustment to their new environment.

The fourth research question sought to determine if there was a difference among groups based on academic department. To explore this question I performed an analysis of variance (ANOVA) based on the four academic departments. No significant difference was found based on academic program. When correlations were performed based on individual departments, some relationships emerged. Respondents from the Nursing Department had significant relationships between first semester grade-point average and total wellness ($r(35) = 0.46, p < .01$), essential wellness ($r(35) = 0.35, p < .05$), and physical wellness ($r(35) = .47, p < .05$). This could be due to many reasons. The Nursing Department had the highest number of respondents. There may be insufficient data from the other departments for relationships to emerge. It could also be that students preparing for careers in Nursing are more aware of their wellness behavior, and therefore have higher overall wellness scores.

The final research question was concerned with whether the factors of wellness could be used to create a predictive model for first semester grade-point average. Since high school grade-point average and SAT score are known predictors of college success, I used them as co-factors in the regression analysis. When I analyzed all variables using simultaneous regression, a

significant model emerged. However, only high school grade-point average was a significant variable within the model (Table 8). In this case adding the factors of wellness did not significantly increase the variability of the model. The model accounted for 35% of the variability in first semester grade-point average scores.

To determine if any of the individual factors of wellness could contribute to the regression model, I performed a step-wise regression analysis. This technique also produced a significant model that included high school grade-point average. In addition, however, the final model also contained the essential factor of wellness and the coping factor of wellness. By adding these two items the model increased from accounting for 24% of the variance in first semester grade-point average to 38% (Table 9). This demonstrates that the use of wellness factors can have a predictive value when considering academic success.

Relating the Findings to Prior Research

Many studies have linked high school grade point average (Camara & Echnernacht, 2000; Harackiewicz, et al., 2002; Reese & Dunn, 2008; Sadler, et al., 1997; Tinto, 1993) and SAT score (Camara & Echnernacht, 2000; Eno, et al., 1998; Harackiewicz, et al.) to academic success in college. My study was not exception. High school grade-point average and SAT score were both significantly associated with first semester grade point average. However, the relationship diminished when the data were divided into sub-groups. There was no association between high school grade-point average and first semester grade-point average for males. In addition, the relationship between SAT score and first semester grade-point average diminished when I analyzed the data by ethnicity. Also, high school grade-point average was related to first semester grade-point average in only two of the four academic departments. This may be due to the relatively low numbers across groups when I divided them into departments. Interestingly,

while high school grade-point average contributed significantly to the predictive model, SAT score did not. This indicates that there are other factors to consider when investigating factors that influence academic success in college.

There are many other factors that can contribute to academic success in college. Studies have shown differences in academic performance based on gender, ethnicity, and academic program (DeBerard & Julka, 2000; DeBerard, et al., 2004; Leppel, 2001; Postsecondary Education Opportunity, 2009). My study had mixed results compared to prior research. Minority students had significantly lower high school grade-point averages, consistent with prior research. However, there were few differences in the data concerning the factors of wellness when investigated by gender or academic program. This may be due to the low number of responses for some departments. Another explanation could be the specialized curriculum of the institution, which may have drawn students who were very similar in type, value, and work ethic. This would be consistent with some prior research (DeBerard, et al., 2004) that has concluded that the difference in academic performance could be due to differences in curriculum rather than gender alone.

Student's ability to cope with the changes associated with the transition to college has previously been linked to academic success (Struthers, et al., 2000; Wang, et al., 2006). My study had mixed results when compared to prior research. I found no significant correlation between the coping factor of wellness and academic success. In fact, the coping factor of wellness was negatively associated with academic success in some cases. This could be interpreted to mean that for some groups, an increase in their self-reported ability to cope decreased their academic performance. This could also be a misinterpretation by the participants, who may think they have greater coping skills than they actually possess (overestimation of self).

I also found that when the coping factor of wellness was added to the stepwise regression model, it increased the predictive power. This shows that the coping factor of wellness could still be a contributor when considering academic success even if the relationship is not as expected.

Creativity is an aspect of wellness that has not been extensively studied in relationship to academic success. Some studies have shown a weak association between creativity variables and academic success (Richards & Casey, 1975), while others found little value in using creativity to predict grades (Stallings, 1969). In the current analysis I found no correlation between creativity scores and first semester grade-point average. Similarly, the creativity factor of wellness was excluded from the step-wise regression analysis due to lack of a significant contribution to the model.

Self identity, spirituality, and cultural identity are all contained within the idea of essential wellness. Concepts associated with essential wellness have been previously linked to academic achievement. Studies have shown that increases in spirituality can lead to higher grade-point averages (George, et al., 2008). In addition, research has shown that sexual and ethnic minority students face additional stressors that can have an effect on their overall academic performance (Education Policy Institute, 2004; Zubernis & Snyder, 2007). My study does not support this prior research. The essential factor of wellness was not significantly related to first semester grade-point average for minority students, but it was for Caucasian students. In other words, minority participants who indicated a high level of self-identity, cultural identity, and spirituality were not significantly more likely to have higher academic achievement.

Surprisingly, minorities had a significantly higher score for the essential factor of wellness ($p < .05$). The essential factor of wellness also contributed significantly to the step-wise

regression model. When the essential factor of wellness was added to high school grade-point average, the predictive power of the model increased from 24% to 35%.

Physical Well-being is a common concept among wellness models. However, prior literature concerning the relationship between physical wellness and academic success is mixed. Some research has shown a positive relationship between physical fitness, retention, and grade-point averages (Trockel, et al., 2000; Zhang & RiCharde, 1998) while others have found the opposite effect (Mansfield, et al., 2004). My study showed mixed results as well. There was a significant relationship between physical wellness and academic success for students from the Nursing Department. However, there were no other significant relationships and the physical factor of wellness did not significantly contribute to the regression model. This may show that the effect of physical wellness may be dictated by curriculum. Although the differences were not significant the respondents from the Nursing Department had the lowest physical wellness scores on average. This, along with the significant tie to first semester grade-point average may indicate that lower physical wellness scores are tied to academic performance in the classroom.

Social support has been considered an important factor of retention and success in higher education (Astin, 1993). Research has shown that students who are more socially integrated are more likely to persist and have higher levels of academic success (Educational Policy Institute, 2004). My study had mixed results. Overall, the social factor of wellness was not significantly associated with first semester grade-point average. However, there was a significant negative correlation for minority students ($r(11) = -.64, p < .05$). This may indicate that these students are overly involved in social activities to the detriment of their academic performance.

My study adds to the current literature concerning the ISM of wellness and higher education. Prior research with the ISM has shown that students with more social interactions

have a greater buffer against stress (Myers & Betchel, 2004). My study adds to this by showing that coping skills (stress buffers) are negatively related to first semester grade-point averages, although this was not significant. It also shows that wellness factors could be considered in an attempt to predict first semester grade-point average.

Implications for Future Practice, Policy, and Research

There are several groups that may be able to use the results of this study to influence practice, policy, and research. For example, coordinators of campus wellness or transition programs may use the results of this study to influence how their programs are administered. This study was administered to first-time, first-year students, who are the target of many wellness and transition programs. My study showed that programs may have an increased effect by focusing on areas such as self-identity and spirituality. Coordinators may also interpret the results to mean that coping skills can have an influence on transition and academic success and therefore incorporate them into their programs. In addition, the analysis indicated that coordinators should modify their programs according to gender, ethnicity and academic programs. Skills associated with wellness may be of greater benefit to female and non-minority students. In this way wellness and transition program coordinators can tailor resources to ensure the greatest efficiency and success of students.

A second group that may be able to use the results to influence practice is high school administrators. Often these administrators are responsible for counseling students with regard to the successful transition from high school to college. The results of this study may allow these individuals to teach high school students skills that may increase their chance of academic success. In addition, they may choose to offer programs that focus on skills such as coping or self-identity to increase the chance that students obtain the skills that may influence their

academic success in college. In addition, for students who are entering certain academic programs, administrators may choose to implement programs that offer specific skills related to wellness. The results of my study indicate that students entering healthcare disciplines such as nursing may benefit from programs that focus on physical wellness, essential wellness in addition to overall wellness.

A third group that may be interested in the results of the current study is high school students as well as their parents. If students and parents understand the skills that could influence their chance to be academically successful, they can choose to obtain those skills before transitioning to college. For example, student could interpret my results to mean that they need to ensure they have coping skills to make the transition to college. This could lead them to certain college-preparatory courses or mentoring programs where they could obtain those skills. In addition, current students and parents could use my results to understand that there are other factors that could influence their academic success besides performance in their high school classroom. This may be of specific interest to the various sub-groups. Students could use my results as a springboard to search out appropriate services once they are on their campus of choice.

One group that may find the greatest benefit in these results is administrators at the participating institution. Many of the results were opposite of what was expected or what is found within the literature. Therefore, administrators may use the results to revise the curriculum for first-time, first-year students. For example, first-time, first-year students enrolled in the first-year seminar course may focus on coping skills, physical health, or other areas related to wellness. The current results indicate that students at this institution may not benefit from instruction in these areas. By changing the curriculum to focus on these areas, administrators

may be able to increase retention and academic success at the institution. In addition, administrators at similar health oriented institutions or programs may be able to use these results to influence changes in practice at their own institutions.

The results of the current study could also be used to affect policy. Policymakers involved in K-12 education could use my results when making decisions regarding the funding of programs involving wellness. For example, many programs focus on preparing minority students for the transition to higher education. The current study indicates that areas related to wellness have an inverse relationship to academic success for minority students. Therefore policymakers may choose to shift resources to other areas that may have a greater influence on academic success. This could include an increase in academic preparation through tutoring, mentoring programs, or technical skills programs. In addition, policymakers may be able to use my results to create programs that ensure students from certain groups are aware of the potential inverse relationships between some areas of wellness and academic success. In this way they may be able to better prepare students with the information and skills they need to be successful.

Higher education policymakers can use the results of my study in similar ways. For example, my study indicated that many factors associated with wellness had little effect on academic success. Policymakers may therefore determine that money allocated to institutions in support of wellness programs may be misdirected. This money can then be re-allocated to programs that have a greater affect on academic success. In addition, higher education policymakers may use the results of my study to create programs that focus on certain areas of wellness. By focusing programs on essential, coping, and in some cases physical wellness, policymakers may be able to have a larger affect of student success. Finally, policymakers may choose to use the results of my student to create information, data warehouses, or programs that

could help students understand which areas most affect their chances at success in college. In the same way, policymakers could effectively warn students of certain groups that higher self-reported aptitude or participation in some wellness areas may have an inverse effect on their chance for academic success.

The results of the current study could also be used to inform future research endeavors. My study employed quantitative methods to investigate the relationship between wellness and academic success. A follow-up to this could include qualitative methods that would allow for a clearer picture of this relationship. For example, the current study indicated that there was a positive influence between wellness and academic success for Caucasian students, and a negative relationship for minority students. Qualitative techniques such as interviews or case studies could be used to help explore this dichotomy. This could provide the researcher with rich descriptions of how the students themselves view wellness and its effect on their academic performance. The results of such a follow-up study may reveal that minority students would benefit from different types of wellness programming. In addition, it may reveal how colleges and universities can increase the success of minority students through changes in curriculum or services, including reducing wellness programming aimed at minorities in favor of other, more impactful options.

In the current study I reviewed data collected from a single cohort of students. A follow-up study could include multiple cohorts of students. This could solidify or discount the current findings so that institutions could be confident in any changes made based on the results. It may be found that the relationship between wellness and academic success changes over time, and therefore programming adjustments could be made accordingly. This is especially important for the participating institution. Since the results were not what you would normally expect, administrators may wish to conduct a follow-up study to solidify these results. In addition,

another option would be to follow a single cohort over multiple years. In this way it could be determined if levels of wellness change over time, if they continue to have an impact on academic success, or if wellness is related to other factors, such as graduation from college. In this way colleges and universities could determine if curricular changes or additions are needed to better prepare and mentor students throughout their program.

Another option for future research could be to study institutions from a wider geographic area. I studied a single institution from the southeastern United States. It is possible that institutions located in other areas may yield different results. For example, in this study I found that essential wellness was related to academic success. It is possible that students attending college in a different geographical area may show a relationship among different factors of wellness. Colleges and universities could then use the results to customize programming to meet the needs of their student population. In addition, the college involved in my study had a single focus on healthcare education. It may be that institutions with a wider focus may yield different results than the current study.

Limitations to the Study

There were several limitations to the current study. The first limitation was related to the sample size. While the response rate for the survey was adequate (66%), the overall population was small ($N = 125$). In addition, several cases had to be deleted to ensure the analysis contained only first-time, first-year students. The low number of responses from sub-groups also reduced the ability to perform analysis based on gender, ethnicity, and academic program. In some cases, such as ethnicity, the sample had to be combined to perform statistical analysis. The low number of responses reduces the ability to generalize these results to the general population. In addition,

any significant results found in the sub-groups of the sample population must be interpreted with caution due to the low numbers in each category.

Another limitation to the study was the timing of the survey. The students participated in my study during their first semester at the institution. It may be that patterns of responses may have been different if the study was conducted at another time. It may be that students develop an appreciation for wellness over the course of time and therefore their responses would be more related to whether or not they graduate rather than their performance in the first semester. In addition, students in their first semester may be overwhelmed with the transition from high school to higher education. It is possible that a greater effect could be obtained by surveying students during their senior year in high school. This would also allow an analysis of how students felt before they transitioned to college compared to their actual performance during the first semester. Another factor could be the timing of the survey within the semester. The survey was not administered until the mid-point in the semester. Students could have undergone significant changes during that time. It is possible that this would affect their responses to the survey. If the survey was administered at the beginning of the semester it would have been more of a true assessment of the student's wellness level before entering college.

Sampling technique was also a limitation. I used a convenience sample based on the available population of first-time, first-year students at a single institution. If I had used a random sampling technique that included multiple institutions the results would have been more generalizable to the larger population. In addition, a more rigorous sampling technique would have increased the power of the statistical analysis.

Scoring of the survey instrument was also a limitation. Evaluation of the survey results was performed by Jane E. Myers, Ph.D. who serves as Professor of Counseling and Educational

Development at the University of North Carolina Greensboro and is also the co-author of the 5F-WEL. Overall wellness scores as well as individual wellness factor scores were provided.

However, the methodology used to obtain these scores was not released. Therefore, I was unable to perform any factor analyses. This hampered my ability to investigate the individual survey responses for reliability and validity. In addition, I was unable to investigate how variability in individual question responses affected the overall and wellness factor scores.

A final limitation of the study deals with the analysis. My analysis was based on the total wellness score as well as the five factors of wellness. It is possible that more information could be gained by studying the underlying sub-factors of wellness. In addition, individual questions were not analyzed. It may be that through a question-by-question analysis more relationships will emerge that could inform the results.

Conclusion

Overall the results show that there is a relationship between wellness and academic success in first-time, first-year college students at a single, private, allied health institution. This relationship, however, is not universal across sub-groups such as gender, ethnicity, and academic program. Minorities showed a negative relationship between wellness and academic success while Caucasian student showed a positive relationship. However, neither relationship was significant. Caucasian students had a significant relationship between essential wellness and academic success. Neither men nor women showed a relationship between the factors of wellness and academic success. There was a relationship between coping wellness, essential wellness, and physical wellness and academic success for nursing students. However no relationship was found between overall wellness and academic success for any group. Essential

wellness and coping wellness did significantly add to a model predicting first-semester grade-point average in first-time, first-year college students.

Many of the results were not expected, and opposite to those found in prior studies. Much of the current literature notes that increased wellness or health in areas related to wellness can increase a student's ability to perform in the classroom. Those studies that have found a lack of relationship between wellness and academic performance have noted that students who over-compensate in any area may then have few resources to devote to academic performance. It could also be that the type of institution affected the results. Students who are attracted to healthcare fields may not have the same relationship to wellness as students in other programs. Typically, these students have already had exposure to health and wellness and therefore may also have skewed results on the survey.

This research is noteworthy because there have been few studies that investigate the relationship between wellness and academic success in college. First-time, first-year students face significant challenges as they transition from the high school environment. Many are living away from home for the first time, and are fully responsible for their well-being, schedule, and time management. Many students have not developed the skills to cope with their new diverse, challenging environment. Dealing with these changes often involves means beyond academic ability. This study demonstrated that factors of wellness can contribute significantly to the academic success of students.

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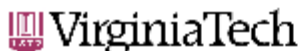
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Appendix A – IRB Approval Letter



Office of Research Compliance
 Institutional Review Board
 2000 Kraft Drive, Suite 2000 (0497)
 Blacksburg, Virginia 24061
 540/231-4991 Fax 540/231-0959
 e-mail moored@vt.edu
 www.irb.vt.edu

PVA00000572 (expires 1/30/2010)
 IRB # is IRB00000667

DATE: October 15, 2009

MEMORANDUM

TO: Steven M. Janosik
 Howard Ballentine

Approval date: 10/15/2009
 Continuing Review Due Date: 9/30/2010
 Expiration Date: 10/14/2010

FROM: David M. Moore 

SUBJECT: IRB Expedited Approval: "The Relationship Between Wellness and Academic Success in First-Year College Students", IRB # 09-796

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of 12 months, effective October 15, 2009.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

Important:

If you are conducting federally funded non-exempt research, please send the applicable OSP/grant proposal to the IRB office, once available. OSP funds may not be released until the IRB has compared and found consistent the proposal and related IRB application.

cc: File

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Appendix B – Initial Recruitment E-mail

Dear Student:

You have been invited to participate in a research study designed to investigate the relationship between wellness and academic achievement. This requires only that you complete an online survey using the link provided below. Following your completion of the survey, your responses will be matched with demographic and enrollment data from the student information system. Please read the informed consent and indicate that you agree to this process and wish to continue. You will then be asked to complete the wellness survey.

Link here

All students who complete the wellness survey will receive 10 extra credit points in their freshman seminar course. In addition, all participants will be entered into a drawing for a \$50 Best Buy gift certificate.

Thank you for your participation. If you have any questions please feel free to contact me directly.

Howard Ballentine
Primary Investigator
540-224-4689
hballentine@jchs.edu

**Note – This message, and any attachments or links that may accompany it, contain information which is intended for the use of the individual to which it is addressed and should not be forwarded or otherwise distributed without prior permission of the originator.*

Appendix C - Follow-Up Recruitment E-Mail

Dear Student:

There is still time for you to participate in a research study designed to investigate the relationship between wellness and academic achievement. This requires only that you complete an online survey using the link provided below. Following your completion of the survey, your responses will be matched with demographic and enrollment data from the student information system. Please read the informed consent and indicate that you agree to this process and wish to continue. You will then be asked to complete the wellness survey.

Link here

All students who complete the wellness survey will receive 10 extra credit points in their freshman seminar course. In addition, all participants will be entered into a drawing for a \$50 Best Buy gift certificate.

Thank you for your participation. If you have any questions please feel free to contact me directly.

Howard Ballentine
Primary Investigator
540-224-4689
hballentine@jchs.edu

**Note – This message, and any attachments or links that may accompany it, contain information which is intended for the use of the individual to which it is addressed and should not be forwarded or otherwise distributed without prior permission of the originator.*