2017

The Influence of Cognitive and Psychological Well-being Factors on Freshmen Community College Student GPA: A Prediction Model

Barbara Karwacinski
Andrews University, karwacin@andrews.edu

ABSTRACT

THE INFLUENCE OF COGNITIVE AND PSYCHOLOGICAL
WELL-BEING FACTORS ON FRESHMEN COMMUNITY
COLLEGE STUDENT GPA: A PREDICTION MODEL

by

Barbara Karwacinski

Chairs: John V. Matthews and Tammy Overstreet

ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University

School of Education

Title: THE INFLUENCE OF COGNITIVE AND PSYCHOLOGICAL WELL-BEING
FACTORS ON FRESHMEN COMMUNITY COLLEGE STUDENT GPA: A
PREDICTION MODEL

Name of researcher: Barbara Karwacinski

Names and degrees of faculty co-chair: John V. Matthews, Ph.D.
Tammy Overstreet, Ph.D.

Date completed: April 2017

Problem

One of the most significant issues for higher education in the early 21st century is
student success. Research studies indicate that a large number of freshman community
college students are unsuccessful in their academic endeavor. However, there is
insufficient research conducted to determine the holistic causes of this problem. Current
research focuses on two types of traditional predictors: cognitive (ability, academic
factors) and non-cognitive (affective, non-academic factors). It seems, however, that
traditional cognitive and non-cognitive predictors alone are inadequate measures for
determining students' full potential because they cannot account for the psychological
processes that contribute to and influence a student's behavioral engagement. Although

several research endeavors established connections between psychological predictors and students' academic performance, there are a limited number of research studies analyzing the impact of individual well-being on student academic success. To address this gap in the research, this study seeks to examine the interrelationship among the six dimensions of Psychological Well-Being (PWB), the student cognitive attributes (high school grade point average [GPA] and American College Test [ACT] scores) and the community college student first-year, first-semester (FYFS) college GPA. The purpose of this study was to examine the interplay between the cognitive and multi-dimensional psychological variables, and the extent to which they may influence one another regarding their impact on freshman student GPA. The study specifically analyzes the interrelationship between the six dimensions of PWB and students' scores on prior cognitive indicators (high school GPA and ACT scores) to create a prediction model that illustrates how these variables contribute to academic success measured by Southwestern Michigan College (SMC) students' FYFS GPA.

Method

A non-experimental, predictive, correlational design was used in this quantitative study. The participants in this study were FYFS students (n = 174) enrolled at SMC in the fall of 2015. A 42-item version of Ryff's PWB scale was administered to all participants. This questionnaire is designed to measure PWB among six dimensions: Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-Acceptance. Students' prior academic achievement records (high school GPA and ACT scores) and the FYFS student GPAs were obtained from SMC's Banner Data Standards System. Student demographic variables (Age, Gender,

Ethnicity, Major, and Parents' Educational Level) were obtained from a student self-reported demographic questionnaire.

Results

Seven linear regression models were built to answer the research questions. Models 2, 6, and 7 arrived at the same results as the best-fit models. Models 2, 6, and 7 revealed that high school GPA had a statistically significant effect on FYFS GPA ($F_{[1, 135]} = 72.87$, $p < .001$). For each point higher in the student's high school GPA, his or her FYFS GPA increased by an average of 0.79, 95% CI (0.61, 0.97). The resulting adjusted R^2 value was 0.35, indicating that approximately 35% of the variation found in FYFS GPA can be explained by students' high school GPA. Model 2 arrived at its model fit without considering any of the psychological factors. However, Models 6 and 7 arrived at their model fits after considering the psychological factors, and concluded that PWB factors do not contribute to explaining any unique variance in students' FYFS GPA.

Conclusion

The findings of this research study revealed that high school GPA is the strongest predictor of students' FYFS college GPA. The study revealed that approximately 35% of the variation found in the rural community college students' FYFS GPA can be explained by the students' high school GPA. I also concluded that even though I do not endorse Models 3 and 4, these models together suggest that there might be evidence to support a marginally significant relationship between Positive Relations With Others and FYFS GPA. Positive Relations With Others as a PWB variable emerged to be more important than the other PWB variables in its contribution to explaining 3.2% of the variation found in the FYFS GPA. Therefore, given the limitations of the study, dismissing the idea that

students' PWB dimensions contribute to their FYFS GPA would be premature. In light of current research, further research studies that would avoid the limitations of this study should validate this idea. Furthermore, in order to determine truly the effect of PWB dimensions on students' FYFS GPA, a longitudinal research on a larger sample size in urban and rural college settings should be carried out.

Andrews University

School of Education

THE INFLUENCE OF COGNITIVE AND PSYCHOLOGICAL
WELL-BEING FACTORS ON FRESHMEN COMMUNITY
COLLEGE STUDENT GPA: A PREDICTION MODEL

A Dissertation

Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

Barbara Karwacinski

April 2017

THE INFLUENCE OF COGNITIVE AND PSYCHOLOGICAL
WELL-BEING FACTORS ON FRESHMEN COMMUNITY
COLLEGE STUDENT GPA: A PREDICTION MODEL

A dissertation
presented in partial fulfillment
of the requirements for the degree
Doctor of Philosophy

by

Barbara Karwacinski

APPROVAL BY THE COMMITTEE:

_____   _____
Co-Chair: John V.G. Matthews   Dean, School of Education
                                           Robson Marinho

_____
Co-Chair: Tammy B. Overstreet

_____
Member: Jimmy Kijai

_____   _____
External: Edyta Jankiewicz   Date approved

TABLE OF CONTENTS

Appendix

LIST OF TABLES

LIST OF ABBREVIATIONS

ACT   American College Testing

FYFS   First-year, First-semester

GED   General Educational Development

GPA   Grade Point Average

IEO   Astin's Input-Environment-Output Model

IPPA   International Positive Psychology Association

IRB   Institutional Review Board for the Protection of Human Subjects

NACAC   National Association for College Admission Counseling

NCES   National Center for Education Statistics

OLS   Ordinary Least Squares

PWB   Psychological Well-Being

SMC   Southwestern Michigan College

SPSS   Statistical Package for the Social Sciences

SPWB   Scales of Psychological Well-Being

SWB   Subjective Well-Being

ACKNOWLEDGMENTS

I wish to give God the glory for providing me with the strength, wisdom, and courage to complete my doctorate. I extend my sincerest thanks to my husband and my son for their love and support through the process of my completing the study.

I would like to acknowledge that the completion of this journey would not be possible without the support and guidance of my committee members. Thank you, John Matthews, for your ongoing support and meticulous guidance. Your wisdom and kindness impacted and enriched my life. Thank you, Tammy Overstreet, for helping me to stay excited about my topic. Thank you, Jimmy Kijai, for guiding every step of my research process, making this work seem doable even in times when I felt discouraged.

I also wish to thank you, Angela Evans, for your help in collecting data. Thank you, Michael Frisby, for your help in analyzing data. Thank you, Dennis Hollingsead and Giny Lonser, for patiently editing my dissertation.

Anna Piskozub deserves a special note of recognition. Thank you, Anna, for all your help and support through my studies.

I also wish to thank the administration and the students at Southwestern Michigan College for your participation in my research.

CHAPTER 1

INTRODUCTION

The purpose of Chapter 1 is to provide information on the background and

identification of the problem. This chapter will also address the purpose of the study, to

create a prediction model to illustrate the extent to which the cognitive and multi-

dimensional psychological variables affect first-year, first-semester (FYFS) student grade

point average (GPA) at Southwestern Michigan College (SMC). This chapter also

includes research questions, research methodology, theoretical framework, significance

of the study, definitions of terms, limitations, and delimitations; and will conclude with

an overview of the research methodology.

Background of the Problem

One of the most significant issues for higher education in the early 21st century is

student success. Community college students represent more than 40% of the

undergraduate enrollment in the United States (American Association for Community

Colleges, 2012). According to a survey by the National Center for Education Statistics

(NCES, 2014a), 37% of first-time students entering two-year colleges do not return for

the second year of studies. It has been estimated that freshmen college students' academic

failure costs over $1.2 billion in federal and state funds (Gaston, 2012).

Early college leaving is associated with negative consequences for students and

their families. A student leaving college without having completed his or her program of

study may also be exposed to various psycho-social problems. Dissatisfaction with college experience, disruption of life plans, and being jobless are some of the many such possible negative outcomes (Radford, Berkner, Wheeless, & Shepherd, 2010).

From an institutional point of view, data on enrollment projections support program planning and budgeting. The prediction of enrollment provides the basis from which to predict both the number of new students and the number of returning students. By studying the variables that contribute to student success, higher educational institutions are better able to predict both enrollment and retention of students.

From a student-centered point of view, this information is equally important to colleges interested in identifying and providing services for students at risk of dropping out. In order for a college to identify ways to provide intervention with students likely to drop out, the institution must be able to predict the types of students who are more likely to leave and to identify ways to intervene with students prone to dropping out.

First-year, first-semester college GPA is one of the major contributing predictors of early drop-out from college (McGrath & Braunstein, 1997, p. 398). The GPA remains the single best indicator of college students' academic performance (Bandura, 1997; Brown, Lent, & Larkin, 1989; Frisby, 2001; Hackett, Betz, Casas, & Rocha-Singh, 1992; Iventosch, Thomas, & Rohwer, 1987; Lauver et al., 2004; Multon, Brown, & Lent, 1991).

The vast majority of community colleges are "open admission" higher education institutions, only requiring a high school diploma or General Educational Development (GED) for entry. Student motivation and desire to study are strong; however, most of these first-generation students come unprepared for the challenges of college (Freeman et al., 2007; Messick, 2013; Sedlacek, 2004; Tracey & Sedlacek, 1984; Warburton, Bugarin,

& Nunez, 2001; Wolters, Shirey, & Pintrich, 1996). A study of student responsibility indicated that 74% of community college students are not prepared academically or psychologically for what is expected in their first year of studies (Howell, 2012, p. 126). Most community college students are low-income, first-generation college students without role models for educational success. These students are easily discouraged in their academic endeavors, often lack a sense of control over their futures, and have difficulty envisioning their long-term goals (Fike & Fike, 2008; Jerald, 2001; Maxwell, 1997).

Furthermore, the first year of college constitutes a time of substantial transition for incoming students (Fisher & Hood, 1987; Goodnough & Ripley, 1997; Kerr, Johnson, Gans, & Krumrine, 2004; Mattanah, Hancock, & Brand, 2004). Freshman students vary greatly in their ability to cope with and adjust to new challenges. Research points out that the students who adapt effectively to their new social and academic environment are much more likely to be successful at college (Thomas, Inentosch, & Rohwer, 1987, pp. 351–352; Tinto, 1993, p. 107).

In the early 21st century, students' academic performance in higher educational institutions has preoccupied educational research (DeBerard, Julka, & Spielmans, 2004; Howell, 2012; Robbins et al., 2004). A great deal of attention has been paid to improving college students' first-year experience (Brown et al., 1989; Hackett et al., 1992; Robbins et al., 2004; Upcraft, Gardner, & Barefoot, 2005). There is a relatively large body of research on the prediction of college GPA. The research focuses on two types of traditional predictors: cognitive (ability, academic factors) and non-cognitive (affective, non-academic factors).

For decades, researchers have relied on cognitive measures such as high school grades and admission test scores to predict college student success (Braxton, Hirschy, & McClendon, 2011; Braxton, Shaw Sullivan, & Johnson, 1997; Rendón, Jalomo, & Nora, 2000; Ryff, Keyes, & Hughes, 2003). These traditional predictors of student success have long been solid predictors of student persistence and first-year college GPA. High school GPA and the American College Testing (ACT) scores have been consistently identified as predictors of success outcomes such as first-year college student GPA (ACT, 2008; Chen, 2012; Geiser & Santelicek, 2004; Kuh, Cruce, Shoup, Kinzie, & Gonya, 2008; Lotkowski, Robbins, & Noeth, 2004; Millikin & Woodruff, 2010; Moores & Klas, 1989; Noble, 1991; Pascarella, Terenzini, Pierson, & Wolniak, 2004; Pryor, Eagan, Blake, Berdan, & Case, 2012; Reason, 2009; Reason, Terenzini, & Domingo, 2006; Robbins et al., 2004; Sawyer, 2010; Walpole, 2003, 2007).

This preference for the cognitive predictors has also been reflected in the admission process. The traditional and the most popular criteria that college administrators have used to seek out the best students for their institutions are standardized tests of verbal and mathematical skills, and prior record of academic achievement such as high school GPA (Mouw & Khanna, 2013). The research on admission practices validated the functionality of standardized tests and high school GPA in predicting students' academic success in college (Feldhusen & Jarwan, 1995; Fleming & Garcia, 1998; Wright, Palmer, & Miller, 1996).

Even though a portion of the variance in the students' academic performance can be explained by standardized cognitive tests and high school GPA, research identifies that a significant amount of variance remains unexplained (Coyle & Pillow, 2008;

Kobrin, Patterson, Shaw, & Mattern, 2008; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Non-cognitive variables have been defined in various ways in the literature. Some researchers have seen them as extracurricular, non-academic activities relating to adjustment, motivation, and perception (Baker & Siryk, 1984; Cohen, Friendlander, Kelemen-Lohnas, & Emore, 2009), while others have used the term to describe academically-related skills, achievement motivation, and academic self-efficacy (Le, Casillas, Robbins, & Langley, 2005; Robbins et al., 2004, pp. 263–267).

It seems, however, that traditional cognitive and non-cognitive measures alone are not sufficient enough to predict students' full potential as those cannot account for the psychological processes that contribute to and influence a student's behavioral engagement (Bean, 2005; Frisby, 2001; O'Connor & Paunonen, 2007; Poropat, 2009; Schreiner & Louis, 2011; Sedlacek, 2004). Research points out that psychological factors are crucial for students making the transition to college (Bean, 2005; Bowman, 2010; Cicognani et al., 2008; Duran, 1986; Frisby, 2001; Haynes, 2003; King & Cooley, 1995; Lauver et al., 2004; Palmer & Strayhorn, 2008; Pritchard & Wilson, 2003; Schreiner & Louis, 2011; Sedlacek, 2004; Sheu & Lent, 2009).

Psychological factors are important because they account for internal assets that can enhance the prediction of students' college GPA (Robbins et al., 2004; Sedlacek, 2004). It is important that the psychological factors are malleable (Robbins et al., 2004, p. 272), meaning that strategically developed interventions at the individual, classroom, and program to help students to succeed at college.

Although several research endeavors established connections between psychological predictors and students' academic performance (Freeman et al., 2007;

Messick, 2013; Wolters et al., 1996), there are a limited number of research studies analyzing the impact of individual well-being on student academic success. According to Bowman (2010), a student's individual well-being and individual positive psychological functioning is an important factor in successfully completing college (p. 184). Pritchard and Wilson (2003) found that the ability to navigate emotional stressors encountered at college successfully is an important factor in positive adjustment and subsequent retention (pp. 19–21).

These findings have particular relevance during the FYFS of college as students begin to navigate the academic, social, and financial challenges of college life (Cooke, Bewick, Barkhan, Bradley, & Audin, 2006, pp. 507–510). Lee, Michaelson, Olson, Odes, and Locke (2009, pp. 306–307) suggested that within the college population, psychological difficulties are most evident among students first entering college. Bewick, Koutsipoulou, Miles, Slaa, and Barkham (2010) found that first-year undergraduate students experience heightened distress and a significant reduction in well-being when they begin college (p. 644). This is consistent with research by Cooke et al. (2006), which found that increased strain is put on students at the start of college. Furthermore, research indicates that college stress negatively influences overall life satisfaction (p. 507). According to Weinstein and Laverrghetta (2009), this has particular implications for student academic performance as a decline in life satisfaction correlates positively with reduced academic performance (pp. 1161–1162).

Even though there is extensive research highlighting the relationship between Psychological Well-Being (PWB) and college student success, research studies have typically utilized only symptom measures to rate the well-being of students. These

measures are designed to target specific areas of psychological difficulties, such as self-esteem, stress, and depression (Kenny & Perez, 1996; Wintre, Bowers, Gordner, & Lange, 2006; Walker, 2009). The results of studies utilizing such indicators of well-being point to global psychological distress, somatic distress, low self-esteem, and anxiety as indicators of psychological functioning and subsequent attrition (Holmbeck & Wandrei, 1993, pp. 74–75; Langston & Cantor, 1989; Wintre & Yafee, 2000, pp. 21–23).

A model developed by Ryff (1989) creates an overall model of positive functioning of a person. Ryff argued that previous models have little theoretical basis and therefore, neglected important aspects of well-being (p. 1073). In lieu of affective aspects of well-being, Ryff pointed to the stability of life-satisfaction rating scales in measuring well-being. Furthermore, PWB is defined as positive functioning, a reflection of one's perception to be able to face and deal with life challenges (Ryff & Singer, 1998, p. 18).

Ryff (1989) proposed the concept of PWB as a multidimensional construct of positive psychological functioning that consists of six distinct facets: (a) Self-Acceptance—the extent to which an individual "possesses a positive attitude toward the self; acknowledges and accepts multiple aspects of self including good and bad qualities; feels positive about past life" (p. 1072); (b) Positive Relations With Others—the extent to which an individual "has warm, satisfying, trusting relationships with others; is concerned about the welfare of others; capable of strong empathy, affection, and intimacy; understands give and take of human relationships" (p. 1072); (c) Autonomy— the extent to which an individual "is self–determining and independent; able to resist social pressures to think and act in certain ways; regulates behavior from within; evaluates self by personal standards" (p. 1072); (d) Environmental Mastery—the extent

to which an individual "has a sense of mastery and competence in managing the environment; controls complex array of external activities; makes effective use of surrounding opportunities; able to choose or create contexts suitable to personal needs and values" (p. 1072); (e) Purpose in Life—the extent to which an individual "has goals in life and a sense of directedness; feels there is meaning to present and past life; holds beliefs that give life purpose; has aims and objectives for living" (p. 1072); and (f) Personal Growth—the extent to which an individual "has a feeling of continued development; sees self as growing and expanding; is open to new experiences; has sense of realizing his or her potential; sees improvement in self and behavior over time; is changing in ways that reflect more self–knowledge and effectiveness" (p. 1072). Each dimension forms one of the six subscales on the instrument developed by Ryff: the Scales of Psychological Well-Being (SPWB).

The Ryff SPWB (1989) have undergone testing, and several studies demonstrated that Ryff's conceptualization of PWB is empirically sound. Research has widely supported the existence of six dimensions of well-being (Keyes, Shmotkin, & Ryff, 2002; Kling, Seltzer, & Ryff, 1997; Kwan, Barker, Richardson, Wagner, & Austin, 2009; Ryff & Keyes, 1995; Ryff, Schmutte, & Lee, 1996; Schmutte & Ryff, 1997).

Ryff's conceptualization suggests that well-being is an evaluative feature that changes in response to developmental milestones and life events, while at the same time maintaining enduring features (Ryff & Keys, 1995, pp. 720–721). Bowman (2010) suggested that this model of PWB has relevancy for the successful completion of life transitions across contexts (p. 192).

This has particular implications for FYFS students as they experience one of the most significant transitions in life. Haynes, Sorrentino, Olson, and Szeto (2007) referred to entering college as a period characterized by "extensive variability and role exploration, without clear normative expectation" (p. 360). While this period may prove to have positive outcomes, there is also increased risk.

The FYFS at college is a significant stressor for students. This transitional time has the potential to impact students' PWB greatly, leading them to question their own identity and purpose in life and consequently, affect their academic success (Bowman, 2010, pp. 194–196; Hinton, Miayamoto, & Chiesa, 2008, pp. 89–90).

Statement of the Problem

The NCES (2014a) has reported that a large number of freshman community college students are unsuccessful in their academic endeavor. However, there is insufficient research conducted to determine the holistic causes of this problem. Current research approaches overemphasize the influence of cognitive attributes on student academic success (ACT, 2014; Chen, 2012; Geiser & Santelicek, 2004; Kuh et al., 2008; Lotkowski et al., 2004; Moores & Klas, 1989; Noble, 1991; Pascarella et al., 2004; Pryor et al., 2012; Reason, 2009; Reason et al., 2006; Robbins et al., 2004; Sawyer, 2010; Walpole, 2003).

Several researchers have found evidence cognitive attributes and non-cognitive factors are closely linked to college student GPA (Bean, 2005; Coyle & Pillow, 2008; Duran, 1986; Frisby, 2001; King & Cooley, 1995; Kobrin et al., 2008; O'Connor & Paunonen, 2007; Poropat, 2009; Roberts et al., 2007; Schreiner & Louis, 2011; Sedlacek, 2004). However, little research has been done on connecting cognitive attributes and

multi-level psychological dimensions of individual well-being and their effect on student academic success. To address this gap in the research, this study sought to examine the interrelationship among the six dimensions of PWB, the student cognitive attributes (high school GPA and ACT scores), and the community college student FYFS college GPA.

Purpose of the Study

This study examined the interplay between the cognitive and multi-dimensional psychological variables and the extent to which they may influence one another regarding their impact on freshman student GPA. The study specifically analyzed the interrelationship between the six dimensions of Psychological Well-Being and students' scores on prior cognitive aptitude (high school GPA and ACT scores) to create a prediction model that illustrates how these variables contribute to academic success measured by Southwestern Michigan College students' first-year, first-semester GPA.

Theoretical Framework

The theoretical framework that guided this study brings together two disciplines: higher education and psychology. This study, within the discipline of higher education, was grounded in Astin's (1984) Input-Environment-Output (IEO) Model. The IEO Model outlines the interconnected relationships among input variables—or the characteristics and experiences with which students enter college; environmental variables—or experiences students encounter in college; and output variables—or the results of students' interacting and experiencing college.

In this study, however, different from the multilevel nature of the original model used by Astin (1984), I restricted the model to be at the individual level. In this modified version of the IEO Model, students' cognitive aptitude (high school GPA and ACT

scores) and the six dimensions of PWB are treated as the input of the model. Students'

academic success (FYFS GPA) was treated as the outcome of the conceptual model as

shown in Figure 1.

This study, within the discipline of psychology, highlights the research on human

positive functioning (Keyes & Haidt, 2003; Ryff, 1989; Seligman, 2011), which forms

the basis for conceptualizing a holistic view of student well-being. The concept of PWB

(Ryff, 1989) was based on the premise that "being well" "encompasses a range of

characteristics and perceptions; that is, positive functioning constitutes much more than

one's current level of happiness" (p. 1070). The theoretical framework of PWB is

grounded in Maslow's (1968) concept of self-actualization, Erikson's (1959)

psychosocial stage model, and Jung's (1947) formulation of individuation (Ryff, 1989,

p. 1069).

Incorporating these perspectives, Ryff (1989) developed a model of PWB that

encompasses six dimensions: autonomous functioning and decision making, mastery of

one's environment, seeking opportunities for personal growth, maintaining positive

relationships with others, having a sense of purpose in life, and accepting and thinking

positively about oneself. Although it is correlated with other constructs, "Psychological

well-being is theoretically and empirically distinct from life satisfaction, happiness, self-

esteem, and locus of control" (Ryff & Keyes, 1995, p. 721). Psychological Well-Being

contributes to a range of critical outcomes in life, including increased social support,

greater life satisfaction, and improved physical health (Bowman, 2010, pp. 187–188;

Pierce, Sarason, & Sarason, 1991; Ryff, 2008, p. 4).
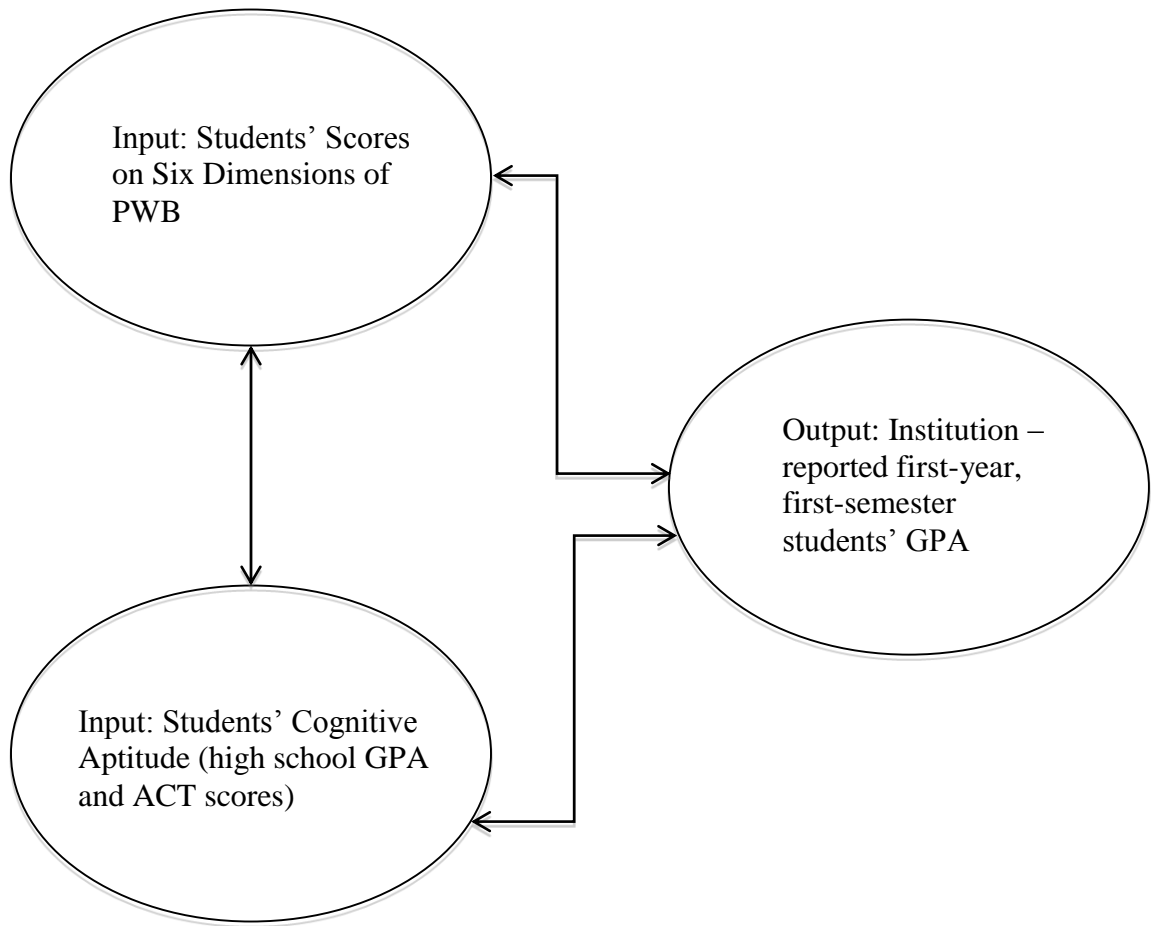
Figure 1. Conceptual model. Input-output: Students' six dimensions of PWB, cognitive aptitude, and academic performance.

Research Questions

This study sought to answer the following research questions:

Research Question 1: What percentage of variance in Southwestern Michigan College students' first-year, first-semester GPA can be explained by the students' prior academic cognitive factors (high school GPA and ACT scores)?

Research Question 2: What percentage of variance in Southwestern Michigan College students' first-year, first-semester GPA can be explained by the students' six dimensions of Psychological Well-Being?

Research Question 3: Which of the cognitive and psychological variables are relatively the most important in predicting the Southwestern Michigan College students' first-year, first-semester college GPA?

Significance of the Study

The study set forth this supposition: Student academic success should be analyzed holistically based on cognitive attributes and non-cognitive dimensions of PWB. Given current assessment practices in higher education, studies such as this are important for many reasons. One of the contributions that this study made is a current and up-to-date profile of freshman community college students' PWB. Another strength of the study is the result of investigating how student PWB and cognitive abilities relate.

The biggest contribution is that this study delineated the interrelationship among the six dimensions of PWB, students' cognitive aptitude (high school GPA and ACT scores), and academic performance (GPA). This research is unique as it delineated a predictive model of cognitive and PWB variables of freshman college students' academic success in a single campus study, a rural community college.

Research points out that institutions should determine for themselves if the results found in nationwide research studies can be generalized to their institution. Tinto asserted, "Models of student persistence should be institution-specific . . . [and] uniquely interact with characteristics of their particular student populations" (as cited in Gillespie & Noble, 1992, p. 12). Perfetto (2002) and Sinatra-Ostlund (1988) recommended that institutions planning to use predictive equations in admissions decisions conduct their own campus search (p. 32). Stumpf and Stanley (2002) believed institutions should conduct within-institution analysis of predictive variables correlating to retention of its own student body if they want "definitive information" (p. 1051). That information, if it leads to improved student-institutional fit, can, in turn, lead to the improved performance of students (Lang, Dunham, & Alpert, 1988, p. 212).

A campus model for freshman students' success can inform the institution about the differences that exist on that campus and provide prescriptions for success (Sinatra-Ostlund, 1988, p. 13). This study looks at cognitive and psychological variables that could provide a means to predict freshman student academic success at SMC.

Although this research created the SMC Model for the prediction of freshman students' academic success, through research grounded in the literature, it can provide other similar institutions with a framework for conducting such research on their own campuses.

Definitions of Terms

Academic Success: For the purpose of this study, student success was narrowly defined according to academic achievement in the form of student FYFS GPA.

American College Testing (ACT): Standardized test for high school achievement and college admission. American College Testing assessment, with multiple choice tests covering four skill areas, English, Mathematics, Reading, and Science, "measures high school students' general educational development and their capability to complete college-work" (ACT, 2008, p. 11).

Cumulative College GPA: GPA is a mathematical method of describing academic success for students in high school and college (Soh, 2010, p. 29). Each letter grade is given a whole number value: A = 4, B = 3, C = 2, D = 1, and F = 0. The average of these values for all course work with a letter grade is student's cumulative GPA.

Ethnicity: Indicates a shared genealogy and cultural traits. The ethnicity of participants is examined based on the following groups: African American, Non-Hispanic, American Indian or Alaska Native, Asian or Pacific Islander, Hispanic, White, Non–Hispanic, and other (Aragon & Johnson, 2008, pp. 148–149).

Psychological Well-Being (PWB): According to Ryff (1989), PWB is a multidimensional construct comprised of six areas of positive functioning: (a) Self-Acceptance—the extent to which an individual "possesses a positive attitude toward the self; acknowledges and accepts multiple aspects of self including good and bad qualities; feels positive about past life;" (b) Positive Relations With Others—the extent to which an individual "has warm, satisfying, trusting relationships with others; is concerned about the welfare of others; capable of strong empathy, affection, and intimacy; understands give and take of human relationships;" (c) Autonomy—the extent to which an individual "is self–determining and independent; able to resist social pressures to think and act in certain ways; regulates behavior from within; evaluates self by personal standards;"

(d) Environmental Mastery—the extent to which an individual "has a sense of mastery and competence in managing the environment; controls complex array of external activities; makes effective use of surrounding opportunities; able to choose or create contexts suitable to personal needs and values;" (e) Purpose in Life—the extent to which an individual "has goals in life and a sense of directedness; feels there is meaning to present and past life; holds beliefs that give life purpose; has aims and objectives for living;" and (f) Personal Growth—the extent to which an individual "has a feeling of continued development; sees self as growing and expanding; is open to new experiences; has sense of realizing his or her potential; sees improvement in self and behavior over time; is changing in ways that reflect more self–knowledge and effectiveness" (p. 1072). Thriving in life depends on the degree to which one sees him/herself functioning in these areas.

Southwestern Michigan College (SMC): Community college established in 1964, located in Dowagiac, MI, with a branch campus in Niles, Michigan.

Traditional Student: A college student under the age of 24, never married, often working part-time (Kinsella, 1998, p. 534).

Nontraditional Student: A college student older than 24 years of age or one who has had a break in education, often a single parent or married with children, working full-time (Kinsella, 1998, p. 535).

Limitations

Various limitations affected the predictive validity and generalizability of this study. A threat to the external validity of the study was the small sample and the fact that all freshman students attended a small rural community college in southwestern

Michigan. The term *external validity* refers to "the extent to which the results and conclusions of a study can be generalized to other people and settings" (McMillan & Schumacher, 1984, p. 108). It may not be possible to generalize the results of this study to freshman community college students in other regions of the United States.

Another limitation may be due to the homogeneity of the sample. This study included FYFS students in a rural community college in southwestern Michigan. The sample was predominantly Caucasian, with a total of 122 (70.1%) participants falling under this ethnicity, followed by 21 African Americans (12.1%), 4 American Indians (2.3%), 9 Hispanics (5.3%), and 12 collectively classified as other (6.9%). The absence of racial diversity will inhibit the transferability of findings to more diverse institutions of similar mission and size.

Furthermore, because this study measured freshman students' PWB, no claims can be made about what causes changes in PWB over time. Findings from longitudinal design could better explain changes in PWB and their effect on students' academic performance.

Delimitations

There were several delimitations of this study. First, the data set was intentionally limited to a single institution. Delimiting the study to a single institution controlled for differences in the levels and nature of engagement among institutions. Furthermore, the delimitation to a particular institution raised certain issues as to the generalizability or, perhaps more appropriately, the transferability of the results of the study.

Second, this research focused on FYFS students at SMC. While qualitative research is also needed to understand better the relation between cognitive and

psychological variables of students during the next semesters of studies, the current study does not explore this facet.

Overview of the Research Methodology

This quantitative study used a non-experimental, predictive, correlational design. The participants in this study were FYFS students enrolled in SMC in the fall of 2015. Prior academic achievement records (high school GPA and ACT scores) and demographic variables (age, gender, ethnicity) of the FYFS college students was obtained from the SMC Banner database.

Students were asked to fill out an online self-report: A 42-item version of Ryff's (1989) SPWB. This questionnaire is designed to measure PWB among the six dimensions outlined previously: Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-Acceptance. In the version utilized in this study, there are seven items per dimension. Responses are based on a 6-point Likert scale (6 = strongly agree, 5 = agree, 4 = agree slightly, 3 = disagree slightly, 2 = disagree, and 1 = strongly disagree). The SPWB have demonstrated sound psychometric properties across a variety of middle-aged adult populations (Ryff & Singer, 1998, pp. 9–11), across cultural and lingual contexts (Akin-Little & Little, 2008, p. 192; Ma, Tan, & Ma, 2012, p. 61), and with college student populations (Bowman, 2010, p. 196; Burns & Machin, 2009, p. 362; Chang, 2006, pp. 1004–1005; September, McCarrey, Baranowsky, Parent, & Schindler, 2001, pp. 220–222).

In scoring the SPWB, the total score represents the sum of 42 items. Negatively scored responses were reversed in the final scoring process so that high scores indicated high self-ratings on the dimensions assessed. Scores were not categorized by a cutoff

point indicating low vs. high well-being; rather, overall well-being scores were indicated on the distribution of responses. The questionnaire may be viewed in Appendix G.

The data was analyzed using standard multiple regression analyses in order to explain the degree to which the GPA scores of the FYFS SMC students can be predicted from the students' prior academic achievement (high school GPA and ACT scores) and the six dimensions of PWB.

Exploratory analyses were performed looking at the contributions of the SPWB subscales and cognitive attributes. Stepwise and hierarchical regression analyses were employed to identify relatively the most important predictors of the FYFS college students' GPA.

Summary

This study addressed the issue of the academic success of the FYFS community college students at SMC. The research sought to establish the effect of cognitive attributes (high school GPA and ACT scores) and the six dimensions of PWB and to create a prediction model to illustrate how these variables contribute to students' academic success measured by the students' FYFS GPA. I used Ryff's (1989) 42-item PWB instrument to collect data on students' six dimensions of PWB. I expected that students' cognitive factors (high school GPA and ACT scores) and their six dimensions of PWB (Autonomy, Positive Relations With Others, Purpose in Life, Personal Growth, Environmental Mastery, and Self-Acceptance) would contribute to their FYFS college GPA.

CHAPTER 2

LITERATURE REVIEW

The Process of Sorting Resources

To discover evidence and documentation for this study, searches were conducted using Andrews University's James White Library's Academic Search Complete (EBSCO), the OmniFile Full Text Select, Education and Psychology Citation Index, Sage Publications, and ProQuest Dissertations and Theses. Some journals were found within the James White Library's periodicals list after having been mentioned in the reference sections of other articles, but were unavailable through any of the search engines of the library. Articles have been included from as early as 1975 if they were seminal studies, but most are from 1995 to November 2014. In addition, I made use of the James White Library Interlibrary Loan program. At times, articles were located using various search engines. Several books were found using the James White Library's digital, online catalog.

Search criteria included, but were not limited to cognitive predictors of college student success, non-cognitive predictors of college student success, psychological predictors of college student success, college student PWB, and the SPWB (Ryff, 1989).

Purpose and Organization

The purpose of this literature review is to answer several questions. First, how does my research relate to and expand research studies on community college student

academic success? Second, how do cognitive variables (high school GPA and ACT scores) predict college students' academic performance? Third, what are some approaches to examining non-cognitive variables that influence students' academic performance? Fourth, how do the six dimensions of PWB link with the freshman college students' academic success? Fifth, why have I chosen to research PWB within the measures of freshman community college student academic success?

This review of literature begins with a description of college student academic success and how it is defined and assessed based on student cognitive attributes. Next, the research studies the influence of traditional non-cognitive attributes (academic self-efficacy, academic achievement motivation, and academic engagement) on student academic performance. Third, early 21st century research studies on students' psychological functioning and its influence on their academic success are introduced. Fourth, Ryff's (1989) six dimensions of PWB are defined and examined. Fifth, the link between freshman college students' academic success and the six dimensions of PWB is explored, with the results of several studies presented.

Pre-College Cognitive Predictors

The academic success of college students, particularly during their FYFS of studies, is a major concern for colleges and universities (Bean & Bradley, 1986; Horn & Kojaku, 2001; House & Keeley, 1997; Noble & Sawyer, 1987; Pascarella & Terenzini, 1998; Pike & Saupe, 2002; Ting, 1997). The research on the predictive value of standardized test scores and high school academic achievement is extensive. Research on this topic dates back to 1917, when high school grades were used to predict class standing at Harvard University (Mouw & Khanna, 2013, p. 331). According to a survey of degree-

granting institutions by the NCES (2014a), standardized test scores and high school GPA are two of the most commonly measured constructs used to evaluate students for admission. Research studies consistently point out that the best predictors of freshman college students' GPA are their high school GPA and their standardized test scores (Adebayo, 1993, 2008, p. 16; Noble & Sawyer, 2002, p. 19; Pascarella, Duby, Miller, & Rasher, 1981, pp. 331–332).

Researchers found ACT scores and high school GPA were the most common variables in predicting freshman college students' GPA. Chou and Huberty (1990) used multiple regression analysis to analyze ACT scores and high school GPA to predict freshman college students' GPA for a group of 3,337 students. The results of the regression analysis found that both variables were significant predictors of college success (pp. 178–179). There seems to be a general agreement regarding high school GPA and ACT composite score as indicators for college students' academic success (Curs & Harper, 2012; Grimes, Rezek, & Campbell, 2013).

Furthermore, both variables were found to be significant predictors of freshman college student GPA. However, some studies indicated high school GPA as the most predictive factor (Cheng, Ickes, & Verhofsadt, 2012; Honken & Ralson, 2013; Rowenton & Bare, 1991).

<center>ACT Composite Score</center>

The ACT composite standardized test score has been used since 1959 by Midwestern and Western states' higher educational systems as a measure of student-level college readiness (ACT, 2014; Radunzel & Noble, 2012). The ACT composite score is a scaled score ranging from 1 to 36 and is derived from subscales of the same range in

<center>22</center>

reading, English, math, and science. The ACT composite score had decades of research

to rely upon to help predict how well students finishing high school are likely to perform

in their first year of college (ACT, 2014). The acceptance of the use of ACT in the

prediction of college success is well-researched (Stumpf & Stanley, 2002, p. 1047).

Coyle and Pillow (2008) found that ACT scores proved to be a significant predictor of

cumulative college GPA, accounting for 14.1% of the variance (p. 723). Myers and Pyles

(2012) conducted a study of 420 first-time freshmen to determine the predictive power of

ACT scores on FYFS college GPA. The results of the regression analysis showed there

was a significant relationship between the variables, with ACT scores accounting for

16% of the variance in college GPAs (pp. 83–85). In the academic year of 2013–2014, an

average of 1.4 million students a year took the ACT nationwide with an average

composite score of 21.0 (ACT, 2014). While ACT scores have been used as a predictor of

college success for many years, the National Association for College Admission

Counseling (NACAC) cautioned higher educational institutions about relying too heavily

on standardized entrance examinations, stating that tests of this type should not be

considered as the sole predictor of college success (Zwick, 2007, p. 13).

<center>High School Grade Point Average</center>

GPA is an accepted indicator of student success (Cheng et al., 2012; Mourad &

Hong, 2011; Sparkman, Maulding, & Roberts, 2012). High school GPA is typically

organized as whole number values associated with letter grades. Most often, each grade is

given a whole number value (A = 4, B = 3, C = 2, D = 1, and F = 0). The mean of these

values for all courses with a letter grade is the student's cumulative GPA (Soh, 2010, p.

29). In a study of student data from three cohorts followed for four years from 26

<center>23</center>

institutions, Bridgeman, Pollack, and Burton (2008) found a strong relationship between high school GPA and first-year college GPA (pp. 18–21).

Wolfe and Johnson (1995) used forward multiple regression to develop a model with the most predictive combination of variables on college GPA for 201 college students. The results of the study found that high school GPA had the highest predictable ability, followed by ACT scores (p. 180). Noble and Sawyer (2002) conducted a study using ACT scores and high school GPA as predictors of different levels of college GPA. Logistic regression was used to find the predictive ability of these variables. The findings of the study indicated high school GPA as the strongest predictor of college GPA (p. 32). Research studies consistently point out that students' high school GPA is an appropriate data point to use as a measure of their college academic success (Curs & Harper, 2012; Grimes et al., 2013; Hu, 2001; Shavelson, 2010).

Non-Cognitive Predictors

There is a "broad body of theoretical perspectives and research indicating the influence of non-cognitive predictors on students' academic performance" (Marti, 2008, p. 4). Pascarella and Terenzini (1998) identified 3,000 studies conducted in the second half of the 20th century that addressed the influence of non-cognitive factors on students' performance (p. 158). Thus, it seems to be beyond the reach of this literature review to conduct such an exhaustive review of all previous work in this area. Therefore, the first part of the literature review pertaining to non-cognitive attributes related to student academic performance will focus on the traditional non-cognitive variables that have received extensive attention in the second half of the 20th century: academic self-efficacy, academic achievement motivation, and academic engagement. The second part

of this section of the literature review will focus on the research studies on psychosocial and psychological functioning variables predicting student academic success which emerged in the early 21st century. Theories of well-being will be presented and the use of Ryff's (1989) SPWB to predict freshman college students' academic success will be analyzed.

Academic Self-Efficacy

Bandura's (1977, 1997) social cognitive theory has been used for decades as a framework for explaining college students' development, as well as their academic persistence and integration. Bandura (1997) defined self-efficacy as one's belief in one's capability to complete successfully domain specific tasks related to a specific outcome (p. 43). The social cognitive theory centers on human agency as the vehicle of change (an agentic perspective) and the efficacy belief system as the foundation of human agency (Bandura, 2001, pp. 5–8; also 1986, 1989). In other words, it is the individual with an internal locus of control working to create change for himself or herself based on self-efficacy beliefs, rather than change having come about as the result of external forces.

Bandura (1997) theorized that self-efficacy beliefs influence behaviors, level of goal commitment, and degree of persistence in the face of perceived challenges or obstacles. He also identified the personal agency or causal capability as an integral component of self-efficacy. Furthermore, the level of perceived self-efficacy one experiences is directly related to the level of control that that individual perceives regarding his or her ability to achieve a desired outcome (pp. 63–66). According to Bandura, four main factors influence self-efficacy: (a) personal experience of success after attempting a specific task, (b) experiences of vicariousness after observing success

of peer group members, (c) acceptance of encouragement that a given task could realistically be achieved, and (d) psychological and emotional responses to a given event or experience. Further, behaviors and perceptions of available options are influenced by self-efficacy beliefs (pp. 78–79). Bandura contended that students who have experienced past academic successes or observed someone in their peer group be successful would have higher levels of academic self-efficacy than students who experienced low levels of academic achievement (p. 91).

The relationship between student academic self-efficacy and student performance has been supported by numerous studies (Brady-Amoon, 2009; Chemers, Hu, & Garcia, 2001; Gore, 1987; House, 1995; Lent, Brown, & Gore., 1997; Multon et al., 1991; Zajacova, Lunch, & Espenshade, 2005). Findings from previous research studies show the level of academic self-efficacy was positively correlated to persistence and academic performance (Hsieh, Sullivan, & Guerra, 2007; Lent et al., 1997; Multon et al., 1991). However, voices criticizing the higher educational institutions' reliance on findings from the self-efficacy studies have surfaced. For example, Braxton (2000) noted that adoption of an academic self-efficacy theory by researchers of higher education as an appropriate theoretical framework for student success models is not adequately measuring student psychosocial attributes. Kahn and Nauta (2001) suggested researchers should consider including constructs from the social cognitive theory such as outcome expectations and performance goals in future studies of multidimensional student success models (p. 635).

Academic Achievement Motivation

Motivation as an academic engagement factor refers to cognitive, emotional, and behavioral indicators of student investment in and attachment to education (Klasner &

26

Pistole, 2003; Le et al., 2005, p. 493). Many studies have established a positive relationship between achievement motivation and student academic performance (Atkinson & Litwin, 1990; Reeve, Heggestad, & George, 2005; Robbins et al., 2004; Sorrentino, Bobocel, Gitta, Olson, & Hewitt, 1988). However, in summarizing findings from early research on the relationship between the need for achievement and ratings or objective measures of performance, Meece, Anderman, and Anderman (2006) pointed out there were inconsistent results across studies and a non-significant relationship was reported in many of the previous research projects (Steers & Braunsterin, 1976; Tziner & Elizur, 1985; Yukl & Latham, 1978). Meece et al. (2006) argued that much of this research was characterized by small sample sizes and measures of need for achievement with questionable psychometric characteristics (p. 496). The results from recent large-scale studies also indicated that measures of need for achievement and achievement motivation yielded relatively weak correlations with measures of academic performance (Dudley, Orvis, Lebiecki, & Cortina, 2006; Durik, Lovejoy, & Johnson, 2009).

It is important that various psychological motivational goals such as mastery, performance, and performance avoidance have been found to exert an influence on student academic success (Barron, Harackiewicz, Pintrich, Elliot, & Thrash, 2002; Durick, Lovejoy, & Johnson, 2009; Mattern, 2005). Ridgell and Lounsbury (2004) contended that personality and work drive could be influential in student performance (pp. 610–611). Vansteenkiste, Simons, Lens, Sheldon, and Deci (2004) also noted in their study that engaging in learning behaviors with an intrinsic goal resulted in academic success and better-tested student performance than engaging in behaviors with an extrinsic goal (p. 251).

Student Academic Engagement

Student engagement is another non-cognitive construct that researchers tend to look at in the process of finding predictors for academic performance. The premise for the student engagement construct is that the students learn the most when they "practice" a subject regularly. The more they practice and get feedback on their writing, analyzing, or problem solving, the more academically engaged they become (Kuh, 2005, p. 101).

Exploring this relationship at the college level, Astin (1970a, 1970b, 1984) presented a widely-accepted student involvement theory. The theory states that the more involved a student is in college experiences, the greater the results are in student learning, personal development, and persistence. A number of works support Astin's theory: (Astin, 1984, 1993; Bowen, 1982; Boyer & Sedlacek, 1988; Chickering & Reisser, 1993; Pace, 1979, 1985; Pascarella, 1985; Pascarella & Terenzini, 2005; Thomas & Chickering, 1984; Tinto, 1993).

Svanum and Bigatti's 2009 study examined the relationship between academic course engagement and subsequent college success over a five- to six-year period among 256 undergraduate students enrolled in a psychology course. Their findings indicated that academic course engagement added significant explanatory power to students' GPA and strongly predicted degree attainment (Svanum & Bigatti, 2009, p. 127). Kuh et al. (2008) conducted research among 6,193 first-year undergraduate students trying to decipher the links between student engagement and two key outcomes of college: academic achievement and persistence. They concluded importantly in their studies that adding student engagement, as well as student psychological characteristics, in addition to prior achievement indicators, into the model significantly increased the explained variance in

students' academic performance and better predicted students' persistence in their second-year study (pp. 559–561).

Pascarella and Terenzini (2005) found that a student's academic involvement exerted a statistically significant influence on his or her intellectual development (p. 113). A student's level of engagement in academic and academic-related tasks and activities positively influenced knowledge acquisition and academic skill development (Kuh, 2005; Kuh & Hu, 2001; Pike, 1999; Watson & Kuhn, 1996). A student's voluntary time and effort invested in non-assigned reading positively influenced standardized measures of reading comprehension, writing skills, and science reasoning (Pascarella & Terenzini, 2005, p. 120).

Berger and Milem (1999) argued in their study of the relationship among students' behavioral involvement, perceptual integration, and college persistence that early involvement in the fall significantly predicted spring involvement and students' persistence in school (p. 155). Among all the perspectives of student involvement, involvement with faculty members had a significant, positive effect on students' subsequent institutional commitment.

Kuh (2005) found a positive correlation between engagement and academic performance for freshman students. The findings indicated a significant relationship among student psychosocial characteristics, utilization of student services, and successful completion of coursework (pp. 37–38).

Findings from Kuh's (2009) extensive interviews revealed that experiences beyond the classroom made substantial contributions to student learning and personal development (p. 687). Seniors reported that learning and developmental outcomes

included self-awareness, autonomy, confidence, altruism, critical thinking ability, social

and practical competence, knowledge acquisition, academic skills, application of

knowledge, esthetic appreciation, vocational competence, and a sense of purpose (pp.

690–693). Moreover, quality of student effort correlates significantly with student

persistence (Ory & Braskamp, 1994; Pascarella & Terenzini, 1998; Tinto & Russo,

1994). These studies found the relationship between effort and gain is not a simple

measure of student ability, but a significant outcome of student involvement.

Psychological Predictors

In the last decade of the 20th century and in the early 21st century, there has been

an important shift in emphasis and conceptualization of which variables best predict

students' academic success. Especially those research studies conducted in the early 21st

century question the functionality of and the existing sole reliance on cognitive and

traditional non-cognitive (self-efficacy, achievement motivation, and academic

engagement) factors to predict college students' academic success. Since the results of

some studies assessing the impact of cognitive and traditional non-cognitive variables on

the academic performance of freshman students have found mixed results (Hood, 2002;

Riehl, 1994; Ting, 1998), there is a growing concern that those variables alone cannot

adequately predict the academic success of college freshman students (Arbona & Novy,

1990; Hood, 2002; Pike & Saupe, 2002; Ting, 1998).

President Richard Atkinson from the University of California at Berkeley was one

of the first advocates for abolishing the use of standardized tests when considering

applicants for college admission. Robbins et al. (2004) listed 16 colleges and universities

that agreed that "there is an overemphasis on test preparation and test performance that

do not necessarily speak to the applicants' real potential to succeed in college after admission" (p. 104). In response to the debate and concerns over the limited predictive power that cognitive factors and traditional non-cognitive factors possess, there has been an increased interest in the role of psychological functioning factors in understanding college outcomes.

A significant number of research studies on the prediction of academic success for college students focuses on influence on psychological factors such as need for achievement and level of happiness (Williams, 2008, pp. 721–723). Diverse psychosocial factors, including family background, academic and social experiences, as well as personal attributes, have been found to have a significant impact on the overall performance of freshman college students (Bean & Metzner, 1985; Fleming, 1985; Stahl & Pavel, 1992).

Angela Duckworth (2016), in her book, *Grit: The Power of Passion and Perseverance*, discusses the impact of students' grit on their academic success. Duckworth defines grit as perseverance and passion for long-term goals and, therefore, an important measure of intelligence. Duckworth states, "During the several years of teaching, I grew less and less convinced that talent was destiny and more and more intrigued by the returns generated by effort" (p. 20). Students who start with a self-centered purpose (this feels good and is fun) stay motivated over time and are, consequently, looking for a deeper purpose: "Purpose that requires a second revelation: I personally can make a difference" (p. 163). Duckworth explains further that grit emphasizes stamina, which distinguishes it from other related personality factors, such as the five-dimension conscientiousness. Although grit shares the achievement aspect of

conscientiousness, it requires sustained effort and interest in goals: "The gritty individual approaches achievement as a marathon; his or her advantage is stamina" (p. 188).

The *Approaches to Predicting Student Success* study by Cohen et al. (2009) from the California Community College discussed student success. The researchers explored this subject in terms of perceived skills of students and faculty, assessment test as student success predictors, study skills, and advising variables relating to student success. The findings of the study pointed out that one must also consider "nonintellectual," or personality characteristics, as predictors (p. 69).

PWB factors, such as the level of anxiety, interest, and need for achievement are also tied to academic success. Researchers have recognized the interaction between the aspects of the student's personality and his/her social environment (Abrams & Jernigan, 2008; Langston & Cantor, 1989; Mallinckordt, 2000; Oswald & Clark, 2003; Paul & Brier, 2001; Rafanelli et al., 2000; Ruini et al., 2003; Strage, 1999). There is a growing number of research studies that use psychological functioning factors, such as personality traits and attitudes, to predict academic success (Bauer & Liang, 2003). College admission administrators also try to quantify the individual differences in these non-cognitive attributes among college students and subsequently account for the variation in students' academic performance (Nixon & Frost, 1990; Wesley & Oskamp, 2005).

Nixon and Frost's study (1990) utilized a 37-item inventory, which measured students' study habits and attitudes towards their academic ability, to predict students' academic goals and their college GPAs (r = .58, $p < .0001$), and academic self-concept and college GPAs (r = .56, $p < .0001$). Based on their findings, they argued that students who were goal-oriented and had high self-concepts tended to have higher GPAs than

their peers who had lower self-concept and lacked well-set goals (p. 1082). Shaughnessy, Zechmeister, and Zechmeister (2012) examined the functionality of psychological factors upon a group of college freshman students by conducting a multiple regression analysis. The results indicated that three personality factors (reasoning, emotional stability, and privateness) were significant predictors of the participants' final grades (p. 113).

In a study conducted by Sadler and Tai (2001), the relationship among students' demographics, high school background variables, and their grades in an introductory college courses were examined. They included 1,933 students from 18 colleges in the research. The researchers conducted multiple regression analysis to predict the course grade. The results of the study indicated that the type and location of high school, student ethnicity, parents' level of education, and student gender were among the significant predictors of students' grades (Sadler & Tai, 2001, pp. 124–125).

Wesley and Oskamp (2005) looked at student ability, high school achievement, and procrastinating behavior as predictors of cumulative college GPA among 244 undergraduate students. Students' procrastinating behavior was measured by a 10-item self-handicapping scale and a 5-item procrastination assessment scale. The findings of the study suggested that procrastination accounted for a significant proportion of the observed variance in students' cumulative GPA, in addition to ACT scores and high school GPA (p. 171).

Toomela (2008) conducted research on the relationship between level of education and non-cognitive characteristics of mind (characteristics adaptations) among 1,495 18- to 23-year-old Estonian men and found that, after accounting for background variables such as parents' level of education, personality dimensions, and cognitive

abilities, non-cognitive characteristics of mind remain correlated with higher levels of education (p. 23). In a study of five dimensions of college success, knowledge and mastery of general principles were found to be the most significant predictors of the status of students, while the dimensions of continuous learning and adaptability significantly predicted the rate of change over collegiate growth (Shivpuri, Schmitt, Oswald, & Kim, 2006, p. 78).

Multiple learning styles have also been shown to influence student collegiate performance. Dickinson and O'Connell (1990) studied the impact of amount and quality of study time and concluded that the time students spent organizing could be a significant predictor of their GPA (Dickinson & O'Connell, 1990, p. 229). Steinberg et al. (2009) confirmed the importance of study time in students' college performance by pointing out that students working more hours outside school per week performed more poorly on average than those working fewer hours (p. 31). The differences in study approach and habits may also result in differences in college performance. Nixon and Frost (1990) reviewed prior research in the area and found that when preparing for examinations, participation in a study group was negatively related to academic success. They provided additional evidence of a moderate correlation between solitary study and academic success (pp. 1081–1082).

Despite a growing number of research studies on psychological variables pertaining to student academic success, a very limited number of those studies have examined college students' PWB. Most studies of PWB have focused on adults and examined demographic and health factors that correlate with PWB. For example, PWB "is positively and consistently associated with measures of physical health, whereas other

forms of well-being have weak relationships with health" (Ryff et al., 2006, p. 91).

Levels of PWB tend to change over the life span. For example, Autonomy and

Environmental Mastery tend to increase with aging; however, Purpose in Life and

Personal Growth tend to be lower among older adults (Ryff, 1989, 1991; Ryff & Keyes,

1995; Ryff & Singer, 1998).

A significant number of research studies dedicated to examining PWB as related

to the mental health status of college students are being published. Substance abuse,

depression, self-harm and suicide, eating disorders, and anxiety disorders are emerging as

the most commonly occurring mental health problems among the college student

population (Tosevski, Milovancevic, & Gajic, 2010). A large number of research studies

have focused on college adjustment processes such as college sense of belonging, social

adjustment to college, and student PWB (Hurtago & Carter, 1997; Locks, Hurtago,

Bowman, & Oseguera, 2008; Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak,

2002; Mounts, 2004). The research points out that these forms of well-being "are

associated with student academic success" (Hausmann, Schofield, & Woods, 2007,

p. 817).

According to Bowman (2010), positive psychological functioning is an important

factor for academic success (p. 185). Research points out that participants who are

emotionally healthy are more likely to succeed (Avery, Wernsing, & Mhatre, 2011;

Wintre et al., 2006, p. 129). Pritchard and Wilson (2003) found that the ability to navigate

emotional stressors encountered at college successfully is an important factor in positive

adjustment and subsequent retention (p. 23).

These findings have particular relevance during the FYFS of college as students begin to navigate academic, social, and financial challenges (Cooke et al., 2006, pp. 511–512). Lee et al. (2009) suggested that within the college populations, adjustment difficulties are most evident among students first entering college (p. 308). Bewick et al. (2010) found that first-year undergraduate students experienced heightened distress and a significant reduction in well-being when they began college (pp. 638–639). This is consistent with research by Cooke et al. (2006), which found that increased strain was put on students at the start of college (p. 511). Furthermore, research has indicated that college students' stress negatively influences their overall life satisfaction (Weinstein & Lavergheta, 2009, p. 1162).

Theories of Well-Being

A recent search of PsychINFO for the keyword *well-being* identified 14,896 citations. The interest in researching well-being at the scholarly level appears both strong and broadly-based. However, specific conceptualizations of well-being vary widely. One movement receiving significant attention refers to itself as *positive psychology* (Ryff, Singer, & Love, 2004). Initiated primarily through the work of Seligman (Seligman & Csikszentmihalyi, 2000), this domain was described by Lent (2004) as a "hybrid enterprise," comprised of media-savvy forays (e.g., Seligman's best-selling book, *Authentic Happiness*, 2011), professional associations such as the International Positive Psychology Association (IPPA), and scholarly compendiums such as the *Oxford Handbook of Positive Psychology* (Snyder & Lopez, 2009).

The topic was further featured in special issues of *The American Psychologist* in 2000 and *The Counseling Psychologist* in 2006, while publishers have also launched *The*

Journal of Positive Psychology and *The Journal of Happiness Studies* within the past decade. However, while the proponents of positive psychology clearly appear to have propelled awareness and promotion of adaptive human functioning beneficially, this broad movement does not necessarily allow for containment within a definable construct that can be operationalized and explored empirically. However, two well-defined conceptualizations of well-being have emerged, which are based on significant empirical support.

The first, often referred to as hedonic well-being (Ryan & Deci, 2000), stresses pleasure and happiness and, therefore, relies upon an individual's ability to determine his or her own self-assessment of these emotions (Ryan & Deci, 2000, p. 71). Further, hedonic well-being has become conflated in the literature with the concept of subjective well-being (SWB), with subjectivity reinforcing the idea of happiness as an ultimately self-determined state (Keyes & Magyar-Moe, 2003). According to Diener (2009), SWB possesses three distinct features. First, SWB is subjective and does not depend upon external, objective conditions, such as health or material wealth. Second, SWB requires positive evaluations, not simply the absence of negative evaluations. Third, SWB is typically conceived of as a summation of all aspects of an individual's life (Diener, 2009, p. 31). Therefore, SWB has become typically operationalized in terms of three constructs—self-reported assessment of positive affect, absence of negative affect, and life satisfaction—and is often measured with instruments such as the *Positive and Negative Affect Schedule* (Watson, Clark, & Tellegen, 1988, pp. 1067–1068) and the *Satisfaction with Life Scale* (Diener, Emmons, Larsen, & Griffin, 1985, p. 73).

Subjective Well-Being has become the predominant conceptualization of well-being within the literature, presumably due in part to the fact that SWB makes no claims regarding the goals or behaviors through which SWB is enhanced. Thus, as Ryan and Deci (2000) pointed out, SWB is amenable to a bottom-up empirical approach, allowing for acknowledgment of whichever casual mechanisms demonstrate relatedness to the construct (p. 72).

A second view on well-being posited that it is not simply a function of happiness, but rather of living life well. Instead of pursuing hedonic enjoyment, individuals find well-being through efforts to pursue one's true self (Waterman, 1993, p. 681). Eudaimonic well-being, therefore, suggests that participants will feel happy when they live congruently with their values and purposes in striving to achieve the full actualization of their individual potentials. Often referred to as PWB, it differs from SWB in the suggestion that the gratification of hedonic desires, while satisfying in the short term, may not lead to well-being in the long term. Conversely, PWB theory suggests that certain negative experiences, such as enduring temporary hardship in pursuit of a goal, may ultimately enhance overall well-being.

Another differentiating aspect of PWB is its lack of strict reliance upon subjective assessments of well-being. As Diener (2009) suggested, eudaimonia does not represent happiness from an internal judgment, but from a value framework, such that the evaluation of well-being may come via external observation as much as from self-report (p. 47). Within this conceptualization, however, is the implicit acknowledgment that PWB relies upon a specified set of agreed-upon values by which to establish criteria for external assessment.

Conceptualizations of Psychological Well-Being

While SWB has achieved a seemingly agreed-upon operationalization in the literature, PWB, as a more value-based construct, has spawned a variety of formulations. For example, Waterman (1993) perceived PWB as a sense of *personal expressiveness*, consisting of meshing with these activities in ways not typical of most daily endeavors, feeling intensely alive, feeling complete or fulfilled while engaged in these activities, believing one does what one was meant to do, and feeling as if this is "who one really is" (p. 680). However, while capturing the essence of PWB, this concept of personal expressiveness "somewhat confounds temporal timeframes, as some of its components imply in-the-moment experiences similar to the moment-to-moment awareness of hedonic happiness" (Ryff & Keyes, 1995, p. 721).

Another more recent construct is Ryan and Deci's (2001) *self-determination theory*, which proposes that the failure to satisfy both physiological and psychological needs results in pathology and ill-being. Conversely, satisfaction of three basic needs across the lifespan—competence, autonomy, and relatedness—contribute to "an ongoing sense of integrity and well-being or 'eudaimonia'" (p. 74).

Seeking to provide a more theoretical grounding for PWB, Ryff (1989) noted earlier conceptualizations of well-being sprouted mostly from measures to assess positive and negative affective states, as well as life satisfaction. Thus, the measures seemingly guided the theory, rather than the reverse. To remedy this, Ryff proposed a comprehensive theoretical perspective of eudaimonia, based on the works of several influential scholars. Ryff (1989) began by agreeing with other scholars that Aristotle, in his *Nicomachean Ethics*, suggested the most important of human goods one can achieve is eudaimonia (p. 1070). However, unlike scholars who translated this term to mean

happiness (e.g., Bradburn, 1969, p. 67), Ryff suggested the term actually implied the notion of living up to one's potential. Ryff, therefore, sought to integrate a variety of theoretical perspectives on positive functioning and adaptive human development into a more parsimonious summary of well-being, including such concepts as Maslow's (1968) self-actualization, Rogers' (1961) notion of a fully functioning individual, and Erikson's (1959) psychosocial stage model (Trabattoni, 2004). Noting a significant overlap among these and other theorists' conceptualizations of positive psychological functioning, Ryff (1989) then proposed "these points of convergence in the prior theories constitute the core dimensions of the alternative formulations of psychological well-being" (pp. 1070–1071). Ryff's efforts of consolidation thus produced six dimensions: Self-Acceptance, Positive Relations With Others, Autonomy, Environmental Mastery, Purpose in Life, and Personal Growth, as described in Chapter 1.

Citing a lack of credible assessment procedures for the underlying theoretical constructs informing her model, Ryff (1989) also developed a robust measure of their six dimensions. The SPWB have since been utilized in an expansive number of investigations of PWB, with a search of the *Social Sciences Citation Index* indicating 789 citations of Ryff's original 1989 article. Thus, the SPWB assessment has become the preeminent measure of PWB.

Ryff's Psychological Well-Being Model

A PWB Model developed by Ryff (1989) expands upon discrete well-being variables to create an overall model of positive functioning. She argued that previous models have little theoretical basis, and therefore, have neglected important aspects of well-being (pp. 1070–1072). In lieu of affective aspects of well-being, Ryff pointed to the

stability of life satisfaction rating scales in measuring well-being. Ryff demonstrated that PWB skills and perceptions are crucial for successfully engaging in meaningful relationships, navigating one's environment, and realizing one's fullest potential.

Ryff's (1989) Model encompasses the qualities of Self-Acceptance, Positive Relations With Others, Environmental Mastery, Purpose in Life, Autonomy, and Personal Growth. Self-Acceptance specifically refers to positive appraisals of oneself and events that occurred in the past. Ryff described Self-Acceptance as a primary feature of mental health status (p. 1074). Self-Acceptance has particular implications across life-span theories, as it encompasses acceptance with the current self as well as with past events. According to Ryff, the ability to develop Positive Relations With Others is an indicator of maturity and refers to the presence of meaningful interpersonal relationships. Environmental Mastery is another indicator of mental health, capturing the ability to manage one's environment effectively. This involves the individual's ability to choose and create an environment he or she feels comfortable in.

Purpose in Life is a measure of an individual's goals, intentions, and direction. According to Ryff (1989), this contributes to the belief that one's life is purposeful and meaningful. Autonomy encompasses the other dimensions of well-being such as self-determination and independence. Individuals who demonstrate autonomous functioning evaluate themselves from within, rather than relying on the approval of others. The Personal Growth dimension is a measure of development as an individual, with a focus on the ability to achieve goals while concentrating to strive for further growth.

Although it is correlated with other constructs, "PWB is theoretically and empirically distinct from life satisfaction, happiness, self-esteem, and locus of control"

(Ryff, 1989, p. 1079). Psychological Well-Being contributes importantly to a range of critical outcomes in freshman college students' life, including "increased social support, greater life satisfaction, and improved physical health" (Bowman, 2010, p. 192).

Ryff's (1989) Model of PWB captures a broad array of conceptions of self. The six dimensions associated with PWB closely align with established developmental outcomes in higher education. For instance, Kegan's (1995) concept of self-authorship (Baxter-Magolda, 2001, p. 92) includes cognitive, interpersonal, and intrapersonal components (p. 117). Students who are self-authored specifically tend to think independently, know themselves, have healthy personal relationships in which other's opinions are valued (but not relied upon exclusively), and have internally-focused goals. These perceptions and behaviors overlap substantially with the PWB dimensions of Autonomy, Self-Acceptance, Purpose in Life, and Positive Relations With Others. Like self-authorship, PWB encompasses "the use of certain skills and perspectives that are useful for overcoming challenges and effectively navigating one's life" (Smider, Essex, & Ryff, 1996, p. 367).

Ryff's unique conceptualization suggests well-being is an evaluative feature that changes in response to developmental milestones in life events, while at the same time maintaining enduring features (Schmutte & Ryff, 1997, p. 554). It has been suggested that this Model of PWB has relevancy for the successful completion of life transitions across contexts (Bowman, 2010, p. 194).

This has particular implications for freshman college students as they experience the transitional phase of emerging adulthood. Emerging adulthood is defined as the period ranging from the late teens through the twenties, with particular emphasis on ages

18 to 25 (Salmela-Aro, Aunola, & Nurmi, 2007, p. 697). Haynes et al. (2007) referred to emerging adulthood as a period characterized by "extensive variability and role exploration, without clear normative expectations" (p. 360).

The transition from high school to college is a significant stressor during the period of emerging adulthood. Positive PWB functioning is especially important for the FYFS college students. Although college transitions can be difficult for all students (Upcraft et al., 2005, pp. 9–10), FYFS community college students often have even greater difficulty adjusting to college (Terenzini et al., 1994, p. 62; Zwerling & London, 1992, p. 91).

Research conducted by Bowman (2010) demonstrates the specific ways in which Ryff's (1989) dimensions of PWB capture the process of development within the higher educational environment. The study, which examined the extent to which college experiences were associated with the development of PWB during the freshman year, resulted in finding many aspects of college life impacted PWB. Bowman (2010) specifically found that involvement in co-curricular activities was positively related to gains in Personal Growth, Positive Relations With Others, and Purpose in Life. Furthermore, being appropriately challenged academically was positively related to gains across all dimensions of the SPWB (pp. 196–197).

Concluding Statement

Research studies point out that traditional cognitive and non-cognitive predictors alone are inadequate measures to predict student success because these variables cannot account for the psychological processes that contribute to and influence a student's

behavioral engagement. Research highlights the fact that psychological factors are crucial for students making transition to college.

This study's quest was to illustrate the interplay between the cognitive and multi-dimensional psychological variables and the extent to which they may influence freshman students' GPA. This research study was designed to analyze the interrelationship between students' scores on the six scales of PWB (Autonomy, Positive Relations With Others, Purpose in Life, Personal Growth, Environmental Mastery, and Self-Acceptance) and their scores on prior cognitive aptitude indicators (high school GPA and ACT) in order to create a prediction model, which would illustrate how these variables contribute to the academic success measured by rural community college students' FYFS GPA. My hope was that this examination of the effects of pre-college cognitive variables and PWB dimensions on rural community college freshman students' academic success will yield important information for college administrators, faculty, and student's advisors.

CHAPTER 3

METHODOLOGY

General Introduction

This study examined the interplay between the cognitive and multi-dimensional psychological variables and the extent to which they may influence one another regarding their impact on freshman students' GPA. The study specifically analyzed the interrelationship between the six dimensions of PWB and students' scores on prior cognitive aptitude measures (high school GPA and ACT scores) to create a prediction model that illustrates how these variables contribute to the academic success measured by community college students' FYFS GPA.

The Research Questions

In order to accomplish the purpose of this study, the following research questions are asked:

Research Question 1: What percentage of variance in Southwestern Michigan College students' first-year, first-semester GPA can be explained by the students' prior academic cognitive factors (high school GPA and ACT scores)?

Research Question 2: What percentage of variance in Southwestern Michigan College students' first-year, first-semester GPA can be explained by the students' six dimensions of Psychological Well-Being?

Research Question 3: Which of the cognitive and psychological variables are relatively the most important in predicting Southwestern Michigan College students' first-year, first-semester college GPA?

Research Design

This quantitative study used a non-experimental, predictive, correlational design. The participants in this study were FYFS students (n = 174) enrolled at SMC in the fall of 2015. A 42-item version of Ryff's (1989) SPWB was administered to all participants. This questionnaire is designed to measure PWB among the six dimensions: Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-Acceptance. Prior students' academic achievement records (high school GPA and ACT scores) and the FYFS student GPA was obtained from the SMC's Banner Data Standards System. Student demographic variables (age, gender, ethnicity, major, parents' educational level) were obtained from a student self-reported demographic questionnaire.

Population and Sample

The participants in this study were 174 FYFS students (56 males and 114 females) during the Fall Semester of 2015 at SMC.

Students completed a consent form (Appendix C) which indicated whether or not they would be willing to take part in this research study. The students also completed a voluntary release information form (Appendix D) to grant the investigator permission to collect their high school GPA and ACT scores and FYFS college GPA from the college's computerized records. A demographic questionnaire was also given, asking students to

report their gender, race, age, major, and parents' educational level (Appendix E). This information was used to further inform data analysis.

Before beginning this study, an application for approval of the research study was submitted to the Institutional Review Board for the Protection of Human Subjects (IRB) at SMC (Appendix B). Both SMC campuses, Dowagiac and Niles, were sampled for a more accurate representation of the SMC student population. An incentive of winning one of twenty $25 debit cards was offered to all participants in the study.

Definitions of Variables

The following list of definitions defines the terms used in this study. The dependent variable is the students' FYFS student GPA. The data collected to answer the research questions, the independent variables, included pre-college factors (high school GPA and ACT score) and six dimensions of PWB (Appendix A). Student demographic characteristics (gender, age, ethnicity, major, and parents' educational level) were the moderator variables. The eight independent variables are defined as follows:

1. *American College Testing* (ACT): This is a standardized test for high school achievement and college admission. American College Testing assessment, with multiple choice tests covering four skill areas (English, Mathematics, Reading, and Science), measures high school students' general educational development and their capability to complete college work.

2. *Cumulative College Grade Point Average* (GPA): This is a mathematical method of describing academic success for students in high school and college. Each letter grade is given a whole number value: A = 4, B = 3, C = 2, D = 1, and F = 0. The average of these values for all course work with a letter grade is student's cumulative GPA.

47

3.   *Autonomy***:** This variable measures the degree to which a student is self-determined and independent, is able to resist social pressures to think and act in certain ways, regulates behavior from within, and evaluates self by personal standards.

4.   *Purpose in Life***:** This variable measures the degree to which a student has goals in life and a sense of directedness, feels there is meaning to present and past life, holds beliefs that give life purpose, and has aims for objectives of living.

5.   *Positive Relations With Others*: This variable measures the degree to which a student has warm, satisfying relationships with others; is concerned about the welfare of others; is capable of strong empathy, affection, and intimacy; and understands the give and take of human relationships.

6.   *Personal Growth*: This variable measures the degree to which a student has a feeling of continued development, sees self as growing and expanding, is open to new experiences, has a sense of realizing his or her potential, and sees improvement in self and behavior over time.

7.   *Environmental Mastery*: This variable measures the degree to which a student, has a sense of mastery and competence in managing the environment, controls a complex array of external activities, makes effective use of surrounding opportunities, and is able to choose or create contexts suitable to personal needs and values.

8.   *Self-Acceptance*: This variable measures the degree to which a student possesses a positive attitude toward self; acknowledges and accepts multiple aspects of self, including good and bad qualities, and feels positive about past life.

Instrumentation

A 42-item version of Ryff's (1989) SPWB was administered to all participants. This questionnaire is designed to measure PWB among the six dimensions outlined previously: Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-Acceptance.

The original structure of the assessment included 20 items for each of six dimensions, resulting in a 120-item scale. Estimates of each scale's internal consistency for a sample of community volunteers were as follows: Self-Acceptance, .93; Positive Relations With Others, .91; Autonomy, .86; Environmental Mastery, .90; Purpose in Life, .90; and Personal Growth, .87 (Ryff, 1989). In addition, the following estimates of test-retest reliability were acquired for a 117-person sample over a 6-week interval: Self-Acceptance, .85; Positive Relations With Others, .83; Autonomy, .88; Environmental Mastery, .81; Purpose in Life, .82; and Personal Growth, .81 (Ryff, 1989).

Given concerns about the convenience of administration, a variety of shorter versions has been subsequently developed and distributed by the original author, including ones containing 12, 18, 42, 54, and 84 items, with a range of 2 to 14 items per dimension. Most recently, significant explorations and discussions have centered upon the 42-item version of the scale (Abbott et al., 2006; Abbott, Ploubidis, Huppert, Kuh, & Croudace, 2010; Springer & Hauser, 2006). In response to questions regarding the factor structure of the 42-item SPWB raised by Springer and Hauser (2006), Ryff and Singer (1998) suggested that factor analyses performed on this version support the theory-driven six-factor model originally proposed by Ryff (1989). Ryff herself gave her "personal recommendation" on the use of the 42-item SPWB (Abbott et al., 2010, p. 359). Therefore, the 42-item version was used in this study as it appeared sufficiently robust to

cover the six dimensions adequately, while allowing for more convenient administration when compared to the full 120-item version.

The SPWB have demonstrated sound psychometric properties across a variety of middle-aged adult populations (Ryff & Singer, 1998), across cultural and lingual contexts (Akin-Little & Little, 2008; Ma et al., 2012), and with college student populations (Bowman, 2010; Burns & Machin, 2009; Chang, 2006; September et al., 2001). In the version utilized in this study, there are seven items per dimension. When administered to a college-aged population, Chronbach's alphas for the 42-item version of this measure have been found to range from .77 to .86 (Bowman, 2010). The items in the 42-item questionnaire are divided equally among positive items and negative items. Responses are based on a 6-point Likert scale (1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = slightly agree, 5 = moderately agree, 6 = strongly agree).

In scoring the SPWB, the total score represented the sum of 42 items. Negatively scored responses were reversed in the final scoring process so that high scores indicated high self-ratings on the dimensions assessed. Scores were not categorized by a cutoff point indicating low vs. high well-being; rather, overall well-being scores were indicated on the distribution of responses. Sample items for each dimension were as follows: *I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people* (Autonomy); *I am good at juggling my time so that I can fit everything that needs to be done* (Environmental Mastery); *When I think about it, I have not really improved much as a person since I was younger* (Personal Growth); *I often feel lonely because I have few close friends with whom I share my concerns* (Positive Relations With Others); *I enjoy making plans for the future and working to make them a reality* (Purpose in Life);

When I look at my life so far, I am pleased with how things have turned out (Self-Acceptance). A demographic questionnaire was also given, asking students to report their gender, race, age, major, and parents' educational level. This information was used to inform further data analysis. See Appendices F and G.

Procedure

The data collection material for this study included five sections: an informed consent form (Appendix D), a voluntary release of information form (Appendix E), demographic information (Appendix F), Psychological-Well Being Survey (Appendix G), and pre-college cognitive factors (high school GPA and ACT scores) and FYFS college GPA.

Since this research study involved human subjects and included student academic data, the first step was to obtain approval from the IRB at SMC (Appendix B) and the IRB at Andrews University (Appendix C). Once the IRB authorizations were obtained, the process of collecting data began. All of the data for this study was collected during the fall of 2015. Ryff's (1989) SPWB and the demographic questionnaire was administered to freshman students during the first four weeks of the Fall Semester of 2015.

Freshman students were asked via e-mail sent from the Institutional Research Department at SMC to participate in an online survey about their PWB. An incentive of winning one of twenty $25 debit cards was offered. Students received the first e-mail during the first week of classes. A second e-mail was sent to all students as a reminder during the second week of classes. A third e-mail was sent during the third week of classes. A fourth e-mail was sent during the fourth week of classes. The online survey

51

was opened for students to complete it during the first four weeks of the semester. Students were assured that their participation was voluntary and that their responses would be kept confidential.

Before completing the online demographic and PWB questionnaires, students were first asked to complete an informed consent form (see Appendix D) and a voluntary release of information form (see Appendix E). They were prompted to provide their SMC Student Identification Number. They were unable to go on and complete the demographic survey (see Appendix F) and the PWB questionnaire (see Appendix G) until this information was provided. The number was used to track students' high school GPA and ACT scores and the FYFS college GPA from the Banner Data Standards System in the SMC's Registrar's Office. A complete list of the first-year, first-semester freshmen from the Fall 2015 cohort was obtained from the Office of Institutional Research at SMC. Student sensitive data, including student names and student ID numbers, were deleted. Student names, which were considered confidential, were assigned numerical codes.

Students' high school GPA data were expressed as a numeric value between 0.0 and 4.0 in the student records required for this research. Students' FYFS college GPA also utilized a 0.0 to 4.0 scale calculated by the student record system from letter grades entered by individual instructors upon student completion of individual courses during the fall semester of 2015. American College Testing composite score data were a numeric value included in student records. In the instance of this research, the values ranged from 1 to 36 in whole numbers. Students' FYFS final cumulative GPA was collected. As GPA was reported in the traditional numeric range from 0.0 to 4.0 in the SMC data system, no coding or re-labeling was required to make use of data for analysis.

Data Analysis

The data containing student records at SMC is not available in a public system. Due to the protected nature of the data contained in the student records, only a few individuals with job-related needs are able to view complete student records. At SMC, the Director of Institutional Research was the only one to access and sanitize the data needed for this research.

IBM Statistical Package for the Social Sciences (SPSS) 23, statistics software, was used to analyze the data and determine the relationship among the cognitive variables (high school GPA and ACT scores), the six dimensions of PWB (Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-Acceptance), and FYFS college students' GPA. Across all analyses, eight independent variables were used: The six dimensions of PWB and the pre-college cognitive attributes (high school GPA and ACT score).

Research Question 1 was addressed with the two pre-college cognitive attributes; Research Question 2 was addressed with the six dimensions of PWB; and Research Question 3 was addressed using all eight cognitive and psychological variables.

Students' demographic characteristics (gender, age, ethnicity, major, and parents' educational level) were collected to describe the data sample. Consistent with previous studies (Pascarella et al., 2004; Pike & Kuh, 2005), first generation students were defined as those whose parents did not attend any postsecondary education (1 = first generation, 0 = other). In addition, a series of coded variables was used to indicate race/ethnicity, which included African American, American Indian, Asian, Hispanic, Caucasian, and students who did not report their race or ethnicity. Other demographic variables include

gender (0 = female, 1 = male) and age to determine if students are traditional college age (0 = 18–24) or non-traditional college age (1 = 25 and above).

The data were analyzed using hierarchical and forward stepwise Ordinary Least Squares (OLS) regression analyses in order to explain the degree, to which the GPA scores of the FYFS SMC students can be predicted from the students' prior academic achievement (high school GPA and ACT scores) and the six dimensions of PWB.

This method allowed the assessment of the relationship among the eight independent variables and one dependent variable. Ordinary Least Squares regression is the most appropriate method for conducting a study like this, since there is one continuous and approximately normally distributed dependent variable and more than one continuous (and only continuous) independent variable. The purpose of OLS regression is to determine the amount of variance in a dependent variable accounted for by each independent variable. The goal of a maximally parsimonious model is "to select the fewest independent variables necessary to provide a good prediction of a dependent variable where each independent variable predicts a substantial and independent segment of the variability in the dependent variable" (Tabachnick, Fidell, & Osterlind, 2001, p. 186). The OLS regression analysis was run to see if any variable or a combination of variables can be used as a predictor of student success and to develop a theory that has the greatest explanatory power.

Exploratory analyses were performed investigating the relative outcome or ordering of the cognitive variables. A similar analysis was completed using non-cognitive, PWB subscale variables for the sample population. This form of research was selected since it fits the form of a predictive model. Stepwise regression and hierarchical

regression analyses were employed to identify relatively the most important predictors of the FYFS college students' GPA.

Treatment of Data

Once students filled out the demographic form and SPWB, the information they provided was stored in a locked Banner Data Standard System database hosted by the Department of the Institutional Research at SMC with the researcher having password-secured access.

In order to provide confidentiality while preserving student traceability, students' identifiers (names and student ID numbers) were removed and replaced with numbers corresponding with the alphabetical order of students' names. Data gathered for each student included: (a) Demographic characteristics (gender, ethnicity, age, major, and parents' educational level), (b) pre-college cognitive attributes (high school GPA and ACT scores), (c) SPWB scores, and (d) FYFS college GPA.

In the dual role of the employee at SMC and student in this research, I was committed to eliminating any breach of student identity during this research. As an employee, I had regular contact with administrative staff who were asked to provide anonymous student data for research. Throughout the research, every effort was made to maintain an appropriate professional distance from these individuals and the data systems they managed. All requests for data and any necessary follow up communication was shared with each individual's direct supervisor. While all raw student data was securely destroyed at the completion of this research, the results of the research were shared with the Director of Institutional Research at SMC.

Summary

The third chapter has delineated the research methodology used during this study of the influence of students' prior cognitive attributes (high school GPA and ACT scores) and their scores on the six scales of PWB factors on freshman community college students' GPA. A complete description of the participants, the setting, the variables, the instrumentation, the procedures, the design, and the statistical analyses performed has been included. This study contributed to the literature by delineating a prediction model of freshman community college students' academic success based not only on pre-college cognitive attributes, but also on a students' PWB factors.

CHAPTER 4

RESULTS

Introduction

In previous chapters, the problem of a large number of freshman community college students unsuccessful in their academic endeavor has been discussed. The insufficient research conducted to determine the holistic causes of the problem was delineated. Current research approaches emphasizing the influence of cognitive attributes on student academic success were described. Also, several research studies showing evidence that cognitive attributes and non-cognitive factors are closely linked to college student GPA were highlighted. This study examined the interplay between the cognitive and multi-dimensional psychological variables, and the extent they influence one another regarding their impact on freshman students' GPA. The study analyzed the interrelationship between the students' six dimensions of PWB and their prior cognitive aptitude (high school GPA and ACT scores) to create a prediction model that illustrates how these variables contribute to the academic success measured by rural community college students' FYFS GPA at SMC.

Description of the Sample

Participants in this study ($n = 174$) were FYFS students during the Fall Semester of 2015 at SMC. The demographic information on each participant's gender, age, mother's highest educational attainment, father's highest educational attainment, and

57

ethnicity was collected. Observations were obtained from 174 participants and, for each variable, between 2.3% and 3.4% missing data was present. Data included 56 males (32.2%) and 114 females (65.5%). Five participants were below age 18 (2.9%), 160 between the ages of 18 and 24 (92%), and five participants aged older than 25 (2.9%). Participants' mother's highest educational attainment was split closely between college and no college, with 77 (44.3%) having a college degree, and 93 (53.4%) having no college degree. Father's highest education attainment was less evenly distributed with 56 (32.2%) having a college degree, and 114 (65.5%) having no college degree. The sample was predominantly Caucasian, with a total of 122 (70.1%) participants falling under this ethnicity, followed by 21 African Americans (12.1%), 4 American Indians (2.3%), 9 Hispanics (5.3%), and 12 collectively classified as other (6.9%) (see Table 1).

Key variables in this study included both cognitive and psychological factors, where psychological factors were computed from the six psychological dimensions of Ryff's (1989) SPWB. These items are each mean composites from six-point Likert scales and include Environmental Mastery ($M = 3.92$, $SD = 0.85$), Personal Growth ($M = 4.84$, $SD = 0.72$), Positive Relations With Others ($M = 4.44$, $SD = 0.78$), Purpose in Life ($M = 4.61$, $SD = 0.88$), Self-Acceptance ($M = 4.16$, $SD = 1.02$), and Autonomy ($M = 4.21$, $SD = 0.83$). Cognitive factors include participants' high school GPA ($M = 2.92$, $SD = 0.75$), ACT scores ($M = 20.3$, $SD = 3.98$), and the dependent variable, FYFS college GPA ($M = 2.84$, $SD = 0.92$). All items were measured across a sample size of $n = 174$ with the exception of high school GPA, which had a sample size of 169. College GPA showed the strongest, and statistically significant, correlations with high school GPA ($r = .39$, $p < .01$) and ACT scores ($r = .26$, $p < .01$), and weaker correlations with Positive Relations ($r = .18$, $p < .05$)

Table 1

Frequencies and Percentages for Demographic Variables (n = 174)

	Participants	
Variable	Frequency	Percentage
Gender		
Male	56	32.2
Female	114	65.5
Missing	4	2.3
Total	174	100.0
Age		
Below 18	5	2.9
18–24	160	92.0
25 and older	5	2.9
Missing	4	2.3
Total	174	100.0
Mother Education		
College Degree	77	44.3
No College Degree	93	53.4
Missing	4	2.3
Total	174	100.0
Father Education		
College Degree	56	32.2
No College Degree	114	65.5
Missing	4	2.3
Total	174	100.0
Ethnicity		
African American	21	12.1
American Indian	4	2.3
Caucasian	122	70.1
Hispanic	9	5.3
Other	12	6.9
Missing	6	3.4
Total	174	100.0

and Self-Acceptance ($r = .17$, $p < .05$). There is a fair amount of correlation existing among the psychological factors. These correlations range from the lowest between Purpose in Life and Autonomy ($r = .26$, $p < .01$) to the highest between Environmental Mastery and Self-Acceptance ($r = .73$, $p < .01$) (see Table 2).

Results by Research Question

In order to address three research questions, a series of seven ordinary least squares (OLS) regression models were constructed. OLS regression is a well-established method, and is both a reasonable and defensible approach when the independent and dependent variables are continuous so long as the modeling assumptions are met (Howell, 2012, p. 123). All assumptions were verified for each model constructed.

Research Question 1

Research Question 1 studied the effect of the students' prior academic cognitive factors (high school GPA and ACT scores) on their FYFS GPA. Models 1 and 2 sought to determine the proportion of variance in FYFS GPA explainable by students' prior academic cognitive factors (high school GPA and ACT scores).

Model 1 used simultaneous entry to include both high school GPA and ACT scores in the model, regardless of whether both contributed to explaining the dependent variable, FYFS GPA. Model 2 implemented forward stepwise regression to eliminate non-contributing variables and generate a more parsimonious model. Models were only constructed on complete data sets, and it should be noted that not all students had scores on the ACT. Out of the 174 students, 31 students did not possess ACT scores and were thus omitted from the modeling process for Models 1 and 2. In both cases, initial fits also revealed six extreme outliers, which were filtered from the data set for continued

Table 2

Descriptive Statistics and Correlations (n = 174)

Variable	Descriptives			Correlations								
	n	*M*	*SD*	HSGPA	ACT	ColGPA	EnvMastery	PGrowth	PosRel	PurposeLife	SelfAccept	Autonomy
HSGPA	169	2.92	0.75	—								
ACT	174	20.30	3.98	.54**	—							
ColGPA	174	2.84	0.92	.39**	.26**	—						
EnvMastery	174	3.92	0.85	.13	-.11	.08	—					
Pgrowth	174	4.84	0.72	.06	-.16	.09	.51**	—				
PosRel	174	4.44	0.78	.07	-.02	.18*	.53**	.52**	—			
PurposeLife	174	4.61	0.88	.07	-.16	.15	.49**	.59**	.48**	—		
SelfAccept	174	4.16	1.02	.10	-.15	.17*	.73**	.57**	.56**	.65**	—	
Autonomy	174	4.21	0.83	.05	-.01	-.02	.37**	.38**	.27**	.26**	.50**	—

Note. **p < .01, significant correlation
*p < .05, significant orrelation

modeling toward Research Question 1. Removing these outliers improved the model's interpretive reliability, as outliers can have a powerful and undue influence on linear regression models, which causes them to disproportionately model the outliers over linear average members of the population (Howell, 2012). The resulting sample size was $n = 137$. Demographic information can be found in Table 3, and statistics and correlations are displayed in Table 4.

Upon removal of the outliers, both model fits were satisfactory. Model 1 found that when included simultaneously in the model, high school GPA is statistically significant ($F_{[1, 135]} = 58.23, p < .001$), but ACT scores are not ($F_{[1, 135]} = 1.61, p = .21$). This suggested that despite the known correlation existing between ACT score and FYFS GPA shown in Table 2, high school GPA is the stronger statistical predictor of the students' FYFS GPA. That is to say the ACT scores were unable to explain any unique variance that was not explained by high school GPA. The explanation for this may be because there is only moderate correlation between high school GPA and ACT scores ($r = .59$). With non-significant variables found in Model 1, Model 2 was built for a more parsimonious model of the impact of cognitive factors on FYFS college GPA.

Model 2 implemented forward stepwise regression and found that students' ACT scores did not have any statistically significant effect on FYFS GPA, and that high school GPA had a statistically significant effect on FYFS GPA ($F_{[1, 135]} = 72.87, p < .001$). For each point higher in high school GPA, FYFS GPA increased by an average of 0.79, 95% CI (0.61, 0.97). The resulting adjusted R^2 value was .35, indicating that approximately 35% of the variation found in FYFS GPA can be explained by students' high school GPA

Table 3

Frequencies and Percentages for Demographic Variables (n = 137)

Characteristic	Frequency	Percent (%)
Gender		
Male	44	32.1
Female	91	66.4
Missing	2	1.5
Total	137	100.0
Age		
Below 18	5	3.6
18–24	130	94.9
25 and older	0	0.0
Missing	2	1.5
Total	137	100.0
Mother Education		
College Degree	65	47.4
No College Degree	70	51.1
Missing	2	1.5
Total	137	100.0
Father Education		
College Degree	49	35.8
No College Degree	86	62.8
Missing	2	1.5
Total	137	100.0
Ethnicity		
African American	9	6.6
American Indian	3	2.2
Caucasian	100	73.0
Hispanic	5	3.6
Other	9	6.6
Missing	4	2.9
Total	137	100.0

Table 4

Descriptive Statistics and Correlations: Models 1 and 2

Variable	Descriptives			Correlations		
	n	*M*	*SD*	HSGPA	ACT	ColGPA
HSGPA	137	3.01	0.66	—		
ACT	137	20.31	4.05	.59**	—	
ColGPA	137	2.88	0.88	.59**	.28**	—

Note. **p < .01, significant correlation*
p < .05, significant orrelation

(see Table 5). The equation for Model 2 is as follows: FYFS GPA = .509+.787∗High

SchoolGPA+error.

Residual plots were visually inspected and confirmed for independence and

homoscedasticity. The residuals were checked for normality by performing a Shapiro-

Wilk test. The Shapiro-Wilk test is a test that takes a series of observations—in this

study, residuals—and compares their distribution to the normal distribution. The null

hypothesis for a Shapiro-Wilk test is that the data points are normally distributed. Thus,

when the *p*-value is returned as a result of the test, a *p*-value greater than .05 indicates

that there is evidence the data follow a normal distribution. When the *p*-value is below

.05, this serves as evidence that the data do not come from a normal distribution (Howell,

2012). The Shapiro-Wilk test confirmed that the residuals from the model were normally

distributed ($W = .985$, $p = .075$).

To answer Research Question 1, I concluded in favor of Model 2. The

assumptions of linear regression were satisfied. Namely, the residuals were shown to be

normally distributed, homoscedastic, and independent. All of independent variables were

continuous, and each showed a weak to moderate linear relationship with the dependent

Table 5

Models 1 and 2: Simultaneous Entry and Stepwise Regression Entry

Variable	Model 1: Simultaneous Entry						Model 2: Stepwise Regression					
	B	*SE B*	*B*	*t*	*p*	*95% CI*	*B*	*SE B*	*β*	*t*	*p*	*95% CI*
Intercept	0.73	0.33	na	2.200	.030	(0.07, 1.39)	0.51	0.28	na	1.790	.080	(-0.05, 1.10)
HS GPA	0.87	0.11	0.66	7.630	<.001	(0.65, 1.10)	0.79	0.09	0.59	8.540	<.001	(0.61, 0.97)
ACT Composite Score	-0.02	0.02	-0.11	-1.270	.210	(-0.06, 0.01)						
Adjusted R^2				0.350						0.350		
F for change in R^2				37.410						72.870		
p				<.001						<.001		

variable, FYFS college GPA. While this is true for both Models 1 and 2, variable selection indicated that ACT scores were superfluous and did not need to be retained in the model. Moreover, their relationship with FYFS GPA was weaker than the relationship between high school GPA and FYFS GPA and failed to explain any unique variance. The results of Model 2 showed that the same adjusted R^2 and overall fit quality can be achieved even upon omitting ACT as a predictor variable in the model. For these reasons, I found Model 2 to be preferable to Model 1. It should be noted as part of the fitting process for Models 1 and 2 that participants without ACT scores were excluded from the analysis. Because stepwise regression was used, Model 2 persists with omitting those participants without ACT scores, despite not including the variable in the final model. A third, but not discussed model was built using *only* high school GPA to predict FYFS GPA, in which those without ACT scores were not omitted from the sample. The third model also indicated quality fit statistics ($r = .53$, $r_{adj}^2 = .28$), was statistically significant ($F_{[1, 162]} = 63.06$, $p < .001$), and residuals were approximately normally distributed. I thus concluded that the data indicate a moderate linear relationship between high school GPA and FYFS college GPA.

Research Question 2

Research Question 2 examined what percentage of variance in SMC students' FYFS GPA was explained by the students' six dimensions of PWB. Model 3 was fit by using simultaneous entry into a standard linear regression model, while Model 4 utilized stepwise regression to cut down on potential multicollinearity and determine which, if any, of the psychological factors best predicts FYFS GPA. Model 3 identified two major outliers that were omitted for the remainder of its fitting process. The resulting sample

size for examining Research Question 2 was $n = 172$. Demographic information for variables can be found in Table 6 and descriptive statistics and correlations on the subset of participants can be found in Table 7.

Upon removal of the outliers, the model fit was satisfactory. Simultaneous entry revealed that none of the psychological factors was statistically significant. The most significant was the effect of Positive Relations With Others, which found that for every one point higher in the Positive Relations composite a person scored, the FYFS GPA increased by an average of 0.18 ($F_{[1, 165]} = 2.78$, $p = .097$), 95% CI (-0.033, 0.394). The adjusted R^2 for this model was .03, suggesting that 3% of the variance in FYFS GPA can be explained by the psychological factors. The exploratory data analysis revealed that a moderate degree of multicollinearity exists among the psychological factors. Variance Inflation Factor (VIF) statistics ranged from 1.37 to 2.58 (see Table 8).

This offers a partial explanation toward why there is no immediate statistical significance of any specific psychological factor. While visual inspection of the residuals for independence, homoscedasticity, and normality yield satisfactory results, formal normality assessments came back significant, suggesting that the data do not come from a normal distribution. It is known, however, that OLS regression models are robust to moderate violations of normality (Box, 1962). In addition to this, formal tests for normality are not without limitations (Ghasemi, 2012). Due to concerns about multicollinearity and fit, I did not endorse Model 3. Consequently, I proceeded to Model 4. In Model 4, I continued to use linear regression as the analysis method of choice; however, I employed variable selection techniques to simplify the model and to reduce the degree of multicollinearity that could pose a threat to model validity.

Table 6

Frequencies and Percentages for Demographic Variables (n = 172)

Characteristic	Frequency	Percent (%)
Gender		
Male	56	32.6
Female	112	65.1
Missing	4	2.3
Total	172	100.0
Age		
Below 18	5	2.9
18–24	158	91.9
25 and older	5	2.9
Missing	4	2.3
Total	172	100.0
Mother Education		
College Degree	76	44.2
No College Degree	92	53.5
Missing	4	2.3
Total	172	100.0
Father Education		
College Degree	56	32.6
No College Degree	112	65.1
Missing	4	2.3
Total	172	100.0
Ethnicity		
African American	21	12.2
American Indian	4	2.3
Caucasian	120	69.8
Hispanic	9	5.2
Other	12	7.0
Missing	6	3.5
Total	172	100.0

Table 7

Descriptive Statistics and Correlations: Models 3 and 4

Variable	Descriptives			Correlations						
	n	*M*	*SD*	ColGPA	EnvMastery	PGrowth	PosRel	PurposeLife	SelfAccept	Autonomy
ColGPA	172	2.87	0.89	—						
EnvMastery	172	3.94	0.63	.08	—					
PGrowth	172	4.83	0.73	.12	.52**	—				
PosRel	172	4.44	0.78	.20**	.51**	.51**	—			
PurposeLife	172	4.61	0.88	.17*	.49**	.59**	.48**	—		
SelfAccept	172	3.84	0.79	.17*	.67**	.54**	.53*	.60**	—	
Autonomy	172	4.21	0.84	.16*	.37**	.38**	.27**	.27**	.49**	—

Note. **p < .01, significant correlation*
p < .05, significant orrelation

Table 8

Collinearity Diagnostics (n = 172)

		Collinearity Diagnostics	
Variable	*n*	*Tolerance*	*VIF*
Autonomy Mean	172	0.731	1.368
EnvMaster Mean	172	0.497	2.014
PGrowth Mean	172	0.531	1.883
PosRel Mean	172	0.619	1.615
PurposeLife Mean	172	0.524	1.909
SelfAccept Mean	172	0.388	2.577

Model 4 implemented a forward stepwise regression technique to reduce the degree of multicollinearity and isolate any meaningful psychological variables that may explain some of the variance seen in FYFS GPA. An *F*-test probability of .05 was used for entry, and I used a probability of .1 for removal. Preliminary model fitting found the same two extreme outliers as found in Model 3 These outliers were omitted for continued fitting for Model 4. The descriptive and correlation information found in Table 7 continues to apply to Model 4. The forward stepwise regression discovered that Positive Relations With Others, when other psychological factors are removed from the model, had a statistically significant effect on FYFS GPA ($F_{[1,\ 171]} = 6.163$, $p = .014$).

Results revealed that for every one point higher an individual scored on the Positive Relations With Others scale, their FYFS GPA improved by an average of .22, 95% *CI* (0.052, 0.388). The adjusted R^2 for this model was .032, suggesting that one PWB variable, Positive Relations With Others, is capable of explaining 3.2% of the variance found in FYFS GPA. This result is comparable to the result found in Model 3, suggesting that the parsimonious model is capable of explaining the same amount of

variance as the model that included all variables (see Table 9). The equation for Model 4 is as follows: *First Semester GPA = 1.899+.22 ∗ PositiveRelations+error.*

Residual plots were inspected and confirmed for homoscedasticity and independence, though a formal normality assessment via the Shapiro-Wilk test showed that the residuals do not follow a normal distribution ($W = 0.954$, $p < .01$). The residuals showed a very slight left skew, but histograms and *Q-Q* plots—visual inspection tools for the histogram—suggested that whatever the deviations from normality being detected by the Shapiro-Wilk test are, they are slight, and thus again I do not think this alone constitutes a significant enough departure from normality to draw into serious question the results from Model 4 (Box, 1962). Models 3 and 4 together suggested there might be evidence to support a marginally significant relationship between Positive Relations With Others and FYFS GPA, although this relationship is notably weak. Nevertheless, Positive Relations With Others as a PWB variable is shown to be more important than the other PWB variables in its contribution to explaining FYFS GPA. Consequently, Models 3 and 4 helped me conclude that while personal relations with others is perhaps the strongest of the psychological variables in determining first-semester GPA, further research studies are needed to provide evidence to support the existence of a meaningful relationship.

<div align="center">Research Question 3</div>

Research Question 3: Which of the cognitive and psychological variables are relatively the most important in predicting the SMC students' FYFS college GPA?

To answer Research Question 3, I took three different approaches to modeling. In Model 5, hierarchical regression was used, with cognitive variables taken to be the first

Table 9

Models 3 and 4. Simultaneous Entry and Stepwise Regression Entry

Variable	Model 3: Simultaneous Entry						Model 4: Stepwise Regression					
	B	SE B	β	t	p	95% CI	B	SE B	β	t	p	95% CI
Intercept	2.14	0.54	na	3.97	<.001	(1.08, 3.21)	1.9	0.38	na	4.96	<.001	(1.14, 2.66)
PosRel	0.18	0.11	0.16	1.67	.100	(-0.03, 0.39)	0.22	0.09	0.20	2.59	.01	(0.05, 0.39)
EnvMastery	-0.15	0.15	-0.11	-0.98	.330	(-0.44, 0.15)						
PGrowth	0.02	0.13	0.02	0.17	.870	(-0.23, 0.27)						
Autonomy	-0.14	0.09	-0.13	-1.48	.140	(-0.32, 0.05)						
PurposeLife	0.07	0.1	0.07	0.68	.500	(-0.14, 0.28)						
SelfAccept	0.17	0.14	0.16	1.28	.200	(-0.09, 0.44)						
Adjusted R^2				0.03						0.03		
F for change in R^2				1.88						6.69		
p				.09						.01		

block, and psychological variables taken to be the second block. All variables within each block were entered into the model. The goal of this approach was to determine whether or not the addition of the psychological variables contributed to explaining variation in FYFS GPA. Model 6 used a forward stepwise regression on all cognitive and psychological variables simultaneously. Given what I discovered from Models 3 and 4, that the psychological variables show a moderate amount of multicollinearity, the goal was to determine whether there are any psychological variables that play a role alongside the cognitive variables in explaining FYFS GPA. Finally, Model 7 combined the ideas of Models 5 and 6. Model 7 used hierarchical regression, with stepwise regression variable selection criteria within each block. Again, since I was aware of moderate collinearity among the psychological variables, this helped me determine whether or not any psychological variables, when entered via stepwise regression and thus circumventing potential problems arising from multicollinearity, contribute to explaining additional variation in FYFS GPA.

Model 5 implemented hierarchical regression with cognitive variables entered first, followed by psychological variables. This model identified one major outlier, which was removed from the model building process. The resulting sample size was $n = 141$. Demographic variables information can be found in Table 10 and descriptive statistics and correlation variables can be found in Table 11.

As in Models 1 and 2, I noticed that the reduction in sample size was due to the use of complete cases only, and 31 students were without ACT scores. Results of the model showed that the addition of the cognitive block provides a significant improvement over a baseline model, with high school GPA being the significant cognitive variable

73

Table 10

Frequencies and Percentages for Demographic Variables (n = 141)

Characteristic	Frequency	Percent (%)
Gender		
Male	45	31.9
Female	94	66.7
Missing	2	1.4
Total	141	100.0
Age		
Below 18	5	3.5
18–24	134	95.0
25 and older	0	0.0
Missing	2	1.4
Total	141	100.0
Mother Education		
College Degree	65	46.1
No College Degree	74	52.5
Missing	2	1.4
Total	141	100.0
Father Education		
College Degree	49	34.8
No College Degree	90	63.8
Missing	2	1.4
Total	141	100.0
Ethnicity		
African American	17	12.1
American Indian	3	2.1
Caucasian	102	72.3
Hispanic	5	3.5
Other	10	7.1
Missing	4	2.8
Total	141	100.0

Table 11

Descriptive Statistics and Correlations (n = 141)

Variable	Descriptives			Correlations								
	n	*M*	*SD*	HSGPA	ACT	ColGPA	EnvMastery	PGrowth	PosRel	PurposeLife	SelfAccept	Autonomy
HSGPA	141	2.97	0.75	—								
ACT	141	20.31	4.00	.54**	—							
ColGPA	141	2.85	0.91	.45**	.25**	—						
EnvMastery	141	3.92	0.62	.13	-.11	.10	—					
PGrowth	141	4.80	0.73	.06	-.16	.08	.55**	—				
PosRel	141	4.39	0.79	.12	-.02	.22**	.46**	.51**	—			
PurposeLife	141	4.57	0.91	.07	-.16	.16*	.48**	.59**	.49**	—		
SelfAccept	141	3.81	0.80	.12	-.11	.15*	.64**	.55*	.51**	.62**	—	
Autonomy	141	4.19	0.85	.03	-.02	-.08	.35**	.34**	.25**	.24**	.47**	—

Note. ***p < .01, significant correlation*
*p < .05, significant orrelation

(F[2, 138] = 37.41, p < .001). The adjusted R^2 for the cognitive block was 0.349,

suggesting that the cognitive block is capable of explaining 34.9% of the variation in

FYFS GPA. The addition of the psychological block showed no significant improvement

to the model ($F_{[6, 132]}$ = 1.86, p = .092] over the cognitive block. The adjusted R^2

following the addition of the psychological block was found to be 0.22. Overall, the

model including both blocks still showed significant improvement over a baseline model

($F_{[8, 132]}$ = 5.93, p < .001]. However, given that the F-test for the change in R^2 was not

significant, coupled with signs of a fair amount of correlation among the variables within

the psychological block, interpretation of the coefficients—particularly of the

psychological variables—may be unreliable (see Table 12).

I refrained from endorsing this model in favor of a more parsimonious and less

volatile conclusion to come from future model adjustments. Before proceeding, however,

I noticed that a Shapiro-Wilk test on the residuals of this model showed them to be

normally distributed (W = .986, p = .176), and visual inspection suggested that the

Table 12

Collinearity Diagnostics (n = 141)

Variable	Collinearity Diagnostics		
	n	*Tolerance*	*VIF*
AutonomyMean	141	0.745	1.343
EnvMasterMean	141	0.520	1.923
PersonalGrowthMean	141	0.513	1.949
PosRelationsMean	141	0.634	1.578
PurposeLifeMean	141	0.501	1.995
SelfAcceptMean	141	0.394	2.539
HS GPA	141	0.668	1.497
ACT Composite	141	0.654	1.529

residuals were independent and homoscedastic. Details of the model coefficients can be found in Table 13.

Model 6 uses a forward stepwise regression on both cognitive and psychological variables simultaneously. An F-test probability of .05 was used for entry, and a probability of .1 was used for removal. Given what I knew about the strength of the relationship among the psychological factors, the goal of this approach was to avoid the volatility of having multiple correlated psychological variables in the model at once, and to determine the strongest psychological factor(s), if any, capable of explaining any unique variations in FYFS GPA alongside the cognitive variables. The model identified six major outliers that were omitted from the model construction process. Upon outlier removal, $n = 137$ participants remained in the study. Descriptive statistics and correlations can be found in Table 14.

The results of the stepwise regression mirrored those results found in Model 2, which was found to be a satisfactory model that satisfied all assumptions of linear regression, including independent and normally distributed residuals. None of the psychological variables were statistically significant, and of the cognitive variables, only high school GPA was significant. The change in R^2 F-test was similar to the Model 2 results ($F_{[1, 135]} = 72.87$, $p < .001$) with an adjusted R^2 of .35. The equation of the fitted Model 6 was equivalent to the equation found in Model 2, as were the confidence intervals for the coefficients. See Table 15 for model fit details.

Table 13

Model 5. Hierarchical Regression: Block Entry

Variable	Block 1: Cognitive Factors						Block 2: Cognitive & Psychological Factors					
	B	*SE B*	*β*	*t*	*p*	*95% CI*	*B*	*SE B*	*β*	*t*	*p*	*95% CI*
Intercept	1.19	0.37	na	3.19	.002	(0.45, 1.93)	0.81	0.69	na	1.17	.240	(-0.56, 2.17)
HS GPA	0.54	0.11	0.44	4.91	<.001	(0.32, 0.76)	0.49	0.11	0.40	4.38	<.001	(0.27, 0.71)
ACT Composite Score	0.00	0.02	0.02	0.16	.870	(-0.04, 0.04)	0.01	0.02	0.05	0.53	.600	(-0.03, 0.05)
PosRel							0.20	0.11	0.17	1.82	.070	(-0.02, 0.41)
EnvMastery							-0.07	0.15	-0.05	-0.49	.630	(-0.38, 0.23)
PGrowth							-0.06	0.13	-0.05	-0.45	.650	(-0.32, 0.20)
Autonomy							-0.18	0.09	-0.17	-1.99	.050	(-0.37, 0.00)
PurposeLife							0.08	0.11	0.08	0.78	.440	(-0.13, 0.29)
SelfAccept							0.13	0.14	0.11	0.92	.360	(-0.14, 0.39)
Adjusted R^2				0.19						0.22		
F for change in R^2				17.49						1.86		
p				<.001						.09		

Table 14

Descriptive Statistics and Correlations (n = 137)

Variable		Descriptives			Correlations								
	n	*M*	*SD*	HSGPA	ACT	ColGPA	EnvMastery	PGrowth	PosRel	PurposeLife	SelfAccept	Autonomy
HSGPA	137	3.01	0.66	—								
ACT	137	20.31	4.05	.60**	—							
ColGPA	137	2.88	0.88	.59**	.28**	—						
EnvMastery	137	3.93	0.62	.10	-.12	.10	—					
PGrowth	137	4.82	0.72	.002	-.17*	.05	.534**	—				
PosRel	137	4.41	0.78	.13	-.02	.18*	.45**	.50**	—			
PurposeLife	137	4.58	0.91	.05	-.15*	.16*	.48**	.58**	.51**	—		
SelfAccept	137	3.84	0.78	.05	-.12	.12	.63**	.53*	.49**	.62**	—	
Autonomy	137	4.21	0.84	-.08	-.02	-.08	.34**	.32**	.26**	.22**	.46**	—

** p < 0.01, significant correlation
* p < 0.05, significant correlation

Table 15

Model 6. Forward Stepwise Regression: Simultaneous Entry

Variable	Model 5: Simultaneous Entry						Model 6: Stepwise Regression					
	B	SE B	β	t	p	95% CI	B	SE B	B	t	p	95% CI
Intercept	0.81	0.69	na	1.17	.24	(-0.56, 2.17)	0.43	0.45	na	0.97	.33	(-0.45, 1.31)
HS GPA	0.49	0.11	0.40	4.38	<.001	(0.27, 0.71)	0.52	0.09	0.43	5.71	<.001	(0.34, 0.71)
PosRel	0.20	0.11	0.17	1.82	.07	(-0.02, 0.41)	0.20	0.09	0.17	2.29	.02	(0.03, 0.37)
ACT Composite Score	0.01	0.02	0.05	0.53	.6	(-0.03, 0.05)						
EnvMastery	-0.07	0.15	-0.05	-0.49	.63	(-0.38, 0.23)						
PGrowth	-0.06	0.13	-0.05	-0.45	.65	(-0.32, 0.20)						
Autonomy	-0.18	0.09	-0.17	-1.99	.05	(-0.37, 0.00)						
PurposeLife	0.08	0.11	0.08	0.78	.44	(-0.13, 0.29)						
SelfAccept	0.13	0.14	0.11	0.92	.36	(-0.14, 0.39)						
Adjusted R^2				0.22						0.22		
F for change in R^2				5.93						5.25		
P				<.001						.02		

The results of Model 6 and its mirroring of Model 2 gave me more insight into the nature of the explanatory power of these variables. Model 6 shows that when both cognitive and psychological variables are subjected to the entry and removal criteria associated with stepwise regression, none of the psychological variables exhibit a significant ability to explain any unique variance in FYFS GPA when cognitive factors are present. This is in close agreement with Model 4, which told me that only Positive Relations With Others variable was capable of explaining any of the variance in FYFS GPA, and that the variance explained was only 3%, thus making Positive Relations a very weak predictor. Model 6 suggests that this 3% is non-unique, and is no longer significant in the presence of high school GPA as a predictor. Consequently, I found that Model 6 provides the same fit as Model 2, but when coupled with the results from other models, Model 6 provides additional information pertaining to the non-significance of the psychological variables that is not provided from Model 2.

Model 7 combines the techniques used in Models 5 and 6: hierarchical regression and stepwise regression. Here, I entered two blocks into the regression model. I started by entering the cognitive variables, followed by the psychological variables. Within each block, stepwise regression was performed to determine whether or not each variable, within its corresponding block, contributes to explaining unique variance in FYFS GPA. As with Model 6, an F-test probability of .05 was used for entry, and .1 was used for removal. Model 7 also identified six outliers, and these outliers were the same as identified in Models 6, 2, and 1. The resulting number of participants was $n = 137$. Model 7 found that there was no statistically significant improvement resulting from the psychological block. In fact, none of the psychological variables made it through the entry criteria of the stepwise

regression, and the resulting model was similar to Models 2 and 6: only high school GPA was a significant predictor of FYFS college GPA, and the R^2, model coefficients, and hypothesis tests are all the same. Table 16 provides information on model fit.

The result of Models 5, 6, and 7 answer Research Question 3 by suggesting that there is no unique effect of psychological variables on FYFS college GPA. High school GPA is consistently a strong predictor of FYFS GPA. Model 5 revealed that when the psychological variables were all entered simultaneously as a block, this block showed no significant improvement to the overall fit of the model. From the correlation table associated with Model 5, I noticed that the psychological variables show a moderate amount of correlation with one another, thus making interpretation of any psychological variables' coefficients in the model unreliable. Consequently, I chose not to interpret these coefficients, as I felt this invites confusion and is not the strongest model available. The complete table of model results can, however, be found in Table 16. Models 6 and 7 both impose selection criteria on all variables entered into the model. Model 6 uses stepwise regression on all cognitive and psychological variables simultaneously and finds that none of the psychological variables explain any unique variance in FYFS GPA, while high school GPA is a strong predictor. The results of this model agree with the results of Model 2, which I found to be a good fit. Moreover, this model provides information regarding the lack of significance of the psychological approach found in Model 5, but implements stepwise regression selection criteria within each block. Like Models 5 and 6, Model 7 also finds no significance of the psychological variables in explaining FYFS GPA. Also, like Models 5 and 6, Model 7 finds high school GPA to be a strong predictor of FYFS GPA. The fit of Model 7 was unsurprisingly similar to the

Table 16

Model 7. Hierarchical Regression and Stepwise Regression

Variable	Block 1: Cognitive Factors						Block 2: Cognitive & Psychological Factors					
	B	*SE B*	*β*	*t*	*p*	*95% CI*	*B*	*SE B*	*B*	*t*	*p*	*95% CI*
Intercept	0.73	0.33	na	2.20	.030	(0.07, 1.39)	0.81	0.69	na	1.17	.240	(-0.56, 2.17)
HS GPA	0.87	0.11	0.66	7.63	<.001	(0.65, 1.10)	0.49	0.11	0.40	4.38	<.001	(0.27, 0.71)
ACT Composite Score	-0.02	0.02	-0.11	-1.27	.210	(-0.06, 0.01)	0.01	0.02	0.05	0.53	.600	(-0.03, 0.05)
PosRel							0.20	0.11	0.17	1.82	.070	(-0.02, 0.41)
EnvMastery							-0.07	0.15	-0.05	-0.49	.630	(-0.38, 0.23)
PGrowth							-0.06	0.13	-0.05	-0.45	.650	(-0.32, 0.20)
Autonomy							-0.18	0.09	-0.17	-1.99	.050	(-0.37, 0.00)
PurposeLife							0.08	0.11	0.08	0.78	.440	(-0.13, 0.29)
SelfAccept							0.13	0.14	0.11	0.92	.360	(-0.14, 0.39)
Adjusted R^2			0.35						0.22			
F for change in R^2			37.41						1.86			
p			<.001						.09			

Fits of Models 6 and 2. Thus, all of the models implemented to answer Research Question 3 point to the same conclusion: none of the psychological variables is capable of explaining a unique variance of FYFS college GPA, while high school GPA is consistently a strong predictor of FYFS college GPA. Hence, I concluded in favor of Models 6 and 7 to answer Research Question 3.

Before proceeding, it is worth noting an important departure that Models 5 through 7 have from Models 3 and 4. Models 5 through 7 include ACT scores as a variable throughout the model fitting process. This variable had missing values on 31 participants, thus reducing the sample size from the 172 found in Models 3 and 4, to the sample sizes found in Models 1, 2, 5, 6, and 7, which were between 137 and 141. For brevity, and because testing the significance of ACT scores as a cognitive variable alongside the psychological variables is important, I omitted additional models where ACT was not used as a potential cognitive variable. This increased the sample size for Models 5 through 7. However, while the coefficients and R^2 values did in fact change, the results did not: high school GPA continues to be a strong predictor of FYFS GPA, while none of the psychological variables appear to be significant.

Summary of Major Findings

This chapter contains a summary and analysis of the statistical testing done to answer the research questions introduced in the first chapter.

Research Question 1 asked: What percentage of variance in SMC students' FYFS GPA can be explained by the students' prior academic cognitive factors (high school GPA and ACT scores)?

Two linear regression models were used to answer this question. Model 1 entered both cognitive factors simultaneously into the model to see what variables explained FYFS GPA. Model 2 followed this result by employing stepwise regression to remove any non-significant variables from the model. Model 1 indicated that when the students' prior academic factors (high school GPA and ACT scores) were included simultaneously in the model, high school GPA was statistically significant ($F_{[1, 135]} = 58.23$, $p < .001$), but ACT scores were not ($F_{[1, 135]} = 1.61$, $p = .21$]. Model 2 indicated that students' ACT scores did not have any statistically significant effect on FYFS GPA, and it was thus removed. By contrast, high school GPA had a statistically significant effect on FYFS GPA ($F_{[1, 135]} = 72.87$, $p < .001$). For each point higher in a student's high school GPA, his or her FYFS GPA increased by an average of .79, 95% *CI* (0.61, 0.97). The resulting adjusted R^2 value was .35, indicating that approximately 35% of the variation found in FYFS GPA can be explained by students' high school GPA. The residuals for Model 2 were inspected to confirm that the modeling assumptions of linear regressions were met. Visual inspection confirmed independence and homoscedasticity, while a Shapiro-Wilk test suggested that the residuals were approximately normally distributed ($W = .985$, $p = .075$). I concluded in favor of Model 2 that ACT scores do not explain any unique variation in FYFS college GPA, and that high school GPA is the stronger of the two cognitive factors.

Research Question 2 asked: What percentage of variance in SMC students' FYFS GPA can be explained by the students' six dimensions of PWB?

Two linear regression models were constructed to address this question. Model 3 used simultaneous entry of all psychological factors into the model, while Model 4

implemented stepwise regression to reduce multicollinearity and determine the strongest psychological variable in explaining variation in FYFS GPA. Model 3 revealed that none of the psychological factors was statistically significant. The most significant was the effect of Positive Relations With Others, which found that for every one point higher in the Positive Relations composite a student scored, his or her FYFS GPA increased by an average of .18 ($F_{[1, 165]} = 2.78$, $p = .097$), 95% CI (-0.033, 0.394. The adjusted R^2 for this model was .03, suggesting that 3% of the variance in FYFS GPA can be explained by psychological factors.

However, this model should be treated with a fair amount of caution, as Table 7 points out a reasonable amount of correlation existing among these variables. While not enough to pose a serious threat to the model, it does cause model coefficients to be unstable, and thus inferences drawn from them should not be without reservation. Model 4 implemented a forward stepwise regression technique to reduce the degree of multicollinearity and to isolate any meaningful psychological variables that may explain some of the variance seen in FYFS GPA. The variable selection technique revealed that Positive Relations With Others, when other psychological factors were removed from the model, had a statistically significant effect on FYFS GPA ($F_{[1, 171]} = 6.163$, $p = .014$). Results found that for every one point higher a student scored on the Positive Relations With Others scale, his or her FYFS GPA improved by an average of .22, 95% *CI* (0.052, 0.388). The adjusted R^2 for this model was .032, suggesting that Positive Relations With Others variable was capable of explaining 3.2% of the variance found in FYFS GPA. Between Models 3 and 4, Model 4 is preferable as it does not introduce multicollinearity concerns. I noticed, however, that not all modeling assumptions were met, as the Shapiro-

Wilk test indicated that residuals do not follow an approximately normal distribution ($W = .954$, $p < .01$). Additionally, I noticed that the relationship between Positive Relations With Others and FYFS GPA is weak, with the psychological variable only explaining 3% of variation. It is plausible that the significance of this result is entirely due to sample size and may not represent a clinically meaningful effect. Thus, I cautiously endorsed the results of Model 4.

Research Question 3 asked: Which of the cognitive and psychological variables are relatively the most important in predicitng the SMC students' FYFS college GPA?

Three linear regression models were constructed to answer this question. Model 5 used hierarchical regression, treating cognitive factors as the first block and psychological factors as the second block. Model 6 used stepwise regression on all cognitive and psychological factors simultaneously to determine which, if any, variables made it into the model without being forced, and to cut down on potential multicollinearity stemming from the correlated psychological variables. Model 7 used hierarchical regression, with each variable within each block subjected to stepwise selection criteria, before being entered into (or removed from) the model. Model 5 revealed that the cognitive block showed a statistically significant improvement over the baseline model ($F[2, 138] = 37.41$, $p < .001$) and explained 34.9% of the variance found in first-semester GPA. The most significant cognitive variable was again high school GPA. By contrast, the psychological block did not contribute to explaining any of the variance in FYFS GPA. The change in R2 test showed ($F[6, 132] = 1.86$, $p = .092$). The adjusted R2 for the model, with both cognitive and psychological blocks, was .22. While the full model compared to a baseline model was statistically significant ($F[8, 132] = 5.93$, $p < .001$), it would be unwise to interpret

coefficients associated with this model for two reasons: the threat of multicollinearity between the psychological variables and the non-significance of the additional psychological block. As such, I employed the stepwise regression techniques in Models 6 and 7 to help find a better model. Models 6 and 7 arrived at a similar model fits as Model 2. That is, neither showed a significant effect of the psychological variables, and high school GPA consistently had a statistically significant effect on FYFS GPA (F[1, 135] = 72.87, p < .001). For each point higher in a student's high school GPA, his or her FYFS GPA increased by an average of 0.79, 95% CI (0.61, 0.97). The resulting adjusted R2 value was .35, indicating that approximately 35% of the variation found in FYFS GPA can be explained by students' high school GPA. I acknowledged from Model 2 that the modeling assumptions of linear regression were satisfied.

The agreement of Models 6 and 7 with Model 2 provides further evidence for the non-significance of the psychological variables in explaining FYFS GPA. Model 2 arrived at its model fit without considering any of the psychological variables. However, Models 6 and 7 arrived at their model fits even after considering the psychological factors and concluded that they did not contribute to explaining any unique variance in FYFS GPA. This also provided evidence for the suspicion in Model 4 that there may not actually be a unique relationship between the Positive Relations psychological variable and FYFS GPA, and if one exists, it is weak and is buried under the relationship between the cognitive factors and FYFS GPA. Consequently, I concluded in favor of Models 2, 6, and 7, and found that the relationship among the cognitive variable, high school GPA, and FYFS GPA is strong and dominates any potential relationships that may exist between the psychological variables and FYFS GPA.

CHAPTER 5

SUMMARY, DISCUSSION, CONCLUSION, AND

RECOMMENDATIONS

Introduction

The NCES (2014a, 2014b) has reported that large numbers of freshman

community college students are unsuccessful in their academic endeavor. There is,

however, insufficient research conducted to determine the holistic causes of this problem.

Current research approaches overemphasize the influence of cognitive attributes on

student academic success (ACT, 2014; Chen, 2012; Geiser & Santelicek, 2004; Kuh et

al., 2008; Lotkowski et al., 2004; Moores & Klas, 1989; Noble, 1991; Pascarella &

Terenzini, 1998; Pryor et al., 2012; Reason, 2009; Reason et al., 2006; Robbins et al.,

2004; Sawyer, 2010; Walpole, 2003).

Several researchers have found evidence that cognitive attributes and non-

cognitive factors are closely linked to college student GPA (Bean, 2005; Coyle & Pillow,

2008; Duran, 1986; Frisby, 2001; King & Cooley, 1995; Kobrin et al., 2008; O'Connor &

Paunonen, 2007; Poropat, 2009; Roberts et al., 2007; Schreiner & Louis, 2011; Sedlacek,

2004). However, insufficient research has been done on connecting cognitive attributes

and multi-level psychological dimensions of individual well-being and their effect on

student academic success. The reviewed literature and data gathered by the researcher of

students' cognitive attributes (high school GPA and ACT scores) and dimensions of

PWB provided a foundation for this study of the cognitive and psychological attributes that affect SMC students' FYFS GPA.

The theoretical framework that guided this study represents an intersection of two disciplines: higher education and psychology. Within the discipline of higher education, this study was grounded in Astin's (1984) IEO Model.

In this study, different from the multilevel nature of the original model used by Astin (1984), I restricted the model to be at the individual level. In this modified version of the IEO model, students' cognitive aptitude (high school GPA and ACT scores) and the six dimensions of PWB are treated as the input of the model. Students' academic success (FYFS GPA) was treated as the outcome of the conceptual model.

Within psychology, this study was grounded in Ryff's (1989) concept of PWB, which is based on the premise that "being well" encompasses a range of characteristics and perceptions; that is, "positive functioning constitutes much more than one's current level of happiness" (p. 1073). She developed a model of PWB that higlights six dimensions: autonomous functioning and decision making, mastery of one's environment, seeking opportunities for personal growth, maintaining positive relationships with others, having a sense of purpose in life, and accepting and thinking positively about oneself. Ryff's unique conceptualization suggests that well-being is an evaluative feature that changes in response to developmental milestones in life events, while at the same time maintaining enduring features (Schmutte & Ryff, 1997, p. 554). Positive PWB functioning is especially important for the FYFS college students. Although college transitions can be difficult for all students (Upcraft et al., 2005, p. 7),

FYFS community college students often have even greater difficulty adjusting to college (Terenzini et al., 1994, p. 71; Zwerling & London, 1992, p. 91).

Purpose of the Study

The purpose of this study was to examine the interplay between the cognitive and multi-dimensional psychological variables and the extent they may influence one another regarding their impact on freshman student GPA. The study analyzed the interrelationship between six dimensions of Psychological Well-Being and students' scores on prior cognitive aptitude (high school GPA and ACT scores) to create a prediction model that illustrates how these variables contribute to the academic success measured by the Southwestern Michigan College students' first-year, first-semester GPA.

Research Methods

Research Questions

Research Question 1 asked: What percentage of variance in Southwestern Michigan College students' first-year, first-semester GPA can be explained by the students' prior academic cognitive factors (high school GPA and ACT scores)?

Research Question 2 asked: What percentage of variance in Southwestern Michigan College students' first-year, first-semester GPA can be explained by the students' six dimensions of Psychological Well-Being?

Research Question 3 asked: Which of the cognitive and psychological variables are relatively the most important in predicting the Southwestern Michigan College students' first-year, first-semester college GPA?

Research Design

      This study was a quantitative, non-experimental, predictive, correlational design. The participants in the study were FYFS students enrolled at SMC in the fall of 2015. Prior academic achievement records (high school GPA and ACT scores) and demographic variables (age, gender, ethnicity) of the FYFS college students were obtained from the Banner database hosted by the SMC Registrar's Office.

      Students were invited to fill out an online self-report: A 42-item version of Ryff's (1989) SPWB. This questionnaire is designed to measure PWB among the six dimensions outlined previously: Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-Acceptance. In the version utilized in this study, there are seven items per dimension. Responses are based on a 6-point Likert scale (6 = strongly agree, 5 = agree, 4 = agree slightly, 3 = disagree slightly, 2 = disagree, and 1 = strongly disagree). The SPWB have demonstrated sound psychometric properties across a variety of middle-aged adult populations (Ryff & Singer, 1998, p. 19), across cultural and lingual contexts (Akin-Little & Little, 2008, p. 192; Ma et al., 2012, p. 61), and with college student populations (Bowman, 2010, 186; Burns & Machin, 2009, p. 363; Chang, 2006, p. 1007; September et al., 2001, p. 224).

      In scoring the SPWB, the total score represented the sum of 42 items. Negative score responses were reversed in the final scoring process so that high scores indicate high self-ratings on the dimensions assessed. Scores were not categorized by a cutoff point indicating low vs. high well-being; rather, overall well-being scores were indicated on the distribution of responses. Sample items for each dimension are as follows: *I am not afraid to voice my opinions, even when they are in opposition to the opinions of most*

people (Autonomy); *I am good at juggling my time so that I can fit everything in what needs to be done* (Environmental Mastery); *When I think about it, I have not really improved much as a person since I was younger* (Personal Growth); *I often feel lonely because I have few close friends with whom I share my concerns* (Positive Relations With Others); *I enjoy making plans for the future and working to make them a reality* (Purpose in Life); *When I look at my life so far, I am pleased with how things have turned out* (Self-Acceptance).

The data were analyzed using standard multiple regression analysis in order to explain the degree the GPA scores of the FYFS SMC students can be predicted from the students' prior academic achievement (high school GPA and ACT scores) and the six dimensions of PWB. Exploratory analyses were performed looking at the contributions of the PWB subscales and cognitive attributes. Stepwise and hierarchical regression analyses were employed to identify relatively the most important predictors of the FYFS college students' GPA.

Summary of Literature Review

The literature review sought to establish a theoretical and empirical basis for the study, and examined prior studies relevant to the influence of cognitive, non-cognitive, and psychological attributes on college freshman students' GPA. This review of literature begins with a description of college student academic success and how it is defined and assessed based on student cognitive attributes. Next, the research studies the influence of traditional non-cognitive attributes (academic self-efficacy, academic achievement motivation, and academic engagement) on student academic performance. Third, early 21st century research studies on students' psychological functioning and its influence on

93

their academic success are introduced. Fourth, Ryff's (1989) six dimensions of PWB are defined and examined. Fifth, the link between freshman college students' academic success and the six dimensions of PWB is explored, with the results of several studies presented.

Pre-College Cognitive Predictors

Research studies found that ACT scores and high school GPA are the most common variables in predicting freshman college students' GPA (Bean & Bradley, 1986; House & Keeley, 1997; Noble & Sawyer, 1987; Pascarella & Terenzini, 1998; Pike & Saupe, 2002; Ting, 1997). The ACT composite standardized test score has been used since 1959 by Midwestern and Western states' higher educational systems as a measure of student-level college readiness (ACT, 2008). The acceptance of the use of ACT in the prediction of college success is well-researched (Stumpf & Stanley, 2002, p. 1047). High school GPA is also a widely accepted indicator of student college success (Cheng et al., 2012; Mourad & Hong, 2011; Sparkman et al., 2012). Research studies consistently point out that students' high school GPA and their ACT scores are appropriate data points to use as a measure of their college academic success (Curs & Harper, 2012; Grimes et al., 2013; Hu, 2001; Shavelson, 2010).

Non-Cognitive Predictors

There is a "broad body of theoretical perspectives and research indicating the influence of non-cognitive predictors on students' academic performance" (Marti, 2008, p. 4). Pascarella and Terenzini (1998) identified 3,000 studies conducted in the second half of the 20th century that addressed the influence of non-cognitive factors on students' performance (Pascarella & Terenzini, 1998, p. 37). Since it was beyond my reach to

94

conduct such an exhaustive review of all previous work in this area, I concentrated on

major aspects of it. The first part of the literature review pertaining to non-cognitive

attributes related to student academic performance focused on the traditional non-

cognitive variables that have received extensive attention in the second half of the 20th

century: academic self-efficacy, academic achievement motivation, and academic

engagement. The second part of this section of the literature review focused on the

research studies on psychosocial and psychological functioning variables predicting

student academic success that emerged in the early 21st century.

Bandura's (1977, 1997) social cognitive theory has been used for decades as a

framework for explaining college students' development, as well as their academic

persistence and integration. The social cognitive theory centers on human agency as the

vehicle of change (an agentic perspective) and the efficacy belief system as the

foundation of human agency (Bandura, 2001, pp. 5–9). The relationship between student

academic self-efficacy and student performance has been supported by numerous studies

(Chemers et al., 2001; Gore, 1987; House, 1995; Lent et al., 1997; Multon et al., 1991;

1997; Zajacova et al., 2005). Findings from previous research studies show that the level

of academic self-efficacy was positively correlated to persistence and academic

performance (Hsieh et al., 2007; Lent et al., 1997; Multon et al., 1991).

Motivation as an academic engagement factor refers to cognitive, emotional, and

behavioral indicators of student investment in and attachment to education (Klasner &

Pistole, 2003; Le et al., 2005, p. 493). Many studies have established a positive

relationship between achievement motivation and student academic performance

(Atkinson & Litwin, 1990; Reeve et al., 2005; Robbins et al., 2004; Sorrentino et al.,

95

1988). Various psychological motivational goals such as mastery, performance, and performance avoidance have been found to exert an influence on student academic success (Barron et al., 2002; Durik et al., 2009; Mattern, 2005).

Student academic engagement is another non-cognitive construct that research studies found as a significant predictor of academic performance. Exploring this relationship at the college level, Astin (1970a, 1970b, 1984) presented a widely accepted student involvement theory. The theory highlights that the more involved a student is in college experiences, the greater the results are in student learning, personal development, and persistence. A number of studies support Astin's theory (Astin, 1993; Bowen, 1982; Boyer & Sedlacek, 1988; Chickering & Reisser, 1993; Pace, 1979, 1985; Pascarella, 1985; Pascarella & Terenzini, 2005; Thomas & Chickering, 1984; Tinto, 1993).

Psychological Predictors

In the last decade of the 20th century and in the early 21st century, there has been an important shift in emphasis and conceptualization of what variables best predict academic success. Especially those research studies conducted in the early 21st century question the functionality of and the existing sole reliance on cognitive and traditional non-cognitive (self-efficacy, achievement motivation, and academic engagement) factors to predict college students' academic success (Arbona & Novy, 1990; Hood, 2002; Pike & Saupe, 2002; Ting, 1998).

Research studies point out that psychological factors are important because they account for internal assets that can enhance the prediction of students' college GPA and persistence to graduation, beyond what can be projected by pre-college preparation alone (Atkinson & Litwin, 1990; Barron et al., 2002; Dudley et al., 2006; Durik et al., 2009;

96

Mattern, 2005; Reeve et al., 2005; Robbins et al., 2004; Sedlacek, 2004; Sorrentino et al., 1988).

A significant number of research studies on the prediction of academic success for college students focus on influence on psychological factors such as need for achievement and level of happiness (Williams, 2008, pp. 724–726). Diverse psychosocial factors, including family background, academic and social experiences, as well as personal attributes, have been found to have a significant impact on the overall performance of freshman college students (Bean & Metzner, 1985; Fleming, 1985; Stahl & Pavel, 1992).

Despite a growing number of research studies on psychological variables pertaining to student academic success, a very limited number of those studies have examined college students' PWB. Most studies of PWB have focused on adults and examined demographic and health factors that correlate with PWB (Hurtago & Carter, 1997; Locks et al., 2008; Mendoza-Denton et al., 2002; Mounts, 2004).

<center>Theories of Well-Being</center>

In the late 20th century and early 21st century two well-defined conceptualizations of well-being have emerged. The first, often referred to as hedonic well-being (Ryan & Deci, 2000), stresses pleasure and happiness and, therefore, relies upon an individual's ability to determine his or her own self-assessment of these emotions (pp. 70–73). A second view on well-being posits that it is not simply a function of happiness, but rather of living life well. Instead of pursuing hedonic enjoyment, individuals find well-being through efforts to pursue their true selves (Waterman, 1993, p. 681). Eudaimonic well-being, therefore, suggests that participants will feel happy

when they live congruently with their values and purposes in striving to achieve the full actualization of their individual potentials.

Ryff's Psychological Well-Being Model

A PWB Model developed by Ryff (1989) expands upon discrete well-being variables to create an overall model of positive functioning. Her model encompasses the qualities of Self-Acceptance, Positive Relations With Others, Environmental Mastery, Purpose in Life, Autonomy, and Personal Growth. Self-Acceptance specifically refers to positive appraisals of oneself and events that occurred in the past. Ryff (1989) described Self-Acceptance as a primary feature of mental health status (p. 1074). Self-Acceptance has particular implications across life-span theories, as it encompasses acceptance with the current self as well as with past events. According to Ryff, the ability to develop Positive Relations With Others is an indicator of maturity and refers to the presence of meaningful interpersonal relationships. Environmental Mastery is another indicator of mental health, capturing the ability to manage one's environment effectively. This involves the individual's ability to choose and create an environment he or she feels comfortable in.

Purpose in Life is a measure of an individual's goals, intentions, and direction. According to Ryff (1989), this contributes to the belief that one's life is purposeful and meaningful. Autonomy encompasses the other dimensions of well-being such as self-determination and independence. Individuals who demonstrate autonomous functioning evaluate themselves from within, rather than relying on the approval of others. The Personal Growth dimension is a measure of development as an individual, with a focus on the ability to achieve goals while concentrating to strive for further growth.

Ryff's unique conceptualization suggests that well-being is an evaluative feature that changes in response to developmental milestones in life events, while at the same time maintaining enduring features (Schmutte & Ryff, 1997, p. 554). It has been suggested that this model of PWB has relevancy for the successful completion of life transitions across contexts (Bowman, 2010, p. 194).

This has particular implications for freshman college students as they experience the transitional phase of emerging adulthood. Emerging adulthood is defined as the period ranging from the late teens through the twenties, with particular emphasis on ages 18 to 25 (Salmela-Aro et al., 2007). Haynes et al. (2007) referred to emerging adulthood as a period characterized by "extensive variability and role exploration, without clear normative expectations" (p. 360).

The transition from high school to college is a significant stressor during the period of emerging adulthood. Positive PWB functioning is especially important for the FYFS college students. Although college transitions can be difficult for all students (Upcraft et al., 2005, p. 11), FYFS community college students often have even greater difficulty adjusting to college (Terenzini et al., 1994, p. 69; Zwerling & London, 1992).

Summary of Findings

This study examined the interplay between the cognitive and multi-dimensional psychological variables and the extent they may influence one another regarding their impact on FYFS, community college student GPA. The study analyzed the interrelationship between the six dimensions of PWB and students' scores on prior cognitive aptitude (high school GPA and ACT scores) to create a prediction model that illustrates how these variables contribute to the academic success measured by the

99

community college student FYFS GPA. Participants in this study ($n = 174$) were ethnically and gender diverse FYFS students during the Fall Semester of 2015 at SMC.

Research Question 1 asked: What percentage of variance in Southwestern Michigan College students' first-year, first-semester GPA can be explained by the students' prior academic cognitive factors (high school GPA and ACT scores)?

Two different linear regression models were used to answer this question. Model 1 entered both cognitive factors simultaneously into the model to see what variables explained FYFS GPA. Model 2 followed this result by employing a stepwise regression to remove any non-significant variables from the model. Model 1 indicated that when the students' prior academic factors (high school GPA and ACT scores) were included simultaneously in the model, high school GPA was statistically significant ($F_{[1, 135]} = 58.23$, $p < .001$), but ACT scores were not ($F_{[1, 135]} = 1.61$, $p = .21$]. Model 2 indicated that students' ACT scores did not have any statistically significant effect on FYFS GPA, and it was thus removed. By contrast, high school GPA had a statistically significant effect on FYFS GPA ($F_{[1, 135]} = 72.87$, $p < .001$). For each point higher in a student's high school GPA, his or her FYFS GPA increased by an average of .79, 95% *CI* (0.61, 0.97). The resulting adjusted R^2 value was .35, indicating that approximately 35% of the variation found in FYFS GPA can be explained by students' high school GPA. The residuals for Model 2 were inspected to confirm that the modeling assumptions of linear regressions were met. Visual inspection confirmed independence and homoscedasticity, while a Shapiro-Wilk test suggested that the residuals were approximately normally distributed ($W = .985$, $p = .075$). I concluded in favor of Model 2 that ACT scores do not

explain any unique variation in FYFS college GPA, and that high school GPA is the stronger of the two cognitive factors.

Research Question 2 asked: What percentage of variance in Southwestern Michigan College students' first-year, first-semester GPA can be explained by the students' six dimensions of Psychological Well-Being?

Two linear regression models were constructed to address this question. Model 3 used the simultaneous entry of all psychological factors into the model, while Model 4 implemented stepwise regression to reduce multicollinearity and determine the strongest psychological variable, if any, in explaining variations in FYFS GPA. Model 3 revealed that none of the psychological factors was statistically significant. The most significant was the effect of Positive Relations With Others, which found that for every one point higher a student scored in the Positive Relations composite, his or her FYFS GPA increased by an average of .18 ($F_{[1, 165]} = 2.78$, $p = .097$), 95% CI (-0.033, 0.394). The adjusted R^2 for this model was .03, suggesting that 3% of the variance in FYFS GPA can be explained by psychological factors. However, this model, as I explained in Chapter 4, should be treated with a fair amount of caution. Table 7 points out a reasonable amount of correlation existing among these variables. While not enough to pose a serious threat to the model, it does cause model coefficients to be unstable and thus, I concluded, inferences drawn on them should not be without reservation.

Model 4 implemented a forward stepwise regression technique to reduce the degree of multicollinearity and isolate any meaningful psychological variables that may explain some of the variance seen in FYFS GPA. The forward stepwise regression technique revealed that Positive Relations With Others, when other psychological factors

were removed from the model, had a statistically significant effect on FYFS GPA ($F_{[1, 171]}$ = 6.163, p = .014). Results showed that for every one point higher an individual scored on the Positive Relations With Others scale, his or her FYFS GPA improved by an average of .22, 95% CI (0.052, 0.388). The adjusted R^2 for this model was .032, suggesting that one PWB variable, Positive Relations With Others, is capable of explaining 3.2% of the variance found in FYFS GPA. This result is comparable to the result found in Model 3, suggesting that the parsimonious model is capable of explaining the same amount of variance as the model that included all variables.

Models 3 and 4 together suggest there might be evidence to support a marginally significant relationship between Positive Relations With Others and FYFS GPA, although this relationship is notably weak. Nevertheless, Positive Relations With Others as a PWB variable is shown to be more important than the other PWB variables in its contribution to explaining FYFS GPA. Consequently, models three and four helped me to conclude that personal relations with others is perhaps the strongest of the psychological variables in determining FYFS GPA.

Research Question 3 asked: Which of the cognitive and psychological variables are relatively the most important in predicting the Southwestern Michigan College students' first-year, first-semester college GPA?

Three linear regression models were constructed to answer this question. Model 5 used hierarchical regression, treating cognitive factors as the first block and psychological factors as the second block. Model 6 used stepwise regression on all cognitive and psychological factors simultaneously to determine which, if any, variables made it into the model without being forced, and to cut down on potential

multicollinearity stemming from the correlated psychological variables. Model 7 used

hierarchical regression, with each variable within each block subjected to stepwise

selection criteria before being entered into (or removed from) the model. Model 5

revealed that the cognitive block showed a statistically significant improvement over the

baseline model model (F[2, 138] = 37.41, p < .001) and explained 34.9% of the variance

found in FYFS GPA. The significant cognitive variable was again high school GPA. By

contrast, the psychological factors did not contribute to explaining any of the variance in

FYFS GPA. The change in R^2 test showed ($F_{[6, 132]}$ = 1.86, p = .092). The adjusted R^2

with both blocks was .22. While the full model compared to a baseline model was

statistically significant ($F_{[8, 132]}$ = 5.93, p < .001), it would be unwise to interpret

coefficients associated with this model for two reasons: the threat of multicollinearity

between the psychological variables and the non-significance of the additional

psychological block. As such, I employed the stepwise regression techniques in Models 6

and 7 to find a better model. Models 6 and 7 arrived at similar model fits as Model 2.

That is, high school GPA had a statistically significant effect on FYFS GPA ($F_{[1, 135]}$ =

72.87, p < .001). For each point higher in a student's high school GPA, his or her FYFS

GPA increased by an average of .79, 95% *CI* (0.61, 0.97). The resulting adjusted R^2 value

was .35, indicating that approximately 35% of the variation found in FYFS college GPA

can be explained by students' high school GPA. It is known from Model 2 that the

modeling assumptions of linear regression were satisfied.

The agreement of Models 6 and 7 with Model 2 provided further evidence for the

non-significance of the psychological variables in explaining FYFS college GPA. Model

2 arrived at its model fit without considering any of the psychological factors. However,

Models 6 and 7 arrived at their model fits even after considering the psychological factors and concluded that they do not contribute to explaining any unique variance in FYFS GPA.

Consequently, I concluded in favor of Models 2, 6, and 7 and found that the relationship between the cognitive variable, high school GPA, and FYFS GPA is both strong, and dominates, any potential relationships that may exist between the psychological variables and FYFS GPA.

I also concluded that even though I did not endorse Models 3 and 4, these models together suggest there might be evidence to support a marginally significant relationship between Positive Relations With Others and FYFS GPA. Positive Relations With Others as a PWB variable emerged to be more important than the other PWB variables in its contribution to explaining FYFS GPA.

Discussion of Major Findings

The expectation of this research study was that cognitive factors (high school GPA and ACT scores) and six dimensions of PWB (Autonomy, Environmental Mastery, Personal Growth, Positive Relationships With Others, Purpose in Life, and Self-Acceptance) affect community college students' FYFS GPA. The theoretical model was constructed using Astin's (1984) IEO Model. In this study, however, rather than the multilevel nature of the original model used by Astin, I restricted the model to be at the individual level. Therefore, in this modified version of the IEO Model, students' cognitive aptitude (high school GPA and ACT scores) and six dimensions of PWB were treated as the input of the model. Students' academic success (FYFS GPA) was treated as the outcome of the conceptual model.

The prediction Models 2, 6, and 7 arrived at similar model fits and validated the theoretical model. However, of the eight dependent variables, seven did not attain statistical significance. The results of this study revealed that the relationship between the cognitive variable, high school GPA, and FYFS GPA is strong and dominates any potential relationships that may exist between the psychological variables and FYFS GPA. As such, this study's modified application of Astin's (1984) IEO Model, which posits that the input of the model, cognitive aptitude (high school GPA and ACT scores) and six dimensions of PWB influence FYFS GPA, was only minimally supported.

These findings suggest that sample size might have been a factor in the failure of seven of the eight parameters in the model to reach statistical significance. Minimal sample sizes of 150 have been recommended for collecting and evaluating data for prediction models (Hair, Black, Babin, & Anderson, 2009; Loehlin, 2004). The sample size for this study was 174 FYFS students (56 males and 114 females), which places it above the minimum recommended number. However, samples of 200 or as many as 400 have been recommended in order to obtain precise parameter estimates and avoid standard errors (Loehlin, 2004), to preserve statistical power, and to obtain more precise results and greater accuracy (Schumacker & Lomax, 2004). In some instances I was unable to obtain $n = 150$ because of the type of statistical procedures used.

The failure of seven of the parameters in the theoretical model to reach statistical significance could also be attributed to some measurement issues, which might have results in unreliable coefficients. In several cases I actually used a sample of less than 150. Psychological variables showed a moderate amount of correlation with one another, thus making interpretation of any of the psychological variables' coefficients unreliable.

However, beyond the discussion of statistical significance, the large effect size of high school GPA on FYFS GPA also indicates a practical significance. Huck (2012) discussed the importance of attending to both statistical and practical significance when reporting and interpreting the results. Huck observed that "statistics can yield results that are statistically significant without being important in a practical manner" (p. 401). In the present study, the strong effect of high school GPA on FYFS GPA may be indicative of the strength of the relationship of PWB factors and high school GPA, and may hold implications, upon further research, for practice.

The absence of statistically significant PWB factors and the emergence of high school GPA as the only significant cognitive predictor of FYFS GPA in the prediction model may be explained both empirically and theoretically. Small sample size may have resulted in a lack of sufficient statistical power. In addition, the failure of seven of the eight independent variables in the model to reach statistical significance could be attributed to some measurement issues, which might have resulted in unreliable coefficients. However, the moderate correlations among the PWB variables point to a possible mediating effect of PWB variables on cognitive variables (high school GPA and ACT scores).

Conclusion

The findings of my study revealed that only high school GPA proved to be statistically significant in prediciting students' FYFS GPA. These findings are consistent with those of previous studies. However, given the limitations of the study, which I am discussing next, dismissing the idea that students' six PWB dimensions and their prior cognitive attributes (high school GPA and ACT scores) contributed to their FYFS GPA

would be premature. In light of current research, further studies that would avoid these limitations may validate this idea of a connection between FYFS GPA and the PWB dimensions. Furthermore, to truly determine the effect of PWB dimensions, high school GPA, and ACT scores on students' FYFS GPA, a longitudinal research study in urban and rural college settings should be carried out.

Limitations of the Study

Creswell (2013) observed, "Limitations are potential weaknesses or problems with the study that are identified by the researcher" (p. 253). Despite the efforts taken to reduce confounding variables in the present study, several limitations remain. First, this project utilized the self-report method, PWB questionnaire, which some may consider being "inherently flawed" within an objectivist paradigm of research (Howell, 2012, p. 121). A self-report measure cannot deliver the "truth," but only a person's perception of the truth. Therefore, some might object to the validity of self-report information.

One aspect of self-report data collection that may be especially important to consider for future projects like this is social desirability, which was unfortunately not assessed in this study. Previous research has found that college students in a university setting are likely to engage in positive-impression-management to researchers (Terenzini et al., 1994, p. 65). In addition, students from rural areas, where social behaviors are closely scrutinized by others, may be specifically prone to inflate positive attributes and minimize negative aspects of themselves (Slama, 2014, p. 227). Therefore, skewing in reporting was possible on the six dimensions of SPWB administered in this study.

Second, the threat to the external validity of the study was the small sample and the fact that all FYFS students attended a small rural community college in Southwestern

Michigan. Consequently, the results of this study are specific to SMC students and cannot be generalized to freshman community college students in other regions of the United States. Some authors have intimated that a culture of rurality exists and differs from the dominant culture in American society (Slama, 2014, p. 248; Wagonfeld, 2003, p. 31). Various researchers have articulated ideas of what characterizes rural culture. Researches agree that rural culture tends to be more collectivistic or communal than does urban culture in the United States. Strong family bonds and family trust (Esterman & Hedlund, 1995, p. 86) and strong community kinship networks (Halfacre, 1995; Gibbs, 2000; Kirby & Conlon, 2005, p. 6) have been empirically noted as potential hallmarks of rural culture. Keller and Murray (1982) have suggested that the culture of rurality differs in quantitative and qualitative ways from the overall culture in the United States. Because each rural community stands alone and is somewhat isolated from other communities, a value of "keeping my feelings to myself" (p. 58) and distrust of outsiders is common.

Taking this into consideration, exploratory work on rural students in college, including their potential differences from urban students, is necessary to understand the contributors to the PWB of rural community college students. This kind of understanding is a precursor to determining whether or not students from rural communities value dimensions of PWB differently from students in urban communities. A number of studies have considered the implication of living in a rural community on college students (Keller & Murray, 1982; Slama, 2014; Woodward & Frank, 1988). The studies suggested that rural communities often share different cultural values than urban communities in the United States. These values include an emphasis on hard-work and self-reliance, importance of family, and conformity to group norms (Esterman & Hedlund, 1995;

Laursen & Collins, 1994). Russell and Elder (1997) reported that students from rural

communities performed significantly better in academics when they experienced support

systems in their lives (Russell & Elder, 1997, p. 171).

Another limitation is due to the homogeneity of the sample. The data included

174 observations, 114 females (65.5%) and 56 males (32.2%), ages 18–25. The sample

was predominantly Caucasian, with a total of 122 (70.1%) participants falling under this

ethnicity, followed by 21 African-Americans (12.1%), 4 American Indians (2.3%), 9

Hispanics (5.3%), and 12 collectively classified as other (6.9%). Consequently, the

absence of age and racial diversity inhibits the transferability of findings to more diverse

institutions of similar mission and size.

Furthermore, because this study measures freshman students' PWB, no claims can

be made about what causes changes in PWB over time. Findings from a longitudinal

design could better explain changes in PWB and their effect on students' academic

performance.

Recommendations

The current study raises several possible recommendations for both practitioners

and educational researchers.

For Practice

The following possible recommendations for practice have been drawn from the

study:

1. In order to interpret the prediction's model results, administrators, teachers,

and staff at community colleges must take into consideration the uniqueness of the

experience of college students coming from a rural community (Esterman & Hedlund, 1995; Laursen & Collins, 1994).

2. This study found that 35% of the variation found in FYFS GPA can be explained by students' high school GPA. Administrators, teachers, and staff at rural community colleges should consider finding ways to partner with area high schools to offer high school students targeted academic services and activities (e.g., college connection, dual enrollment, early assessment, summer bridge programs).

3. The forward stepwise regression analysis implemented in this study revealed that the Positive Relations With Others variable, when other psychological factors are removed from the model, has a statistically significant effect on the students' FYFS student GPA, explaining 3.2% of the variance. Administrators, teachers, and staff at rural community colleges can consider finding ways to bolster students' Positive Relations With Others in the following ways: a) linking students with people and places that feel nurturing and supportive to them; b) involving parents in student orientation and offering specific, targeted suggestions on empowering their children emotionally; and c) having a professional staff member at a community college to provide year-to-year consistency, organization, programming, and guidance for freshman students.

For Future Research

The following recommendations for further study are based on the reported results and related conclusions of this research:

1. Further quantitative research will be necessary to validate the findings of this research—perhaps, a longitudinal study exploring the same basic variables with student data from other community colleges, in urban and rural settings.

110

2. Additional research with a larger and a more heterogeneous sample should be conducted. The current study consisted of 70.1% Caucasian students. Ethnicity was, therefore, not considered a variable in the model.

3. This study was a quantitative, non-experimental, predictive, correlational design. Qualitative research on FYFS students' PWB dimensions affecting their FYFS GPA may help researchers understand what potential differences are perceived by rural and urban students in regards to their PWB.

4. A multi-level prediction model could be developed to include institutional and teacher characteristics.

5. The prediction model developed in this study could be modified in future exploratory studies to investigate the mediating effect of environmental and behavioral factors on student's cognitive attributes (highs school GPA and ACT score), dimensions of PWB, and the influence of these attributes and dimensions on students' FYFS GPA.

APPENDIX A

TABLE OF VARIABLE DEFINITIONS

TABLE OF VARIABLE DEFINITIONS

Variable Name	Conceptual Definition	Instrumental Definition	Operational Definition
Autonomy	Autonomy, the first dimension of Psychological Well-Being (PWB), represents the degree to which someone is, "self-determine and independent, able to resist social pressures to think and act in certain ways, regulates behavior from within, and evaluates self by personal standards" (Ryff, 1989, p. 1072).	Autonomy was measured by answering items representing this variable on the questionnaire: 1, 7, 13, 19, 25, 31, and 37. Participants indicated a response (strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree) for each of the seven questions.	Responses were measured on a six-point scale with 1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, and 6=strongly agree. An overall score for the Autonomy is calculated by finding the mean of all responses, producing a value between 1 and 6.
Purpose in Life	Purpose in Life, the second dimension of Psychological Well-Being (PWB), represents the degree to which someone, "has goals in life and a sense of directedness, feels there is meaning to present and past life, holds beliefs that give life purpose, and has aims and objectives for living" (Ryff, 1989, p. 1072).	Purpose in Life was measured by answering items representing this variable on the questionnaire: 5, 11, 17, 23, 29, and 35. Participants indicated a response (strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree) for each of the seven questions.	Responses were measured on a six-point scale with 1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, and 6=strongly agree. An overall score for the Purpose in Life is calculated by finding the mean of all responses, producing a value between 1 and 6.
Positive Relations With Others	Positive Relations With Others, the third dimension of Psychological Well-Being (PWB), represents the degree to which someone, "has warm, satisfying relationships with others, is concerned about the welfare of others, is capable of strong empathy, affection, and intimacy, and understands the give and take of human relationships" (Ryff, 1989, p. 1072).	Positive Relations With Others were measured by answering items representing this variable on the questionnaire: 4, 10, 16, 22, 28, 34, and 40. Participants indicated a response (strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree) for each of the seven questions.	Responses were measured on a six-point scale with 1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, and 6=strongly agree. An overall score for the Positive Relations with Others is calculated by finding the mean of all responses, producing a value between 1 and 6.

Variable Name	Conceptual Definition	Instrumental Definition	Operational Definition
Personal Growth	Personal Growth, the fourth dimension of Psychological Well-Being (PWB), represents the degree to which someone, "has a feeling of continued development, sees self as growing and expanding, is open to new experiences, has sense of realizing his or her potential, sees improvement in self and behavior over time, and is changing in ways that reflect more self-knowledge and effectiveness" (Ryff, 1989, p. 1072).	Personal Growth was measured by answering items representing this variable on the questionnaire: 3, 9, 15, 21, 27, 33, and 39. Participants indicated a response (strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree) for each of the seven questions.	Responses were measured on a six-point scale with 1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, and 6=strongly agree. An overall score for the Personal Growth is calculated by finding the mean of all responses, producing a value between 1 and 6.
Environmental Mastery	Environmental Mastery, the fifth dimension of Psychological Well-Being (PWB), represents the degree to which someone, "has a sense of mastery and competence in managing the environment, controls complex array of external activities, makes effective use of surrounding opportunities, and is able to choose or create contexts suitable to personal needs and values" (Ryff, 1989, p. 1072).	Environmental Mastery was measured by answering items representing this variable on the questionnaire: 2, 8, 14, 20, 26, 32, and 38. Participants indicated a response (strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree) for each of the seven questions.	Responses were measured on a six-point scale with 1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, and 6=strongly agree. An overall score for the Environmental Mastery is calculated by finding the mean of all responses, producing a value between 1 and 6.
Self-Acceptance	Self-Acceptance, the sixth dimension of Psychological Well-Being (PWB), represents the degree to which someone, "possesses a positive attitude toward the self, acknowledges and accepts multiple aspects of self, including good and bad qualities, and feels positive about past life" (Ryff, 1989, p. 1072).	Self-Acceptance is measured by answering items representing this variable on the questionnaire: 6, 12, 18, 24, 30, 36, and 42. Participants indicate a response (strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, strongly agree) for each of the seven questions.	Responses is measured on a six-point scale with 1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, and 6=strongly agree. An overall score for Self-Acceptance is calculated by finding the mean of all responses, producing a value between 1 and 6.

Variable Name	Conceptual Definition	Instrumental Definition	Operational Definition
American College Testing (ACT)	ACT is the standardized test for high school achievement and college admission. ACT assessment, with multiple choice tests covering four skill areas, English, Mathematics, Reading, and Science, measures high school students' general educational development and their capability to complete college-work (ACT, 2014).	ACT assessment is divided into four multiple choice subject tests: English, mathematics, reading, and science reasoning. Subject test scores range from 1 to 36. All scores are integers. The English, mathematics, and reading tests also have subscores ranging from 1 to 18. The composite score is the average of all four tests (ACT 2014)	The student ACT assessment test score was retrieved from the SMC Banner Information Data System and was coded for all freshman students: scores 30–36=4, scores 29–23=3, scores 22–16=2, scores 15–9=1, scores 8–0=0.
High School GPA	GPA represents the average number of grade points a student earns for each graded high school course. "Grade points are points per course credit assigned to a passing grade" (NCES, 2014a).	The four-point GPA scale is used by the High School Transcript Study to compute each student's GPA. Grade "A" equals four points. The scale progresses down to zero points for the letter "F" (NCES, 2014a).	The student high school GPA data was retrieved from the SMC Banner Information Data System and was coded for all freshman students: A=4, B=3, C=2, D=1, F=0.
First-year, first-semester college student GPA	The GPA represents the average number of grade points a student earns for each graded FYFS college course. "Grade points are points per course credit assigned to a passing grade" (NCES, 2014a).	The four-point scale is used by the Higher Education Institutions Transcript Study to compute each student's GPA Grade "A" equals four points. The scale progresses down to zero points for the letter "F" (NCES, 2014a).	The student FYFS college GPA data was retrieved from the SMC Banner Information Data System and was coded for all freshman students: A=4, B=3, C=2, D=1, F=0.

APPENDIX B

APPLICATION TO CONDUCT RESEARCH AT
SOUTHWESTERN MICHIGAN COLLEGE

The following application was used to request permission to conduct research with SMC students, faculty and/or staff. The Research Review Committee (RRC) reviewed the research proposal to verify that Institutional Review Board (IRB) permissions had been granted by the appropriate partner university/college as well as coordinates scheduling of projects on campus. This completed application was returned to Dr. Angela Evans, Director of Institutional Research, aevans14@swmich.edu.

1. Project Title:

The Influence of Cognitive and Psychological Well-Being Factors on Freshman Community College Student GPA: A Prediction Model

2. Principal Investigator:

Name: Barbara Karwacinski
Department: Curriculum and Instruction
Email: bkarwacinski@swmich.edu

College/University: Andrews University
Phone: 269.471.6361

3. Status:

☐   Faculty

X   Student

☐   Other (please specify)

4. Is this study being/has been reviewed by an IRB (Institutional Review Board) at another institution?

X   Yes (please see attached IRB proposal and approval with this application)

☐   No

5. State the purpose of the research. Include major hypothesis and research design:

This study examines the interplay between the cognitive and multi-dimensional psychological variables, and the extent they may influence one another regarding their impact on freshman student GPA. Specifically, the study analyzes the interaction between the six dimensions of Psychological Well-Being (PWB) and students' scores on

prior cognitive aptitude (high school GPA and ACT scores) to create a prediction model that illustrates how these variables contribute to the academic success measured by the community college student first- year, first-semester GPA.

The study seeks to answer the following research questions:

Research Question 1: What percentage of variance in SMC students' FYFS GPA can be explained by the students' prior academic cognitive factors (high school GPA and ACT scores)?

Research Question 2: What percentage of variance in SMC students' FYFS GPA can be explained by the students' six dimensions of PWB?

Research Question 3: Which of the cognitive and psychological variables are relatively the most important in predicting the SMC student first-year, first- semester college GPA?

Research Design

This quantitative study will use a non-experimental, predictive, correlational design. The participants in this study are FYFS students enrolled at SMC in the Fall Semester of 2015. A 42-item version of Ryff's (1989) SPWB will be administered to all participants. This questionnaire is designed to measure PWB among the six dimensions: Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-Acceptance.

Prior student academic achievement records (high school GPA and ACT scores) and the FYFS student GPA will be obtained from the Banner Data Standards System. The student demographic variables (Age, Gender, Ethnicity, Major, Parents' Educational

118

Level) will serve as moderator variables and will be obtained from a student self-reported demographic questionnaire.

6.   Describe the population you are studying and how they are being selected:

The participants in this study are freshman students at SMC in Fall Semester of 2015. Both SMC campuses, Dowagiac and Niles, will be sampled for a more accurate representation of the SMC student population. Students who are enrolled into their FYFS at SMC in Fall of 2015 will be invited to participate.

7.   Provide a description of the procedures to be followed. Include copies of questionnaires, interview protocol or description of project to allow the RRC to understand the nature of participants' involvement:

A 42-item version of Ryff's (1989) SPWB will be administered to all participants. This questionnaire is designed to measure PWB among the six dimensions: Autonomy, Environmental Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, and Self-Acceptance.

In the version utilized in this study, there are seven items per dimension. The items in the 42-item questionnaire are divided equally between positive items and negative items. Responses are based on a 6-point scale (1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, 6=strongly agree).

Participant responses will be divided into one of two categories per dimension: high scorer or low scorer. A high scorer refers to an individual who possesses the qualities that encompass the dimension while a low scorer does not possess these

qualities. For example, within the Self-Acceptance variable a higher scorer has a positive attitude towards the self, whereas a low scorer feels dissatisfied with self.

A demographic questionnaire will be also given, asking students to report their Gender, Ethnicity, Age, Major, and Parents' Educational Level. This information will be used to further inform data analysis.

Study Procedures

The data collection material for this study will include five sections: an informed consent form (Appendix C), a voluntary release of information form (Appendix D), a demographic information (Appendix E), Psychological-Well Being Survey (Appendix F), pre-college cognitive factors (high school GPA and ACT scores), and first-year, first-semester college GPA.

Freshman students will be asked via e-mail sent to their SMC e-mail address to participate in an online survey about their PWB. Students will receive the first e-mail on September 10th. A second e-mail will be sent to all students as a reminder on September 17th. A third e-mail will be sent on September 24th. A fourth e-mail will be sent on September 31st. The survey will be opened for students to complete it during the first four weeks of the Fall semester. The first day to complete the survey will be September 10th; the last day to complete the survey will be October 8. Students will be assured that their participation is voluntary, and that their responses would be kept confidential.

Before completing the online demographic and PWB questionnaires, students first will be asked to complete an informed consent form (see Appendix C) and a voluntary release of information form (Appendix D). They will be prompted to provide their first and last names and the SMC Student Identification Number (SIN). They will be unable to

proceed to completing the demographic survey (see Appendix E) and the PWB

questionnaire (see Appendix F) until this information is provided. The student name and

SIN number will be used to track the student's high school GPA and ACT scores, and the

FYFS college GPA from the SMC Banner Data Standards System.

8. Describe any potential harm and/or benefits to be experienced by research

participants:

There is no potential harm to research participants associated with this study.

An incentive of winning one out of twenty $25 each visa debit cards will be

offered to those students who participate in the research study.

9. Describe the specific methods by which confidentiality or anonymity will be

protected, including the use of data coding systems, how and where data will be stored,

who will have access to it, how long it will be stored, and what will happen to the data

after the completion of the study.

In order to provide confidentiality while preserving student traceability, all

student identifiers (names and student ID numbers) will be removed and replaced with

numbers corresponding with the alphabetical order of students' names. Data gathered for

each student will include: (a) demographic characteristics (gender, ethnicity, age, major,

and parents' educational level, (b) pre-college cognitive attributes (high school GPA and

ACT scores), (c) SPWB scores, and (d) FYFS college GPA. Data will be stored in a

locked Banner Data Standard System. The researcher will have access to the password

secured data till the completion of the study.

10. Please describe the timeline for your research project:

All of the data for this study will be collected during the Fall Semester of 2015,

September 10–December 22. Ryff's (1984) SPWB and the demographic questionnaire will be administered to freshman students during the first four weeks of the Fall Semester of 2015. The student high school GPA and ACT scores will be retrieved from the SMC Data Banner System from October 10–17. The student FYFS GPA will be retrieved from the SMC Data Banner System at the end of the Fall Semester of 2015, December 18–22. Date submitted: July 24, 2015.

APPENDIX C

APPLICATION TO CONDUCT RESEARCH AT
ANDREWS UNIVERSITY

June 25, 2015

Barbara Karwacinski   Tel: 574-272-0234   Email: bkarwacinski@swmich.edu

RE: APPLICATION FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS
IRB Protocol #: 15-087 Application Type: Original Dept.: Curriculum & Instruction Review
Category: Expedited Action Taken: Approved Advisor: John Matthews   Title: The influence of
cognitive and psychological well-being factors on freshman community college student GPA: A
prediction model.

This letter is to advise you that the Institutional Review Board (IRB) has reviewed and approved
your IRB application of research involving human subjects entitled: "The influence of cognitive
and psychological well-being factors on freshman community college student GPA: A prediction
model" IRB protocol number 15-087 under Expedited category. This approval is valid until June
05, 2016. If your research is not completed by the end of this period you must apply for an
extension at least four weeks prior to the expiration date. We ask that you inform IRB whenever
you complete your research. Please reference the protocol number in future correspondence
regarding this study.

Any future changes (see IRB Handbook pages 10-11) made to the study design and/or consent
form require prior approval from the IRB before such changes can be implemented. Please use
the attached report form to request for modifications, extension and completion of your study.

While there appears to be no more than minimum risk with your study, should an incidence occur
that results in a research-related adverse reaction and/or physical injury, (see IRB Handbook page
11) this must be reported immediately in writing to the IRB. Any project-related physical injury
must also be reported immediately to the University physician, Dr. Reichert, by calling (269)
473-2222. Please feel free to contact our office if you have questions.

Best wishes in your research. Sincerely,

Mordekai Ongo

Research Integrity & Compliance Officer

Institutional Review Board, 4150 Administration Drive, Room 322, Berrien Springs, MI 49104-
0355 Tel: (269) 471-6361 Fax: (269) 471-6543 E-mail: irb@andrews.edu

APPENDIX D

INFORMED CONSENT FORM

TITLE OF THE STUDY: The Influence of Cognitive and Psychological Well-Being Factors on Freshman Community College Student GPA: A Prediction Model

Andrews University
Curriculum and Instruction Department
Barbara Karwacinski
karwacin@andrews.edu
bkarwacinski@swmich.edu
269.782.1467
574.272.0234

You are being asked to take part in a dissertation research project that I am conducting as a doctoral student in the Curriculum and Instruction Department, at the School of Education at Andrews University, under the supervision of Professor John Matthews and Professor Tammy Overstreet.

My research is focused on understanding cognitive and psychological well-being factors that relate to a freshman student academic success.

You are asked to take part in a research study. The purpose of this study is educational with the intent to create a prediction model for a freshman community college student academic success. You may not benefit personally from this study; however, your participation may provide a long-term benefit by identifying the cognitive and psychological well-being factors associated with the freshman student academic success.

All first-year, first-semester SMC students are invited to participate in this study.

Your participation is completely voluntary. Neither your status as the SMC student nor your grade in any course will be affected if you choose not to participate in this study. You may refuse to join, or you may withdraw consent to be in the study, for any reason, without penalty at any time.

As a participant in this study, you will be asked to indicate your level of agreement to forty-two (42) statements. The survey is estimated to take 10–15 minutes to complete. There are no costs associated with the completion of this survey.

Your answers to the survey items will be strictly confidential. Only summary results of the study will be reported. The individual responses will not be included in any report.

Should you choose to sign the informed consent form and complete the enclosed questionnaire, you name will be entered into the drawing of twenty ($25 each) debit cards.

Please provide the complete mailing address where we should send your debit card.

Address _____

City _____ State _____ Zip _____

CONSENT

I have been given the chance to read this consent form. I understand the information about this survey. I state that I am 18 years old and willing to participate in this study.

Name (type your first and last name _____

Please check the appropriate box below.

☐ Yes, I agree to participate in the study.

☐ No, I do <u>not</u> agree to participate in the study.

APPENDIX E

VOLUNTARY RELEASE OF INFORMATION FORM

I have read the informed consent form and understand that participation in this study requires that information regarding my high school GPA, ACT scores, and first-year, first-semester college GPA will be obtained from the Southwestern Michigan College Registrar's Office. I give my permission for these records to be released to the investigator.

Banner ID number _____

Name (type your first and last name) _____

Please check the appropriate box below.

☐ Yes, I agree.

☐ No, I do <u>not</u> agree.

APPENDIX F

DEMOGRAPHIC INFORMATION FORM

All information provided on this form will be kept confidential and will only be used to create a demographic summary when results of the study are reported. None of the information will ever be reported with names or other identifiable information attached.

Name (print clearly) _____

Student ID# _____

Gender	☐ Male	☐ Female
Age	☐ 18–24	☐ 25 and above
Did your mother graduate from college?	☐ Yes	☐ No
Did your father graduate from college?	☐ Yes	☐ No

Ethnicity: ☐ African American   ☐ Asian   ☐ Caucasian

☐ American Indian   ☐ Hispanic   ☐ Other _____

APPENDIX G

INSTRUMENT FORMATTED FOR PARTICIPANTS

STUDENT QUESTIONNAIRE

Name (print clearly)_____

Student ID# _____

Directions: For each of the twenty items below, check mark (√) one number (1, 2, 3, 4, 5, or 6) from the choice listed that best describes your response. Please answer every item. The choices are:

1. I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

2. In general, I feel I am in charge of the situation in which I live.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

3. I am not interested in activities that will expand my horizons.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

4. Most people see me as loving and affectionate.

1 ☐ strongly disagree
2 ☐ moderately disagree
3 ☐ slightly disagree
4 ☐ slightly agree
5 ☐ moderately agree
6 ☐ strongly agree

5. I live life one day at a time and don't really think about the future.

1 ☐ strongly disagree
2 ☐ moderately disagree
3 ☐ slightly disagree
4 ☐ slightly agree
5 ☐ moderately agree
6 ☐ strongly agree

6. When I look at the story of my life, I am pleased with how things have turned out.

1 ☐ strongly disagree
2 ☐ moderately disagree
3 ☐ slightly disagree
4 ☐ slightly agree
5 ☐ moderately agree
6 ☐ strongly agree

7. My decisions are not usually influenced by what everyone else is doing.

1 ☐ strongly disagree
2 ☐ moderately disagree
3 ☐ slightly disagree
4 ☐ slightly agree
5 ☐ moderately agree
6 ☐ strongly agree

8.   The demands of everyday life often get me down.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

9.   I think it is important to have new experiences that challenge how you think about yourself and the world.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

10. Maintaining close relationships has been difficult and frustrating for me.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

11. I have a sense of direction and purpose in life.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

12. In general, I feel confident and positive about myself.

1 ☐ strongly disagree
2 ☐ moderately disagree
3 ☐ slightly disagree
4 ☐ slightly agree
5 ☐ moderately agree
6 ☐ strongly agree

13. I tend to worry about what other people think of me.

1 ☐ strongly disagree
2 ☐ moderately disagree
3 ☐ slightly disagree
4 ☐ slightly agree
5 ☐ moderately agree
6 ☐ strongly agree

14. I do not fit very well with the people and the community around me.

1 ☐ strongly disagree
2 ☐ moderately disagree
3 ☐ slightly disagree
4 ☐ slightly agree
5 ☐ moderately agree
6 ☐ strongly agree

15. When I think about it, I haven't really improved much as a person over the years.

1 ☐ strongly disagree
2 ☐ moderately disagree
3 ☐ slightly disagree
4 ☐ slightly agree
5 ☐ moderately agree
6 ☐ strongly agree

16. I often feel lonely because I have few close friends with whom to share my concerns.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

17. My daily activities often seem trivial and unimportant to me.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

18. I feel like many of the people I know have gotten more out of life than I have.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

19. I tend to be influenced by people with strong opinions.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

20. I am quite good at managing the many responsibilities of my daily life.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
 6 ☐   strongly agree

21. I have the sense that I have developed a lot as a person over time.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
 6 ☐   strongly agree

22. I enjoy personal and mutual conversations with family members or friends.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

23. I don't have a good sense of what it is I'm trying to accomplish in life.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

24. I like most aspects of my personality.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

25. I have confidence in my opinions, even if they are contrary to the general consensus.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

26. I often feel overwhelmed by my responsibilities.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

27. I do not enjoy being in new situations that require me to change my old familiar ways of doing things.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

28   People would describe me as a giving person, willing to share my time with others.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

29. I enjoy making plans for the future and working to make them a reality.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

30. In many ways, I feel disappointed about my achievements in life.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

31. It's difficult for me to voice my own opinions on controversial matters.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

32. I have difficulty arranging my life in a way that is satisfying to me.

1 ☐　　strongly disagree

2 ☐　　moderately disagree

3 ☐　　slightly disagree

4 ☐　　slightly agree

5 ☐　　moderately agree

6 ☐　　strongly agree

33. For me, life has been a continuous process of learning, changing, and growth.

1 ☐　　strongly disagree

2 ☐　　moderately disagree

3 ☐　　slightly disagree

4 ☐　　slightly agree

5 ☐　　moderately agree

6 ☐　　strongly agree

34. I have not experienced many warm and trusting relationships with others.

1 ☐　　strongly disagree

2 ☐　　moderately disagree

3 ☐　　slightly disagree

4 ☐　　slightly agree

5 ☐　　moderately agree

6 ☐　　strongly agree

35. Some people wander aimlessly through life, but I am not one of them.

1 ☐　　strongly disagree

2 ☐　　moderately disagree

3 ☐　　slightly disagree

4 ☐　　slightly agree

5 ☐　　moderately agree

6 ☐　　strongly agree

36. My attitude about myself is probably not as positive as most people feel about themselves.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

37. I judge myself by what I think is important, not by the values of what others think is important.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

38. I have been able to build a home and a lifestyle for myself that is much to my liking.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

39. I gave up trying to make big improvements or changes in my life a long time ago.

1 ☐   strongly disagree
2 ☐   moderately disagree
3 ☐   slightly disagree
4 ☐   slightly agree
5 ☐   moderately agree
6 ☐   strongly agree

40. I know that I can trust my friends, and they know they can trust me.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

41. I sometimes feel as if I've done all there is to do in life.

1 ☐   strongly disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

42. When I compare myself to friends and acquaintances, it makes me feel good about who I am.

1 ☐   moderately disagree

2 ☐   moderately disagree

3 ☐   slightly disagree

4 ☐   slightly agree

5 ☐   moderately agree

6 ☐   strongly agree

REFERENCE LIST

REFERENCE LIST

Abbott, R. A., Ploubidis, G. B., Huppert, F. A., Kuh, D., & Croudace, T. J. (2010). An evaluation of the precision of measurement of Ryff's psychological well-being scales in a population sample. *Social Indicators Research, 97*(3)*, 357–373.

Abbott, R. A., Ploubidis, G. B., Huppert, F. A., Kuh, D., Wadsworth, M., & Croudace, T. J. (2006). Psychometric evaluation and predictive validity of Ryff's psychological well-being items in a UK birth cohort sample of women. *Health & Quality of Life Outcomes, 4*(1), 1.

Abrams, H., & Jernigan, L. P. (2008). Academic support services and the success of high-risk college students. *American Educational Research Journal*, *41*(2), 261–273.

ACT. (2008). *The relative predictive validity of ACT scores and high school grades in making college admissions decisions*. Iowa City, IA: Author. Retrieved from ERIC database. (ED501270)

Adebayo, B. A. (1993). Predicting the academic success of re-entry college students from placement test scores. *College Quarterly*, *1*(2), 18–21.

Adebayo, B. A. (2008, Summer). Cognitive and non-cognitive factors affecting the academic performance and retention of conditionally admitted freshmen. *Journal of College Admission, 200*, 15–21.

Akin-Little, A., & Little, S. G. (2008). Psychology's contribution to education: An introduction to the special issue. *Psychology in the Schools, 45*(3), 191–193.

American Association for Community Colleges. (2012). *Reclaiming the American dream: A report from the 21st Century Commission on the future of community colleges*. Washington, DC: Author. Retrieved from http://www.aacc.nche.edu /21stCentReport

Aragon, S. R., & Johnson, E. S. (2008). Factors influencing completion and noncompletion of community college courses. *American Journal of Education, 22*(3), 146–158.

Arbona, C., & Novy, D.M. (1990). Noncognitive dimensions as predictors of college success among Black, Mexican-American, and White students. *Journal of College Student Development*, *31*(5), 415–422.

Astin, A. W. (1970a). The methodology of research on college impact, Part 1. *Sociology of Education, 43*(3), 223–254.

Astin, A. W. (1970b). The methodology of research on college impact, Part 2. *Sociology of Education, 43*(4), 437–450.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*(4), 297–308.

Astin, A. W. (1993). *What matters in college: Four critical years revisited.* San Francisco, CA: Jossey-Bass.

Atkinson, J. W., & Litwin, G. H. (1990, January). Achievement motive and test anxiety conceived as motive to approach success and motive to avoid failure. *Journal of Abnormal Social Psychology, 60*, 52–63.

Avery, J. B., Wernsing, T. S., & Mhatre, K. H. (2011). A longitudinal analysis of positive psychological constructs and emotions on stress, anxiety, and well-being. *Journal of Leadership & Organizational Studies, 18*(2), 216–228.

Baker, R. W., & Siryk, B. (1984). Measuring adjustment to college. *Journal of Counseling Psychology, 31*(2), 179–189.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of a behavioral change. *Psychological Review, 84(2)*, 191–215.

Bandura, A. (1986). *Social foundation of thought and action: A social cognitive theory*. Upper Saddle River, NJ: Prentice Hall.

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology, 25*(5), 729–735.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York, NY: Freeman.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1–26.

Barron, K. E., Harackiewicz, J. M., Pintrich, P. R., Elliot, A. J., & Thrash, T. M. (2002). Revision of achievement goal theory: Necessary and illuminating. *Journal of Educational Psychology, 94*(3), 638–645.

Bauer, K. W., & Liang, Q. (2003). The effect of personality and precollege characteristics on first-year activities and academic performance. *Journal of College Student Development, 44*(3), 277–290.

Baxter-Magolda, M. B. (2001). *Making their own way: Narratives for transforming higher education to promote self-development*. Sterling, VA: Stylus.

Bean, J. P. (2005). Nine themes of college student retention. In A. Seidman (Ed.), *College student retention* (pp. 215–243). Westport, CT: Praeger.

Bean, J. P., & Bradley, R. K. (1986). Untangling the satisfaction-performance relationship for college students. *Journal of Higher Education, 57*(4), 393–412.

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research, 55*(4), 485–540.

Berger, J. B., & Milem, J. F. (1999). The role of student involvement and perceptions of integration in a causal model of student persistence. *Research in Higher Education, 40*, 153–158.

Bewick, M., Koutsipoulou, G., Miles, J., Slaa, E., & Barkham, M. (2010). Changes in undergraduate students' psychological well-being as they progress through university. *Studies in Higher Education, 35*(6), 633–645.

Bowen, H. R. (1982). *The state of the nation and the agenda for higher education*. San Francisco, CA: Jossey-Bass.

Bowman, N. A. (2010). The development of psychological well-being among first-year college students. *Journal of College Student Development, 51*(2), 180–200.

Box, G. E. P. (1962). Robustness to non-normality of regression tests. *Biometrika, 49*(1-2), 93–106.

Boyer, S. P., & Sedlacek, W. E. (1988). Noncognitive predictors of academic success: A longitudinal study. *Journal of College Student Development, 29*(3), 218–223.

Bradburn, N. M. (1969). *The structure of psychological well-being*. Chicago, IL: Aldine.

Brady-Amoon, M. (2009). *The association between self-efficacy and self-rated abilities and college students' adjustment and academic performance*. Nashville, TN: Vanderbilt University Press.

Braxton, J. M. (2000). *Reworking the student departure puzzle*. Nashville, TN: Vanderbilt University Press.

Braxton, J. M., Hirschy, A. S., & McCledon, S. A. (2011). *Understanding and reducing college student departure: ASHE-ERIC Higher Education Report* (Vol. 30, No. 3). Hoboken, NJ: Wiley.

Braxton, J. M., Shaw Sullivan, A. V., & Johson, R. M. (1997). Appraising Tinto's theory of college student departure. In J. C. Smart (Ed.), *Higher education: A handbook of theory and research* (Vol. 12, pp. 107–164). New York, NY: Agathon Press.

Bridgeman, B., Pollack, J., & Burton, N. (2008). *Predicting grades in different types of college courses*. New York, NY: College Board.

Brown, S. D., Lent, R. W., & Larkin, K. C. (1989). Self-efficacy as a moderator of scholastic aptitude-academic performance relationships. *Journal of Vocational Behavior, 35*(1), 64–75.

Burns, R. A., & Machin, M. A. (2009). Investigating the structural validity of Ryff's Psychological Well-Being Scales across two samples. *Social Indicators Research, 93*(2), 359–375.

Chang, E. C. (2006). Perfectionism and dimensions of psychological well-being in a college student sample. *Journal of Social & Clinical Psychology, 25*(9), 1001–1022.

Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology, 93*(1), 55–64.

Chen, R. (2012). Institutional characteristics and college student dropout risks: A multilevel event history analysis. *Research in Higher Education*, *53*(5), 487–505.

Cheng, W., Ickes, W., & Verhofsadt, L. (2012). How is family support related to students' GPA scores? A longitudinal study. *Higher Education, 64*(3), 399–420.

Chickering, A., & Reisser, L. (1993). *Education and identity*. San Francisco, CA: Jossey-Bass.

Chou, T., & Huberty, C. J. (1990). *A freshman admissions prediction equation: An evaluation and recommendation*. Unpublished manuscript, University of Georgia Athens. Retrieved from ERIC database. (ED 333081)

Cicognani, E., Pirini, C., Keyes, C. L., Joshanloo, M., Rostami, R., & Nosratabi, M. (2008). Social participation, sense of community, and social well being: A study on American university students. *Social Indicators Research, 89*(1), 97–112.

Cohen, E., Friedlander, J., Kelemen-Lohnas, E., & Elmore, R. (2009). *Approaches to predicting student success: Findings and recommendations from a study of California community college* (Report No. JC-209-414). Sacramento, CA: California Community College Fund for Instructional Improvement. Retrieved from ERIC database. (ED 310808)

Cooke, R., Bewick, B. M., Barkham, M., Bradley, M., & Audin, K. (2006). Measuring, monitoring, and managing the psychological well-being of first year university students. *British Journal of Guidance & Counseling, 34*(4), 505–517.

Coyle, T. R., & Pillow, D. R. (2008). SAT and ACT predict college GPA after removing g. *Intelligence, 36*(6), 719–729.

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed approaches* (3rd ed.). Thousand Oaks, CA: Sage.

Curs, B., & Harper, C. (2012). Financial aid and first-year collegiate GPA: A regression discontinuity approach. *Review of Higher Education, 35*(4), 627–649.

DeBerard, M. S., Julka, D. L., & Spielmans, G. I. (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal, 38*(1), 66–80.

Dickinson, D. J., & O'Connell, D. Q. (1990). Effect of quality and quantity of study on student grades. *Journal of Educational Research, 83*(4), 227–231.

Diener, E. (2009). Subjective well-being. In E. Diener (Ed.), *The science of well-being: The collected works of Ed Diener. Social Indicators Research Series, Vol. 37* (pp. 11–58). New York, NY: Springer.

Diener, E., Emmons, R., Larsen, R., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71–75.

Duckworth, A. (2016). *Grit: The power of passion and perseverance*. New York, NY: Scribner.

Dudley, N. M., Orvis, K. A., Lebiecki, J. E., & Cortina, J. M. (2006). A meta-analytic investigation of conscientiousness in the prediction of job performance: Examining the intercorrelations and the incremental validity of narrow traits. *Journal of Applied Psychology, 91*(1), 40–57.

Duran, R. P. (1986). Prediction of Hispanics' college achievement. In M. A. Olivas (Ed.), *Latino college students* (pp. 221–245). New York, NY: Teachers College Press.

Durik, A. M., Lovejoy, C. M., & Johnson, S. J. (2009). A longitudinal study of achievement goals for college in general: Predicting cumulative GPA diversity in course selection. *Contemporary Educational Psychology, 34*(2), 113–119.

Erikson, E. H. (1959). *Identity and the life cycle.* New York, NY: International Universities Press.

Esterman, K., & Hedlund, D. (1995). Comparing rural adolescents from farm and nonfarm families. *Journal of Research in Rural Education*, *11*(2), 84–91.

Feldhusen, J. F., & Jarwan, F. A. (1995). Predictors of academic success in state-supported schools for mathematics and science: A validity study. *Educational & Psychological Measurement, 55*(3), 505–512.

Fike, D. S., & Fike R. (2008). Predictors of first-year student retention in the community college. *Community College Review, 36*(2), 68–88.

Fisher, S., & Hood, B. (1987). The stress of the transition to university: A longitudinal study of psychological disturbance, absent-mindedness, and vulnerability to homesickness. *British Journal of Psychology, 78*(4), 425–441.

Fleming, J. (1985). *Blacks in college. A comparative study of students' success in Black and in White institutions*. San Francisco, CA: Jossey-Bass.

Fleming, J., & Garcia, N. (1998). Are standardized tests fair to African Americans? Predictive validity of the SAT in Black and White institutions. *Journal of Higher Education, 69*(5), 471–495.

Freeman, E., Frydenberg, E., Munro, J., LoBianco, J., Margetts, K., & Godinho, S. (2007). *Educational psychology.* Melbourne, AU: Pearson Education.

Frisby, C. L. (2001). Academic achievement. In L. Suzuki, J. G. Ponterotto, & P. J. Meller (Eds.), *Handbook of multicultural assessment: Clinical, psychological and educational applications* (2nd ed., pp. 541–568). San Francisco, CA: Jossey-Bass.

Gaston, P. L. (2012). *The challenge of Bologna: What United States higher education has to learn from Europe, and why it matters that we learn it*. New York, NY: Stylus.

Geiser, S., & Santelicek, M. V. (2004). The role of advanced placement and honors courses in college admission. In P. Gandava, G. Orfiled, & C. Horn (Eds.), *Expanding opportunity in higher education: Leveraging promise* (pp. 75–113). Albany, NY: SUNY Press.

Ghasemi, A. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *International Journal of Endocrinology & Metabolism, 10*(2), 486–489.

Gibbs, R. M. (2000). The challenge ahead for rural schools. *Forum for Applied Research & Public Policy, 15*(1), 82.

Gillespie, M., & Noble, J. (1992). *Factors affecting student persistence: A longitudinal study.* ACT Research Report Series No. 92-4. Iowa City, IA: ACT.

Goodnough, G. E., & Ripley, V. (1997). Structured groups from high school seniors making the transition to college and to military service. *School Counselor, 44*(3), 230–234.

Gore, J. M. (1987). Reflecting on reflective teaching. *Journal of Teacher Education, 38*(2), 33–39.

Grimes, P. W., Rezek, J. P., & Campbell, R. C. (2013). Academic success and the transfer of community college credits in the principles of economics. *American Economist, 58*(1), 27–40.

Hackett, G., Betz, N. E., Casa, J. M., & Rocha-Singh, I. A. (1992). Gender, ethnicity, and socio-cognitive factors predicting the academic achievement of student in engineering. *Journal of Counseling Psychology, 39*(4), 527–538.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis* (7th ed.). London, UK: Pearson.

Halfacre, K. (1995). Talking about rurality: Social representations of the rural as expressed by residents of six parishes. *Journal of Rural Studies, 11*(1), 1–20.

Hausmann, L. R. M., Schofield, J. W., & Woods, R. L. (2007). Sense of belonging as a predictor of intentions to persist among African American and White first-year students. *Research in Higher Education*, *48*(7), 803–839.

Haynes, G. A., Sorrentino, R. M., Olson, J. M., & Szeto, A. C. (2007). The effects of temporal framing on counterfactual thinking and self-appraisal: An individual differences perspective. *Social Cognition*, *25*(3), 339–366.

Haynes, N. M. (2003). Addressing students' social and emotional needs: The role of mental health teams in schools. *Journal of Health & Social Policy, 16*(1-2), 109–123.

Hinton, C., Miayamoto, K., & Chiesa, B. D. (2008). Brain research, learning, and emotions: Implications for education research, policy, and practice. *European Journal of Education, 43*(1), 87–103.

Holmbeck, G. N., & Wandrei, M. L. (1993). Individual and relational predictors of adjustment in first-year college students. *Journal of Counseling Psychology, 40*(1), 73–78.

Honken, N., & Ralson, P. (2013). High-achieving high school students and not so high-achieving college students: A look at lack of self-control, academic ability, and performance in college. *Journal of Advanced Academics, 24*(2), 108–124.

Hood, D. W. (2002). Academic and non-cognitive factors affecting the retention of Black men at a predominantly White university. *Journal of Negro Education, 61*(1), 12–23.

Horn, L. J., & Kojaku, L. K. (2001). High school academic curriculum and the persistence path through college. *Education Statistics Quarterly, 3*(3), 65–72.

House, J. D. (1995). Noncognitive predictors of achievement in introductory college chemistry. *Research in Higher Education, 36*(4), 473–490.

House, J. D., & Keeley, E. J. (1997). Predictive validity of college admission test scores. *Journal of Psychology, 131*(5), 572–574.

Howell, D. C. (2012). *Statistical methods for psychology*. Belmont, CA: Wadsworth Cengage Learning.

Hsieh, P., Sullivan, J. R., & Guerra, N. S. (2007). A closer look at college students: Self-efficacy and goal orientation. *Journal of Advanced Academics, 18*(3), 454–476. doi:10.1037/00121649.25.5.729

Hu, S. (2001). Student persistence in a public higher education system: Understanding racial and ethnic differences. *Journal of Higher Education, 72*(3), 265–286.

Huck, S. W. (2012). *Reading statistics and research* (6th ed.). London, UK: Pearson.

Hurtago, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on students' sense of belonging. *Sociology of Education, 70*(4), 324–345.

Iventosch, L., Thomas, J. W., & Rohwer, W. D. (1987). Relationships among student characteristics, study activities, and achievement as a function of course characteristics. *Contemporary Educational Psychology, 12*(4), 344–364.

Jerald, C. D. (2001). *Dispelling the myth revisited: Preliminary findings from a nation-wide analysis of "high-flying" schools*. Washington, DC: The Education Trust. Retrieved from http://www.cameroneducationalconsulting.com/uploads/1/6/9/4 /16946282/ed_commission_of_the_states_dispelling_the_myth.pdf

Jung, C. G. (1947). *On the nature of the psyche*. London, UK: Ark.

Kahn, J. H., & Nauta, M. M. (2001). Social-cognitive predictors of first-year college persistence: The importance of proximal assessment. *Research in Higher Education, 42*(6), 633–652.

Kegan, R. (1995). *In over our heads: The mental demands of modern life.* Cambridge, MA: Harvard University Press.

Keller, P. A., & Murray, J. D. (1982). *Handbook of rural community mental health*. New York, NY: Human Sciences Press.

Kenny, M. E., & Perez, V. (1996). Attachment and psychological well-being among first-year college students. *Journal of College Student Development, 37*(5), 527–535.

Kerr, S., Johnson, V. K., Gans, S. E., & Krumrine, J. (2004). Predicting adjustment during the transition to college: Alexithymia, perceived stress, and psychological symptoms. *Journal of College Student Development*, *45*(6), 593–611.

Keyes, C. L. M., & Haidt, J. (2003). *Flourishing: Positive psychology and the life well lived.* Washington, DC: American Psychological Association.

Keyes, C. L. M., & Magyar-Moe, J. L. (2003). The measurement and utility of adult subjective well-being. In S. J. Lopez & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook for models and measures* (pp. 411–425). Washington, DC: American Psychological Association.

Keyes, C. L. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality & Social Psychology, 82*(6), 1007–1022.

King, J. E., & Cooley, E. L. (1995). Achievement orientation and the impostor phenomenon among college students. *Contemporary Educational Psychology*, *20*(3), 304–312.

Kinsella, S. (1998). A cross-discipline study of traditional and nontraditional college students. *College Students Journal, 32*(4), 532–538.

Kirby, D. K., & Conlon, M. C. (2005). Comparing the economic experiences of rural and urban university students. *Alberta Journal of Educational Research, 51*(1), 4–17.

Klasner, L., & Pistole, M. C. (2003). College adjustment in a multiethnic sample: Attachment, separation-individuation, and ethnic identity. *Journal of College Student Development, 44*(1), 92–109.

Kling, K. C., Seltzer, M. M., & Ryff, C. D. (1997). Distinctive life challenges: Implications for coping and well-being. *Psychology of Aging, 12*(2), 288–295.

Kobrin, J. L., Patterson, B. F., Shaw, E. J., & Mattern, K. D. (2008). *Validity of the SAT for predicting first-year college grade point average*. (Research Report No. 2008–5). New York, NY: The College Board.

Kuh, G. D. (2005). Student engagement in the first year of college. In M. L. Upcraft, J. N. Gardner, & B. O. Barefoot (Eds.), *Challenging and supporting the first-year student: A handbook for improving the first year of college* (pp. 86-107). San Francisco, CA: Jossey-Bass.

Kuh, G. D. (2009). What student affairs professionals need to know about student engagement. *Journal of College Student Development*, *50*(6), 683–706.

Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonya, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *The Journal of Higher Education, 79*(5), 540–563.

Kuh, G. D., & Hu, S. (2001). The relationship between selected learning, personal development outcomes, and other college experiences. *Journal of College Student Development, 42*(3), 217–232.

Kwan, D., Barker, K., Richardson, D., Wagner, S. J., & Austin, D. (2009). Effectiveness of a faculty development program in fostering interprofessional education competencies. *Journal of Research in Interprofessional Practice & Education, 1*(1), 24–41.

Lang, G., Dunham, R. G., & Alpert, G. P. (1988). Factors related to the academic success and failure of college football players: The case of the mental dropout. *Youth & Society, 20*(2), 209–221.

Langston, C. A., & Cantor, N. (1989). Social anxiety and social constraint: When making friends is hard. *Journal of Personality & Social Psychology, 56*(4), 649–661.

Laursen, B., & Collins, W. A. (1994). Interpersonal conflict during adolescence. *Psychological Bulletin, 115*(2), 197–209.

Lauver, K., Robbins, S., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130*(2), 261–288.

Le, H., Casillas, A., Robbins, S. B., & Langley, R. (2005). Motivational and skills, social, and self-management predictors of college outcomes: Constructing the student readiness inventory. *Educational & Psychological Measurement, 65*(3), 482–508.

Lee, D., Michaelson, S. T., Olson, E., Odes, E., & Locke, B. (2009). The effects of college counseling services on academic performance. *Journal of College Student Development, 50*(3), 305–319.

Lent, R. W. (2004). Toward a unifying theoretical and practical perspective on well-being and psychosocial adjustment. *Journal of Counseling Psychology*, *51*(4), 482–509.

Lent, R. W., Brown, S. D., & Gore, P. A. (1997). Discriminant and predictive validity of academic self-concept, academic self-efficacy, and mathematics-specific self-efficacy. *Journal of Counseling Psychology, 44*(3), 307–315.

Locks, A. M., Hurtago, S., Bowman, N. A., & Oseguera, L. (2008). Extending notions of campus climate and diversity to students' transition to college. *Review of Higher Education, 31*(3), 257–285.

Loehlin, J. C. (2004). *Latent variable models: An introduction to factor, path, and structural equaltion analysis* (4th ed.). Mahwah, NJ: Lawrence Erhaum.

Lotkowski, V. A., Robbins, S. B., & Loeth, R. J. (2004). *The role of academic and non-academic factors in improving college retention*: *ACT Policy Report*. Retrieved from ERIC database. (ED 485476)

Ma, S. M., Tan, Y., & Ma, S. C. (2012). Testing a structural model of psychological well-being., leisure negotation, and leisure participation. *Leisure Science, 34*(1), 55–71.

Mallinckordt, B. (2000). Attachment, social competencies, social support, and interpersonal process in psychotherapy. *Psychotherapy Research, 10*(3), 239–266.

Marti, C. N. (2008). Dimensions of student engagement in American community colleges. Using the community college student report in research and practice. *Community College Journal of Research & Practice, 33*(1), 1–24.

Maslow, A. H. (1968). *Toward a psychology of being* (2nd ed.). New York, NY: Van Nostrand.

Mattanah, J. F., Hancock, G. R., & Brand, B. L. (2004). Parental attachment, separation-individuation, and college student adjustment. *Journal of Counseling Psychology, 51*(2), 213–225.

Mattern, R. A. (2005). College students' goal orientation and achievement. *International Journal of Teaching & Learning in Higher Education, 17*(1), 27–32.

Maxwell, M. (1997). *What are the functions of a college learning assistance center?* Kensington, MD: MM Associates. Retrieved from ERIC database. (ED 413031)

McGrath, M., & Braunstein, A. (1997). The prediction of freshmen attrition: An examination of the importance of certain background, academic, financial, and social factors. *College Student Journal, 31*(1), 396–408.

McMillan, J. H., & Schumacher, S. (1984). *Research in education: A conceptual introduction.* Boston, MA: Little Brown.

Meece, J. L., Anderman, E. M., & Anderman, L. H. (2006). Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology, 57,* 487–503.

Mendoza-Denton, R., Downey, G., Purdie, V. J., Davis, A., & Pietrzak, J. (2002). Sensitivity to status-based rejection: Implications for African-American students' college experience. *Journal of Personality & Social Psychology, 83*(4), 896–918.

Messick, S. J. (Ed.). (2013). *Assessment in higher education: Issues of access, quality, student development and public policy.* Hoboken, NJ: Taylor & Francis.

Millikin, M., & Woodruff, J. (2010, September*). Focus on diagnosis: Persistence at Tulsa Community College*. Paper presented at Achieving the Dream Strategies Institute, Charlotte, NC.

Moores, K., & Klas, L. D. (1989). Comparing personal, social, and institutional variables for university dropouts and those who persist. *College Student Journal, 23*(1), 16–22.

Mounts, N. S. (2004). Contributions of parenting and campus climate to freshman adjustment in a multiethnic sample. *Journal of Adolescent Research, 19*(4), 468–491.

Mourad, R., & Hong, J. (2011). Factors associated with bachelor degree attainment by community college transfer students. *Journal of Applied Research in the Community College, 18*(2), 9–16.

Mouw, J., & Khanna, R. (2013). Prediction of academic success: A review of the literature and some recommendations. *College Student Journal, 27,* 328–336.

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic coutcomes: A meta-analytic investigation. *Journal of Counseling Psychology, 38*(1), 30.

Myers, R., & Pyles, M. (2012). *Relationship among high school grade, ACT test scores, and college grade*. Retrieved from ERIC database. (ED 353317)

National Center for Education Statistics. (2014a). *How is grade point average calculated?* (NCES 2014-608). Washington, DC: Author.

National Center for Education Statistics. (2014b). *The nation's report card* (NCES 2014-462). Washington, DC: Author.

Nixon, C. T., & Frost, A. G. (1990). The study habits and aptitudes inventory and its implications for student's success. *Psychological Reports, 66,* 1075–1085.

Noble, J. (1991). *The classroom arsenal: Research, information, technology, and public education.* New York, NY: Falmer Press.

Noble, J., & Sawyer, R. (1987). *Predicting grades in specific college freshman courses from ACT test scores and self-reported high school grade*s. Iowa City, IA: American College Testing.

Noble, J., & Sawyer, R. (2002). *Predicting different levels of academic success in college using high school GPA and ACT composite score*. (ACT Research Report Series No. 2002-4). Iowa City, IA: ACT

O'Connor, M. C., & Paunonen, S. V. (2007). Big five personality predictors of post-secondary academic performance. *Personality & Individual Differences, 43*(5), 971–990.

Ory, J. C., & Braskamp, L. A. (1994). *Assessing faculty work: Enhancing individual and institutional performance*. San Francisco, CA: Jossey-Bass.

Oswald, A. J., & Clark, E. M. (2003). Best friends forever? High school friendships and the transition to college. *Personal Relationships, 10*(2), 187–196.

Pace, C. R. (1979). *Measuring outcomes of college: Fifty years of findings and recommendations for the future*. San Francisco, CA: Jossey-Bass.

Pace, C. R. (1985). *The credibility of student self-reports.* Los Angeles, CA: Center for the Study of Evaluation, University of California, Los Angeles.

Palmer, R. T., & Strayhorn, T. L. (2008). Mastering one's own fate: Non-cognitive factors associated with academic success. *NASAP Journal, 11*(1), 126–143.

Pascarella, E. T. (1985). College environmental influences on learning and cognitive development: A critical review of syntheses. *Higher Education: Handbook of Theory & Research, 1*(1), 1–61.

Pascarella, E. T. (2001). Using student self-reported gains to estimate college impact: A cautionary tale. *Journal of College Student Development, 42*(5), 488–492.

Pascarella, E. T., Duby, P. B., Miller, V. A., & Rasher, S. P. (1981). Pre-enrollment variables and academic performance as predictors of freshmen year persistence, early withdrawal, and dropout behavior in an urban nonresidential university. *Research in Higher Education, 15*(4), 329–349.

Pascarella, E. T., & Terenzini, P. T. (1998). Studying college students in the 21st century: Meeting new challenges. *Review of Higher Education*, *21*(2), 151–165.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco, CA: Jossey-Bass.

Pascarella, E. T., Terenzini, P. T., Pierson, C. T., & Wolniak, G. C. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education, 75*(3), 249–284.

Paul, E. L., & Brier, S. (2001). Friendsickness in the transition to college: Precollege predictors and college adjustment correlates. *Journal of Counseling & Development, 79*(1), 77–89.

Perfetto, G. (2002). Predicting academic success in the admission process: Placing an empirical approach in a larger process. *College Board Review, 196*, 30–35.

Pierce, G. R., Sarason, I. G., & Sarason, B. R. (1991). General and relationship-based perceptions of social support: Are two constructs better than one? *Journal of Personality & Social Psychology, 61*(6), 1028–1039.

Pike, G. R. (1999). The effects of residential learning communities and traditional residential living arrangements on educational gains during the first year of college. *Journal of College Student Development, 40*(3), 269–284.

Pike, G. R., & Kuh, G. D. (2005). First- and second-generation college students: A comparison of their engagement and intellectual development. *Journal of Higher Education, 76*(3), 276–300.

Pike, G. R., & Saupe, J. L. (2002). Does high school matter? An analysis of three methods of predicting first-year grades. *Research in Higher Education, 43*(2), 187–207.

Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135*(2), 322–338.

Pritchard, M. E., & Wilson, G. S. (2003). Using emotional and social factors to predict student success. *Journal of College Student Development*, *44*(1), 18–28.

Pryor, J. H., Eagan, K., Blake, L. P., Berdan, J., & Case, M. H. (2012). *The American freshmen: National norms fall 2012*. Los Angeles, CA: Psychology Press.

Radford, A. W., Berkner, L., Wheeless, S. C., & Shepherd, B. (2010). *Persistence and attainment of 2003-04 beginning postsecondary students: After 6 years: First look* (NCES 2011-151). Washington, DC: National Center for Education Statistics.

Radunzel, J., & Noble, J. (2012). *Tracking 2003 ACT [R]-tested high school graduates: College readiness, enrollment, and long-terms success.* (ACT Research Report Series, No. 2012-2). Iowa City, IA: ACT.

Rafanelli, C., Park, S. K., Ruini, C., Ottolini, F., Cazarro, M., & Fava, G. A. (2000). Rating well-being and distress. *Stress & Health, 16*(1), 55–61.

Reason, R. D. (2009). An examination of persistence research through the lens of a comprehensive conceptual framework. *Journal of College Student Development, 50*(6), 659–682.

Reason, R. D., Terenzini, P. T., & Domingo, R. J. (2006). First thing first: Developing academic competence in the first year of college, *Research in Higher Education, 47*(2), 149–175.

Reeve, C. L., Heggestad, E. D., & George, E. (2005). Estimation of transient error in cognitive ability scales. *International Journal of Selection & Assessment*, *13*(4), 316–320.

Rendón, L. I., Jalomo, R. E., & Nora, A. (2000). Theoretical considerations in the study of minority student retention in higher education. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 127–156). Nashville, TN: Vanderbilt University Press.

Ridgell, S. D., & Lounsbury, J. W. (2004). Predicting academic success: General intelligence, "Big Five" personality traits, and work drive. *College Student Journal, 38*(4), 607–619.

Riehl, R. J. (1994). The academic preparation, aspirations, and first-year performance of first-generation students. *College & University, 70*(1), 14–19.

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin*, *130*(2), 261–288.

Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological Science, 2*(4), 313–345.

Rogers, C. R. (1961). *On becoming a person*: *A therapist's view of psychotherapy.* New York, NY: Houghton Mifflin.

Rowenton, W. E., & Bare, C. (1991). *Predicting rural college retention*. (Report No. RC018267). Retrieved from ERIC database. (ED 335185)

Ruini, C., Ottolini, F., Rafanelli, C., Tossani, E., Ryff, C. D., & Fava, G. A. (2003). The relationship of psychological well-being to distress and personality. *Psychotherapy & Psychosomatics, 72*(5), 268–275.

Russell, S., & Elder, G. J. (1997). Academic success in rural America: Family background and community integration. *Childhood, 4*(2), 169–181.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*(1), 141–166.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality & Social Psychology, 57*(6), 1069–1081.

Ryff, C. D. (1991). Possible selves in adulthood and old age: A tale of shifting horizons. *Psychology & Aging, 6*(2), 286–295.

Ryff, C. D. (2008, February). *Longitudinal examination of health outcomes: The danger of the double gradient.* Paper presented at the annual meeting of the Society for Personality and Social Psychology, Albuquerque, NM.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality & Social Psychology, 69*(4), 719–727.

Ryff, C. D., Keyes, C. L. M., & Hughes, D. L. (2003). Status inequalities, perceived discrimination, and eudaimonic well-being: Do the challenges of minority life hone purpose and growth? *Journal of Health & Social Behavior, 44*(3), 275–291.

Ryff, C. D., Love, G. D., Urry, H. L, Muller, D., Rosenkranz, M. A., Friedman, E., & Singer, B. H. (2006). Psychological well-being and ill-being: Do they have distinct or mirror biological correlates? *Psychotherapy & Psychosomatics, 75*(2), 85–95.

Ryff, C. D., Schmutte, P. S., & Lee, Y. H. (1996). How childen turn out: Implications for parental self-evaluation. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 383–422). Chicago, IL: University of Chicago Press.

Ryff, C. D., & Singer, B. H. (1998). The contours of positive human health, *Psychological Inquiry, 9*(1), 1–28.

Ryff, C. D., Singer, B. H., & Love, G. D. (2004). Positive health: Connecting well-being with biology. *Philosophical Transactions-Royal Society of London Series B Biological Sciences, 359*(1449), 1383–1394.

Sadler, P. M., & Tai, R. H. (2001). Success in college. The role of high school preparation. *Science Education, 85*(2), 111–136.

Salmela-Aro, K., Aunola, K., & Nurmi, J. (2007). Personal goals during emerging adulthood: A 10-year follow up. *Journal of Adolescent Research, 22*(6), 690–715.

Sawyer, R. (2010). *Usefulness of high school average and ACT scores in making college admission decisions.* (ACT Research Report Series No. 2010-2). Iowa City, IA: ACT.

Schmutte, P. S., & Ryff. C. D. (1997). Personality and well-being: Reexamining methods and meanings. *Journal of Personality & Social Psychology, 73*(3), 549–559.

Schreiner, L. A., & Louis, M. C. (2011). The engaged learning index: Implications for faculty development. *Journal on Excellence in College Teaching, 22*(1), 5–28.

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.

Sedlacek, W. E. (2004). *Beyond the big test: Noncognitive assessment in higher education*. San Francisco, CA: Jossey-Bass.

Seligman, M. E. (2011). *Authentic happiness.* New York, NY: Free Press.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*(1), 5–14.. doi:10.1037/0003-066X.55.1.5

September, A. N., McCarrey, M., Baranowsky, A., Parent, C., & Schindler, D. (2001). The relation between well-being and gender role orientation among Canadian university students. *Journal of Social Psychology, 141*(2), 218–232.

Shaughnessy, J. J., Zechmeister, E. B., & Zechmeister, J. S. (2012). *Research methods in psychology*. New York, NY: McGraw-Hill.

Shavelson, R. (2010). *Measuring college learning responsibility: Accountability in a new era*. Stanford, CA: Stanford University Press.

Sheu, H. B., & Lent, R. W. (2009). A social cognitive perspective on well-being in educational and work settings: Cross-cultural considerations. *International Journal for Educational & Vocational Guidance, 9*(1), 45–60.

Shivpuri, S. N., Schmitt, N., Oswald, F. L., & Kim, B. H. (2006). Individual differences in academic growth: Do they exist, and can we predict them? *Journal of College Student Development, 47*(1), 69–86.

Sinatra-Ostlund, C. (1988). The use of a GPA prediction formula to better prepare the freshman student for college academic success—one school's approach. *Journal of Higher Education, 74*(1), 11–16.

Slama, R. B. (2014). Investigating whether and when English learners are reclassified into mainstream classrooms in the United States: A discrete-time survival analysis. *American Educational Research Journal*, *51*(2), 220–252.

Smider, N. A., Essex, M. J., & Ryff, C. D. (1996). Adaptation to community relocation: The interactive influence of psychological resources and contextual factors. *Psychology & Aging, 11*(2), 362–371.

Snyder, C. R., & Lopez, S. J. (Eds.). (2009). *Oxford handbook of positive psychology* (2nd ed.). New York, NY: Oxford University Press.

Soh, K. (2010). Grade point average: What's wrong and what's the alternative? *Journal of Higher Education Policy & Management, 33*(1), 27–36.

Sorrentino, R. M., Bobocel, C. R., Gitta, M. Z., Olson, J. M., & Hewitt, E. C. (1988). Uncertainty orientation and persuasion: Individual differences in the effects of personal relevance on social judgments. *Journal of Personality & Social Psychology, 55*(3), 357–371.

Sparkman, L., Maulding, W., & Roberts, J. (2012). Non-cognitive predictors of student success in college. *College Student Journal, 46*(3), 642–652.

Springer, K. W., & Hauser, R. M. (2006). An assessment of the construct validity of Ryff's scales of psychological well-being: Method, mode, and measurement effects. *Social Sciences Research, 35*(4), 1080–1102.

Stahl, V. V., & Pavel, D. M. (1992, April). *Assessing the Bean and Metzner Model with community college student data.* (Report No.JC-920-209). San Francisco, CA. Paper presented at the annual meeting of the American Educational Research Association. Retrieved from ERIC database. (ED 344639)

Steers, R. M., & Braunstein, D. N. (1976). A behaviorally-based measure of manifest needs in work settings. *Journal of Vocational Behavior, 9*(2), 251–266.

Steinberg, L., Graham, S., O'Brien, L., Woolard, J., Cauffman, E., & Banich, M. (2009). Age differences in future orientation and delay discounting. *Child Development, 80*(1), 28–44.

Strage, A. A. (1999). Social and academic integration and college success: Similarities and differences as a function of ethnicity and family educational background. *College Student Journal, 33*(2), 198–198.

Stumpf, H., & Stanley, J. C. (2002). Group data on high school grade point averages and scores on academic aptitude tests as predictors of institutional graduation rates. *Educational & Psychological Measurement, 62*(6), 1042–1052.

Svanum, S., & Bigatti, S.M. (2009). Academic course engagment during one semester forecasts college success: Engaged students are more likely to earn a degree, do it faster, and do it better. *Journal of College Student Development, 50*(1), 120–132.

Tabachnick, B., Fidell, L., & Osterlind, S. J. (2001). *Using mulitivariate statistics.* New York, NY: Harper Collins.

Terenzini, P. T., Rendón, L. I., Upcraft, M. L., Millar, S. B., Allison, K. W., … Jalomo, R. (1994). The transition to college: Diverse students, diverse stories. *Research in Higher Education, 35*(1), 57–73.

Thomas, J. W., Inentosch, L., & Rohwer Jr., W. D. (1987). Relationships among student characteristics, study activities, and achievement as a function of course characteristics. *Contemporary Educational Psychology, 12*(4), 344–364.

Thomas, R., & Chickering, A.W. (1984). Education and identity revisited. *Journal of College Student Personnel, 25*(5), 392–399.

Ting, S. R. (1997). Estimating academic success in the first year of college for specially admitted White students: A model of combining cognitive and psychosocial predictors. *Journal of College Student Development, 38*(4), 401–409.

Ting, S. R. (1998, Winter). First-year grades and academic progress of college students of first-generation and low-income families. *Journal of College Admission, 158,* 14–23.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition.* Chicago, IL: University of Chicago Press.

Tinto, V., & Russo, P. (1994). Coordinated studies programs: Their effect on student involvement at a community college. *Community College Review*, *22*(2), 16–25.

Toomela, A. (2008). Noncognitive correlates of education. *Learning & Individual Differences, 1*(1), 19–28.

Tosevski, D. L., Milovancevic, M. P., & Gajic, S. D. (2010). Personality and psychopathology of university students. *Current Opinion in Psychiatry, 23*(1), 48–52.

Trabattoni, F. (2004). Review of the book *Eudaimonia and well-being: Ancient and modern conceptions,* by L. J. Jost & R. A. Shiner. *Elenchos, 25*(1), 159-168.

Tracey, T. J., & Sedlacek, W. (1984). Non-cognitive variables in predicting academic success by race. *Measurement & Evaluation, 16*(4), 171–178.

Tziner, A., & Elizur, D. (1985). Achievement motive: A reconceptualization and new instrument. *Journal of Occupational Behavior, 6*(3), 209–228.

Upcraft, M. L., Gardner, J. N., & Barefoot, B. O. (2005). *Challenging and supporting the first-year student: A handbook for improving the first year of college*. San Francisco, CA: Jossey-Bass.

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic role of intrinsic goals and autonomy-support. *Journal of Personality & Social Psychology, 87*(2), 246–260.

Wagonfeld, M. O. (2003). A snapshot of rural and frontier America. In B. H. Stamm (Ed.), *Rural behavioral health care: An interdisciplinary guide* (pp. 33–40). Washington, DC: American Psychological Association.

Walker, C. J. (2009, August). *A longitudinal study on the psychological well-being of college students*. Poster presented at the 117th annual meeting of the American Psychological Association, Toronto, Canada.

Walpole, M. (2003). Socioeconomic status and college: How SES affects college experiences and outcomes. *Review of Higher Education, 27*(1), 45–73.

Walpole, M. (Ed.). (2007). Economically and educationally challenged students in higher education: Access to outcomes. *ASHE Higher Education Report, 33*(3), 1–113. Retrieved from ERIC database. (EJ791627)

Warburton, E. C., Bugarin, R., & Nunez, A. M. (2001). Bridging the gap: Academic preparation and postsecondary success of first-generation students. Statistical Analysis Report. Postsecondary education descriptive analysis reports. *Education Statistics Quarterly, 3*(3), 73–77.

Waterman, A. S. (1993). Two conceptualization of happiness: Contrast of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of Personality & Social Psychology, 64*(4), 678–691.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality & Social Psychology, 54*(6), 1063–1070.

Watson, L. W., & Kuhn, G. D. (1996). The influence of dominant race environments on student involvement, perceptions, and educational gains: A look at historically Black and predominantly White liberal arts institutions. *Journal of College Student Development, 37*(4), 415–424.

Weinstein, L., & Laverghetta, A. (2009). College student stress and satisfaction with life. *College Student Journal, 43*(4), 1161–1162.

Wesley, S., & Oskamp, S. (2005). *Attitudes and opinions* (3rd ed.). Mahwah, NJ: Erlbaum.

Williams, J. M. G. (2008). Mindfulness, depression and modes of mind. *Cognitive Therapy & Research*, *32*(6), 721–733.

Wintre, M. G., Bowers, C., Gordner, N., & Lange, L. (2006). Re-evaluating the university statistic: A longitudinal follow-up study. *Journal of Adolescent Research, 21*(2), 111–132.

Wintre, M. G., & Yafee, M. (2000). First-year students' adjustment to university life as a function of relationships with parents. *Journal of Adolescent Research*, *15*(1), 9–37.

Wolfe, R. N., & Johnson, S. D. (1995). Personality as a predictor of college performance. *Educational & Psychological Measurement, 55*(2), 177–185.

Wolters, C. A., Shirey, L. Y., & Pintrich, P. R. (1996). The relation between goal orientations and students' motivational beliefs and self-regulated learning. *Learning & Individual Differences, 8*(3), 211–238.

Woodward, J. C., & Frank, B. D. (1988). Rural adolescent loneliness and coping strategies. *Adolescence*, *23*(91), 559–565.

Wright, R. E., Palmer, J. C., & Miller, J. C. (1996). An examination of gender-based variations in the predictive ability of the SAT. *College Student Journal*, *30*, 81–84.

Yukl, G. A., & Latham, G. P. (1978). Interrelationships among student participation, individual differences, goal difficulty, goal acceptance, goal instrumentality, and performance. *Journal of Psychology, 31*(2), 305–323.

Zajacova, A., Lunch, S. M., & Espenshade, T. J. (2005). Self-efficacy, stress, and academic success in college. *Research in Higher Education, 46*(6)*,* 677–706.

Zwerling, L. S., & London, H. B. (Eds.). (1992, Winter). *First-generation students: Confronting the cultural issues. Vol. 80, new directions for community colleges* (pp. 87–96). San Francisco, CA: Jossey-Bass.

Zwick, R. (2007, February). *College admission testing*. Retrieved from http://www.nacacnet.org/NR/rdonlyres/21062AE7-F087-4CF8-A5BA-E5C3474F07C4/0/Standardized_Testing.pdf

VITA

VITA

Name: Barbara Karwacinski

Education (United States):

2017   Ph.D. Andrews University. Education
Concentration: Curriculum and Instruction in Higher Education

Phi Kappa Phi Member
Andrews University Chapter

2004   State of Indiana Professional Educator's License (#1561364)
Sociology, World Civilization, Government

Education (Poland):

1992   J.D. University of Warsaw

1990   M.A. University of Warsaw, High Honors
Major: Sociology, History

1988   B.A. University of Warsaw, High Honors
Major: Sociology, History

Employment:

2005–present   Social Sciences and Humanities Department, Faculty
Sociology Course Director
Southwestern Michigan College

2001–2005   Sociology and Anthropology Department, Adjunct Faculty
Indiana University—South Bend

2003–2005   Social Sciences Department, Adjunct Faculty
Goshen College

2001–2005   Developmental Studies Department, Adjunct Faculty
Southwestern Michigan College