Interaction Between Engagement and the Big-Five Personality Characteristics

on Academic Success of College Students

by

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ABSTRACT

Within this research, a version of the person-environment fit model, adapted for use in higher education, was tested. It was postulated that stable personality characteristics (represented by the Big-Five personality traits) interact with engagement with the college environment, resulting in good or bad fit, as measured by semester-to-semester persistence and cumulative grade point average (GPA). Data were collected via a self-report online survey containing questions about personality characteristics, degree of academic effort made, degree and quality of perceived campus support, number and quality of faculty-student interactions, and number and quality of college peer relationships. The final sample was comprised of 129 students from San Diego area postsecondary institutions. Hierarchical multiple regression was used to determine the degree to which personality characteristics interacted with level of engagement with the college environment to predict cumulative GPA. The degree to which various biodemographic variables (e.g., ethnicity, gender, level of parental education) predicted GPA was also examined using ANOVA. Due to small sample size ($n = 6$), all results reported represent findings for a sample of students who intended to persist in college. Results indicated that agreeableness, conscientiousness, and engagement with faculty, peers and campus environment significantly predicted cumulative GPA for students who intended to enroll in the upcoming semester of college. Institutions are encouraged to employ this person-environment fit model in pinpointing students who are at greater risk of academic failure and devise strategies to assist them in attaining academic goals based on the strategic assessment of personality and environment interactions.
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CHAPTER 1—INTRODUCTION

Current Trends in Academic Success for College Students

Academic success and persistence in college is a topic of continued interest. With 11.7 million students enrolled in community college, or 44% of all U.S. undergraduate students (over half of which are credit students) entering community colleges (American Association of Community Colleges, 2009), determining how to best serve this large contingent of individuals who seek degrees or transfer to a 4-year institution is critical. Approximately 9 out of 10 students enter community college reporting the intention of transferring to a university or obtaining some type of credential (U.S. Department of Education [USDOE], 2003), and students with an expectation of obtaining a degree or transferring were more likely to succeed/persist than those who entered community college without a goal (American Association of Community Colleges, 2009; USDOE, 2008). Regardless of the initial intention for attending community college, dropout rates are higher in the community college system than for all other higher education (Cohen & Brawer, 2008). For example, in California, there is a retention/completion rate of only 64% in the community college system (Cohen & Brawer, 2008). Persistence rates are lower overall for community college students (approximately 53%) compared with persistence rates of other types of higher education institutions; given the broad goals of community colleges and the diverse needs they serve (American Federation of Teachers, 2003), such a low number of students who persist is not surprising since this calculation takes into account students who do not enter college with a specific goal to persist/transfer. Regardless, too many students are failing to achieve what they report are their academic goals.
Persistence within the university system for undergraduates is not much better. In general, only 58% of full-time students at 4-year universities obtain a bachelor’s degree or its equivalent (USDOE, 2003), and students who started their college education at institutions that granted doctorates were more likely to earn a bachelor’s degree than those students who began at nondoctorate-granting institutions (USDOE, 2003). Overall, there is a 69% degree completion rate for all undergraduates within the United States (USDOE, 2003). Specifically, within the California State University system, which serves the greatest number of students after the community college system, retention rates for first-year students range from 61% to 90%; however, of the students who persist past the first year, only 28.2% to 66.1% graduate after 6 years (The Education Trust, 2010). Whether within the community college or university system, a tremendous number of students are failing to complete their education. Understanding why so many students fail is key in making student-centered institutional changes to promote academic success.

**Impediments to Academic Success in College**

The pathways to academic success and persistence have not yet been fully discovered, as evidenced by the significant number of students who fail to persist and succeed academically. To successfully accomplish educational goals, college students must adjust to new and sometimes vastly different sets of environmental, social, and academic settings than previously experienced in high school. For new students, the college environment presents a new set of norms, traditions, rituals, and language (Hunter, 2006) that must be mastered in order to be successful in college. Success in college is dependent on rapid adjustment to these issues of greater autonomy and individual responsibility (Brinkworth, McCann, Matthews, & Nordstrom, 2009), and
students often report feeling stress due to large changes and conflicts associated with the adjustment to college (Rayle & Chung, 2008).

This stress may be due in part to the neglect of college and university leadership to fully address issues of social, personal, and academic adjustment to the college environment. It has been suggested that adjustment to college is impacted by the combined influence of many factors, predominantly social and personal factors (Wang, 2009). For example, when assessing students’ perceptions of college, it was found that neither social nor academic experiences aligned with students’ expectations of their first year in college (Smith & Wertlieb, 2005), and students whose college expectations were unrealistic were found to be less likely to persist academically (Hawley & Harris, 2006). With so many students entering higher education with expectations that may not match the personal, social, and academic demands of the institution they attend, it becomes less surprising that students are failing to persist, as this poor fit between person and environment may severely impact students’ levels of engagement.

Clearly, the interplay between social and personal factors and the college environment has a significant impact on persistence and academic success; however, little attention has been focused on assessing the interaction of these factors. Of vital importance is uncovering the specific nature of the interaction of social and personal factors on adjustment to college. The student is a complex being whose successful academic functioning in college cannot be fully understood except via the interaction of internal and external forces, or mastery of individual/personal factors and the social facets of the college experience such that these factors become aligned with the demands of the institution, or stated another way, the degree to which a student “fits” with the college
environment. Further, understanding the toll this rapid adjustment to school norms takes on students and how personality impacts adjustment strategies is an essential first step in changing the college environment to align with students’ needs—developing specialized programs to assist with students’ personal and social adjustment, or fit, with the college environment is critical.

**Personal Adjustment**

Academic success is in part a result of mastery and application of educationally advantageous skills; for example, successful time management and ability to retain focus on coursework throughout a semester. Adjustment to college requires that students obtain and refine the necessary academic skills. Overall, student learning is deepened by relatively any form of involvement in college (Astin, 1993a), and, most obviously, the time and effort a student dedicates to coursework impacts academic adjustment to college. For example, the number of hours spent studying was positively associated with retention, academic development, preparation and enrollment in graduate school, and increase in cognitive skills (Astin, 1993a). The ability to remain focused on coursework despite competing demands on a student’s time is a vital component of academic adjustment. College students who were characterized as highly active and unfocused (i.e., those who spent more time on activities unrelated to school and school work) were more likely to eventually drop out of school (Hawley & Harris, 2006). Alternatively, students who were organized and conscientious in working toward scholastic goals were more likely to persist in college (Napoli & Wortman, 1998). Likewise, students who were able to effectively manage their time showed higher academic performance, even when controlling for high school grade point average (GPA) and Scholastic Assessment
Test (SAT) scores (Kitsantas, Winsler, & Huie, 2008), indicating that precollege entry factors may be less salient to academic success than is the mastery of critical skills while in college. Further, research with college students revealed motivation impacted both retention and graduation (Lor, 2008). Motivation to attain a degree resulted in higher likelihood of actually achieving educational goals (Wang, 2009), and student motivation was correlated with higher GPAs (Komarraju, Karau, & Schmeck, 2009). As Komarraju et al. (2009) found, disciplined and organized students were more likely to be motivated to succeed and be engaged in school.

Students’ positive attitudes about their ability to cope with the stressors of college and successfully meet challenges head-on also impact academic adjustment. Beliefs about the ability to successfully navigate the college experience are related to persistence (Gloria & Ho, 2003). Students who believe that they have the skills to be successful appear to be more readily able to turn those thoughts into actions to successfully accomplish academic goals. Hawley and Harris (2006), for example, found that students who believed they could face challenges were better able to strategically anticipate and plan how to incorporate challenges into their academic schedule, resulting in greater levels of success. Similarly, students who believed that they had greater control over their college lives were able to take steps to get higher grades (Aspinwall & Taylor, 1992). Beliefs about the future and ability to move into that future successfully significantly shape students’ abilities to adjust to college and, in turn, impact the ability to persist and succeed. Positive attitude enables students to confidently move towards the future, directed by the belief that accomplishing goals is possible.
Also essential to academic adjustment is the development of skills to combat stressors commonly associated with transition to a new setting, in this case the college environment. Overall, students’ emotional health was positively related to degree completion (Astin, 2006), and stress was the most commonly cited health problem to impact academic success for college students (American College Health Association, 2006). Aspinwall and Taylor (1992) found that optimistic students had better adjustment to college and higher academic performance, and optimism buffered against scholastic stressors for students (S. R. Jacobs & Dodd, 2003). Ruthig, Haynes, Stupnisky, and Perry (2009) found that students who experienced depression during college were less likely to feel commitment to completion of academic goals and had lower GPAs. Alternatively, students who were optimistic about their education were more likely to have lower levels of depression and stress (Ruthig et al., 2009), and lower levels of depression were correlated with higher GPAs (Astin, 1993b). Lidy and Kahn (2006) found that students who were more emotionally stable were better adjusted overall during their first year of school. High stress and depression can impact successful adjustment to college, impede academic attainment, and contribute to attrition.

**Academic Fit With the College Environment**

To a certain extent, these findings appear to indicate that students can control some of the factors that are linked with academic adjustment, such as developing organizational skills and employing strategies that bolster the ability to focus on assignments. Clearly then, as a primary principle of “fit” is the implementation of changes in the environment to adapt to needs of individuals to attain positive outcomes, it is then the role of the institution to provide pathways for students to improve these skills.
to enhance the potential for academic success. More complex however, is the issue of inherent dispositional variables such as motivation, which may be less under the control of the student and are not as likely to be mutable via skill building efforts by the institution. The question remains as to how institutions impact these less tangible characteristics, such as motivation, to improve students’ chances of success. Given that dispositional variables have been found to be more predictive of academic success than test scores (Cohen & Brawer, 2008), it is crucial that the role of these variables is understood in regard to college engagement.

While the aforementioned factors represent just a few of the issues/skills students must master during college, the discussion points towards the dynamic and complex nature of academic adaptation to college. The degree of fit, in regard to the college readiness skills of students, and the environmental requirements of the colleges they attend, is a critical measure that must be taken into account when striving to unravel the mystery of our failing college students. Equally crucial is the assessment of the degree of fit between the social readiness skills of students and the opportunities for social interaction and support provided by the institution to enhance levels of student engagement.

**Social Adjustment**

Social support is an essential feature of successful navigation of the college system. Students who are faced with a new set of rules, new peers, and new requirements for self-management may need to look to those around them to help cope with an unfamiliar environment if they are to successfully complete the courses necessary to attain their scholastic goals. For example, in a study of social support of students,
participants addressed social support as central to success and many expressed that the
first year of school was primarily about the social sphere, indicating that the successful
negotiation between precollege life and the new experience of being on a college campus
was critical to establishing and maintaining social support (Wilcox, Winn, & Fyvie-
Gauld, 2005). In order to move forward in their new school lives, it may be necessary for
students to make a conscious effort to integrate themselves into the campus environment
in order to establish and foster a variety of sources of social support that can provide
assistance with navigating the college environment. Peer support and campus support
(which includes faculty, peer mentors, staff, and overall campus climate) all impact
students’ abilities to successfully adjust to college.

Indeed, the social support network available to students has been found to be one
of the most significant factors which affect the decision to persist in college (Gloria &
Ho, 2003; Rayle, Robinson-Kurpius, & Arredondo, 2006; Rosenthal, 1995), and each
aspect of the social support sphere (e.g., peers, mentors, faculty) plays a unique role in
student adjustment to college (Wilcox et al., 2005). For example, students who
participated in learning communities with peers spent more time studying than students
who were not involved in learning communities (Tinto & Russo, 1994) and were more
likely to persist (Engstrom & Tinto, 2008). Adequate support from other students is also
predictive of better academic adjustment to college and greater commitment to obtaining
a degree (Grant-Vallone, Reid, Umali, & Pohlert, 2004), which is not surprising as Astin
(1993a) postulates that the dominant orientation of the peer group directly influences the
values and attitudes of individual members. It is important to note that peer support
outside of the classroom plays a critical role in adjustment, as well. In fact, peer support
beyond the classroom was indicated to be an important factor in persistence decisions for community college students (Tinto & Russo, 1994).

Whether students are able to successfully integrate with the college environment hinges on the ability of students to navigate several aspects of the social environment. Central to attaining adequate levels of social support is the ability of students to actively engage in positive interactions with peers. Students who are well adjusted are better able to interact socially with others in college (Napoli & Wortman, 1998), whereas social conflicts for students were found to inhibit engagement with the college environment, which in turn impacted persistence (Napoli & Wortman, 1998). Similarly, those who felt that the transition to college and making new friends would be a challenge or threat were less successful at becoming integrated with the college environment (Pancer, Pratt, Hunsberger, & Alisat, 2004), and, as stated previously, students who are more integrated with campus life fare better academically (Astin, 1993b; Cohen & Brawer, 2008; Hawley & Harris, 2006; Hunter, 2006; Skahill, 2003; Wang, 2009).

Similarly, after peers, faculty have the next biggest impact on adjustment to college, with a positive correlation between the number of positive student-faculty interactions and GPA, persistence, graduating with honors, as well as with intellectual growth (Astin, 1993a). It has been stressed by various researchers that faculty efforts and actions, such as retaining a strong student orientation, are essential for the successful retention of students (Astin, 1993b; Tinto, 2007). Student-faculty interaction in general, as well as more specific interactions about coursework, were positively correlated with GPA (Carini, Kuh, & Klein, 2006). In addition, faculty support has been found to be critical for certain groups of students. For example, M. E. Schneider and Ward (2003)
found that faculty support was correlated with adjustment to college for Latino students. Similarly, faculty support predicted adjustment to college for first and second-generation students (Hertel, 2002). Faculty support appears to be a key factor in students’ successful adjustment to college regardless of ethnicity or first generation status. Indeed, in a study of factors that affected college adjustment, it was found that the need for connections to college professors cut across all ethnicities (Fischer, 2007).

Campus staff and campus climate also play an important role in the successful fit between students and environmental demands. Student’s interactions with staff have been found to be critical to success (Astin, 1993b), with use of student support services increasing retention (Fike & Fike, 2008), especially that of first generation, low-income students (Grant-Vallone et al., 2004). Similarly, negative experiences with campus administrative services were associated with poor social integration and with attrition (Napoli & Wortman, 1998). Much like the role of support services, overall campus climate plays an important function in students’ ability to succeed and remain in school. Persistence has been associated with the college environment (Wang, 2009); decisions to persist in college were related to a student’s feelings of comfort at the institution (Gloria & Ho, 2003), and institutions that had a greater level of warmth and receptivity increased students’ comfort (Rayle et al., 2006). More specifically, campuses that engendered a sense of community had a positive impact on first-year students’ desires to remain enrolled in college (Astin, 1993b; J. Jacobs & Archie, 2008). Conversely, Saggio and Rendon (2004) found that many types of students do not do well in cold, competitive environments, and larger institutions (which may be more readily perceived as harboring a colder climate) had higher rates of student attrition (Astin, 1997).
Social Fit With the College Environment

Students who do not fit with the college environment and lack integration with campus life may become prone to loneliness, depression, and stress; the experience of which can severely impact academic success. It has been found that the quality of relationships a student has affects overall adjustment to college (Bettencourt, Charlton, Eubanks, & Kernahan, 1999), and students cite lack of a sense of community as negatively impacting their emotional health (Astin, 1993b), with loneliness in particular affecting attrition (Nicpon et al., 2007). Rayle and Chung (2008) found that degree of mattering (i.e., the extent to which others are concerned or interested in us) within the college environment predicted levels of academic stress. Similarly, students who were fearful of starting college were found to experience poor adjustment, as opposed to those who reported feeling prepared to enter college (Pancer et al., 2004).

The primary role of campus personnel and campus climate in adjustment to college is the provision and maintenance of an atmosphere conducive to learning, one reflective of guiding principles of acceptance and receptivity. Further, institutions must also provide opportunities for students to connect with the campus, other students, faculty and staff. These opportunities to engage in multiple positive interactions with caring faculty, staff and peers, which reaffirm and validate students, are vital to enhancing “fit” by establishing an environment that fosters the development of essential skills for success. Students in an educational environment which has eliminated as many potential stressors as possible leaves more opportunities for students to focus on education, as opposed to expending energy on navigating a cold and complex system in order to succeed.
Academic persistence and success are impacted by the interaction of many internal and external factors, some of which are under a student’s control (e.g., time management/time on task) or beyond that which the student has the ability to directly impact (e.g., degree of campus climate warmth). Similarly, campus leadership can impact some factors that affect student academic and social adjustment (e.g., facilitating opportunities for students to connect with faculty), but other factors are more difficult to directly change (e.g., students’ fears about making friends at school). Given the evasiveness of persistence and success for many college students, understanding the interaction of social and personal factors on fit with the campus environment may improve how institutions address issues of academic success. Institutions can provide students with greater chances at attaining academic success by first supporting and enhancing the various social support avenues available to students and then by assisting students with identifying and addressing internal factors that may impede academic progress. It is critical to prepare students for transfer to a university or obtain a degree by delivering avenues by which necessary skills can be learned. Further, finding ways to identify and mitigate potential personal/social stressors to adjustment are essential for ensuring the success of students. Once factors that impact academic success have been discovered, developing specific programs which will assist students in gaining the skills they need to thrive and excel may be possible.

**Purpose of the Study**

The purpose of this research was to examine the interaction between student engagement and the big-five personality characteristics on academic success of college students. This research expanded upon the person-environment fit theory (also known as
the person-environment interaction theory), which states that personality characteristics influence how an individual interacts with the environment and, in turn, how that environment will impact the individual (Martin & Swartz-Kulstad, 2000; Tinsley, 2000; Walsh, Craik, & Price, 2000). Specifically, Holland’s theory of personality types and model environments postulates that beneficial outcomes follow from congruency between the person and the workplace environment (Martin & Swartz-Kulstad, 2000). Even though Holland’s theory focuses on the workplace, researchers who study the big-five personality traits have become particularly interested in the person-environment fit theory, examining the degree to which big-five characteristics predict life outcomes beyond the workplace (John, Naumann, & Soto, 2008); however, the postsecondary educational setting has, as of yet, been left out of this equation. As such, this study, guided by the theory of person-environment fit, addressed how the big-five personality characteristics interact with engagement with the college environment (e.g., the quality and degree of students’ connections to faculty, other students, the campus environment and commitment to academic performance) to predict cumulative GPA. The degree to which various biodemographic variables (e.g., ethnicity, gender, level of parental education) predicted cumulative GPA was also examined.

**Problem and Significance**

To fully understand the issue at hand, a brief overview of the concept of “fit” must first be provided; additional detail regarding the person-environment fit theory is provided within Chapter 2. The application of the concept of “fit” to the college environment can be described as the degree to which a student’s characteristics (e.g., thoughts, attitudes, beliefs, values, etc.) are congruent with the characteristics of a given
environment, in this case the college or university the student attends. The greater the extent to which a person’s characteristics match with that of the environment, the better the fit is said to be between that person and his/her environment (Bolman & Deal, 2008). Instances of good fit are more likely to result in positive outcomes for all. Alternatively, incongruence between person and environment will result in poor fit, and negative outcomes will likely result for individuals, or in this case, for students. In applying this general theory of fit to academic success, it is postulated that fit between aspects of student’s personalities and the degree to which opportunities are provided to students to become connected or engaged with the college environment is the source of ultimate success or failure within postsecondary education.

Issues of poor fit between students and their college environment can be dealt with in one of three ways—students can simply leave the incongruent environment by dropping out (or may more covertly “leave” the environment by neglecting to put necessary effort into school work and subsequently fail); students can try to alter aspects of themselves such that better alignment with the school environment is attained; or the school environment can be altered to better address the needs of the students. Given the three options that address issues of poor fit, only one is an appropriate solution. Clearly, students dropping out of school or failing because they do not fit in a postsecondary environment is the most costly option; the current lack of academic success achieved by students in higher education may very well be the result of lack of fit. Further, students changing themselves to better adhere to environmental characteristics may also fail to be a viable option—as proposed within this research, personality characteristics are a potential root of academic failure; given that personality remains generally stable
throughout the lifetime, altering the “self” to fit with the environment is not a likely possibility. This, then, leaves the final solution as the most feasible manner to address the problem of fit; institutions must be altered to better suit the needs of students they serve. Another side of this coin may be students who have the luxury of selecting colleges where better fit is likely; while this is optimal, it may not be the norm for most students who may be bound to a given institution due to price, proximity or other factors. Again, in this case, institutions must make changes in order to better fit the needs of students they serve.

This research is an initial step in discovering whether lack of fit between students’ personalities and demands of academic environments/perceptions of demands of the academic environment is the source of student failure, and, if so, this research can form a basis for further exploration into student characteristics that must be understood and taken into account when making environmental changes within the college/university structure to promote student success.

**Research Question/Hypotheses**

In order to examine the interaction between student engagement and the big-five personality characteristics on academic success of college students, the following research question and hypotheses were explored:

**Research Question**

How do the big-five personality characteristics interact with engagement with academics, peers, faculty, and campus environment to predict academic success (i.e., cumulative GPA)?
Hypotheses

1. Students high in conscientiousness, agreeableness and emotional stability who have high levels of engagement with academics, peers, faculty, and the campus will be more likely to be academically successful than students low in conscientiousness, agreeableness, and emotional stability who have low levels of engagement with academics, peers, faculty, and the campus.

2. There will be no difference in academic success for students high in openness and extroversion who have high levels of engagement with academics, peers, faculty, and the campus than students low in openness and extroversion who have high levels of engagement with academics, peers, faculty, and the campus.

3. There will be no difference in academic success for students high in openness and extroversion who have low levels of engagement with academics, peers, faculty, and the campus than students low in openness and extroversion who have low levels of engagement with academics, peers, faculty, and the campus.

In addition, the following secondary hypotheses regarding student biodemographic data and GPA will be tested:

1. There will be a difference in GPA between male and female students of different ethnicities.

2. There will be a difference in GPA between male and female students depending on the level of parental education.
Note that research questions and hypotheses pertaining to persistence are absent from the aforementioned list. As described more fully in Chapters 3 and 4, the sample of students who elected to participate in this research consisted primarily of individuals who reported their intention to persist in college. As such, the sample included within this research is comprised solely of students who reported that they intended to persist in college.

**Definition of Terms**

*Academic success/Academic achievement:* The terms academic success and academic achievement are used here to refer to self-reported cumulative GPA. It is important to note that these and a number of similar terms are commonly used interchangeably within current research (i.e., academic success, academic performance, academic achievement, and student outcomes) to refer to a myriad of achievement measures such as semester grades, cumulative GPA, as well as more abstract constructs such as gains in critical thinking skills. Grade point average has been selected as the unit of measurement of academic success/achievement as it is the most commonly used measure of academic performance, as well as an easily understood marker of general academic performance.

*The big-five model of personality:* The terms big-five, five factors, and the five-factor model are used interchangeably here to refer to the method of organizing personality into mutually uncorrelated factors “that capture the five largest sources of variance shared by the variables in fairly representative assemblages of personality-attribute descriptors in a number of languages” (De Raad & Perugini, 2002, p. 29). These five factors are conscientiousness, openness to experience, agreeableness, extroversion,
and neuroticism. A more detailed description of the traits that comprise each of these factors has been provided within Chapter 2.

**Engagement:** Engagement is defined within the scope of this research as comprised of two primary elements; the effort students put into scholastic activities that lead to academic success and how educational institutions foster students’ learning and growth (Kuh, 2009; Wolf-Wendel, Ward, & Kinzie, 2009). This latter domain specific to the role of the college environment is further subdivided within this research into three sub-domains: degree and quality of perceived campus support; degree and quality of faculty-student interactions; number and quality of peer relationships.

**Persistence:** This term is used here to refer to intention to enroll in the upcoming semester. Terms such as persistence and retention are often used interchangeably within current research to refer to re-enrollment in college from one semester to the next, remaining enrolled for the duration of a course, attainment of a degree, and/or transfer to a 4-year institution. It is beyond the scope of this research to measure persistence beyond self-reports of intention to enroll in the upcoming semester/quarter of coursework. Within this research the term “persistence” will be used only to refer to enrollment in the subsequent semester/quarter.

**Person-environment fit:** At its most basic level, person-environment fit theory can be described as the degree to which individuals and the organizations of which they are a part are compatible, with good fit between a person and his/her environment resulting in beneficial outcomes for both entities, while poor fit results in negative consequences for person and organization alike (Bolman & Deal, 2008). Within this research, the “person” aspect of the model is represented by the measure of participants’ big-five personality
characteristics. The “environment” aspect is captured via collection of data regarding student’s reports of engagement with the academic environment (or degree of academic effort made), and their engagement with faculty, peers, and the overall campus environment; these measures take into account both engagement opportunities provided by the college, as well as student efforts to become engaged with the college environment. Finally, “fit,” whether good or bad, is indicated by students’ self-reported cumulative GPA and intention to re-enroll in college in the following semester/quarter.

Limitations

Despite the care taken to develop a sound research study, several limitations remain; specifically limitations in the instrument used, the construct which guides the study, and the sampling methodology employed are discussed below.

Instrument Limitations

Self-reported GPA may not accurately reflect true academic achievement, thus rendering results meaningless should a majority of students inaccurately report GPA. However, given the frequency with which self-reported GPA is obtained for research purposes, many studies have investigated the reliability of self-reported GPA and have concluded that GPA is accurately reported within survey research (Cassady, 2001; Gray & Watson, 2002). Further, participants were not specifically asked within the survey to provide their cumulative GPA; they were asked to provide their overall GPA. Participants may have taken this question to mean that they should report their current semester GPA instead of their cumulative GPA, for example. In addition, a potential limitation lies within the assessment of persistence. This study only attempted to assess intention to remain in or withdraw from college; this intention may only be based on a
current state of mind. Whether students who reported that they intended to enroll in the upcoming semester actually do enroll within the semester/quarter following administration of the survey will not be assessed. Intentions to persist or withdraw may never be acted upon by surveyed students. Further, intention to persist may have less to do with personality and degree of engagement in some cases, and may simply be the result of contextual factors, such as a family obligation to remain in school. Finally, a potential limitation may be the measure of engagement used; as a majority of the engagement questions were developed by the author, this measure does not represent a commonly used tool to assess engagement. Specifically, some of the engagement subscales (i.e., engagement with faculty and engagement with academics) lacked an adequate degree of internal consistency.

**Construct Limitations**

For purposes of this research, the “person” aspect of the person-environment fit theory is based on measures of big-five personality characteristics. Even though the “person” aspect of the five-factor model is comprised of more than just personality, it is beyond the scope of this research to assess all of the factors that are part of the “person” construct.

**Sampling Limitations**

A limitation of this study was lack of data collection from a national sample of community college and university students. The initial intention was to collect data from a sample of students drawn from the population of postsecondary education students within the United States. Due to a low response rate to the national survey request, a local sample of San Diego students was obtained, comprised primarily of community
college students. Thus, results may lack generalizability to students beyond the San Diego region, as well as to those who are attending universities. Similarly, certain groups of students were underrepresented within the data (e.g., certain ethnic groups). In addition, students with lower GPAs, as well as students who were not motivated to persist in school, were underrepresented in the data set. This underrepresentation may have been a function of responder bias. As extra credit was offered as an incentive for participation, it may be that only high achievers were more likely to take advantage of an extra credit opportunity, thus only those students with higher GPAs and motivation to complete their education opted to participate in the study. Those students with lower GPAs or those who were not motivated to stay in school may be the same types of students who would typically not engage in any extra credit opportunities.

**Delimitations**

In order to maintain a reasonable survey administration length, each engagement subscale in the survey only included a small number of items. While collecting more in-depth information about students’ engagement with faculty, peers, the campus, and academics would have been valuable, the burden placed on participants should a longer engagement survey been used would have been inappropriate. Further, the data collection time period was limited to mid-semester. To be fair in regard to obtaining extra credit, students were given the entire semester to earn their extra credit by completing the survey; however, due to time constraints for completion of the dissertation research, only those surveys completed by mid-March were included in analyses. Additional surveys that are completed throughout the remainder of the semester may be included in future publications of the research findings. Also, only institutions on the semester system were
included in the research. As the majority of postsecondary institutions within the San Diego region are on the semester system and not the quarter system, it was determined that trying to gather data to draw conclusions about differences between institutions on the semester versus the quarter system was beyond the scope of this research.

Assumptions

The majority of person-environment fit research is specific to the relationship between workers and their place of employment. It is assumed that much of the research within this realm can also be appropriately employed to draw conclusions about the student and campus environment relationship. Further discussion of the similarities between employee and workplace and student and campus fit is provided within Chapter 2.
CHAPTER 2—LITERATURE REVIEW

Person-Environment Fit

Given the ongoing struggle of educators and institutions of higher learning to pinpoint and address the issues of student persistence and academic success in college, it is crucial to examine the extent to which lack of person-environment fit may be at fault or in this case, how lack of congruency between individual personality characteristics and engagement with the college environment may impact academic success. A discussion follows of each of these constructs (i.e., the big-five personality construct and engagement with the college environment) and how they are related to outcomes of persistence and academic success.

Theoretical Perspective: Person-Environment Fit Theory

The person-environment fit theory states that personality characteristics influence how an individual interacts with the environment and, in turn, that environment will impact the individual (Martin & Swartz-Kulstad, 2000; Pervin, 1989; Tinsley, 2000; Walsh et al., 2000). Many theorists have expanded upon this model in the effort to explain more specific and complex types of potential environmental and individual influences on behavior. For example, Neufeld et al. (2006) has espoused a model of person-environment fit that takes into account engagement in the interaction; the authors propose that engagement mediates the interaction between person and environment. Within this line of research, engagement does not refer to the specific condition of investment in a given school environment and campus culture; instead engagement refers more broadly to the negotiation, participation, and evaluation processes that unfold during an individual’s interaction with his/her environment (Neufeld et al., 2006). While not
specific to the higher educational sphere, this theory provides insight into the primary function of the state of engagement on the person-environment interaction; good person-environment fit is to some degree impacted by an individual’s engagement with a given environment. Furnham (2001) notes a similar connection between person and environment in his discussion of the dynamic nature of the relationship between situations, organizations, and individuals. He asserts that the impact of choice, or lack thereof, must be considered when assessing person-environment fit; workers may be employed in a capacity that they do not wish to be involved, thus compromising ideal fit (Furnham, 2001). The same can be said for students, who may only be attending school due to family pressure, or who are taking required courses in which they would prefer not to be enrolled. In both the aforementioned examples of models of fit, focus is placed on unraveling the factors that impact the relationship between an individual and the environment(s) in which he/she must function, whether it be engagement with one’s environment or the ability to self-select the environment in which one will reside. Indeed, much of the research in regard to fit is directed towards discovering which aspects of the person-environment fit model should be emphasized when seeking to understand the myriad of human behaviors that occur, with particular emphasis on understanding the individual’s role in selecting, conforming to, and shaping the environment (Pervin, 1989).

In his review of person-environment fit, Pervin (1989) discussed two overarching models that address issues of congruence, specifically the cognitive-social model and the goals model. The cognitive-social model is based upon the premise that it is the aptitudes and skills of individuals which are central to fit; key to successful adjustment is a
person’s ability to accurately assess the requirements of a given environment and adjust his/her behavior to best suit the situation (Pervin, 1989). Congruence, in this case, is primarily the result of altering the self to fit a more or less static situation. Alternatively, the goals model states that an individual’s motivations or goals interact with dynamic situations to produce behavior, that individuals experience satisfying situations when their goals are attainable, and that individuals are more likely to be attracted to an environment in which they can move closer to their ideals and goals (Pervin, 1968, 1989, 2001). In this case, focus is more squarely placed on the role of the individual, whose motivations may guide and direct the selection of the best environment. While it is this latter state of being described by the goals model that may be ideal for students (i.e., students exist within a satisfying educational environment in which they feel that their academic goals are attainable), this level of fit between student and college environment may not be the norm. Given that so many students do not feel congruence with their college environment, success may instead be predicated on the ability of the student to revise behavior and attitudes to fit with the situational requirements. In the cognitive-social model, best fit is a product of a person’s ability to meet the demands of a situation, and it is this model which may most accurately describe current issues of student lack of fit with the college environment; students are not successfully reshaping themselves in order to meet demands of the scholastic environment, or they are not selecting (for whatever reason) the environment that best suits their needs. In evaluating student fit with the college environment, it may be best to draw from both models, as it is important to recognize how each impacts issues of fit; students are likely faced with an environment that they must accept to some degree “as is” and quickly adjust to in order to attain
academic success but, ultimately, college environments also need to be mutable and adapt
to students’ needs such that students feel able to attain scholastic goals.

Holland’s theory (as cited in Martin & Swartz-Kulstad, 2000) of personality
types and model environments, while not specifically placed within the context of the
cognitive-social model or goals model in Pervin’s discussion, can be considered as
encompassing aspects of both models. Specifically, Holland postulates that beneficial
outcomes follow from congruency between the person and the workplace environment
(Martin & Swartz-Kulstad, 2000); essentially positive outcomes result from the greater
alignment between factors within an individual’s vocational environment and that
individual’s skills, interests, and personality (Furnham, 2001). Holland postulates that
individuals are apt to select activities and pastimes that are congruent with their
personality and avoid those which are in opposition to their personal tastes (Walsh et al.,
2000). Individuals who have achieved optimal fit with their environment will be satisfied
and unlikely to prematurely leave, while those who do not fit will strive to alter their
environment to make it more satisfactory and, barring that, will likely opt to leave that
environment (Furnham, 2001).

One of the major contributions of Holland’s theory to the person-environment fit
literature has been the recognition that assessments of broad personality types, as well
as broad environment types, can be used in conjunction to predict congruence between
people and situations (Gottfredson & Richards, 1999). Holland has used various methods
to measure personality and environment in the assessment of fit. For example, the
vocational preference inventory and the self directed search scales can be used to measure
typologies referred to as RIASEC—much like the big-five, the RIASEC encompasses
broad categories of characteristics (i.e., labeled by Holland as realistic, investigative, artistic, social, enterprising, and conventional types) that can be used to describe either personality or environment (Pascarella & Terenzini, 1991). However, comparisons between the big-five and Holland’s concept of RIASEC yielded few significant correlations among factors (Furnham, 2001), possibly due to the occupationally-centric view of person-environment fit that has guided much of the research in the field.

In general, much of the person-environment fit research is similar in structure; researchers in this area are primarily concerned with the attractiveness of a given workplace to a given employee and an employee’s ability to meet the demands of that workplace (Tinsley, 2000). It is precisely this reciprocal relationship between employee and job, or, in the case of this research, the reciprocal relationship between student and educational environment, that warrants further attention. Constraints of fit that impact the workforce are also prevalent in the educational realm. Given that many of the same factors that impact successful integration into the workplace also hold true for student acclimation to a college environment (e.g., both require some degree of assimilation to a larger/different culture, meeting deadlines, developing and applying skills to successfully accomplish assigned tasks, interacting with others in a respectful and professional manner, meeting the demands of a superior) application of the person-environment fit theory to an educational setting is long overdue. Notably, even though person-environment fit research focuses predominantly on the workplace, researchers who study the big-five personality traits have become particularly interested in the person-environment fit theory, examining the degree to which big-five characteristics predict life outcomes beyond the workplace (John et al., 2008).
Of interest, one of the earliest assessments of person-environment fit within postsecondary education was directed towards investigating the transactional nature of student personality and college environment. Specifically, data were gathered regarding characteristics of the college, students, faculty, administration, and, most interesting, students’ perceptions of ideal college characteristics (Pervin, 1967). While the comprehensive and well validated measures of personality and environment in use today had not yet been developed when Pervin first measured student and college qualities, his establishment of a line of research directed towards understanding the interaction between student personality and the college environment was a vital initial step in the ongoing effort to establish pathways towards successful student development. Only when the reciprocal influence of the college environment on students and student behavior on the college environment is understood can we begin to improve student success by making deliberate and strategic changes to existing institutions.

John et al. (2008) also allude to the expansion of the model beyond the vocational environment when they espoused that the primary foundation of the person-environment fit model is the interaction between an individual’s personality and aspects of a given environment that produce specific behaviors and experiences. Essentially, this concept speaks to the appropriateness, and, more so, the need to employ the person-environment fit theory more broadly when striving to understand the source of human behavior in various contexts. As noted previously, the basic premises of the person-environment fit theory can easily be transferred from the study of the workplace environment to the study of the higher education realm, as these two contexts overlap in many of their general attributes (e.g., both require development of an understanding of the rules and
requirements of the larger culture, adhering to those rules and regulations, and successfully working autonomously and with other members of the larger culture).

Further, this concept also speaks to the importance of recognizing the unique behavioral outcomes that can arise due to the experience of a given environment. Indeed, in considering human behavior, most modern scholars believe that it is important to recognize the combined contribution of individual personality and the environment and that these factors can be both consistent and variable (Pervin, 1989), meaning that an individual’s behavior can be consistent from situation to situation but that novel behaviors may arise due to environmental factors. Using this as an example, a student who is academically successful in a high school environment may not be academically successful within an institution of higher education, as the unique environment may provoke a unique behavioral response. The new degree of autonomy experienced within a community college or university when compared to high school may be too stressful for a student who needs continual support and encouragement when completing assignments, for example. In this case, the experience of the new environment and its requirements results in an unexpected behavior on the part of a previously high achieving student. It is for this very reason that employing the person-environment fit theory is appropriate as a means to begin to unravel the complex interaction of student behaviors and college environments and how this relationship may cause some students to succeed and some students to fail.

As previously noted, the “person” aspect of the model is represented within this research by the big-five personality characteristics, the “environment” component is comprised of student’s engagement with the academic environment (or degree of
academic effort made), their engagement with faculty, peers, and the overall campus environment, and the degree of “fit” between personality and engagement with the environment is indicated by students’ self-reported GPA and intention to re-enroll in college. It is hoped that through the collection of the aforementioned information, ideal combinations can be found of personality types and the corresponding environmental factors that result in academic success and persistence. Thus a basic guidepost can be developed with which institutions can make specific recommendations for students to assist them in attaining academic goals. For example, it may be found that students who score high in the personality characteristic of extroversion and who lack connections with their college peers will have lower GPAs and will be less likely to re-enroll in college courses. Institutions can then use this information to assess students’ personalities and make recommendations to all highly extroverted students that they should actively seek out study groups or enroll in learning community oriented classes in order to build the peer connections they need to be successful academically.

Personality and the Big-Five: A Brief Overview

Personality generally refers to the consistency or stability of an individual’s way of thinking, feeling, and behaving (Kazdin, 2000; Lazarus, 1961). Research into the personality construct is often concerned with understanding these facets by examining personality traits and/or personality types. Traits can be thought of as existing on a continuum between two extremes, with personality trait scores reflecting where one might fall within the spectrum of a given characteristic, whereas personality type refers to a unique grouping of traits (Pittenger, 2004; Røvik et al., 2007). To clarify, Lazarus (1961) states “persons can be classified into types by their pattern of traits” (p. 53). One
of the most common methods by which traits can be organized and assessed is via the five-factor personality construct.

Goldberg (1993) noted that there are two major models of five-factor personality: McCrae and Costa’s model and what can be termed the lexical model, to which he and many other researchers ascribe. While a brief discussion of the two models is provided for the purpose of orienting the reader towards the general development of the big-five personality construct, it is the lexical tradition which will guide the structure of this research, most notably in the selection of the scale used to measure personality. (For a more complete review of the history of the various five-factor models, differing interpretations of the traits which comprise each of the big-five domains, and measures used to assess the big-five, seeDigman, 1990).

Simply stated, the lexical tradition infers that personality taxonomies can be developed by grouping descriptive terms within a given language, and many personality theorists have developed models, such as the big-five, by reducing personality characteristics listed within the dictionary into the smallest number of discreet descriptions (Goldberg, 1993; John et al., 2008; Saucier & Goldberg, 2002). This grouping methodology is rooted in the premise that descriptors found within the spoken language of a certain group represent characteristics that are salient and important for that group when describing and evaluating personality (John et al., 2008). There continues to be growing consensus that the reduction of characteristics into five domains is accurate and represents valid descriptors of the broadest categories of personality traits using the smallest number of domains (Goldberg, 1993; John et al., 2008; McCrae & John, 1992).
The big-five personality traits have been historically denoted as extroversion (or surgency), agreeableness, conscientiousness (or dependability), neuroticism (versus emotional stability) and culture (Goldberg, 1990.) However, over time the culture dimension has become known as intellect or openness (McCrae & Costa, 1997), and it is this domain where the two models diverge; McCrae and Costa’s model conceives of this factor as openness to experience, while the lexical model conceptualized the domain as intellect or imagination (Goldberg, 1993). Other differences between the two models occur primarily within the content of the various domains (e.g., the personality trait of “warmth” is associated with agreeableness in one model and extroversion in the other; Goldberg, 1993), but ultimately, the two models are quite similar. Goldberg (1993) notes that collaborations between he and McCrae and Costa have resulted in general consensus regarding the ultimate nature of the big-five personality traits, and the following description of the general makeup of each represents the most commonly accepted big-five personality characteristics.

Extroversion, also known as surgency, is denoted as Factor I (Goldberg, 1990). This Factor contrasts traits like sociability, talkativeness, assertiveness, and activity level with silence, passivity, and reserve (Goldberg, 1993; John et al., 2008). Personality descriptors that make up Factor II or agreeableness (Goldberg, 1990) are kindness, trust, humility, and warmth, which are contrasted with hostility, selfishness, and distrust (Goldberg, 1993; John et al., 2008). Factor III, known as conscientiousness and sometimes dependability (Goldberg, 1990), is comprised of traits such as orderliness, thoroughness, decisiveness, and reliability, versus carelessness, negligence, and unreliability (Goldberg, 1993; John et al., 2008). Factor IV is commonly referred to as
neuroticism versus emotional stability (Goldberg, 1990) and consists of traits such as nervousness, moodiness, insecurity, and irritability at the neuroticism end of the continuum and confidence, stability, and independence at the emotional stability end of the scale (Goldberg, 1993; John et al., 2008). The final factor, openness/intellect contrasts personality characteristics such as imagination, curiosity, perceptiveness, and creativity with shallowness and imperceptiveness (Goldberg, 1993; John et al., 2008). The openness/intellect facet is known as Factor V (Goldberg, 1990).

**Relationship of the Big-Five to Student Success**

Given that the big-five is simply a framework by which to understand and categorize personality at its broadest level, it is this very breadth that lends itself so well to use in the assessment of student persistence and GPA resulting from the interaction of personality and engagement. Many researchers have stressed abandoning the use of big-five domains in assessment, and instead assert the greater predictive value in examination of the more specific, individual traits that comprise each of the big-five domains (Block, 1995; Hough; 1992; McAdams, 1992; R. J. Schneider & Hough, 1995).

Indeed, the predictive value of the big-five personality traits on academic achievement has been questioned as some research has failed to indicate a link between the big-five traits and student academic success. For example, Ridgell and Lounsbury (2004) indicated surprise that in their research the majority of big-five traits did not predict single course grade or GPA given that many other studies have indicated that big-five personality measures have significantly predicted academic success. However, other research has shown that GPA was significantly correlated with big-five personality traits, and incremental validity in predicting GPA was found for the big-five traits above
and beyond more narrow measures of personality (Lounsbury, Sundstrom, Loveland, & Gibson, 2003). Similarly, Chamorro-Premuzic and Furnham (2003b) noted that, within their findings, the five factors were better predictors of academic performance than were the subfactors that comprised each of the big-five.

Furthermore, as prior research evaluating the interaction between the big-five and engagement in college is limited in scope, gaining an understanding of the broadest personality factors that may be predictive of student academic outcomes is an appropriate point from which to begin. Once the relationship between these constructs has been determined, assessment of specific personality traits on engagement may then be more appropriate. Further, using a broad assessment tool such as the 50-item International Personality Item Pool-Five-Factor Model measure (50-item IPIP) may have greater utility in real world application within postsecondary institutions. For example, it would be impractical for institutions of higher education to employ the use of multiple measures of specific personality traits when evaluating their students. Assessing the multitude of personality characteristics that may impact academic success would require more time than would be feasible. Alternatively, by using a single big-five measure at intake, a broad summary of personality traits can be obtained quickly. It is exactly this rationale that is discussed within the writing of John et al. (2008) when espousing the value of employing the big-five taxonomy for studying the larger domain of personality characteristics rather than trying to study the thousands of individual characteristics that make each human unique.
**Personality Profile of the Academically Successful Student**

Extensive research points towards the combination of three factors as most prevalent in impacting student academic success: conscientiousness, agreeableness, and emotional stability. Students who rank high in the combination of these factors are usually more successful within the college environment. For example, conscientiousness has consistently been found to be positively related to both college and high school GPA and academic performance in general, even after controlling for SAT scores (Chamorro-Premuzic & Furnham, 2003a; Chamorro-Premuzic, Furnham, & Ackerman, 2006; Conard, 2006; Noftle & Robins, 2007), and individuals who showed increases in conscientiousness over the course of college tended to also have higher GPAs (Noftle & Robins, 2007). Similarly, a combination of high conscientiousness and high agreeableness were correlated with higher GPAs (Komarraju et al., 2009), as these characteristics predispose individuals to invest more time and effort in their educational pursuits, and this high level of effort regulation was found to be a predictor of academic achievement (Bidjerano & Dai, 2007). Specifically, subfacets of the conscientiousness facet, such as diligence, prudence, perfectionism, achievement-striving, competence, and self-discipline have been associated with college GPA (Komarraju et al., 2009; Noftle & Robins, 2007).

Neuroticism/emotional stability has also been linked with academic performance. Neuroticism has been found to predict grades, with higher degrees of neuroticism linked with lower overall grades (Chamorro-Premuzic & Furnham, 2003a), and it has been suggested that work drive, in combination with intelligence and emotional stability may be a valuable predictor of academic success (Ridgell & Lounsbury, 2004). Neuroticism
has also been shown to be negatively associated with final exam grades, and it is suggested that this may be due in part to the anxiety and impulsivity subfacets of the neurotic personality domain (Chamorro-Premuzic & Furnham, 2003a, 2003b).

Characteristics of conscientiousness, agreeableness, and emotional stability are comprised of features that may impact academic success. For example, high levels of conscientiousness have been found to significantly predict students’ use of metacognition, elaboration, critical thinking, and time and effort management (Bidjerano & Dai, 2007). The conscientious student will adhere to goals to complete a plan of study and approach assignments with careful planning; the agreeable student is able to interact well with others in the classroom; and the emotionally stable student will approach obstacles with confidence in his/her ultimate success. Indeed, students who were better able to manage their overall academic efforts were more likely to perform better scholastically (Bidjerano & Dai, 2007). Conscientiousness, agreeableness, and emotional stability also impact student retention. It has been found that students who ranked high in agreeableness, conscientiousness, and emotional stability were less likely to drop out of school (Lounsbury, Saudargas, & Gibson, 2004). Similarly, traits of emotional stability and conscientiousness emerged in one study as significant factors in predicting intention to withdraw; the investigators note that the direction of the correlation is not surprising as it is consistent with the trait; they provide the example that the negative correlation between withdrawal and conscientiousness is expected, as individuals who are more inclined to do what is expected of them (an aspect of conscientiousness) would be less likely to withdraw from college (Lounsbury et al., 2004).
Students who are conscientious, agreeable, and emotionally stable may be able to draw on these internal resources to seek out support and academic assistance when necessary, which may in turn impact scholastic achievement and persistence decisions. For example, these students may have a greater skill set from which to draw when engaging in help seeking behaviors, as this characteristic may promote positive interactions with other students and faculty when seeking assistance. In fact, disagreeable students were more likely to be uncooperative and have social group adaptation problems (Komarraju et al., 2009) and, as such, may be more likely to fail as various avenues of social support are less available to them. It appears that conscientious, agreeable, and emotionally stable students are better able to take advantage of the academic and social support opportunities that are available to them. Students who have the skills to seek out resources necessary to succeed may have fewer obstacles to completing their education and attaining their academic goals.

**Lack of Support for Extroversion and Openness as Predictors of Academic Success**

Little evidence has been found which links the openness factor with academic achievement outcomes. In some cases, weak relationships have been found between GPA and openness, and only certain specific facets of the openness factor have been shown to be related to GPA, such as the trait of openness to values (Noftle & Robins, 2007). Similarly, some positive correlations have been found between openness and higher levels of academic performance, but only for students who employ learning strategies such as critically relating ideas to other experiences; openness in this case was not directly related to academic performance (Arteche, Chamorro-Premuzic, Ackerman, & Furnham, 2009; Duff, Boyle, Dunleavy, & Ferguson, 2004). Chamorro-Premuzic and
Furnham (2003a) found only a modest relationship between openness and academic achievement, suggesting that the restriction of participation to a single academic department within their study may have tapped into a specific student population in which openness was not as likely to occur. Further, given initial failures of big-five theorists to agree on the facets that make up the openness factor, it may not be surprising that openness failed to emerge as a significant predictor of academic success in some cases; perhaps this factor lacks the internal cohesion of the other big-five characteristics, thus making it difficult to use when predicting academic outcomes.

Contradictory evidence has also been found regarding the role of extroversion in academic success. In some cases, evidence has been provided which indicates that individuals high in extroversion are more likely to do poorly academically, even though this relationship was weak (Petrides, Chamorro-Premuzic, Frederickson, & Furnham, 2005), with specific subfacets of activity and gregariousness negatively correlated with exam grades (Chamorro-Premuzic & Furnham, 2003b). It has been postulated that this poor performance may be due to the expression of traits such as impulsivity, distractibility, and greater energy spent on socializing associated with extroversion which may inhibit adequate classroom preparation (Chamorro-Premuzic & Furnham, 2003a). However, a small body of research postulates that extroversion is positively related to academic achievement (Eysenck & Cookson, 1969; Irfani, 1978; Lounsbury, Huffstetler, Leong, & Gibson, 2005; Searle & Ward, 1990; Spann, Newman, & Matthews, 1991). Overall, research has indicated that extroversion has little relation at all to academic performance (Chamorro-Premuzic & Furnham, 2003a; Conard, 2006; Noftle & Robins, 2007; Wagerman & Funder, 2007).
Engagement With the College Environment

Various theories have been formulated which address internal and external factors that impact student academic success. An early theory asserts that the more fully integrated a student is in the educational environment, the more likely that student is to persist (Tinto, 1975). Integration refers to the connection students have with other students and faculty on campus resulting from shared beliefs and attitudes (Wolf-Wendel et al., 2009). In turn, the concept of involvement can be defined as the amount of time and energy a student “invests in the educational process” (Astin, 1993b, p. 6). This model addressed involvement in both the academic and social sphere as being critical to positive student outcomes (Wolf-Wendel et al., 2009). It is the concept of engagement, however, that most aptly marries elements of integration and involvement to explain how student time and effort and environmental factors interact to impact students’ academic success. Engagement can be defined most simply as comprised of two primary elements, namely how educational institutions foster students’ learning and growth and the effort students put into scholastic activities that lead to academic success (Kuh, 2009; Wolf-Wendel et al., 2009).

The Relationship Between Engagement and Academic Success

The concept of engagement provides a direct link between student behaviors and institutional practices, focusing attention on aspects of the educational environment that can be altered to improve student learning (Wolf-Wendel et al., 2009), thus having tremendous practical value to institutions of higher learning. Results in one study indicated that student’s characteristics upon entry into community college (e.g., preparedness, ACT/SAT scores, etc.) might have less to do with academic success than
does engagement, which indicates that institutions may need to focus more attention on
how environment can foster successful student outcomes (Schuetz, 2008). Findings
indicated that students with lower academic ability (defined as lower SAT scores upon
entry into college) benefitted more from engagement than did high ability students (Carini
et al., 2006). Similarly, engagement in educationally purposeful activities significantly
affected grades during the first year of college, and students who entered college with
higher ACT scores and reported engagement in educationally purposeful activities had
higher GPAs than students with lower ACT scores (Kuh, Cruce, Shoup, Kinzie, &
Gonyea, 2008). Finally, student engagement in educationally purposeful activities
predicted student persistence (Kuh et al., 2008).

**Student Behaviors That Impact Academic Success**

As noted in Chapter 1, the concept of engagement is defined as comprised of
the effort students put into scholastic activities that lead to academic success and how
educational institutions foster students’ learning and growth (Kuh, 2009; Wolf-Wendel
et al., 2009). A discussion of the extent to which each of these aspects of engagement
(i.e., academic effort, engagement with peers, faculty support and connection to the
campus environment) impact academic success follows.

**Academic efforts.** To a certain extent, the academic growth of the student is up
to the student. The greater the amount of time and energy a student devotes to
schoolwork, the more likely that student will be successful academically (Kuh, 2009).
While it may be an obvious conclusion that the degree of academic effort made will be
reflected in level of academic achievement, it is still vital to uncover which aspects of
student directed effort are most salient to success. For example, it has been found that
students’ active involvement in classroom learning and contributions to class discussions predicted academic achievement (Ullah & Wilson, 2007), and student-to-student interactions in the classroom had strong positive effects on overall attainment of essential academic skills, such as problem solving abilities and critical thinking skills (Astin, 1993a). In addition, course load has been found to be associated with retention; retention was positively associated with fuller course loads and negatively associated with number of classes dropped (Fike & Fike, 2008). Student efforts to glean as much from the classroom environment as possible by engaging in activities with other students and maintaining rigorous course loads may be key factors in academic success. Also critical to academic success may be student engagement with educational activities beyond individual classes. In a study of community college students, those who were active in leadership roles were more likely to persist in school (Hawley & Harris, 2006). Benefits of engaging in activities outside of standard coursework are not only limited to student leadership roles; it has been found that taking advantage of student support services also positively impacts retention for college students (Fike & Fike, 2008). Ultimately, students who engaged in a larger range of academic activities due to participation in a coordinated studies program reported greater academic achievement than those students who enrolled in standard curriculum courses (Tinto & Russo, 1994).

**Engagement with peers.** Numerous research studies point to the critical role peer support plays in successful academic outcomes for students. It is postulated that the most significant impact on academic achievement is due to the relationship one has with peers (Astin, 1993a), and interactions between students and other individuals on campus are key for retention, especially critical during the transitional first year (Tinto, 2007).
Overall, research supports the conclusion that the more connections and involvement a student has to college life, the greater chance that student has to persist (Cohen & Brawer, 2008; Hawley & Harris, 2006; Hunter, 2006; Rayle et al., 2006), and succeed academically (Astin, 1993a, 1993b; Skahill, 2003; Wang, 2009). Specifically, membership in fraternities, sororities, or other campus clubs has been found to impact persistence decisions (Astin, 1997; S. R. Jacobs & Dodd, 2003), and collaborative learning promotes student retention and achievement, as it provides a network of peers who ease the transition into the college environment (Tinto & Russo, 1994). Essentially, students who are socially able to interact with a variety of individuals on campus are more likely to persist (Napoli & Wortman, 1998). These findings indicate that greater levels of engagement with peers are associated with greater likelihood of accomplishing educational goals. This relationship may be due to peer influence to stay in school, and, in fact, Caboni et al. (2005) found that group norms influence the behavior of individual members of the group. Similarly, as Astin (1993b) points out, individuals have a tendency to adopt the norms of the group of which they are a part. The more integrated a student is with his/her peers the more likely that individual is to internalize the values of the group and in turn persist in college and succeed academically (assuming that peers are prosocial).

Adhering to group norms may first require feelings of cohesion with the group. This adoption of group norms may be due in part to the quality of peer relationships. Having compatible peers is necessary for group integration. Rayle et al. (2006) found that feelings of cultural congruity contributed to persistence decisions. Students in Wilcox et al.’s (2005) research indicated that making friends that could be counted on,
who became a student’s “new family” were instrumental to the decision to remain in school. Conversely, as Rayle and Chung (2008) found, students who lacked social support reported feeling that they did not matter to other students, and lack of mattering predicted stress and lower academic success. Likewise, students who reported failure to make compatible friends cited this as a primary reason for decisions to leave school (Wilcox et al., 2005). The role of friendship is critical in the successful completion of school, and students whose majority of friends are not part of the school environment may lack a positive influence to persist. For example, as Skahill (2003) proposed, commuter students may have less influence on the decision to persist, as they have a support network of nonschool friends to fall back on should they decide to leave school. As peer influence is a vital factor in decisions to remain in school and efforts to accomplish academic goals, lack of academic peer networks, regardless of the cause, may impact academic success. Simply put, students who are socially integrated feel like they belong on campus and are more likely to be successful.

**Faculty support of student learning.** After peers, faculty has the next largest impact on student development (Astin, 1993a). Students’ relationships with faculty were significantly positively correlated with academic achievement (Ullah & Wilson, 2007). Astin (1993a) found a positive correlation between the number of positive student-faculty interactions and GPA, persistence, graduating with honors, as well as with intellectual growth. Tinto (2007) stressed that faculty efforts are essential for the successful retention of students. Positive impacts on GPA, gains in academic achievement, and graduating with honors were all associated with interactions with faculty who were considered to be strongly student oriented (Astin, 1993b). Another important factor in student success and
persistence is faculty/staff validation of students; for example, students reported
benefitting from faculty/staff acknowledgment of religious practices (Saggio & Rendon,
2004) and sensitivity to minority issues (Astin, 1993b). Faculty who demonstrate
compassion and understanding towards students have a significant impact on academic
success and decisions to remain in school. Much like the effects of peer interactions,
positive outcomes are tied to support that comes from a source to which students feel
connected. Whether it is understanding of cultural background or just a general student
oriented attitude, faculty who demonstrate interest via acknowledgment of the student’s
unique personal characteristics are more likely to positively influence students to invest
effort in their educational outcomes.

Tutor/student mentor\textsuperscript{1} support was also found to buffer against decisions to leave
school (Wilcox et al., 2005). Persistence rates for undergraduate students were strongly
related to culturally congruent mentoring (Bordes & Arredondo, 2005), and students
with a mentor reported higher levels of commitment to their college, as well as higher
academic integration overall (Torres & Hernandez, 2009). This may be due to the need
of first generation students to rely more heavily on mentor support networks, as others
(such as family) may lack knowledge of the college system and be unable to offer support
in this arena (Harrell & Forney, 2003). Students may look to these more integrated peers
to determine how to behave. Mentors hold a position between that of peers and teachers
and, as such, may offer a unique support network that bridges the student faculty divide
that may be difficult for new students to navigate. Feelings of connection with these

\textsuperscript{1}Peer tutors/mentors are included in this category, as they play a role much like that of faculty, i.e.,
authority figures who guide a student’s development of skills.
knowledgeable peers may provide an essential source of information for new students when mastering the school environment.

**Connections with the campus.** Student’s interactions with staff are also critical to success (Astin, 1993b). Use of student support services, which involves regular meetings with advisors, encouraged student retention (Fike & Fike, 2008). Grant-Vallone et al. (2004) found that usage of student support services and peer mentoring were critical for retention of first generation, low income students, and greater social involvement resulted in greater commitment to completion of school. Similarly, negative experiences with campus administrative services were associated with poor social integration and with attrition (Napoli & Wortman, 1998).

Much like the role of support services, overall campus climate also plays an important function in students’ ability to succeed and choice to remain in school. Persistence has been associated with the college environment (Wang, 2009); decisions to persist in college were related to a student’s feelings of comfort at the institution (Gloria & Ho, 2003), and institutions that had a greater level of warmth and receptivity increased students’ comfort (Rayle et al., 2006). More specifically, campuses that engender a sense of community had a positive impact on students’ desires to remain enrolled in college (Astin, 1993b; J. Jacobs & Archie, 2008). Indeed, students who felt greater commitment and connection to an institution were more likely to persist (Napoli & Wortman, 1998). Conversely, Saggio and Rendon (2004) found that first-generation students do not do well in cold, competitive environments, and larger institutions (which may be more readily perceived as harboring a colder climate) had higher rates of student attrition (Astin, 1997). For some students, increased comfort with the university environment was
associated with academic persistence; specifically, students who reported having more mentoring indicated more positive feelings with the university environment (Gloria & Ho, 2003.)

**Summary of Prior Research on the Big-Five and Engagement**

Relatively little research has focused on the relationship between the big-five personality traits and engagement and how this relationship impacts academic success. As previously stated, the concept of engagement encompasses student directed efforts, as well as efforts made by an institution to foster the learning and growth of the student body; however, much of the research within this area commonly focuses only on student directed efforts. Motivation, a student directed aspect of engagement, is often the subject of studies linking personality and engagement to student success. For example, one study examined the degree to which the big-five personality traits predicted motivation and goal directed behaviors, and it was found that personality strongly dictates the degree to which effort is expended in reaching goals (Parks, 2007). Similarly, Laskey (2004) found that personality traits (specifically conscientiousness) and motivation impacted the academic success and retention of “at-risk” students, while Conard (2006) noted that conscientiousness and motivation to regularly attend classes positively impacted GPA. Fremont (1998) likewise found a connection between motivation, personality (as measured by the Myers-Briggs), and increased persistence. (It is important to note that while this research attempted to delve into the role of personality and engagement in student success, using the Myers-Briggs, a complex and lengthy measure, may lack feasibility for use in higher education.) These lines of research, while valuable in illustrating the connection between personality and engagement, did not capture all of the
factors which may impact success for college students, such as the role institutional
dfactors and the environmental context may play.

Given the crucial role the college environment plays in fostering student success, a significant gap in the ability to pinpoint where roadblocks to success may lie occurs when neglecting the environmental aspect of the educational experience. Provided that the previously noted premise hold true (i.e., changing students personalities to better fit the college environment is not likely, so the best alternative in improving student academic success is revising the college environment to better meet the needs of the students served), assessing not only student directed aspects of engagement but also the role of the institution is necessary to develop a more complete awareness of the multitude of factors that help and hinder the attainment of student educational goals. In Pascarella and Terenzini’s (1991) review of theories concerning the role of the college environment on student success, it is noted that nearly all theories stress the vital role of the environment on student development. Certainly, Holland as well as the other person-environment fit theorists, would agree that only through exploring the impact of the institution on the students it serves can changes be made within the college/university system to promote student academic success. It is through this research that the degree of fit between students’ personalities and demands of academic environments can begin to be understood in light of pathways to academic success.

This research will employ the concepts of “person,” “environment,” and “fit” in an attempt to develop a framework through which to gain an understanding of the relationship between the personal and social spheres of college students and how these forces interact to predict academic success. In this case, the personal sphere or the
“person” element is represented by the measure of student’s big-five personality characteristics. The social sphere or “environment” aspect of the model is comprised of measures of students’ engagement with peers, engagement with faculty, and engagement with the general college campus and with the academic requirements of college, all of which include both engagement opportunities provided by the college/university, as well as student directed efforts to connect with the college environment. Finally, “fit” between the individual student’s personality and his/her engagement with the college environment is represented by cumulative GPA. The outcome measure of cumulative GPA is used to assess the degree of goodness of fit; reports of higher GPA indicate better fit between person and environment, and reports of lower GPA indicate poor fit between person and environment. For additional information on the fit model proposed within this research, refer to Figure 1.
Figure 1. Visual representation of the person-environment fit model for higher education.
CHAPTER 3—METHODOLOGY

In order to examine the interaction between student engagement and the big-five personality characteristics on academic success of college students, the following research question was explored for the sample of students who intended to persist in college: How do the big-five personality characteristics interact with engagement with academics, peers, faculty, and campus environment to predict academic success?

The following chapter addresses the methodology used to answer this research question. First, a discussion is provided of the person-environment fit model and how it has been adapted to higher education; then a brief description of the research design is given, followed by an outline of the subscales included within the survey instrument used. Next is a detailed discussion of the data collection methods, including delineation between the first and second waves of data collection that were employed. A description of the sample of participants is also included, as well as the specific analyses conducted, including discussion of the independent and dependent variables and hypotheses to be tested. Finally, study limitations and delimitations are presented.

Model

Within this research, a version of the person-environment fit model, adapted for use in higher education, was tested. In this case, it was postulated that stable personality characteristics (represented by the big-five personality traits) interact with engagement with the college environment resulting in good or bad fit, as measured by cumulative GPA. For example, it may be found that students who score high in the personality characteristic of extroversion and who lack connections with their college peers and the college faculty will have lower GPAs. Extroverted students may need to have significant
and meaningful connections to their professors and peers in order to be successful in college, potentially more so than introverted students. The basis for this model is the assumption that personality characteristics are a primary determinant of how students approach the college environment, how they adapt to that environment, and ultimately how they are able to succeed in that environment.

**Research Design**

This research employed a quantitative design using self-reported data gathered via survey. Survey research is a valuable tool to use when seeking to obtain information from a given sample, the results of which can then be used to draw generalizable conclusions about a given population (Babbie, 1990). As the purpose of this research was to draw conclusions about the nature of personality and engagement on academic success of the population of college students, gathering data via survey provided the most economical method, in terms of both time and resources, to gather a large amount of information from a broad spectrum of students (Fowler, 2002). Further, the assessment of personality characteristics lent itself well to survey research, as many reliable measures of personality exist.

**Instrument**

Students who decided to participate in the study accessed the survey instrument via web, as the survey was housed online. The first page of the survey included the consent form (see Appendix A for all recruitment and consent materials). After reviewing and accepting the consent information, students were asked to complete the survey. The survey contained questions consisting of a mix of Likert scale, multiple choice, and yes/no response options. As each wave of data collection was comprised of
slightly different audiences, slightly different versions of the survey were used for wave one and wave two of data collection (e.g., wave one consisted of only students in their sophomore year, wave two included students at all levels). Copies of both surveys are included in Appendices B and C. The survey was divided into five major sections: questions pertaining to personality assessment, quality of faculty/student interactions, quality of peer relationships, perceived campus support, degree of student academic effort, and general demographic questions. As the survey was online, students had the ability to participate in the research at a time and place that was most convenient to them. All participation was anonymous.

The 50-item International Personality Item Pool-Five-Factor Model (IPIP) measure (Goldberg, 1999), despite being a shortened version of a common big-five personality measure, has excellent reliability and validity (Costa & McCrae, 1997; Johnson, 2005; Socha, Cooper, & McCord, 2010). Items within the 50-item IPIP highly correlate with the big-five domains identified by Goldberg (1992). This survey was selected for use in this research specifically because of its shortened nature; sensitivity to student’s available free time to complete the survey was a primary consideration when selecting the 50-item IPIP. Of the 50 items that comprise the measure, 10 questions contribute to a total score for each of the big-five personality characteristics. Items, some of which are positively scored on a scale of one to five points and some of which are negatively scaled from negative one to negative five points, are summed to provide an overall score for each of the big-five personality characteristics. This summed score can then be used to determine where one falls within the continuum of each of the big-five traits; for example, does one’s score fall closer to the emotionally stable end of the
spectrum or closer to the neurotic side? As previously noted, a continuum of scores for each personality characteristic can be generated, with scores for each of the five characteristics ranging from high or low, producing an overall personality profile for a respondent.

The next section of the survey (i.e., questions pertaining to the quality of faculty/student interactions, quality of peer relationships, perceived campus support, and degree of student academic effort) was partially developed by the researcher, as a standardized instrument does not exist which taps specifically into each of the dimensions of engagement under study. While a portion of the questions used to develop the engagement measure were adapted from the National Survey of Student Engagement (NSSE), a commonly used measure of engagement (NSSE, 2011), the overall survey lacked questions that probed into the quality of interactions with faculty, peers, the campus and academics. Further, the NSSE has been called into question for widespread concerns about the reliability and validity of the measure; an entire issue of *The Review of Higher Education* was dedicated to voicing concerns about the psychometric properties of the NSSE and its community college counterpart, the Community College Survey of Student Engagement (Amaury, 2011). Given the inadequacy of these common measures of student engagement to tap into the specific questions outlined within this research, as well as the lack of reliability and validity, it was determined that developing survey questions designed to gain a broader perspective of the elements that contribute to the engagement construct was necessary.

Questions within the section of the survey labeled “Preparing for Class” were designed to tap into the degree of student academic effort made by assessing number of
hours spent engaged in academic pursuits, as well as ability to meet deadlines. Perceptions of campus support were measured by questions within the section labeled “Campus Environment/Support.” Questions within this section pertained to the role of the campus in connecting students with other students and the provision of adequate support services. Quality of faculty-student interactions were measured within the section of the survey labeled “Interaction with Faculty” by questions that addressed students’ interactions with faculty outside of the classroom, comfort with interacting with faculty, and perceptions of professors’ concern regarding student growth. Questions regarding the quality of peer relationships were included in the survey section labeled “Relationships With Other Students.” These questions asked students to report the number of school activities they participated in with other students and whether they had any close friends at their given institution.

The majority of questions within the demographic section of the survey were used to describe the sample of respondents. In addition, question 15 regarding cumulative GPA, was used to assess fit. It was assumed that good fit between personality factors and engagement with the college environment would result in higher cumulative GPAs.

**Data Collection**

Data collection was conducted in two waves; the unexpected low response rate during wave one of data collection resulted in implementation of a revised process to gather data in wave two. Details regarding both waves of data collection are provided below.
First Wave of Data Collection

During the first wave of recruitment, data collection occurred with the assistance of Student Voice. Student Voice is the primary service provider of assessment tools, from data collection to dissemination of information across campuses, within higher education within the United States (Student Voice, 2011). Institution selection criteria established by the researcher was used to send out study recruitment information to specifically targeted institutions. This stratification included selection of institutions within each of the 5 U.S. regions, with a mixture of urban and rural schools, and public and private schools. In addition, following the Carnegie Classification system definitions, selection procedures also included institutions of various sizes and residential and nonresidential campuses (Carnegie Foundation for the Advancement of Teaching, 2011). Under this classification system, institutional setting is broken down into four categories: 2-year institutions, 4-year primarily nonresidential institutions, 4-year primarily residential institutions and 4-year highly residential institutions. Each of these setting categories is further subdivided by size. Four-year institutions are divided into very small (i.e., fewer than 1,000 degree-seeking students), small (i.e., 1,000-2,999 degree-seeking students), medium (i.e., 3,000-9,999 degree-seeking students), and large (i.e., at least 10,000 degree-seeking students) institutions. Two-year institutions are subdivided as follows: very small (i.e., fewer than 500 students), small (i.e., enrollment of 500-1,999 students), medium (i.e., enrollment of 2,000-4,999) and large (i.e., enrollment of 5,000-9,999) institutions.

As relatively few institutions fell into the “very small” institution category, the “very small” and “small” categories were collapsed into a single designation of “small”
for this research. Similarly, the categories of “residential” and “highly residential” were combined as a designation of “residential” adequately describes any institution which has student housing facilities, whether few or many. Based on the aforementioned parameters, nine Student Voice client-institutions within each of the five U.S. regions were selected to participate in the research, with representation from rural and urban, public and private, religious and secular, and large medium and small institutions. In addition, as so few community colleges have opted to become Student Voice clients, all community colleges that were Student Voice clients within a given region were automatically selected as recruitment sites.

Based upon the above noted criteria, recruitment of institutions during the first wave occurred in two ways (see Appendix A for all recruitment and consent materials). First, a general announcement regarding the study was placed on the Student Voice website. The announcement briefly described the study and who was eligible to participate (in this case, institutions that were eligible to participate, as well as students who were eligible to participate were described). Institutions that were interested in participating were instructed to contact the researcher directly for more information about the research. No institutions were recruited using this methodology.

In addition, based on the stratification criteria developed by the researcher, specific institutions, as noted above, were selected for inclusion in the study. In this case, the researcher obtained a list of Student Voice member institutions as potential research sites from the Student Voice website. Using this list, study announcements were sent to Student Affairs Directors/Deans, as well as Institutional Research (IR) Office Directors (who are often the primary Student Voice contact person for a given institution) from
each of the selected institutions. This study recruitment announcement (approved for use by the San Diego State University [SDSU] Institutional Review Board [IRB], as well as Student Voice) was used to broach administrator’s interest in assisting with the selection of students from their campus to participate in the study (see Appendix D for the copy of the SDSU IRB approval letter).

A total of 45 institutions were invited to participate in the research following the stratification criteria. No community colleges from any region participated in the study, and only six universities, with two from Region 2, three from Region 3, and one from Region 5, opting to participate. Of the Region 1 institutions that were approached as potential sites for student recruitment, six were universities and three were community colleges. Of those recruited, three institutions declined to participate, and the remaining institutions did not reply regarding the request to participate in the research. Within Region 2, all institutions recruited, apart from one, were universities. Two institutions from this region (both universities) agreed to participate; one institution asked that a request be filled out and sent to the IR office (to which no reply was received); and the remaining institutions did not reply to the request to participate in the study. Within Region 3, no community colleges were Student Voice clients; so all requests to participate were sent to universities. In this case, three institutions agreed to participate, one institution showed initial interest but then did not respond to any additional contact attempts, and the remaining institutions did not respond to any contact attempts. Like Region 1, Region 4 also failed to supply any assistance in participant recruitment. Of the nine institutions contacted, neither of the two community colleges nor four of the universities approached responded to requests to participate in the study. One university
declined to participate, and the two remaining institutions agreed to participate initially.
In one case, after contacting the IRB to obtain approval, no response from the IRB was
received, despite several attempts to contact them regarding the process to obtain
approval. In the other case, it was recommended that recruitment agreements be
developed between individual instructors, but no additional information regarding which
instructors would allow this type of recruitment to occur was provided. Within Region 5,
two institutions declined to participate, one institution agreed to participate, and one of
the two community colleges in the region required that the IRB be contacted to obtain
approval. Again, in this case, the IRB did not respond to any requests to obtain
information regarding their review process. Of the remaining five institutions, one of
which was a community college, no response was received regarding the request to
participate in the research.

Of all of the institutions that declined to participate, the commonly cited rationale
for opting out was either due to a general campus policy that this type of data are not
given to those outside of the institution or that students are already over-sampled, and
additional burden on students was to be avoided.

Once an institution decided to participate in the research, the researcher and the
institution’s point of contact for survey administration jointly determined the best method
to recruit potential student participants such that all institutional policies, as well as
Family Education Rights and Privacy Act (FERPA, 1974) regulations, were adhered to.
In one case, the administrator elected to recruit students herself using the researcher
developed eligibility criteria and recruitment materials. With all other institutions,
administrators provided a random selection of students’ email addresses to the researcher
in order to conduct recruitment. In either case, students received two reminder email messages (also developed by the researcher) to complete the survey. Given that participation in the research was anonymous, there was no manner by which student completion of the survey could be tracked. As such, all students in the sample were sent reminders to complete the survey regardless of whether they had already completed it.

During this first wave of recruitment, a random sample of 100 second year students from each of the selected institutions were invited to participate in the research. Students from an included institution were asked to complete the online survey only once. Students did not need to be enrolled in a minimum number of units to be eligible to participate in the research. Beyond these basic criteria, no further inclusion criteria were implemented. All students self-selected into the study by voluntarily responding to recruitment materials. In this case, only two or three students opted to participate from each of the institutions that agreed to participate. Typical survey responses are relatively low (Patten, 2001), often with a 50% return rate or less (Cook, Heath, & Thompson, 2000). As there is some conjecture that responses to web based surveys may be even lower than average, at 35%-40% (Cook et al., 2000) it is not surprising, then, that a total of 18 students from the six participating institutions elected to participate during the first wave of recruitment.

Second Wave of Data Collection

Given the low response rate for the first wave of recruitment, a second wave of recruitment was conducted. During this second wave, individual instructors known to the researcher from institutions within the San Diego area were asked to provide a link to the online survey to their students in exchange for a small amount of extra credit. Five
instructors across various departments at SDSU were invited to recruit their students to participate; of these instructors, two opted to provide survey information to their students. In addition, instructors from Cuyamaca, Palomar, MiraCosta, and Southwestern community colleges offered extra credit to their students for participating.

Within this second wave of recruitment, instructors who agreed to assist with recruitment were provided with the student recruitment script that included a general outline of the study purpose and procedures, as well as a link to the survey (see Appendix A for all recruitment and consent materials). Instructors then forwarded this recruitment script to all of their undergraduate students with the offer to receive a small amount of extra credit for completing the survey. After completing the survey, students were directed to a final page that they could print and return to their instructor to obtain their extra credit. Instructors sent no completion reminder email messages to students.

During the second wave of recruitment, any undergraduate student who attended a course taught by the instructors assisting with recruitment was eligible to participate. Students did not need to be enrolled in a minimum number of units to be eligible to participate in the research. Beyond these basic criteria, no further inclusion criteria were implemented. In order to maximize response rates, as well as to avoid unfair recruitment procedures (i.e., to employ eligibility criteria in which only some students in class have the opportunity to obtain extra credit by participating is an unethical practice), all undergraduate students, not just those entering their sophomore year, were included. Also, while understanding factors critical to success and persistence for the first year of college is important, it is equally important to understand factors critical to success and retention for students at all levels. As such, data collection included both upper and
lower division students. All students self-selected into the study by voluntarily responding to recruitment materials.

**Participation Summary**

Within this research, a two-pronged recruitment method was employed to obtain data. Within the first wave of recruitment, a self-administered online survey was used to gather cross-sectional data from a randomly drawn natural sample of second year community college and university students across the nation. In this case, students who had entered their second year of college in the fall were invited to participate in the research during the summer; in this way, respondents were able to reflect upon their whole first year experience when responding to survey questions. Within the second wave of recruitment, the survey was sent to a randomly drawn sample of community college and university students within the San Diego area. In this case, undergraduates (both lower and upper division) were invited to participate in the research and reflect upon their most recently completed semester of college. Participants in both waves were invited to complete a quantitative survey of personality characteristics, degree of academic effort made, degree and quality of perceived campus support, number and quality of faculty-student interactions, and number and quality of college peer relationships. Participants were also asked to provide information about GPA, persistence, and general demographics on the survey. The sample of students was drawn from 2-year and 4-year colleges that represented public, private, religious, secular, urban, and rural institutions.

Participants ranged in age from 17 to 61 with an average age of 24.94. Thirty-nine percent of respondents were male and 61% were female; 48.8% of respondents were
of Hispanic/Latino/Chicano heritage, 3.3% were Black/African American, 2.4% were Native Hawaiian or other Pacific Islander, 7.3% were Asian/Southeast Asian, 30.9% were White/Caucasian/European, .8% reported that they were of American Indian/Alaskan Native heritage, and 6.5% responded “Other.” Six individuals did not provide a response regarding ethnicity. Figure 2 contains a pie chart representing the sample by race.

![Pie Chart](image)

**Figure 2.** Sample by race.

Of those sampled, 16.5% of respondents reported that their father/stepfather/male guardian obtained less education than high school, 40.9% reported high school diploma or equivalency, 9.4% reported Associate degree (1-2 year college degree), 15% reported Bachelor’s degree (4-year college degree), 7.1% reported Master’s degree, 3.2% reported Doctorate, 1.6% reported other, and 6.3% of respondents reported that they did not
know/did not grow up with a father/father figure. In addition, two individuals chose not to respond to the question. Similarly, 17.8% of respondents reported that their mother/stepmother/female guardian obtained less education than high school, 38.8% reported high school diploma or equivalency, 14% reported Associate degree (1-2 year college degree), 14% reported Bachelor’s degree (4-year college degree), 9.3% reported Master’s degree, 1.6% reported Doctorate, 3.9% reported other, and .8% of respondents reported that they did not know/did not grow up with a mother/mother figure. For more information, see Figures 3 and 4.

Figure 3. Highest degree earned by father/stepfather/male guardian.

It can be noted that 68.2% of respondents were full-time students, with 12 units being the most commonly reported number of units being taken during the current semester and 12 units taken the previous semester; 39.7% reported that they were
Figure 4. Highest degree earned by mother/stepmother/female guardian.

freshmen, 32.5% were sophomores, 15.1% were juniors, and 12.7% were seniors; 72.9% of respondents had not attended another college or university prior to attending their current college or university. Of those who did attend another institution, on average they completed three semesters before coming to their current institution. A majority of participants, 84.5%, reported that they were currently attending a community college, and 15.5% reported that they were currently attending a university.

Data Analysis

Hierarchical multiple regression was used to determine the degree to which personality characteristics interact with level of engagement with the college environment to predict cumulative GPA. The sequential model was selected, as it is best employed when it is expected that a given independent variable may be a more influential outcome
predictor than other independent variables included in the analyses (Mertler & Vannatta, 2010). In this case, recalling Chapter 2, agreeableness, conscientiousness and neuroticism have all previously been found to be stronger predictors of academic success than extroversion and openness. Given the strong evidence that only some of the big-five personality characteristics are associated with academic success, hierarchical multiple regression was used to further unravel the complex relationship between personality and engagement on academic success. In addition, the degree to which various biodemographic variables (e.g., ethnicity, gender, level of parental education) predicted GPA was examined using ANOVA.

**Variables**

All data used in this research were self-reported by student participants. The dependent variables included in this research were persistence, defined as the intention to re-enroll in the upcoming semester and GPA. Again, as only six individuals reported that they did not intend to enroll in college in the upcoming semester, these cases were omitted from analyses, and hypotheses were tested using a sample of students who intended to persist in college. The independent variables consisted of the five IPIP subscales (i.e., agreeableness, conscientiousness, neuroticism—henceforth referred to as emotional stability—extroversion and openness, referred to within this section as AG, CO, ES, EX, and OP, respectively), as well as each of the four engagement domains (i.e., engagement with academics, engagement with faculty, engagement with peers, and engagement with the campus, referred to within the remainder of this section as AC, FA, PE, and CA, respectively).
Independent variables were entered into the model in a grouped fashion based on the expected influence of each group on the dependent variables, from those expected to have the least influence to those most likely to have the greatest influence on the outcome variables. In this case, demographic variables were entered into the model first (e.g., age, gender, ethnicity), followed by the set of personality characteristics which have been shown to have little impact on academic success, specifically OP and EX, then the grouped personality variables of CO, AG, and ES, and finally the grouped engagement variables (i.e., AC, FA, PE, and CA) were entered into the model. Given this, the combinations of interest in predicting GPA become:

1A: High CO, AG, ES + High AC, FA, PE, CA  
2A: High CO, AG, ES + Low AC, FA, PE, CA  
3A: Low CO, AG, ES + High AC, FA, PE, CA  
4A: Low CO, AG, ES + Low AC, FA, PE, CA  
1B: High OP, EX + High AC, FA, PE, CA  
2B: High OP, EX + Low AC, FA, PE, CA  
3B: Low OP, EX + High AC, FA, PE, CA  
4B: Low OP, EX + Low AC, FA, PE, CA  

For additional information regarding the combinations of interest, refer to Table 1. These combinations then lead to the following hypotheses:

1. Students high in conscientiousness, agreeableness and emotional stability who have high levels of engagement with academics, peers, faculty, and the campus will be more likely to be academically successful than students low in
Table 1

Combinations of Interest in Predicting Grade Point Average

<table>
<thead>
<tr>
<th>Personality factors</th>
<th>High AC, FA, PE, CA</th>
<th>Low AC, FA, PE, CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>High CO, AG, ES</td>
<td>1A</td>
<td>2A</td>
</tr>
<tr>
<td>Low CO, AG, ES</td>
<td>3A</td>
<td>4A</td>
</tr>
<tr>
<td>High OP, EX</td>
<td>1B</td>
<td>2B</td>
</tr>
<tr>
<td>Low OP, EX</td>
<td>3B</td>
<td>4B</td>
</tr>
</tbody>
</table>

1. There will be no difference in academic success for students high in conscientiousness, agreeableness and emotional stability who have low levels of engagement with academics, peers, faculty, and the campus (1A > 4A).

2. There will be no difference in academic success for students high in openness and extroversion who have high levels of engagement with academics, peers, faculty, and the campus than students low in openness and extroversion who have high levels of engagement with academics, peers, faculty, and the campus (1B = 3B).

3. There will be no difference in academic success for students high in openness and extroversion who have low levels of engagement with academics, peers, faculty, and the campus than students low in openness and extroversion who have low levels of engagement with academics, peers, faculty, and the campus (2B = 4B).

Given the combinations of interest noted above, it might be expected that a hypothesis such as the following would be included: there will be no difference in academic success for students high in conscientiousness, agreeableness, and emotional stability who have low levels of engagement with academics, peers, faculty, and the
campus than students low in conscientiousness, agreeableness, and emotional stability
who have high levels of engagement with academics, peers, faculty, and the campus
(1A = 2A). However, this hypothesis essentially states that contrary to all prior research
findings, it does not matter where one would fall on the conscientiousness, agreeableness,
and emotional stability scales; it is only engagement variables that will affect GPA. As
noted in Chapter 2, there is a wealth of research that indicates that personality variables of
conscientiousness, agreeableness, and emotional stability play a major role in positive
academic outcomes such as academic success. As such, this hypothesis will not be
included in analyses.

In addition, the following secondary hypotheses regarding student
biodemographic data and GPA were tested:

1. There will be a difference in GPA between male and female students of
different ethnicities.

2. There will be a difference in GPA between male and female students
depending on the level of parental education.

Limitations

Despite the care taken to develop a sound research study, several limitations
remain; specifically, limitations in the instrument used, the construct which guides the
study, and the sampling methodology employed are discussed below.

Instrument limitations. Self-reported GPA may not accurately reflect true
academic achievement, thus rendering results meaningless should a majority of students
inaccurately report GPA. However, given the frequency with which self-reported GPA
is obtained for research purposes, many studies have investigated the reliability of
self-reported GPA and have concluded that GPA is accurately reported within survey research (Cassady, 2001; Gray & Watson, 2002). Further, participants were not specifically asked within the survey to provide their cumulative GPA; they were asked to simply provide their overall GPA. Participants may have taken this question to mean that they should report their current semester GPA instead of their cumulative GPA, for example. In addition, a potential limitation lies within the assessment of persistence. This study only attempted to assess intention to remain in or withdraw from college; this intention may only be based on a current state of mind. Whether students who reported that they intended to enroll in the upcoming semester actually do enroll within the semester/quarter following administration of the survey will not be assessed. Intentions to persist or withdraw may never be acted upon by surveyed students. Further, intention to persist may have less to do with personality and degree of engagement in some cases, and may simply be the result of contextual factors, such as a family obligation to remain in school. Finally, a potential limitation may be the measure of engagement used; as a majority of the engagement questions were developed by the author, this measure does not represent a commonly used tool to assess engagement. Specifically, some of the engagement subscales (i.e., engagement with faculty and engagement with academics) lacked an adequate degree of internal consistency.

**Construct limitations.** For purposes of this research, the “person” aspect of the person-environment fit theory is based on measures of big-five personality characteristics. Even though the “person” aspect of the five-factor model is comprised of more than just personality, it is beyond the scope of this research to assess all of the factors that are part of the “person” construct.
**Sampling limitations.** A limitation of this study was lack of data collection from a national sample of community college and university students. The initial intention was to collect data from a sample of students drawn from the population of postsecondary education students within the United States. Due to a low response rate to the national survey request, a local sample of San Diego students was obtained, comprised primarily of community college students. Thus, results may lack generalizability to students beyond the San Diego region, as well as to those who are attending universities. Similarly, certain groups of students were underrepresented within the data (e.g., certain ethnic groups). In addition, students with lower GPAs, as well as students who were not motivated to persist in school, were underrepresented in the data set. This underrepresentation may have been a function of responder bias. As extra credit was offered as an incentive for participation, it may be that only high achievers were more likely to take advantage of an extra credit opportunity; thus, only those students with higher GPAs and motivation to complete their education opted to participate in the study. Those students with lower GPAs or those who were not motivated to stay in school may be the same types of students who would typically not engage in any extra credit opportunities.

**Delimitations**

In order to maintain a reasonable survey administration length, each engagement subscale in the survey only included a small number of items. While collecting more in-depth information about students’ engagement with faculty, peers, the campus, and academics would have been valuable, the burden placed on participants should a longer engagement survey been used would have been inappropriate. Further, the data collection
time period was limited to mid-semester. To be fair in regard to obtaining extra credit, students were given the entire semester to earn their extra credit by completing the survey; however, due to time constraints for completion of the dissertation research, only those surveys completed by mid-March were included in analyses. Additional surveys that are completed throughout the remainder of the semester may be included in future publications of the research findings. Also, only institutions on the semester system were included in the research. As the majority of postsecondary institutions within the San Diego region are on the semester system and not the quarter system, it was determined that trying to gather data to draw conclusions about differences between institutions on the semester versus the quarter system was beyond the scope of this research.

Assumptions

The majority of person-environment fit research is specific to the relationship between workers and their place of employment. It is assumed that much of the research within this realm can also be appropriately employed to draw conclusions about the student and campus environment relationship. Within Chapter 4, this application of the person-environment fit model to higher education and its predictive value in student academic success is assessed.
Hierarchical multiple regression was used to determine the degree to which personality characteristics interacted with level of engagement with the college environment to predict cumulative GPA within a sample of students who intended to enroll in college in the upcoming semester. As previously stated, only six individuals reported that they did not intend to enroll in the upcoming semester of college, so results are reported for the sample of students who intended to persist. Specifically, the aim of this study was to address how the big-five personality characteristics (i.e., agreeableness, conscientiousness, openness, emotional stability/neuroticism, and extroversion) interacted with engagement with faculty, peers, the college environment, and academics to predict cumulative GPA. The degree to which various biodemographic variables (e.g., ethnicity, gender, level of parental education) predicted GPA was also examined using ANOVA. Data were analyzed using Predictive Analytic Software (PASW) v.20. One hundred twenty-nine surveys were included within the analyses. Results indicated that agreeableness, conscientiousness, and engagement with faculty, peers, and the campus environment significantly predicted cumulative GPA for students who intended to persist in college. However, no significant results were found for the relationship between GPA and ethnicity, gender, or level of parental education.

Within this chapter, a discussion of the data analysis procedures is provided. First, the data screening methods employed are described, and then follows an extensive description of the coding of the instrument, as well as development of the various subscales within the instrument. In particular, as the researcher designed the majority of the engagement questions, an assessment of the internal consistency of these items is
included. Next within the chapter is a discussion of the analyses and findings for the primary hypotheses, followed by a brief description of the initial data inspection for these primary hypotheses (e.g., assumptions required for testing, tests for normality, linearity and homoscedasticity). Finally, a discussion of the secondary hypotheses and findings is provided.

**Data Screening**

Inspection of the 18 surveys from the first wave of recruitment revealed that none of the surveys were complete; as such all of the data obtained from the Student Voice website were omitted from all analyses. From the second wave of data collection, of the approximately 300 students who were invited to participate, 170 surveys were started. A visual scan of the data revealed 21 cases where participants elected to answer only a few questions on the survey before ending participation. These surveys were removed from the data set leaving 149 surveys.

Frequencies and distributions were checked for all variables to determine whether any cases produced scores that fell outside of expected parameters (e.g., GPA above a 4.0, three digit age). For any case in which an extreme score was found, the score was reviewed and omitted as necessary. For example, in cases where participants reported having had more teachers whom they felt were concerned about their academic growth than the actual number of teachers they had during the given time period, that score was not included in analyses. An additional eight surveys were omitted due to incorrect entry of over 15% of variables and missing data. Finally, data from the six individuals who did not intend to persist in college were removed from the data set. For all other missing
values, variable means were used to replace missing scores. For additional detail regarding data screening, refer to Table 2.

Table 2

*Description of Removal of Surveys From the Dataset*

<table>
<thead>
<tr>
<th>Data collection wave</th>
<th>Description</th>
<th>Remaining N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave I: National sample</td>
<td>18 surveys filled out</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>18 surveys removed after visual scan revealed obvious incompleteness</td>
<td>0</td>
</tr>
<tr>
<td>Wave II: Local sample</td>
<td>170 surveys filled out</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>21 surveys removed after visual scan revealed obvious incompleteness</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>8 surveys removed due to incorrect entry/missing data for 15% or more of the questions</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td>6 surveys removed as respondents indicated they did not intend to re-enroll in college</td>
<td>135</td>
</tr>
<tr>
<td></td>
<td>6 surveys removed as Mahalanobis distance revealed outliers</td>
<td>129 (Final Sample)</td>
</tr>
</tbody>
</table>

**Scale Development**

The scale used within this research was comprised of three main portions: questions pertaining to personality, as measured by the 50-item International Personality Item Pool-Five-Factor Model; questions pertaining to engagement, measured by questions adapted from the NSSE and questions developed by the researcher; and questions pertaining to GPA and persistence, also developed by the researcher.
The 50-item International Personality Item Pool-Five-Factor Model (IPIP) measure (Goldberg, 1999) is a common big-five personality measure, with high reliability and validity (Costa & McCrae, 1997; Johnson, 2005; Socha et al., 2010). The measure includes 50 total items, with 10 questions contributing to a total score for each of the big-five personality characteristics. Items provide an overall score for each of the big-five personality characteristics that can be used to determine where one falls within the continuum of each of the big-five traits. For all items within the IPIP, respondents were asked to rate the degree to which each item accurately described his/her personality characteristics. Response choices were as follows:

1—Very Inaccurate
2—Moderately Inaccurate
3—Neither Accurate nor Inaccurate
4—Moderately Accurate
5—Very Accurate

Items associated with extroversion on the measure were questions 1, 6, 11, 16, 21, 26, 31, 36, 41, and 46. The agreeableness factor was measured by questions 2, 7, 12, 17, 22, 27, 32, 37, 42, and 47. Questions 3, 8, 13, 18, 23, 28, 33, 38, 43, and 48 were used to measure the contentiousness factor. Neuroticism was measured by questions 4, 9, 14, 19, 24, 29, 34, 39, 44, and 49; and openness was measured by questions 5, 10, 15, 20, 25, 30, 35, 40, 45 and 50. In addition, specific questions within the IPIP were negatively valanced. Note that higher scores on a given subscale indicate the presence of the given personality characteristic. In this case, higher scores on the neurotic subscale indicate
higher levels of neurosis; however, as the focus of this study was on characteristics related to academic success, the neuroticism subscale was reversed such that higher scores on this dimension were associated with emotional stability. The final set of negatively valanced questions within the IPIP were 2, 6, 8, 9, 10, 12, 16, 18, 19, 20, 22, 26, 28, 30, 32, 36, 38, 46.

**Engagement Scales**

Questions within this portion of the survey were used to develop a ratio for each of the four aspects of engagement (i.e., engagement with faculty, engagement with peers, engagement with the campus environment, and engagement with academics). Within the “Engagement With Faculty” section of the survey, question 1 regarding the number of teachers a respondent had during the school year was used with questions 2-4 (which ask the respondent to indicate the number of teachers they felt they could speak with about personal issues, the number of teachers they felt were concerned about their academic growth, and the number of teachers they felt were concerned about their personal growth) to create a ratio that was used to evaluate the degree to which students were engaged with faculty at their institution. In this case, the number of teachers the respondent noted they could speak with about personal issues was divided by the number of teachers reported and so on.

Questions 5 and 6, which asked students to rank how often they worked with faculty members on a given task, were scored using the following scale:
1—Never
2—Sometimes
3—Often
4—Very Often

Question 7, which asked students to rate the overall quality of their relationship with faculty at their institution was scored using the following scale:

1—Exceptionally Unavailable, Unhelpful, Unsympathetic
2—Very Unavailable, Unhelpful, Unsympathetic
3—Somewhat Unavailable, Unhelpful, Unsympathetic
4—Neutral
5—Somewhat Available, Helpful, Sympathetic
6—Very Available, Helpful, Sympathetic
7—Exceptionally Available, Helpful, Sympathetic

The three ratio scores resulting from questions 1-4 were then added to the scores for questions 5-7 to develop an overall score for perceptions of faculty support, with higher scores representing higher levels of engagement with faculty. Scores for engagement with faculty were out of a possible total of 11.

Similarly, within the “Engagement with Peers” section, questions 1 and 2 were used to develop a ratio (i.e., indicate the number of friends you had at your school, of those friends how many would you consider close/someone you could rely on if you were in some kind of trouble). Questions 3-5 were scored from 1-4 points; question 6 was scored from 1-7 points to develop an overall score for perceptions of connections with peers. Scores for engagement with peers were out of a possible total of 20.
Questions 3-5 asked respondents to indicate how often they engaged in various activities with their closest friend at school, using the following scale:

1—Never
2—Sometimes
3—Often
4—Very Often
5—N/A

Note that a response of N/A was coded as -99, indicating a missing value. These were coded as missing values as it was not necessary to include responses of N/A in analyses.

Question 6 asked respondents to indicate the overall quality of their relationships with other students at their institution using the following scale:

1—Extremely Unfriendly, Lack of connection with other students
2—Very Unfriendly, Lack of connection with other students
3—Somewhat Unfriendly, Lack of connection with other students
4—Neutral
5—Somewhat Friendly, Sense of connection to other students
6—Very Friendly, Sense of connection to other students
7—Extremely Friendly, Sense of connection to other students

Within the “Engagement With the Campus Environment” section, questions 1-3 were used to develop a ratio (i.e., indicate the number of campus staff you interacted with, indicate the number of staff who treated you with respect, indicate the number of staff who were concerned with your academic growth); questions 4-8 were scored from 1-4 points; and question 9 was scored from 1-7 points to develop an overall score for
perceptions of campus climate. Scores for engagement with the campus were out of a possible total of 29. Questions 4-8 asked respondents to indicate to what degree they felt their institution helped connect students with other students, as well as the degree to which the institution provided different types of support for students, using the following scale:

1—Very Little
2—Some
3—Quite a Bit
4—Very Much

Question 9 asked respondents to indicate the overall quality of their relationships with campus personnel at their institution using the following scale:

1—Extremely Unhelpful, Inconsiderate, Unkind
2—Very Unhelpful, Inconsiderate, Unkind
3—Somewhat Unhelpful, Inconsiderate, Unkind
4—Neutral
5—Somewhat Helpful, Considerate, Kind
6—Very Helpful, Considerate, Kind
7—Extremely Helpful, Considerate, Kind

Within the “Engagement With Academics” section, question 1 scores were combined with scores from questions 2-6 to develop an overall score for degree of academic effort made. Scores for engagement with academics were out of a possible total of 16. Question 1, which asks students to report the number of hours spent studying, was broken down into the following scale:
Questions 2-6 asked students to report how often they were timely in turning in assignments, how often they prepared several drafts of an assignment before turning it in, as well as how often they worked harder than anticipated to meet course standards. The following scale was used for questions 2-6 (except in the case of question 4 where the scale was reversed with a score of 1 indicating “Very Often” and 4 indicating “Never”):

1—Never
2—Sometimes
3—Often
4—Very Often

Grade Point Average and Persistence

Students were asked to supply their cumulative GPA as an indicator of academic success. Grade point average was recoded using the following scale:
1—0-1.99
2—2.0-2.49
3—2.5-2.99
4—3.0-3.49
5—3.5-4.0

In addition, students who answered “yes” to the question “Do you plan to attend this institution next semester” were coded 1. Responses of “no” were coded as 2. Similarly, students who answered “yes” to the following question were also coded with a 1: “If no, do you plan to attend another college/university next semester.” Responses were coded 1 in this case as the intention to continue in college, regardless of where students opted to continue.

**Cronbach’s Alpha**

Cronbach’s alpha was calculated for all four engagement scales (i.e., engagement with faculty, engagement with peers, engagement with the campus, engagement with academics) as the majority of items within this measure were designed by the investigator (i.e., items adapted from the NSSE were numbers 6 and 7 within the engagement with faculty portion of the measure, item 6 within the engagement with peers section, items 6-9 within the engagement with the campus section, and items 5 and 6 within the engagement with academics portion of the measure). For Cronbach’s alpha, a score of .7 is typically considered acceptable if using a small sample size and/or the scale contains few items (Hinton, 2004). As each of the engagement subscales consist of 5 to 8 items, a score of .7 or above was determined to be acceptable for the engagement subscales.
Cronbach’s alpha was calculated for the faculty engagement subscale (Table 3) using three ratio scores (i.e., item 2/item 1, item 3/item 1, and item 4/item 1), the 4-point scale scores for questions 4 and 5, and the 7-point scale score for question 6. The resulting calculation resulted in a Cronbach’s alpha of .58, indicating the scale had only moderate internal consistency. For all questions in the subscale, except item 6, Cronbach’s alpha would be lower if the item was removed (Table 4). To improve the overall internal consistency of the faculty engagement subscale, item 6 was omitted.

Table 3

*Cronbach’s Alpha for the Faculty Engagement Scale*

<table>
<thead>
<tr>
<th>Cronbach’s alpha</th>
<th>Cronbach’s alpha based on standardized items</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.58</td>
<td>.72</td>
<td>6</td>
</tr>
</tbody>
</table>

When item 6 was removed, internal consistency was improved and Cronbach’s alpha was .62 (Table 5). Given that the mean score for item 6 was 4.97, and as ratings in the middle of the scale were not anchored to a specific adjective choice, it becomes difficult to interpret participants’ true intentions when providing ratings that fell in the middle of the scale. It is unclear what a respondent may have intended when providing a rating of 3 to 5; these middle scores could potentially denote a neutral opinion of faculty. As interpreting this item may be difficult due to the lack of anchors for each of the response choices, as well as the increase in the internal consistency of the scale should the item be omitted, the question pertaining to the overall perceptions of faculty was removed from the final engagement with faculty scale.
Table 4

*Cronbach’s Alpha for Individual Faculty Engagement Scale Items*

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale mean if item deleted</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Squared multiple correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teachers I could talk with about personal issues</td>
<td>8.86</td>
<td>4.74</td>
<td>.40</td>
<td>.34</td>
<td>.54</td>
</tr>
<tr>
<td>Number of teachers concerned with academic growth</td>
<td>8.74</td>
<td>4.56</td>
<td>.52</td>
<td>.52</td>
<td>.51</td>
</tr>
<tr>
<td>Number of teachers concerned with personal growth</td>
<td>8.81</td>
<td>4.61</td>
<td>.47</td>
<td>.53</td>
<td>.52</td>
</tr>
<tr>
<td>Worked with a faculty member on coursework outside of class</td>
<td>7.58</td>
<td>3.87</td>
<td>.35</td>
<td>.30</td>
<td>.51</td>
</tr>
<tr>
<td>Worked with a faculty member on activities other than coursework</td>
<td>7.86</td>
<td>3.80</td>
<td>.36</td>
<td>.31</td>
<td>.51</td>
</tr>
<tr>
<td>Rate the overall quality of your relationships with faculty members</td>
<td>4.32</td>
<td>2.63</td>
<td>.32</td>
<td>.22</td>
<td>.62</td>
</tr>
</tbody>
</table>

Table 5

*Cronbach’s Alpha for the Final Faculty Engagement Scale—Revised*

<table>
<thead>
<tr>
<th>Cronbach’s alpha</th>
<th>Cronbach’s alpha based on standardized items</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.62</td>
<td>.69</td>
<td>5</td>
</tr>
</tbody>
</table>
Omission of any other items within the faculty engagement subscale would not improve internal consistency (Table 6), so the subscale was not changed any further. All additional analyses using the Faculty Engagement subscale included only the three ratio scores (i.e., item 2/item 1, item 3/item 1, and item 4/item 1) and scores for questions 4 and 5. As this subscale did not meet minimum standards of internal consistency, any findings for faculty engagement should be interpreted with caution.

Table 6

*Cronbach’s Alpha for Individual Faculty Engagement Scale Items—Revised*

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale mean if item deleted</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Squared multiple correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teachers I could talk with about personal issues</td>
<td>3.95</td>
<td>2.28</td>
<td>.28</td>
<td>.29</td>
<td>.61</td>
</tr>
<tr>
<td>Number of teachers concerned with academic growth</td>
<td>3.82</td>
<td>2.13</td>
<td>.45</td>
<td>.49</td>
<td>.56</td>
</tr>
<tr>
<td>Number of teachers concerned with personal growth</td>
<td>3.90</td>
<td>2.11</td>
<td>.44</td>
<td>.53</td>
<td>.56</td>
</tr>
<tr>
<td>Worked with a faculty member on coursework outside of class</td>
<td>2.66</td>
<td>1.44</td>
<td>.40</td>
<td>.28</td>
<td>.57</td>
</tr>
<tr>
<td>Worked with a faculty member on activities other than coursework</td>
<td>2.95</td>
<td>1.27</td>
<td>.50</td>
<td>.31</td>
<td>.49</td>
</tr>
</tbody>
</table>

Cronbach’s alpha was calculated for the peer engagement subscale (Table 7) using one ratio score (i.e., item 2/item 1), the 4-point scale scores for questions 3, 4 and 5, and the 7-point scale score for question 6. As Cronbach’s alpha for the peer engagement subscale was .70, indicating adequate internal consistency, no items were omitted. For all analyses, all five original items remained within the peer engagement subscale.
Table 7

*Cronbach’s Alpha for the Peer Engagement Scale*

<table>
<thead>
<tr>
<th>Cronbach’s alpha</th>
<th>Cronbach’s alpha based on standardized items</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.70</td>
<td>.63</td>
<td>5</td>
</tr>
</tbody>
</table>

Cronbach’s alpha was calculated for the campus engagement subscale (Table 8) using two ratio scores (i.e., item 2/item 1 and item 3/item 1), the 4-point scale scores for questions 6-8, and the 7-point scale score for question 9. As Cronbach’s alpha for the campus engagement subscale was .85, no items were omitted from the subscale to improve internal consistency. For all analyses, all eight original items remained within the campus engagement subscale.

Table 8

*Cronbach’s Alpha for the Campus Engagement Scale*

<table>
<thead>
<tr>
<th>Cronbach’s alpha</th>
<th>Cronbach’s alpha based on standardized items</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.85</td>
<td>.84</td>
<td>8</td>
</tr>
</tbody>
</table>

Cronbach’s alpha was calculated for the academic engagement subscale (Table 9) using one ratio score (i.e., item 2/item 1) and the 4-point scale scores for questions 2-6. Cronbach’s alpha for the academic engagement subscale was .46, indicating poor internal consistency for the scale. For all questions on the subscale, except item 4, Cronbach’s alpha would be lower if the item was removed (Table 10). Item 4 (i.e., “How often did you turn in assignments late/after the due date”) is not critical to understanding the degree to which students prepared for class given that item 3 asks how often assignments were turned in on time. As a response to item 3 essentially provides a response to item 4 as
Table 9

*Cronbach’s Alpha for the Academic Engagement Scale*

<table>
<thead>
<tr>
<th>Cronbach’s alpha</th>
<th>Cronbach’s alpha based on standardized items</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.46</td>
<td>.51</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 10

*Cronbach’s Alpha for Individual Academic Engagement Scale Items*

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale mean if item deleted</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Squared multiple correlation</th>
<th>Corrected item-total correlation if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours per week spent studying</td>
<td>14.99</td>
<td>5.58</td>
<td>.28</td>
<td>.09</td>
<td>.43</td>
</tr>
<tr>
<td>Turn class assignments in early</td>
<td>15.73</td>
<td>8.75</td>
<td>.28</td>
<td>.28</td>
<td>.39</td>
</tr>
<tr>
<td>Turn class assignments in on time</td>
<td>14.27</td>
<td>10.24</td>
<td>.33</td>
<td>.16</td>
<td>.41</td>
</tr>
<tr>
<td>Turn class assignments in late</td>
<td>14.64</td>
<td>11.31</td>
<td>-.09</td>
<td>.17</td>
<td>.54</td>
</tr>
<tr>
<td>Prepared several drafts of an assignment</td>
<td>15.47</td>
<td>8.59</td>
<td>.32</td>
<td>.25</td>
<td>.36</td>
</tr>
<tr>
<td>Worked harder to meet course standards</td>
<td>15.13</td>
<td>8.65</td>
<td>.43</td>
<td>.33</td>
<td>.33</td>
</tr>
</tbody>
</table>

well, and since this question decreases the internal consistency of the academic engagement subscale, item 4 was omitted from the final scale. Omission of item 4 improved the internal consistency of the subscale (Table 11); however, the Cronbach’s alpha for the academic engagement subscale was still low, at .54. However, should item 1 also be omitted (Table 12), the overall internal consistency of the scale would be increased. Assessing the number of hours spent studying per week may not provide a true understanding of academic engagement. The number of reported hours of studying may
Table 11

*Cronbach’s Alpha for the Academic Engagement Scale—Revised*

<table>
<thead>
<tr>
<th>Cronbach’s alpha</th>
<th>Cronbach’s alpha based on standardized items</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.54</td>
<td>.63</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 12

*Cronbach’s Alpha for Individual Academic Engagement Scale Items—Revised*

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale mean if item deleted</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Squared multiple correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours per week spent studying</td>
<td>11.59</td>
<td>5.71</td>
<td>.24</td>
<td>.07</td>
<td>.64</td>
</tr>
<tr>
<td>Turn class assignments in early</td>
<td>12.32</td>
<td>8.08</td>
<td>.38</td>
<td>.24</td>
<td>.45</td>
</tr>
<tr>
<td>Turn class assignments in on time</td>
<td>10.86</td>
<td>10.21</td>
<td>.28</td>
<td>.10</td>
<td>.53</td>
</tr>
<tr>
<td>Prepared several drafts of an assignment</td>
<td>12.07</td>
<td>8.09</td>
<td>.40</td>
<td>.24</td>
<td>.44</td>
</tr>
<tr>
<td>Worked harder than you thought you would</td>
<td>11.72</td>
<td>8.23</td>
<td>.49</td>
<td>.32</td>
<td>.41</td>
</tr>
</tbody>
</table>

not tap into the true degree of effort made by students in trying to understand a given course topic. A student may spend a great deal of time studying, but it may not be quality study time; number of hours studying does not necessarily directly equate to quality study time. Further, items 2, 3, 9, and 10 provide a much more concrete picture of student effort made to meet course standards. Given the ambiguous interpretation of hours per week spent studying and low internal consistency for this item, it was determined that item 1 should be omitted from the engagement with academics scale. After removing item 1, Cronbach’s alpha for the scale was .64 (Table 13). All additional analyses using the academic engagement subscale included only questions 2, 3, 5, and 6. As this
Table 13

*Cronbach’s Alpha for the Final Academic Engagement Scale*

<table>
<thead>
<tr>
<th>Cronbach’s alpha</th>
<th>Cronbach’s alpha based on standardized items</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.64</td>
<td>.64</td>
<td>4</td>
</tr>
</tbody>
</table>

subscale did not meet standards of internal consistency, any findings for academic engagement should be interpreted with caution.

Mahalanobis’ distance was then calculated to find outliers (Table 14). The critical value of chi-square at $p .05$ with $df = 9$ was found to be 16.92. This value was exceeded as a maximum Mahalanobis’ distance of 23.37 was found. Six cases were found which exceeded the chi-square criterion and were eliminated from the data set.

Table 14

*Mahalanobis’ Distance*

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.72</td>
<td>23.37</td>
<td>8.9</td>
<td>4.33</td>
<td>135</td>
</tr>
</tbody>
</table>

**Analyses of Primary Hypotheses**

The following primary hypotheses were tested in regard to personality and engagement variables and cumulative GPA:

1. Students high in conscientiousness, agreeableness, and emotional stability who have high levels of engagement with academics, peers, faculty, and the campus will be more likely to be academically successful than students low in conscientiousness, agreeableness, and emotional stability who have low levels of engagement with academics, peers, faculty, and the campus.
2. There will be no difference in academic success for students high in openness and extroversion who have high levels of engagement with academics, peers, faculty, and the campus than students low in openness and extroversion who have high levels of engagement with academics, peers, faculty, and the campus.

3. There will be no difference in academic success for students high in openness and extroversion who have low levels of engagement with academics, peers, faculty, and the campus than students low in openness and extroversion who have low levels of engagement with academics, peers, faculty, and the campus.

Hierarchical multiple regression was used to determine the degree to which personality characteristics interacted with level of engagement with the college environment to predict cumulative GPA. As all but 5% \((n = 6)\) of respondents reported that they did not intend to attend college/university the next semester, group differences in personality and level of engagement between “persisters” and “nonpersisters” were not tested. A statistically significant group difference could not be detected from such a small group. As previously noted, these six cases were omitted from the data set, and all analyses represent findings for a sample of students who reported that they intended to persist in college.

To test the hypothesis that cumulative GPA is a function of five personality variables (i.e., extroversion, openness, agreeableness, conscientiousness, emotional stability) and four engagement variables (i.e., engagement with faculty, engagement with peers, engagement with the campus, engagement with academics), a hierarchical multiple
regression analysis was performed. Demographic variables of age, gender and ethnicity were the first block of variables entered, followed by the block extroversion and openness, then agreeableness, conscientiousness, emotional stability, and then the block engagement with faculty, engagement with peers, engagement with the campus, and engagement with academics according to the theory outlined within this research.

Results of the regression analysis provided partial confirmation for the research hypothesis that students high in conscientiousness, agreeableness, and emotional stability who have high levels of engagement with academics, peers, faculty, and the campus will be more likely to be academically successful than students low in conscientiousness, agreeableness, and emotional stability who have low levels of engagement with academics, peers, faculty, and the campus (hypothesis 1). Specifically, the best fitting model for predicting cumulative GPA (Table 15) was a linear combination of agreeableness ($M = 38.36, SD = 5.70$), conscientiousness ($M = 36.33, SD = 6.15$), emotional stability ($M = 29.92, SD = 7.28$) and engagement with faculty ($M = 4.31, SD = 1.54$), peers ($M = 12.11, SD = 3.87$), campus ($M = 18.71, SD = 4.76$), and academics ($M = 11.73, SD = 2.28$; $R = .57, R^2 = .32, F (5,108) = 4.29, p < .001$). Addition of the extroversion and openness variables did not significantly improve prediction ($R^2$ change $= .03, F = 2.24, p = .11$), as expected given the hypotheses that there would be no difference in academic success for students high in openness and extroversion than those students low in openness and extroversion regardless of levels of engagement with academics, peers, faculty, and the campus (hypotheses 2 and 3).

However, the examination of beta weights revealed that only agreeableness, conscientiousness, engagement with faculty, engagement with peers, and engagement
Table 15

**ANOVA of Blocks of Grade Point Average Predictor Variables in the Model**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>13.26</td>
<td>3</td>
<td>4.42</td>
<td>4.49</td>
<td>.005</td>
</tr>
<tr>
<td>1 Residual</td>
<td>115.30</td>
<td>117</td>
<td>.99</td>
<td>.99</td>
<td>.004</td>
</tr>
<tr>
<td>Total</td>
<td>128.56</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>17.59</td>
<td>5</td>
<td>3.52</td>
<td>3.65</td>
<td>.004</td>
</tr>
<tr>
<td>2 Residual</td>
<td>110.98</td>
<td>115</td>
<td>.965</td>
<td>.965</td>
<td>.004</td>
</tr>
<tr>
<td>Total</td>
<td>128.56</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>25.84</td>
<td>8</td>
<td>3.23</td>
<td>3.52</td>
<td>.001</td>
</tr>
<tr>
<td>3 Residual</td>
<td>102.72</td>
<td>112</td>
<td>.92</td>
<td>.92</td>
<td>.001</td>
</tr>
<tr>
<td>Total</td>
<td>128.56</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>41.50</td>
<td>12</td>
<td>3.46</td>
<td>4.29</td>
<td>.000</td>
</tr>
<tr>
<td>4 Residual</td>
<td>87.06</td>
<td>108</td>
<td>.81</td>
<td>.81</td>
<td>.000</td>
</tr>
<tr>
<td>Total</td>
<td>128.56</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Model 1 includes the predictors Ethnicity, Gender, and Age. Model 2 includes the predictors Ethnicity, Gender, Age, Extroversion, and Openness. Model 3 includes the predictors Ethnicity, Gender, Age, Extroversion, Openness, Emotional Stability, Conscientiousness, and Agreeableness. Model 4 includes predictors Ethnicity, Gender, Age, Extroversion, Openness, Emotional Stability, Conscientiousness, Agreeableness, Campus Engagement, Academic Engagement, Peer Engagement, and Faculty Engagement.

with the campus significantly contributed to the model. Beta coefficients (Table 16) for the nine predictors were extroversion, $\beta = .06, t = .65, p = .52$; openness, $\beta = -.03, t = -.33, p = .74$; agreeableness, $\beta = .20, t = 1.99, p < .05$; conscientiousness, $\beta = .20, t = 2.09, p < .05$; emotional stability, $\beta = .11, t = 1.26, p = .21$; engagement with faculty, $\beta = -.27, t = 2.71, p < .01$; engagement with peers, $\beta = .22, t = 2.39, p < .05$; engagement with the campus, $\beta = -.19, t = 1.99, p < .05$; and engagement with academics, $\beta = -.05, t = -.54, p = .59$. It is important to note that as beta weights for engagement with faculty and engagement with the campus are both negative, a negative relationship between these variables and conscientiousness and agreeableness is denoted. In this case, given hypotheses, it was not expected that emotional stability, as well as engagement with
Table 16

Beta Weights of Predictor Variables in the Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized coefficients</th>
<th>Standardized coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>Std. error</td>
</tr>
<tr>
<td>Age</td>
<td>.02</td>
<td>.01</td>
</tr>
<tr>
<td>Gender</td>
<td>-.47</td>
<td>.18</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.05</td>
<td>.04</td>
</tr>
<tr>
<td>Extroversion</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Openness</td>
<td>-.01</td>
<td>.02</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.04</td>
<td>.02</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.03</td>
<td>.02</td>
</tr>
<tr>
<td>Emotional stability</td>
<td>.02</td>
<td>.01</td>
</tr>
<tr>
<td>Faculty engagement</td>
<td>-.18</td>
<td>.07</td>
</tr>
<tr>
<td>Peer engagement</td>
<td>.06</td>
<td>.03</td>
</tr>
<tr>
<td>Campus engagement</td>
<td>-.04</td>
<td>.02</td>
</tr>
<tr>
<td>Academic engagement</td>
<td>-.02</td>
<td>.04</td>
</tr>
</tbody>
</table>

academics, would fail to emerge as significant predictors of GPA, nor was the negative relationship between engagement with faculty and the campus with conscientiousness and agreeableness expected.

Significant results were found for the relationship between ethnicity, gender, age and cumulative GPA (\( F[3,117] = 4.49, p < .005 \)). However, inspection of beta coefficients revealed that only gender (\( \beta = -.22, t = -2.57, p < .05 \)) and age (\( \beta = .20, t = 2.07, p < .05 \)) significantly predicated cumulative GPA. It must be noted that these results should be taken with caution as there were unequal sample sizes for both sets of variables. For gender, 61% of respondents were female and 39% were male, with male
students having higher GPAs than female students ($\mu_{\text{Male}} = 3.14$, $\mu_{\text{Female}} = 2.92$). In addition, student respondents ranged in age from 17 to 61, with 72% of participants falling between 18 and 25 years of age. Further, the only groups that included 10 or more respondents per age group were those between the ages of 18 and 21, with lowest GPAs shown for the 18-year-old group ($\mu_{18 \text{Years}} = 2.64$, $\mu_{19 \text{Years}} = 2.94$, $\mu_{20 \text{Years}} = 3.08$, $\mu_{21 \text{Years}} = 2.94$).

**Assumptions for Primary Hypotheses**

Hierarchical multiple regression requires a minimum ratio of valid cases to independent variables. While 5 to 1 is the minimum ratio, 14 to 1 is the preferred ratio. In the case of this data set, with 129 valid cases and 9 independent variables, the resulting ratio of 14.33 to 1 is within the preferred limits.

A scatter plot was generated (Figure 5) which showed nonelliptical shapes, indicating a possible failure of the assumptions of linearity and normality. However, a more sophisticated method to assess linearity and normality that compared standardized residuals to predicted values of the dependent variable was used. As the graphed and residuals (Figure 6) were not clustered at the top or bottom of the plot, the data can be said to be normal; further, the plotted residuals were not curved so the data are linear; the plotted residuals were not clustered on the right or left side, so the data do not show heteroscedasticity. Since the residual plot shows a generally rectangular shape with scores concentrated in the middle, it can be concluded that the assumptions of normality, linearity, and homoscedasticity have been met.

Tests for multicollinearity (Table 17) indicated that a low level of multicollinearity was present (tolerance = .78 for extroversion, .59 for openness, .67 for
Figure 5. Scatterplot of personality and engagement variables.

Figure 6. Standardized residuals plot of personality and engagement variables.
Table 17

Tests for Multicollinearity of Independent Variables in the Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlations</th>
<th>Collinearity statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zero-order</td>
<td>Partial</td>
</tr>
<tr>
<td>Age</td>
<td>.21</td>
<td>.20</td>
</tr>
<tr>
<td>Gender</td>
<td>-.18</td>
<td>-.24</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>.22</td>
<td>.14</td>
</tr>
<tr>
<td>Extroversion</td>
<td>.10</td>
<td>.06</td>
</tr>
<tr>
<td>Openness</td>
<td>.16</td>
<td>-.03</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.25</td>
<td>.19</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>.25</td>
<td>.20</td>
</tr>
<tr>
<td>Emotional stability</td>
<td>.04</td>
<td>.12</td>
</tr>
<tr>
<td>Faculty engagement</td>
<td>-.26</td>
<td>-.25</td>
</tr>
<tr>
<td>Peer engagement</td>
<td>.04</td>
<td>.22</td>
</tr>
<tr>
<td>Campus engagement</td>
<td>-.17</td>
<td>-.19</td>
</tr>
<tr>
<td>Academic engagement</td>
<td>-.07</td>
<td>-.05</td>
</tr>
</tbody>
</table>

agreeableness, .71 for conscientiousness, .86 for emotional stability, .62 for engagement with faculty, .71 for engagement with peers, .73 for engagement with the campus and .74 for engagement with academics). All tolerance statistics exceeded .1 indicating that all of the independent variables were tolerated in the model.

For each block of variables, $R$ square indicated the percentage of variability accounted for (Table 18). Age, gender and ethnicity accounted for 10% of the variability. The next block of factors, extroversion and openness, accounted for 14% of the variability. Adding emotional stability, conscientiousness, and agreeableness into the model increased the amount of variability accounted for by 20%. Finally, adding the engagement variables into the model increased the variability accounted for by 32%, or
Table 18

**Model Summary—R Square Change for Independent Variables**

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R$ square</th>
<th>Adjusted $R$ square</th>
<th>$R$ square change</th>
<th>$F$ change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. $F$ change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.32</td>
<td>.10</td>
<td>.08</td>
<td>.10</td>
<td>4.49</td>
<td>3</td>
<td>117</td>
<td>.005</td>
</tr>
<tr>
<td>2</td>
<td>.37</td>
<td>.14</td>
<td>.10</td>
<td>.03</td>
<td>2.24</td>
<td>2</td>
<td>115</td>
<td>.111</td>
</tr>
<tr>
<td>3</td>
<td>.45</td>
<td>.20</td>
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<td>.06</td>
<td>3.00</td>
<td>3</td>
<td>112</td>
<td>.034</td>
</tr>
<tr>
<td>4</td>
<td>.57</td>
<td>.32</td>
<td>.25</td>
<td>.12</td>
<td>4.86</td>
<td>4</td>
<td>108</td>
<td>.001</td>
</tr>
</tbody>
</table>

Note. Model 1 includes the predictors Ethnicity, Gender, and Age. Model 2 includes the predictors Ethnicity, Gender, Age, Extroversion, and Openness. Model 3 includes the predictors Ethnicity, Gender, Age, Extroversion, Openness, Emotional Stability, Conscientiousness, and Agreeableness. Model 4 includes predictors Ethnicity, Gender, Age, Extroversion, Openness, Emotional Stability, Conscientiousness, Agreeableness, Campus Engagement, Academic Engagement, Peer Engagement, and Faculty Engagement.

more simply, the model put forth within this research accounted for 32% of the variance in cumulative GPA.

**Analyses of Secondary Hypotheses**

The following secondary hypotheses regarding student biodemographic data and cumulative GPA were tested:

1. There will be a difference in GPA between male and female students of different ethnicities.

2. There will be a difference in GPA between male and female students depending on the level of parental education.

A two-way analysis of variance completely crossed factorial design was conducted to investigate differences in cumulative GPA by gender and parental level of education. As prior tests of homogeneity of variance indicated that this assumption was not met (Table 19), findings should be interpreted with caution. ANOVA results
Table 19

Levene’s Test of Equality of Error Variances for Gender and Level of Parental Education

<table>
<thead>
<tr>
<th>F</th>
<th>df1</th>
<th>df2</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.33</td>
<td>47</td>
<td>79</td>
<td>.000</td>
</tr>
</tbody>
</table>

presented in Table 20 showed no significant main effect for gender, $F(1,79) = .13, p = .72$), father’s educational level, $F(8,79) = .74, p = .66$) or mother’s educational level, $F(7,79) = 1.54, p = .16$). Interactions between factors were not significant; cumulative GPA and father’s educational level, $F(4,79) = .73, p = .58$), cumulative GPA and mother’s educational level, $F(4,79) = .41, p = .80$) and cumulative GPA and father’s and mother’s educational level, $F(6,79) = .69, p = .66$). Hypotheses for differences in cumulative GPA by gender and parental level of education were not supported.

A two-way analysis of variance completely crossed factorial design was conducted to investigate differences in cumulative GPA by gender and ethnicity. Prior tests of homogeneity of variance indicated that this assumption was met (Table 21). A two-way analysis of variance completely crossed factorial design was conducted to investigate differences in cumulative GPA by gender and ethnicity. ANOVA results presented in Table 22 showed no significant main effect for gender, $F(1,110) = 1.74, p = .19$) or ethnicity, $F(6,110) = 1.03, p = .41$). Interaction between factors was not significant either, $F(5,110) = .88, p = .50$). Hypotheses for differences in cumulative GPA by gender and ethnicity were not supported.
Table 20

Tests of Between-Subjects Effects for Gender and Level of Parental Education

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type III sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected model</td>
<td>16.59</td>
<td>47</td>
<td>.35</td>
<td>1.03</td>
<td>.45</td>
</tr>
<tr>
<td>Intercept</td>
<td>368.67</td>
<td>1</td>
<td>368.67</td>
<td>1075.96</td>
<td>.00</td>
</tr>
<tr>
<td>Gender</td>
<td>.04</td>
<td>1</td>
<td>.04</td>
<td>.13</td>
<td>.72</td>
</tr>
<tr>
<td>Father edu.</td>
<td>2.02</td>
<td>8</td>
<td>.25</td>
<td>.74</td>
<td>.66</td>
</tr>
<tr>
<td>Mother edu.</td>
<td>3.71</td>
<td>7</td>
<td>.53</td>
<td>1.55</td>
<td>.16</td>
</tr>
<tr>
<td>Gender * Father edu.</td>
<td>.99</td>
<td>4</td>
<td>.25</td>
<td>.73</td>
<td>.58</td>
</tr>
<tr>
<td>Gender * Mother edu.</td>
<td>.56</td>
<td>4</td>
<td>.14</td>
<td>.41</td>
<td>.80</td>
</tr>
<tr>
<td>Father edu. * Mother edu.</td>
<td>1.80</td>
<td>13</td>
<td>.14</td>
<td>.41</td>
<td>.96</td>
</tr>
<tr>
<td>Gender * Father edu. * Mother edu.</td>
<td>1.41</td>
<td>6</td>
<td>.24</td>
<td>.69</td>
<td>.66</td>
</tr>
<tr>
<td>Error</td>
<td>27.07</td>
<td>79</td>
<td>.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1206.79</td>
<td>127</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>43.660</td>
<td>126</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 21

Levene’s Test of Equality of Error Variances for Gender and Ethnicity

<table>
<thead>
<tr>
<th>F</th>
<th>df1</th>
<th>df2</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.371</td>
<td>12</td>
<td>110</td>
<td>.191</td>
</tr>
</tbody>
</table>
Table 22

Tests of Between-Subjects Effects for Gender and Ethnicity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type III sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>1</td>
<td>306.55</td>
<td>903.56</td>
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<tr>
<td>Gender</td>
<td>.59</td>
<td>1</td>
<td>.59</td>
<td>1.74</td>
<td>.19</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>2.09</td>
<td>6</td>
<td>.35</td>
<td>1.03</td>
<td>.41</td>
</tr>
<tr>
<td>Gender * Ethnicity</td>
<td>1.49</td>
<td>5</td>
<td>.30</td>
<td>.88</td>
<td>.50</td>
</tr>
<tr>
<td>Error</td>
<td>37.32</td>
<td>110</td>
<td>.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1154.46</td>
<td>123</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>42.90</td>
<td>122</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results indicated that a combination of personality variables, specifically conscientiousness and agreeableness and engagement with faculty, peers, and the campus significantly predicted cumulative GPA; in this case higher levels of conscientiousness and agreeableness in combination with higher levels of engagement with peers and lower levels of engagement with faculty and the campus predicted higher cumulative GPAs. In addition, higher levels of openness and extroversion, regardless of level of engagement with faculty, peers, the campus, and academics did not predict cumulative GPA, as expected. Surprisingly, emotional stability and engagement with academics did not significantly contribute to the model in predicting cumulative GPA, despite expectations that they would be significant predictors. Finally, neither gender, ethnicity nor parental level of education significantly predicted cumulative GPA. A detailed discussion of these results, as well as a discussion of implications of limitations and recommendations is provided within Chapter 5.
CHAPTER 5—DISCUSSION

In an effort to understand pathways to student success, prior research has focused on the role of engagement (Astin, 1993b; Carini et al., 2006; Kuh et al., 2008; Schuetz, 2008; Tinto, 1975) or personality factors in academic success (Bidjerano & Dai, 2007; Lounsbury et al., 2003; Lounsbury et al., 2004; Noftle & Robins, 2007); however, there has been a lack of research that focuses on the combined influence of personality factors and engagement with the college environment on academic success. Within this research, a version of the person-environment fit model, adapted for use in higher education, was employed. It was postulated that stable personality characteristics (represented by the big-five personality traits) interact with engagement with the college environment (which includes engagement with academics, faculty, peers, and the campus) resulting in good or bad fit, as measured by cumulative GPA.

Students within postsecondary institutions across the nation, from universities, as well as community colleges, were invited to complete an online quantitative survey of personality characteristics, degree of engagement with academics, peers, faculty, and the campus, GPA, and persistence. The final sample was comprised of 129 upper and lower division students from San Diego postsecondary institutions. All cases included within analyses were restricted to students who reported within the survey that they intended to enroll in the upcoming semester of college. Results indicated that the usage of this model of person-environment fit, as adapted for higher education, was successful in significantly predicting 32% of the variance found in cumulative GPA; specifically, agreeableness, conscientiousness, and engagement with faculty, peers, and the campus environment significantly predicted cumulative GPA within a sample of students who intended to
persist in college. No significant results were found for the relationship between cumulative GPA and ethnicity, gender, or level of parental education.

Within this chapter, a discussion of findings for primary hypotheses is provided, followed by a discussion of the findings for secondary hypotheses. Then implications of limitations on present and future research are presented, with focus on survey and construct limitations, followed by recommendations specific to education research, recommendations for the practical application of results, and recommendations for future research.

**Discussion of Findings for Primary Hypotheses**

Partial support was found for the hypothesis that students high in conscientiousness, agreeableness, and emotional stability who have high levels of engagement with academics, peers, faculty, and the campus will be more likely to be academically successful than students low in conscientiousness, agreeableness, and emotional stability who have low levels of engagement with academics, peers, faculty, and the campus. In addition, hypotheses 2 and 3 were supported; no difference in academic success for students high in openness and extroversion versus those students low in openness and extroversion were found, regardless of levels of engagement with academics, peers, faculty, and the campus. A detailed discussion of these findings follows.

**Hypothesis 1**

Partial support was found for the hypothesis that students high in conscientiousness, agreeableness, and emotional stability who have high levels of engagement with academics, peers, faculty, and the campus will be more likely to be
academically successful than students low in conscientiousness, agreeableness, and emotional stability who have low levels of engagement with academics, peers, faculty, and the campus. In this case, only the personality variables of conscientiousness and agreeableness and the engagement variables of peer, faculty, and campus connection were predictive of cumulative GPA, with faculty and peer engagement negatively correlated with GPA. It was expected that agreeableness, conscientiousness, and engagement with faculty, peers, and the campus environment would significantly predict cumulative GPA given the wealth of research that indicates these factors all play a major role in academic success (Arteche et al., 2009; Gloria & Ho, 2003; Grant-Vallone et al., 2004; J. Jacobs & Archie, 2008; Lidy & Kahn, 2006; Ullah & Wilson, 2007). Specifically, conscientiousness and agreeableness have both been found to be associated with academic performance. Conscientiousness, for example, has been found to incrementally predict GPA over academic ability (Conard, 2006) and is also predictive of both freshman and senior GPA (Wagerman & Funder, 2007); conscientiousness has also been found to predict exam grades (Chamorro-Premuzic & Furnham, 2003a), as well as final course grades (Chamorro-Premuzic & Furnham, 2003b). Similarly, agreeableness has been shown to be associated with cumulative GPA (Gray & Watson, 2002; Lounsbury et al., 2005) and has even been shown, in conjunction with the other big-five traits, to have greater predictive value for GPA than academic motivation (Komarraju et al., 2009). Findings from this research that indicate that agreeableness and conscientiousness are predictive of GPA fit well within the body of literature concerning personality factors and academic success.
The failure of emotional stability to predict GPA despite expectations that this factor would emerge as significant, while unexpected given hypotheses, was none the less not a surprise, as prior research is mixed in results for linkages between emotional stability/neuroticism and cumulative GPA. For example, Chamorro-Premuzic and Furnham (2003a) found that emotional stability predicted academic success but only in combination with work-drive and intelligence. This finding indicates that the emotional stability factor may be less valuable as a predictor of academic success on its own. Instead, it may be that characteristics such as high work-drive account more for academic success than does emotional stability; emotional stability may moderate the relationship between academic outcomes and work-drive. In addition, in the profile of the academically successful student, emotional stability has been found to play a larger role in the realm of persistence than academic success (Lounsbury et al., 2004). It may be that emotional stability has greater impact on persistence, and agreeableness and conscientiousness may have a greater impact on academic success (i.e., cumulative GPA in this case)—both of which are necessary to the ultimate achievement of educational goals. Had a sample of students who did not intend to persist in college been included in the research, differences in emotional stability between “persisters” and “nonpersisters” may have emerged.

Similarly, the failure of engagement with academics to predict cumulative GPA was also unexpected given that prior research has found that academic success is correlated with academic engagement (Astin, 1993b; Kitsantas et al., 2008; Kuh, 2009; Lor, 2008; Tinto & Russo, 1994; Ullah & Wilson, 2007). When taking into account Noftle and Robins’ (2007) research, for example, which indicated that increased degree
of academic effort directly mediated the relationship between conscientiousness and college GPA, the lack of association between academic engagement, personality variables, and GPA found within this research was surprising. Similarly, Bidjerano and Dai (2007) found that effort regulation mediated the effects of conscientiousness on GPA, and Komarraju et al. (2009) found that conscientiousness mediated the relationship between motivation and GPA. These findings all point to the impact on GPA made by the interaction between conscientiousness and academic engagement. Again, findings from these studies are contrary to findings for this research; academic engagement in conjunction with conscientiousness failed to predict GPA.

A potential source of this failure may be in the academics subscale of the engagement measure used within this research. As previously stated, this particular subscale lacked adequate internal consistency and was comprised of only four items. In addition, the items included within this scale may have only tapped into surface level learning; asking about the number of hours spent studying does not address the quality of the studying done; asking whether assignments were turned in on time does not probe into whether those assignments were demonstrative of deep learning and concentrated effort. Previous research has found that it is these deeper efforts that are often associated with academic success; contributions to class discussions and active involvement in the classroom, for example, have been found to be predictive of academic success (Ullah & Wilson, 2007). The academic engagement subscale used within this research may have lacked a breadth of questions that truly probed into the quality of student academic effort, whereas the other items within the engagement measure were designed to dig deeper into both degree and quality of engagement with faculty, peers, and the campus. As noted
above, prior findings for academic engagement appear to be the result of usage of measures that more adequately tapped into the degree of academic effort made. Development of a more robust measure of academics that probed more deeply into effort made may have resulted in significant findings.

Most surprising was the finding that engagement with faculty and the campus were significantly negatively correlated with conscientiousness and agreeableness, while engagement with peers was significantly positively correlated with conscientiousness and agreeableness. Prior research suggests that positive interactions with faculty are associated with higher GPA (Ullah & Wilson, 2007) with interactions with faculty regarding coursework, in particular, associated with higher GPA (Carini et al., 2006). Likewise, graduating with honors has been associated with positive student-faculty interactions (Astin, 1993a). Connection with the campus environment has also been demonstrated to be associated with academic success within previous research. A supportive campus climate has been associated with higher GPAs (Carini et al., 2006); in particular, a tolerant campus climate was associated with higher grades for students of color (Brown, Morning, & Watkins, 2005); and greater involvement in campus activities has been linked with higher GPA, especially for students of color (Fischer, 2007). Our research indicated the opposite of these previous findings; students high in conscientiousness and agreeableness who indicated lower degrees of engagement with faculty and the campus community had higher GPAs.

Contrary to the body of literature, these results paint a picture of the successful college student as someone who is high in conscientiousness and agreeableness and has high levels of engagement with college peers but lower levels of engagement with the
campus and faculty. It may be that students who are high in conscientiousness and agreeableness who have adequate peer support do not need to be as deeply engaged with the campus or faculty in order to be academically successful. More often than not, the primary role of campus and faculty is to set standards, develop deadlines for which various tasks must be completed and move students towards attaining academic goals, for example. These tasks may be the very same tasks that a student who is high in conscientiousness and agreeableness may inherently engage in on his/her own. Indeed, Komarraju et al. (2009) found that high conscientiousness in particular was associated with motivation, suggesting that these students are more motivated to engage in academically advantageous behaviors. These students can set their own deadlines and develop their own internal standards for achievement, making it less necessary for faculty and staff to be deeply involved in areas other than general instruction for these students.

However, the role that peers play may still be critical for these highly conscientiousness and agreeable students in order to be successful; peers are the primary providers of emotional support; they likely have no other agenda than simply being supportive. Wilcox et al. (2005) noted the unique role of peer support in their research, indicating that compatible friends “provide direct emotional support, equivalent to family relationships” (p. 707). For example, a friend who is told by the student that a professor is unfair more likely sympathizes instead of pointing out how the professor could more accurately be described as simply having high standards. Conversely, a faculty member who provides support to a student has a primary motivation—to help ensure that the student is successful and to encourage his/her intellectual growth. To go back to the example provided above, the professor, in this case, does not lower course standards in an
effort to support the student who believes he/she is unfair. This example illustrates a primary difference between the support provided by a friend versus that provided by a faculty member; friends are likely biased and provide unconditional support, whereas a professor’s support is likely tempered by the goal of producing a successful and thoughtful student. This may be why peer support is so crucial, not only for students high in conscientiousness and agreeableness, but for all students; it provides the unconditional emotional support that is necessary for students to face academic challenges.

Pondering the alternative to this finding is also of interest, specifically that lower levels of conscientiousness and agreeableness were associated with higher levels of engagement with faculty and the campus environment and lower levels of peer engagement. In this case, students who have lower levels of conscientiousness and agreeableness may need greater support from faculty and the campus in order to be academically successful. For exactly the same reasons that students high in these characteristics do not need as much faculty and campus support, students low in conscientiousness and agreeableness may need greater faculty and campus support; they offer students an external structure for attaining academic goals. The careless, indecisive student may need the intercession of campus staff to assist with goal setting and ensuring that all necessary steps are taken in order to graduate, as these students may lack the skills to complete these tasks alone. Faculty may need to work with the hostile and disorganized student to guide him/her towards a more effective way of approaching assignments and effectively collaborating with peers in order to be successful academically. Komarraju et al. (2009), for example, suggest that students who were low in agreeableness may be more likely to behave in an antisocial manner in the classroom.
This example may be exactly why students low in conscientiousness and agreeableness also reported lower peer engagement within our research. Characteristics associated with low conscientiousness and agreeableness, such as hostility, disorganization, distrust, carelessness, and selfishness are traits that would likely be off-putting to other students. These individuals may have very little to contribute to group work, study groups, or any other interactions with other students. With fewer peers to connect with, these students would likely need the guidance of faculty and staff in learning how to appropriately interact with other students.

Ultimately, findings from this research for the relationship of engagement with faculty and the campus with academic success were contrary to previous research results that have found a positive correlation between academic success and engagement with faculty and the campus environment (Astin, 1993a, 1993b; Carini et al., 2006; Skahill, 2003; Wang, 2009). Whereas prior research has indicated that faculty and campus connections are typically important in academic success for students, our model indicates that only certain types of students may truly need to be engaged with the faculty and campus life in order to be successful. This difference may be due to the unique model proposed; where other research has focused on the role of engagement or personality in predicting success, this research was novel in assessing the interaction of engagement and personality in predicting success.

It is important to note that nearly 85% of survey respondents were from the community college system; given that the sample was comprised primarily of community college students, it may be that peer support is more critical for the academic success of community college students than for university students. Had a larger sample of
university students been included in the study, differences in GPA, degree of peer engagement, and institution type could have been explored.

**Hypotheses 2 and 3**

As expected given the hypotheses, no difference in academic success for students high in openness and extroversion versus those students low in openness and extroversion were found, regardless of levels of engagement with academics, peers, faculty, and the campus. Prior findings have noted that openness and extroversion have failed to predict academic success. For example, Noftle and Robins (2007) provided a review within their research of a sample of 20 current studies that assessed the relationship between course grade or GPA and the big-five personality characteristics. No significant relationship between course grade or GPA and openness was found for 15 of the 20 studies reviewed, and no significant relationship between course grade or GPA and extroversion was found for 16 of the 20 studies (Noftle & Robins, 2007). Similarly, a recent meta-analysis of 58 studies on college academic success and the big-five personality characteristics found that the openness and extroversion factors have consistently failed across studies to be associated with academic success (Trapmann, Hell, Hirn, & Schuler, 2007). As predicted, based on the lack of support cited in the literature for the connection between academic success and openness and extroversion, these two factors did not interact with the engagement variables to predict GPA within our research.

Also surprising was that no differences found in GPA were associated with ethnicity or first generation status. Typically, it is the first-generation student of color at the community college who needs support from faculty, staff, and a warm campus climate to be academically successful (Astin, 1993b; Bordes & Arredondo, 2005; Gloria & Ho,
For example, Bailey, Calcagno, Jenkins, Kienzl, and Leinbach (2005) found that community college students were more academically successful in smaller institutions than in larger institutions, as large institutions may struggle more with creating a warm campus environment due to their size. Likewise, participation in TRIO programs (which required regularly scheduled visits with advisors) by community college students was shown to impact academic success (Fike & Fike, 2008). Overall, faculty and institutional support were found to be vital to the academic success of community college students (Scott, 2008). Further, regardless of ethnicity or first generation status, high conscientiousness and agreeableness in combination with high engagement with peers was associated with higher GPA. These findings are contrary to research that has indicated, for example, that students of color typically need greater levels of engagement with faculty to be successful (Fischer, 2007; Hertel, 2002; M. E. Schneider & Ward, 2003). Again, perhaps it was the unique model employed within this research that allowed a clearer picture of specific engagement needs to come to light. In this case, students of color or first generation students who are high in conscientiousness and agreeableness and who have adequate peer support may need less faculty support and connection with the campus environment than previously thought.

In answering the research question, how do the big-five personality characteristics interact with engagement to predict academic success (i.e., GPA), it can be said that for the sample of students who intended to persist in college, those who were higher in conscientiousness and agreeableness who had high levels of peer engagement and low levels of faculty and campus engagement were more likely to have higher GPAs. In
addition, neither high nor low levels of agreeableness, extroversion, or openness appeared to interact with engagement variables to predict GPA.

**Implications of the Limitations on Present and Future Research**

Several limitations within the research warrant discussion, particularly limitations noted within the design of the survey instrument, as well as limitations with the application of the person-environment fit construct to the educational environment.

**Survey Limitations**

The primary limitation was the failure to collect any data regarding student persistence, which was the initial intention of the research. Within the survey, students were only asked to report whether they intended to re-enroll in the upcoming semester. Students may have responded that their intention was to re-enroll, as they did not want to consider dropping out or acknowledge such a drastic step. By revising the survey such that persistence is assessed via Likert scale (e.g., “rate your likelihood to re-enroll in the upcoming semester”), students may be apt to provide a more accurate assessment of their actual intention to re-enroll.

Another limitation was associated with the assessment of engagement within the survey. Given that the definition of engagement used for this research focused on both the opportunities provided by an institution to connect with the college environment, as well as student directed efforts to connect with the college environment, creating an instrument which tapped into both of the internal and external efforts to engage was key. While the survey included questions that tapped into student directed efforts to engage and campus directed efforts to provide engagement opportunities, student and campus engagement effort questions were not distributed evenly between each of the four
engagement subscales. For example, the engagement with academics subscale only included questions that pertained to student directed efforts to engage with the college environment. It may have been valuable to include questions that probed into the institutions’ efforts to provide students with opportunities to engage with academics, such as “teachers at my institution make an effort to make course content interesting and understandable.”

In addition, further refinements to the campus engagement section of the survey should be made. For example, as the majority or respondents were from the community college system, it is unclear whether these students completed the survey with a single campus or multiple campuses in mind. As attending multiple community colleges has become a common practice for students (Bontrager, Clemetsen, & Watts, 2005), it is possible that the sample of students included within this research may have responded to questions about campus connections while thinking of multiple campuses. Had these dual enrollees felt a lack of connection to one campus, for example, and a moderate connection to another campus, they may have reported an overall lower impression of campus connection when mentally “averaging” all of the colleges they attended. Revising the survey to clarify that students should respond to questions based on experiences at the institution where they spend most of their time may provide a more accurate picture of students’ connections with the campus environment.

As attempts to begin to paint a picture of student success using the person-environment fit theory were simply a rough sketch, future iterations of data collection using this model of person-environment fit could refine the questions used in an effort to gain a deeper understanding of engagement with the college environment.
**Construct Limitations**

The premise that the outcome of good fit between person and environment results in persistence in college and higher cumulative GPA did not take into account factors that may impact fit beyond engagement and personality; one such example are students who may be obligated by family to attend and complete college within an institution in which they do not “fit.” When assessing fit, it may be more than just a combination of engagement and personality that predicts goodness of fit. Assuming that fit can simply be defined by outcome measures (e.g., cumulative GPA and persistence) may constitute an erroneous leap. As much of the person-environment fit literature operationalizes the concept of fit as degree of congruency with the environment, failure to assess this congruency via questions targeted at environment choice and satisfaction with that choice may be omitting a critical piece of the puzzle. Choice and satisfaction may be more accurate measures of fit, which in turn predict cumulative GPA and persistence.

Unfortunately, while it was the initial intention to assess congruency/satisfaction with college choice, due to an error these questions were omitted from the online survey for the second wave of data collection. However, this failure to include choice and satisfaction questions within the San Diego sample may not have impacted the study results as greatly given that the primary group of responders were from the community college system. Students often go to community colleges not because it is a first choice, but because it is the only option that is affordable, the only institution that offers classes at a time conducive to a full-time work schedule, or due to proximity to an area from which an individual is unable to move (Cohen & Brawer, 2008). It is exactly these types of students who need to be assisted—students who do not have a choice but must find a
way to be successful regardless. Whether it is the community college student who attends an institution because it is affordable and close to home, the first generation college student who attends college out of a family obligation, or the university student who enrolls in a college with the expectation that he/she made the right choice only to discover that he/she does not fit with the institution, exploring these “forced fit” situations may be a key factor in understanding pathways to successful adjustment to college and academic success for these students.

The degree to which a student feels he or she fits or belongs with the overall college/university has been shown to be a primary factor in academic performance, social adjustment and psychological well being; alternatively, students who do not fit or who may be in a “forced fit” situation may be more prone to difficulties with academic, social, and psychological adjustment. For example, a study of university students revealed that students who had a higher sense of belonging with the institution had better psychological adjustment than students who had lower senses of belonging (Pittman & Richmond, 2008); and lower socioeconomic background was associated with lower senses of belonging, which predicted lower levels of social and academic adjustment (Ostrove, 2007). However, despite these poor prospects for students with a lower sense of belonging, an intervention designed to specifically address issues of belonging on campus resulted in higher GPAs and improved health and feelings of well being for minority students (Walton & Cohen, 2011). This finding points to a viable solution for students in forced fit situations; interventions aimed at increasing sense of belonging can be used to successfully promote positive social and academic outcomes.
Within future research, a measure of satisfaction with choice should certainly be included to assess the impact of a “forced fit” situation. This is especially important if the intention is to obtain results that are generalizable to a population of students who typically have less choice in the selection of their college environment. In addition, understanding the implications and effects of enduring lack of fit in college may aid institutions in gaining a broader perspective on the resiliency and strategies used to successfully adjust to the college environment.

Recommendations

Recommendations for education research, the practical application of results of this research, and directions for future research are provided below.

Education Research

One of the primary recommendations stems from the failure during the first wave of data collection to obtain a sufficient number of student participants. If there is any hope to improve the state of higher education today, there must be a greater emphasis placed on working collaboratively across institutions to gather and share information. As it currently exists, there are many barriers to data collection; mechanisms do not exist which allow for data gathering/sharing across institutions. For example, institutional points of contact who are key in data collection efforts are often not clear to the outside researcher. Establishing a line of communication with the correct individuals can be difficult. In addition, each institution has unique and often vastly different manners by which an outside investigator can receive access to student participants. Navigating this process can be especially difficult if locating the correct point of contact is burdensome.
A partial explanation for these varied hoops may be the manner in which IRB regulations are interpreted by each institution. In efforts to do their due diligence in protecting research subjects, institutions may inadvertently create barriers that effectively shut down research initiatives by other institutions. Administrators may be overly cautious in assisting with research studies, as they do not have a complete understanding of IRB regulations and do not want to make decisions that may go against regulations. Out of apprehension, administrators may simply opt out of assisting with research studies to avoid the potential for censure by their IRB. Furthermore, many IRBs have not developed a streamlined process for handling outside research and as such may not have procedures in place to assist researchers from other institutions in obtaining approval to collect data. In some cases, IRBs are overburdened with the review of research conducted by their own students, faculty, and staff, and they simply do not have time to review and approve outside research. It is barriers such as these that must be eliminated before true data collection and sharing can occur across institutions.

Another recommendation is that institutions must do a better job with educating students about the importance of participating in research studies, especially those studies aimed at improving programs of which students are a part. Students often only participate in research studies if there is some type of incentive. Educating students regarding the value of participating in research may help alleviate the need to offer incentives to boost participation rates. Along these same lines, researchers must do a better job of outlining within recruitment scripts and consent forms how participation in research can directly benefit students by seeking to improve the programs and services offered to them.
Students are also often inundated with surveys and other research projects for which they are recruited. Oversampling is a term heard time and time again in regard to student populations. Students are often not the most appropriate population from which to gather data; research studies conducted by faculty may seek to answer questions that could best be answered by a population other than students. Unfortunately, students are a most convenient group from which to gather data, hence the oversampling. It is often an institutionally accepted practice to use students to answer all manner of research questions, despite the fact that they may not truly represent the population under study. Rectifying the problem of oversampling could begin with a reduction in the amount of research projects that recruit students that are not primarily focused on student populations. Once this oversampling is corrected, research studies that focus on improving services for students can be given the place of primacy they must have if the dire state of higher education is to be reversed.

**Practical Application of Results**

This research put forth a viable model of student success such that personality characteristics and engagement levels can be used to predict academic success. This is the ultimate strength of the study: the development of a useable survey to pinpoint students who are more likely to be successful academically (and may need less guidance and supervision) versus those students who are more likely to struggle. For example, special programs can be developed that connect students low in conscientiousness and agreeableness with faculty mentors in order to promote academic success. Or students who are high in conscientiousness and agreeableness may need assistance in connecting with peers who are vital to their academic success. Given the tremendous lack of
resources institutions of higher education are currently facing, it is crucial to have a guide to help divert resources to those who may need them most. Institutions or individual departments can use the survey during a students’ first year of college to help direct focus to those in greatest need of assistance. Annual use of the survey for students at all levels could also be of value by allowing for a comparison of students’ needs by level or even through the comparison of individual students over time. Evaluating the changing needs of students across time may be particularly useful in ensuring that their needs are met throughout the duration of their academic careers.

Further, survey results can be used to indicate where on campus opportunities for engagement are lacking. For example, are the majority of students reporting that the campus is not providing what they need to be academically successful? Or are students struggling to connect with other campus life? Institutions can use the model of person-environment fit proposed within this research to gain a broader understanding of how academic success is impacted by the unique personality characteristics of the student body and how these interact with the unique college environment. In doing so, it is hoped that institutions will be better able to revise institutional practices to provide more adequate academic support for students, to assist students in developing meaningful connections with other individuals on campus in order to be academically successful, or devise any number of strategies to assist students in attaining academic goals based on the strategic assessment of personality and environment interactions.

While this study is only an initial step into understanding determinants of academic success, application of this model of person-environment fit by institutions may expose different pathways to success than found within this research. Results from this
study speak primarily to the pattern of success for a sample of Southern California, “persisting,” community college students; institutions are encouraged to use our person-environment fit model to uncover potentially different patterns of success that may be influenced by institution type, size, or location. Gaining a greater understanding of factors that impact academic success for the population of college students is of critical importance, but this body of knowledge can only be expanded if individual institutions examine their own populations to discover pathways to success. This research will hopefully provide a new direction that other institutions can take when striving to understand student success.

**Future Research**

Given the restricted sample of students included within this research, future research should certainly include a national sample of students with greater equity in the number of university and community college students included. In addition, ensuring that students with a broader range of GPAs, as well as intentions to persist, is key. Again, a limitation of this research was the failure to collect data from a large enough group of students who were “nonpersisters.” Students who are on the brink of dropping out are the most important individuals to understand in order to proactively assist students in attaining educational goals. It is unfortunate that this group of students could not be located and included in the research. Future studies should seek out methods to locate potential “nonpersisters” in order to develop methods of intervention before they abandon their education.

Most importantly, future research could focus on developing a survey that more accurately assesses engagement with the college environment; such a survey should take
into account the quality and success of both student directed and institution directed efforts to create engagement opportunities with the college environment. Improvements to the survey should include deeper assessments of satisfaction with college choice as well. Finally, it is recommended that a qualitative approach be taken in unraveling the complex relationship found between conscientiousness, agreeableness, and engagement with peers, faculty, and the campus. While we can only demonstrate that a link exists between high conscientiousness, agreeableness, and peer engagement, and low faculty and campus engagement in predicting GPA, we cannot say with a surety that these highly conscientious and agreeable students need more peer support and less faculty and campus support than other types of students. These successful students who reported fewer connections with faculty and campus life may have needed that faculty and campus support just as much as the next student, but perhaps adapted to this lack of support by developing other pathways to success. These students may have relied more heavily on family support in order to be academically successful, for example, a factor that was not evaluated within this research. A series of interviews with students with various personality profiles may help to clarify which types of engagement are needed and used by students in order to be successful.
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Torres, V., & Hernandez, E. (2009). Influence of an identified advisor/mentor on urban
Latino students’ college experience. *Journal of College Student Retention, 11*(1), 141-160.


student involvement with learning and relationships with faculty and peers.
*College Student Journal, 41*(4), 1192-1202.


APPENDIX A

First Wave Data Collection Survey

Section I: Descriptions of You

Use the scale below to describe yourself as you generally are now, not as you wish to be in the future, describe yourself as you honestly see yourself; in relation to other people you know who are of the same sex as you and roughly your same age.

Indicate for each statement whether it is:

Very Inaccurate as a description of you.

Moderately Inaccurate as a description of you.

Neither Accurate Nor Inaccurate as a description of you.

Moderately Accurate as a description of you.

Very Accurate as a description of you.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Very Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Neither Accurate Nor Inaccurate</th>
<th>Moderately Accurate</th>
<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am the life of the party</td>
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<td>2. I feel little concern for others</td>
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<td>3. I am always prepared</td>
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<td>4. I get stressed out easily</td>
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<td>5. I have a rich vocabulary</td>
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<td>6. I don’t talk a lot</td>
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<td>7. I am interested in people</td>
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<td>8. I leave my belongings laying around</td>
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<tr>
<td>9. I am relaxed most of the time</td>
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<tr>
<td></td>
<td>Very Inaccurate</td>
<td>Moderately Inaccurate</td>
<td>Neither Accurate Nor Inaccurate</td>
<td>Moderately Accurate</td>
<td>Very Accurate</td>
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<tr>
<td>10.</td>
<td>I have difficulty understanding abstract ideas</td>
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<td>11.</td>
<td>I feel comfortable around people</td>
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<td>12.</td>
<td>I insult people</td>
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<tr>
<td>13.</td>
<td>I pay attention to details</td>
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<td>14.</td>
<td>I worry about things</td>
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<tr>
<td>15.</td>
<td>I have a vivid imagination</td>
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<tr>
<td>16.</td>
<td>I keep in the background</td>
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<td>17.</td>
<td>I sympathize with others’ feelings</td>
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<tr>
<td>18.</td>
<td>I make a mess of things</td>
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<td>19.</td>
<td>I seldom feel blue</td>
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<td>20.</td>
<td>I am not interested in abstract ideas</td>
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<tr>
<td>21.</td>
<td>I start conversations</td>
<td></td>
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<tr>
<td>22.</td>
<td>I am not interested in other people’s problems</td>
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<tr>
<td>23.</td>
<td>I get chores done right away</td>
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<tr>
<td>24.</td>
<td>I am easily disturbed</td>
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<tr>
<td>25.</td>
<td>I have excellent ideas</td>
<td></td>
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<tr>
<td>26.</td>
<td>I have little to say</td>
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<tr>
<td>27.</td>
<td>I have a soft heart</td>
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<tr>
<td></td>
<td>Very Inaccurate</td>
<td>Moderately Inaccurate</td>
<td>Neither Accurate Nor Inaccurate</td>
<td>Moderately Accurate</td>
<td>Very Accurate</td>
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<td>28.</td>
<td>I often forget to put things back in their place</td>
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<tr>
<td>29.</td>
<td>I get upset easily</td>
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<tr>
<td>30.</td>
<td>I do not have a good imagination</td>
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<tr>
<td>31.</td>
<td>I talk to a lot of different people at parties</td>
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<tr>
<td>32.</td>
<td>I am not really interested in others</td>
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<tr>
<td>33.</td>
<td>I like order</td>
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<td>34.</td>
<td>I change my mood a lot</td>
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<td>35.</td>
<td>I am quick to understand things</td>
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<td>36.</td>
<td>I don’t like to draw attention to myself</td>
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<td>37.</td>
<td>I take time out for others</td>
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<td>38.</td>
<td>I shirk my duties</td>
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<tr>
<td>39.</td>
<td>I have frequent mood swings</td>
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<td>40.</td>
<td>I use difficult words</td>
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<td>41.</td>
<td>I don’t mind being the center of attention</td>
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<td>42.</td>
<td>I feel others’ emotions</td>
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<td>43.</td>
<td>I follow a schedule</td>
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<td>44.</td>
<td>I get irritated easily</td>
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<td>45.</td>
<td>I spend time reflecting on things</td>
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<td></td>
<td>Very Inaccurate</td>
<td>Moderately Inaccurate</td>
<td>Neither Accurate Nor Inaccurate</td>
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<td>Very Accurate</td>
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<tr>
<td>46.</td>
<td>I am quiet around strangers</td>
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<tr>
<td>47.</td>
<td>I make people feel at ease</td>
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<tr>
<td>48.</td>
<td>I am exacting in my work</td>
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</tr>
<tr>
<td>49.</td>
<td>I often feel blue</td>
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<td></td>
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</tr>
<tr>
<td>50.</td>
<td>I am full of ideas</td>
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</table>

**Section II: Engagement With Your School**

*For all questions below, please think about your experience at your institution during the past academic school year (e.g., your first full year of school).*

**Interactions With Faculty**

1. Indicate the number of teachers you have had last year: ______

2. Of the number of teachers indicated above, how many teachers would you feel comfortable speaking with about personal issues: ______

3. Indicate the number of your teachers whom you felt were concerned about your academic growth: ______

4. Indicate the number of your teachers whom you felt were concerned about your personal growth: ______

Indicate for each statement about how often you have done each of the following:

<table>
<thead>
<tr>
<th></th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
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</thead>
<tbody>
<tr>
<td>5. Worked with faculty members on coursework outside of class</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. Worked with a faculty member on activities other than coursework (committees, orientation, students’ life activities, etc.)</td>
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</tbody>
</table>
7. Circle the number that best represents the overall quality of your relationships with faculty members at your institution during your last school year:

Unavailable, Unhelpful, Unsympathetic
Available, Helpful, Sympathetic

1 2 3 4 5 6 7

Relationships With Other Students

1. Indicate the number of friends you had at your school last year: ______

2. Of the number of friends listed in question #1 above, how many of these friends did you meet at your current school: ______

3. Of the number of friends listed in question #1 above, how many of these friends did you know before college that are now at the same campus as you: ______

4. How many of your friends at your school would you consider to be close friends (for example, someone you could rely on if you were in some kind of trouble): ______

Think of your closest friend at school. For each statement below, indicate about how often you have done each of the following with your closest friend at school last year at school:

<table>
<thead>
<tr>
<th></th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Studied/worked on assignments together</td>
<td></td>
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<td></td>
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<tr>
<td>6. Went to campus activities together (attended a campus sporting event together, etc.)</td>
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<tr>
<td>7. Went to off campus activities together (went to the movies together, etc.)</td>
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</table>

8. Circle the number that best represents the quality of your overall relationships with other students at your institution during the last school year:
Unfriendly,  
Unsupportive,  
Sense of  
Alienation  

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

Campus Environment/Support

1. Indicate the number of campus staff (for example: counselors, librarians, coaches, enrollment services staff, etc.) you interacted with during the last school year: ______

2. Indicate the number of staff who you interacted with whom you felt treated you with respect: _____

3. Indicate the number of staff who you interacted with whom you felt were concerned about your academic success: _____

During the last school year, to what extent do you feel that your campus:

<table>
<thead>
<tr>
<th>4. Provided activities that fostered the development of connections between students</th>
<th>Very Much</th>
<th>Quite a Bit</th>
<th>Some</th>
<th>Very Little</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>5. Had designated programs that helped students feel connected to the campus</th>
<th>Very Much</th>
<th>Quite a Bit</th>
<th>Some</th>
<th>Very Little</th>
</tr>
</thead>
</table>

To what extent did your institutional leadership do each of the following during the last school year:

<table>
<thead>
<tr>
<th>4. Provided the support you needed to succeed academically</th>
<th>Very Much</th>
<th>Quite a Bit</th>
<th>Some</th>
<th>Very Little</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>5. Helped you cope with your responsibilities outside of class (work, family, etc.)</th>
<th>Very Much</th>
<th>Quite a Bit</th>
<th>Some</th>
<th>Very Little</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>6. Provided the support you needed to thrive socially</th>
<th>Very Much</th>
<th>Quite a Bit</th>
<th>Some</th>
<th>Very Little</th>
</tr>
</thead>
</table>
9. Circle the number that best represents the quality of your relationships with staff people at your institution during the last school year:

Unhelpful, Inconsiderate, Rigid
Helpful, Considerate, Flexible

1 2 3 4 5 6 7

Preparing for Class

1. Indicate the average number of hours per week you spend studying/doing homework during the last school year: ______

2. Of the number of hours listed above in question #1, how many of those hours per week were spent on reading assignments for class: ______

3. Of the number of hours listed above in question #1, how many of those hours per week were spent on writing assignments for class: ______

4. How many of those hours per week are spent working with other people outside of class on assignments: ______

5. Did you participate in a study group with other students during the last school year?
   Yes___ No___
   If yes, about how many hours did you spend per week working with your study group: _____

How often did you:

<table>
<thead>
<tr>
<th></th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Turn class assignments in early</td>
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<tr>
<td>7. Turn class assignments in on time</td>
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<tr>
<td>8. Turn class assignments in late/after the due date</td>
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</tbody>
</table>
Indicate for each statement how often you did the following during the last school year:

<table>
<thead>
<tr>
<th>9. Prepared several drafts of an assignment before turning it in</th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Worked harder than you thought you could to meet an instructor’s standards</td>
<td></td>
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</tr>
</tbody>
</table>

Section III: Demographic and Education Questions

1) Age ________

2) Sex ________

3) Race/ethnicity (Circle one or more):
   (1) Hispanic/Latino/Chicano
   (2) Black/African American
   (3) American Indian/Alaskan Native
   (4) Native Hawaiian or other Pacific Islander
   (5) Asian/Southeast Asian
   (6) White/Caucasian/European
   (7) Other

4) Which of the following best describes the highest degree your father/stepfather/male guardian earned? (If you have a father and a stepfather, or another father figure, please note education for whoever had the most substantial role in raising you.)
   _____ Less than high school
   _____ High school diploma or equivalency (GED)
   _____ Associate degree (1-2 year college degree)
   _____ Bachelor’s degree (4 year college degree)
   _____ Master’s degree
   _____ Doctorate (Ph.D., Ed.D., etc.)
   _____ Professional (MD, JD, DDS, etc.)
   _____ Other (specify)
   _____ Not Sure (Don’t know/didn’t grow up with a father/father figure)
5) Which of the following best describes the highest degree your mother/stepmother/ female guardian earned? (If you have a mother and a stepmother, or another mother figure, please note education for whoever had the most substantial role in raising you.)

- Less than high school
- High school diploma or equivalency (GED)
- Associate degree (1-2 year college degree)
- Bachelor’s degree (4 year college degree)
- Master’s degree
- Doctorate (Ph.D., Ed.D., etc.)
- Professional (MD, JD, DDS, etc.)
- Other (specify)
- Not Sure (Don’t know/didn’t grow up with a mother/mother figure)

6) Name of the college/university you are currently attending: ____________

<table>
<thead>
<tr>
<th></th>
<th>Very Satisfied</th>
<th>Satisfied</th>
<th>Neither Satisfied nor Dissatisfied</th>
<th>Dissatisfied</th>
<th>Very Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. How satisfied are you with your choice to attend your current school?</td>
<td></td>
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<tr>
<td>8. How satisfied are you with your overall social experience at your school?</td>
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<tr>
<td>9. How satisfied are you with your overall academic experience at your current school</td>
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</tr>
</tbody>
</table>

7) Are you a full-time student? _____ Yes   _____ No

8) Year in School (Mark one):

- Freshman
- Sophomore
- Junior
- Senior
9) Semesters completed at your current institution ______ Or if you are on the quarter system, quarters completed at your current institution ______

10) Have you attended any other colleges/universities before coming to this institution? _____ Yes _____ No

(1) If yes, how many semesters did you complete at your previous college/university? ______ Or if you are on the quarter system, how many quarters did you complete at your previous college/university?

11) Number of units enrolled in this semester or quarter______

12) Number of units enrolled in last semester or quarter______

13) Do you plan to attend this institution next semester or quarter? ____Yes ____ No

(1) If no, do you plan to attend another college/university next semester/quarter? _____ Yes _____ No

14) What are your educational goals? (Mark one or more):

_____ Obtain a vocational/technical certificate
_____ Obtain an associate's degree
_____ Obtain a bachelor’s degree
_____ Obtain a master’s degree
_____ Obtain a doctoral degree
_____ Other (please specify): _________________________

15) Major _________________

16) Overall GPA ________

17) Do you live on campus? ______ Yes ______ No

18) If no, Do you live near campus? ______ Yes ______

19) Do you commute to campus? _____ Yes _____ No

20) Are you participating in any extracurricular activities this semester? _____ Yes _____ No If yes, which ones? (Mark one or more):

_____ Campus athletic team
_____ Fraternity/Sorority
_____ Student government
_____ Academic club/organization
_____ Social club/organization
_____ Campus performing arts organization
_____ Other (please specify): _________________________
APPENDIX B

Second Wave Data Collection Survey

Section I: Descriptions of You

Use the scale below to describe yourself as you generally are now, not as you wish to be in the future, describe yourself as you honestly see yourself; in relation to other people you know who are of the same sex as you and roughly your same age.

Indicate for each statement whether it is:

Very Inaccurate as a description of you.

Moderately Inaccurate as a description of you.

Neither Accurate Nor Inaccurate as a description of you.

Moderately Accurate as a description of you.

Very Accurate as a description of you.

<table>
<thead>
<tr>
<th></th>
<th>Very Inaccurate</th>
<th>Moderately Inaccurate</th>
<th>Neither Accurate Nor Inaccurate</th>
<th>Moderately Accurate</th>
<th>Very Accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am the life of the party</td>
<td></td>
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<tr>
<td>2. I feel little concern for others</td>
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<td>3. I am always prepared</td>
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<td>4. I get stressed out easily</td>
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<td>5. I have a rich vocabulary</td>
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<tr>
<td>6. I don’t talk a lot</td>
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<tr>
<td>7. I am interested in people</td>
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<tr>
<td>8. I leave my belongings laying around</td>
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<tr>
<td>9. I am relaxed most of the time</td>
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<tr>
<td></td>
<td>Very Inaccurate</td>
<td>Moderately Inaccurate</td>
<td>Neither Accurate Nor Inaccurate</td>
<td>Moderately Accurate</td>
<td>Very Accurate</td>
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<tr>
<td>10. I have difficulty understanding abstract ideas</td>
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<td>11. I feel comfortable around people</td>
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<td>12. I insult people</td>
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<td>13. I pay attention to details</td>
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<td>14. I worry about things</td>
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<td>15. I have a vivid imagination</td>
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<td>16. I stay in the background</td>
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<td>17. I sympathize with others’ feelings</td>
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<td>18. I make a mess of things</td>
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<td>19. I seldom feel blue</td>
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<td>20. I am not interested in abstract ideas</td>
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<tr>
<td>21. I start conversations</td>
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<td>22. I am not interested in other people’s problems</td>
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<td>23. I get chores done right away</td>
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<td>24. I am easily disturbed</td>
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<td>25. I have excellent ideas</td>
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<td>26. I have little to say</td>
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<td>27. I have a soft heart</td>
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<tr>
<td></td>
<td>Very Inaccurate</td>
<td>Moderately Inaccurate</td>
<td>Neither Accurate Nor Inaccurate</td>
<td>Moderately Accurate</td>
<td>Very Accurate</td>
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<tr>
<td>28.</td>
<td>I often forget to put things back in their place</td>
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<td>29.</td>
<td>I get upset easily</td>
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<td>30.</td>
<td>I do not have a good imagination</td>
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<tr>
<td>31.</td>
<td>I talk to a lot of different people at parties</td>
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<tr>
<td>32.</td>
<td>I am not really interested in others</td>
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<tr>
<td>33.</td>
<td>I like order</td>
<td></td>
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<td>34.</td>
<td>I change my mood a lot</td>
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<td>35.</td>
<td>I am quick to understand things</td>
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<tr>
<td>36.</td>
<td>I don’t like to draw attention to myself</td>
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<td>37.</td>
<td>I take time out for others</td>
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<td>38.</td>
<td>I neglect my duties</td>
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<td>39.</td>
<td>I have frequent mood swings</td>
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<td>40.</td>
<td>I use difficult words</td>
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<td>41.</td>
<td>I don’t mind being the center of attention</td>
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<tr>
<td>42.</td>
<td>I feel others’ emotions</td>
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<td>43.</td>
<td>I follow a schedule</td>
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<td>44.</td>
<td>I get irritated easily</td>
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<tr>
<td>45.</td>
<td>I spend time reflecting on things</td>
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<tr>
<td></td>
<td>Very Inaccurate</td>
<td>Moderately Inaccurate</td>
<td>Neither Accurate Nor Inaccurate</td>
<td>Moderately Accurate</td>
<td>Very Accurate</td>
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<tr>
<td>46. I am quiet around strangers</td>
<td></td>
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<tr>
<td>47. I make people feel at ease</td>
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<tr>
<td>48. I am exacting in my work</td>
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<tr>
<td>49. I often feel sad</td>
<td></td>
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<tr>
<td>50. I am full of ideas</td>
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</tbody>
</table>

**Section II: Engagement With Your School**

*For all questions below, please think about your experience at your institution during the last semester.*

**Interactions With Faculty**

1. Indicate the number of teachers you had last semester: ______

2. Of the number of teachers indicated above, how many teachers would you feel comfortable speaking with about personal issues: ______

3. Indicate the number of your teachers whom you felt were concerned about your academic growth: ______

4. Indicate the number of your teachers whom you felt were concerned about your personal growth: ______

Indicate for each statement about how often you have done each of the following:

<table>
<thead>
<tr>
<th></th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Worked with a faculty member on coursework outside of class</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6. Worked with a faculty member on activities other than coursework (committees, orientation, students’ life activities, etc.)</td>
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</tbody>
</table>
7. Circle the number that best represents the overall quality of your relationships with faculty members at your institution during your last semester:

Unavailable, Available, Unhelpful, Helpful, Unsympathetic, Sympathetic

1 2 3 4 5 6 7

Relationships With Other Students

1. Indicate the number of friends you had at your school last semester: ______

2. How many of your friends at your school would you consider to be close friends (for example, someone you could rely on if you were in some kind of trouble): ______

Think of your closest friend at school. For each statement below, indicate about how often you did each of the following with your closest friend at school last semester:

<table>
<thead>
<tr>
<th></th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Studied/worked on assignments together</td>
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<td>4. Went to campus activities together (attended a campus sporting event together, etc.)</td>
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<tr>
<td>5. Went to off campus activities together (went to the movies together, etc.)</td>
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</tbody>
</table>

6. Circle the number that best represents the quality of your overall relationships with other students at your institution during the last semester:

Unfriendly, Friendly, Unsupportive, Supportive, Sense of Sense of Alienation Belonging

1 2 3 4 5 6 7
Campus Environment/Support

1. Indicate the number of campus staff (for example: counselors, librarians, coaches, enrollment services staff, etc.) you interacted with during the last semester: _____

2. Indicate the number of staff who you interacted with whom you felt treated you with respect: _____

3. Indicate the number of staff who you interacted with whom you felt were concerned about your academic success: _____

During the last semester, to what extent do you feel that your campus:

<table>
<thead>
<tr>
<th></th>
<th>Very Much</th>
<th>Quite a Bit</th>
<th>Some</th>
<th>Very Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Provided activities that fostered the development of connections between students</td>
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<tr>
<td>5. Had designated programs that helped students feel connected to the campus</td>
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</table>

To what extent did your institutional leadership do each of the following during the last semester:

<table>
<thead>
<tr>
<th></th>
<th>Very Much</th>
<th>Quite a Bit</th>
<th>Some</th>
<th>Very Little</th>
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</thead>
<tbody>
<tr>
<td>6. Provided the support you needed to succeed academically</td>
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<tr>
<td>7. Helped you cope with your responsibilities outside of class (work, family, etc.)</td>
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<tr>
<td>8. Provided the support you needed to thrive socially</td>
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</table>

9. Circle the number that best represents the quality of your relationships with staff people at your institution during the last semester:

Unhelpful, Inconsiderate, Rigid                                     Helpful, Considerate, Flexible

1 2 3 4 5 6 7
Preparing for Class

1. Indicate the average number of hours per week you spent studying/doing homework during the last semester: ______

During the last semester, how often did you:

<table>
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<tr>
<th></th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
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</thead>
<tbody>
<tr>
<td>2. Turn class assignments in early</td>
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<tr>
<td>3. Turn class assignments in on time</td>
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<tr>
<td>4. Turn class assignments in late/after the due date</td>
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</tbody>
</table>

Indicate for each statement how often you did the following during the last semester:

<table>
<thead>
<tr>
<th></th>
<th>Very Often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Prepared several drafts of an assignment before turning it in</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6. Worked harder than you thought you could to meet an instructor’s standards</td>
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</tr>
</tbody>
</table>

Section III: Demographic and Education Questions

1) Age ________

2) Sex ________

3) Race/ethnicity (Circle one or more):

   (1) Hispanic/Latino/Chicano
   (2) Black/African American
   (3) American Indian/Alaskan Native
   (4) Native Hawaiian or other Pacific Islander
   (5) Asian/Southeast Asian
   (6) White/Caucasian/European
   (7) Other
4) Which of the following best describes the highest degree your father/stepfather/male
guardian earned? (If you have a father and a stepfather, or another father figure,
please note education for whoever had the most substantial role in raising you.)

_____ Less than high school
_____ High school diploma or equivalency (GED)
_____ Associate degree (1-2 year college degree)
_____ Bachelor’s degree (4 year college degree)
_____ Master’s degree
_____ Doctorate (Ph.D., Ed.D., etc.)
_____ Professional (MD, JD, DDS, etc.)
_____ Other (specify)
_____ Not Sure (Don’t know/didn’t grow up with a father/father figure)

5) Which of the following best describes the highest degree your mother/stepmother/
female guardian earned? (If you have a mother and a stepmother, or another mother
figure, please note education for whoever had the most substantial role in raising
you.)

_____ Less than high school
_____ High school diploma or equivalency (GED)
_____ Associate degree (1-2 year college degree)
_____ Bachelor’s degree (4 year college degree)
_____ Master’s degree
_____ Doctorate (Ph.D., Ed.D., etc.)
_____ Professional (MD, JD, DDS, etc.)
_____ Other (specify)
_____ Not Sure (Don’t know/didn’t grow up with a mother/mother figure)

6) Name of the college/university you are currently attending:_____________

7) Are you a full-time student? _____ Yes    _____No

8) Year in School (Mark one):
   _____ Freshman
   _____ Sophomore
   _____ Junior
   _____ Senior

9) Semesters completed at your current institution ______

10) Have you attended any other colleges/universities before coming to this institution?
    _____ Yes    _____ No
(1) If yes, how many semesters did you complete at your previous college/university? ______

11) Number of units enrolled in this semester ______

12) Number of units enrolled in last semester ______

13) Do you plan to attend this institution next semester? _____Yes _____ No

(1) If no, do you plan to attend another college/university next semester?
   _____ Yes _____ No

14) Major __________________

15) Overall GPA ________
Dear Colleague,

I am writing to you on behalf of my doctoral student, Wendy Bracken, who is conducting research regarding student success. We are seeking your assistance with this research project.

This study is designed to identify factors that may impact college students’ GPA and ability to complete college. If you decide to participate in the study, we would ask you to provide email addresses for a random sample of 100 students who are entering their second year of college who have completed at least one course per semester/quarter during their first year of college. Students would be asked to complete a brief survey hosted on the Student Voice website. Approximately 45 colleges and universities across the nation will be invited to participate in this research.

The survey includes questions that ask students to describe their personality characteristics, study habits, their relationships with faculty and friends at college and to provide their opinions about the college environment in general. They will also be asked to provide their GPA and demographic information. It should take approximately 35 minutes to complete the survey. All survey responses will be anonymous.

Aggregate data from student participants, as well as study results, will be provided to you. It is hoped that data gathered from this research will assist institutions with making strategic enhancements to programs and policies to promote student success.

I’ve attached additional information regarding this research project.
If you have any additional questions or would like to participate in the study, please feel free to contact Wendy Bracken at wsbracken@cox.net.

Thank you for your time.

My best,

Marilee Bresciani

Additional Information for Student Voice School Point of Contact

Academic success and persistence in college is a topic of continued interest; of specific interest is unraveling the reasons why students aren’t succeeding in college at a higher rate. Overall, there is a 69% degree completion rate for all undergraduates within the United States (U.S. Department of Education, 2003). For example, within California Community Colleges, there is a retention/completion rate of only 64% (Cohen & Brawer, 2008). Within the California State University system, which serves the greatest number of students after the community college system, retention rates for first year students range from 61% to 90%; however, of the students who persist past the first year, only 28.2% to 66.1% graduate after 6 years (The Education Trust, 2010). Whether within the community college or university system, a tremendous number of students are failing to complete their education. Understanding why so many students fail is key in making student-centered institutional changes to promote academic success.

This study aims to address this question by examining the interaction between student engagement and personality characteristics (defined within this research by the Big-five personality traits) on academic success of first year college students. This research will expand upon the Person-environment fit theory, which states that personality characteristics influence how an individual interacts with the environment.
and, in turn, how that environment will impact the individual (Martin & Swartz-Kulstad, 2000; Tinsley, 2000; Walsh et al., 2000). Even though much of the Person-Environment Fit research focuses on the workplace, researchers who study personality traits have become particularly interested in the Person-environment fit theory, examining the degree to which personality characteristics predict life outcomes beyond the workplace (John et al., 2008); however, the postsecondary educational setting has, as of yet, been left out of this equation.

The application of the concept of “fit” to the college environment can be described as the degree to which a student’s characteristics (e.g., thoughts, attitudes, beliefs, values, etc.) are congruent with the characteristics of a given environment; in this case the college or university the student attends. The greater the extent to which a person’s characteristics match with that of the environment, the better the fit is said to be between that person and his/her environment. Instances of good fit are more likely to result in positive outcomes. Alternatively, incongruence between person and environment will result in poor fit, and negative outcomes will likely result for individuals, or in this case, students. In applying this general theory of fit to academic success, it is postulated that fit between aspects of student’s personalities and the degree to which opportunities are provided to become connected or engaged with the college environment is the source of students’ ultimate success or failure within postsecondary education.

Issues of poor fit between students and their college environment can be dealt with in one of three ways—students can simply leave the incongruent environment by dropping out (or may more subtly “leave” the environment by neglecting to put necessary
effort into school work and subsequently fail); students can try to alter aspects of themselves such that better alignment with the school environment is attained; or the school environment can be altered to better address the needs of the students. Given the three options that address issues of poor fit, only one stands out as an appropriate action to pursue. Clearly, students dropping out of school or failing because they do not fit in a postsecondary environment is the worst possible outcome; the current lack of academic success achieved by students in higher education may very well be the result of this form of lack of fit. Further, students changing themselves to better adhere to environmental characteristics may also fail to be a viable option—as proposed within this research, personality characteristics are a potential root of academic failure; given that personality remains generally stable throughout the lifetime, altering the “self” to fit with the environment may be difficult, if not impossible in some cases. This then, leaves the final solution as the most obvious manner to address the problem of fit; institutions must be altered to better suit the needs of students they serve. Through first understanding the source of student failure, then determining what factors need to be addressed and changed within the college/university environment, and finally assessing impacts of institutional changes on academic achievement can the problem of student’s failure to succeed begin to be solved.

This research is an initial step in discovering whether lack of fit between students’ personalities and demands of academic environments is the source of student failure, and, if so, this research can form a basis for further exploration into student characteristics that must be understood and taken into account when making environmental changes within the college/university structure to promote student success. As such, this study, guided
by the theory of Person-environment fit, will address how the Big-five personality characteristics interact with engagement to predict GPA, as well as first to second semester retention.

**Student Voice—School Point of Contact Reminder**

Dear Colleague,

Several weeks ago, I contacted you about participating in a student success research study conducted by my doctoral student Wendy Bracken. This study is designed to identify factors that may impact college students’ GPA and ability to complete college. If you decide to participate in the study, we would ask you to provide email addresses for a random sample of 100 students who are in their second year of college. Students would be asked to complete a brief survey hosted on the Student Voice website. The survey includes questions that ask students to describe their personality characteristics, study habits, their relationships with faculty and friends at college and to provide their opinions about the college environment in general. All survey responses will be anonymous. Approximately 45 colleges and universities across the nation will be invited to participate in this research.

If you have any additional questions or would like to participate in the study, please feel free to contact Wendy Bracken at wsbracken@cox.net.

Thank you for your time.

My best,

Marilee Bresciani
Student Recruitment Message/Consent Form

You are invited to participate in a research study to identify factors that may impact college students’ GPA and ability to complete college.

This research is being conducted by Wendy Bracken and supervised by Dr. Marilee Bresciani from the Higher Education Department at San Diego State University. We are asking students who have completed their first year of college to complete an on-line survey. Students from colleges across the country will be included in this research. You are eligible to participate in this study if you are over the age of 18. About 4,500 students will be asked to participate in this research.

The survey includes questions that ask you to describe your personality characteristics and your study habits. You will also be asked to discuss your relationships with your friends at school, your teachers, and your opinions about your college in general. You will also be asked to provide your GPA. The survey also includes questions about your age, gender, and ethnic background. It will take about 35 minutes of your time to complete the survey. To access the survey, please click on the following link: [LINK]

Your participation in this study is voluntary. If you decide to participate, your responses will be anonymous—that is, recorded without any identifying information that is linked to you. Survey results will be published and will be reported back to your college, but only in a grouped format so no one will be able to know what your individual survey responses were.

If you have any questions regarding this survey, please contact me at wbracken@interwork.sdsu.edu. You may also contact the Institutional Review Board at
SDSU (619-594-6622, irb@mail.sdsu.edu) to report problems or concerns related to this study.
APPENDIX D

Institutional Review Board Approval Letter

August 25, 2011

Student Researcher: Wendy Bracken
Faculty Sponsor/Thesis Chair: Dr. Marilee Bresciani
Department: Administration, Rehabilitation & Post Sec Educ

IRB Number: 749080
Title: Interaction between engagement and the Big Five personality characteristics on academic success of first year college students
Risk Level: Minimal
Exemption: 45 CFR 46.101(b)(2)

Dear Ms. Bracken:

The project referenced was reviewed and verified as exempt in accordance with SDSU’s Assurance and federal requirements pertaining to human subjects protections within the Code of Federal Regulations (45 CFR 46.101). This review applies to the conditions and procedures described in your protocol.

The determination of exemption is final and requests for continuing review (Progress Reports) are not required for this study. However, if any changes to your study are planned, you must submit a modification request and receive either IRB approval (per 45 CFR 46.110 or 46.111) or IRB verification that the modification is exempt (per 45 CFR 46.101). To submit a modification request, access the protocol via the WebPortal, on the protocol Main Page, you will need to click on “Modifications” under Protocol Maintenance and enter a report. Once you have filled in your responses on the report form, click “Submit”. Additionally, notify the IRB office if your status as an SDSU-affiliate changes while conducting this research study (you are no longer an SDSU faculty member, staff member or student).

Please note the following for all exempt studies:

a) If this research involves the use of existing or secondary data sources, information obtained must be recorded so that subjects cannot be identified, either directly or through identifiers linked to the subjects.

b) If information will be obtained from individual medical records, please check with the organization authorized to provide access to these records to determine whether regulations relating to the Health Insurance Portability and Accountability Act (HIPAA) pertain to your research. Likewise, if academic records are accessed, Federal Education Rights and Privacy Act (FERPA) requirements must be respected. Notify the SDSU IRB office if protocol revisions are necessary to comply with HIPAA regulations.

c) If recruitment will take place through an outside agency or organization, confirm with that institution that you have permission to conduct the study prior to initiation of any study activities. If this research involves the use of existing or secondary data sources, confirm with
the data owner that you have permission to access the data.

d) Approval is contingent upon the completion of the SDSU human subjects tutorial (found at: http://www-sohan.sdsu.edu/~ers/login.php) by all members of the research team. This certification must be renewed every 2 years.

For questions related to this correspondence, please contact the IRB office (619) 594-6622 or e-mail irb@mail.sdsu.edu. To access IRB review application materials, SDSU’s Assurance, the 45 CFR 46, the Belmont Report, and/or any other relevant policies and guidelines related to the involvement of human subjects in research, please visit the IRB web site at http://ers.sdsu.edu/research.php

Graduate Students: This notification may be used as documentation to register in Thesis 799A. Attach a hard copy of this notice to your Appointment of Thesis/Project Committee form prior to submitting the completed form to Graduate and Research Affairs: Student Services Division.

Sincerely,

Jeanna Nichols
Chair, Institutional Review Board

Brianna Larson-Mongaon
Regulatory Compliance Analyst

Amy McDaniel
Regulatory Compliance Analyst

Choya Washington
Regulatory Compliance Analyst