

ABSTRACT

Title of dissertation: DEPRESSIVE SYMPTOMS AMONG COLLEGE
STUDENTS: AN ASSESSMENT OF THE
INFLUENCE OF ENVIRONMENTAL FACTORS
ON RETENTION OUTCOMES

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Depressive symptoms among college students have major implications for higher education institutions across the country. First-year college students are particularly susceptible to the various impacts that the college experience may produce during the transitional first year of college. The effects of depressive symptoms among college students in relation to retention have been largely unexplored in terms of traditional predictor models within higher education literature. Using a sample of 130 first-year college students who were symptomatic of depressive features, the purpose of this study was to employ Astin's I/E/O model to assess the relationship among theoretical predictor variables and retention. The study sought to answer three basic questions: Among first-year college students with depressive symptoms, how do variables reflecting academic

performance influence retention? Among first-year college students with depressive symptoms, controlling for academic performance, do variables reflecting non-academic variables influence retention? Among first-year college students with depressive symptoms, how does the interaction between academic and non-academic variables influence retention? Factor analysis did not yield reduced sets of components for Input and Environmental variables. Retention was analyzed through a series of logistic regressions to theoretical groupings of input and environmental variables. One retention model, Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment (Involvement) was significant. Students who did not express a self-concern for academic adjustment were 3.7 times more likely to be retained than students who did express a self-concern for academic adjustment in college. First semester GPA had a positive impact on student retention, illustrated by the fact that for each one-point increase in GPA, students were 3.2 times more likely to be retained in school. An inverse relationship is noted for exercise, as students who did not appear to exercise at the institution's fitness center were 1.2 more times likely to be retained than students who exercised at the on-campus fitness center. Implications for policy development and implementation should focus on the development of retention models using variables that may be associated with mental health and college persistence.

DEPRESSIVE SYMPTOMS AMONG COLLEGE STUDENTS: AN ASSESSMENT
OF THE INFLUENCE OF ENVIRONMENTAL FACTORS ON RETENTION
OUTCOMES

By

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Dedication

To my very patient and encouraging family-Tim, Timothy, and Gabrielle – I love you.

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CHAPTER 1

Introduction

Major Depression affects approximately 121 million people worldwide and is among the leading causes of disability in the United States, as measured by Years Lived with a Disability (YLD) (World Health Organization [WHO], 2012). Depression ranks fourth among the major contributors to the global burden of disease (WHO, 2012). Moreover, depression is also the second leading contributor to the global burden of disease for both males and females ages 15-44, as determined by The Disability Adjusted Life Years (DALY's), a measurement of the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability (WHO, 2012). By 2020, depression is expected to rank second among DALY's for both men and women of all ages (WHO, 2012). Consequently, as undergraduate enrollment rates are expected to approach 20 million by the year 2020 (Aud, Hussar, Kena, Bianco, Frohlich, Kemp, & Tahan, 2011), the potential challenge for higher education institutions to combat a leading mental health problem in the world will likely become a distinct reality.

According to the American Psychiatric Association (Diagnostic and Statistical Manual of Mental Disorders [DSM-IV-TR], 2000), the diagnostic criteria for a major depressive disorder include: "Five (or more) of the following symptoms having been present during the same two-week period and representing a change from previous functioning. At least one of the symptoms includes a 1) depressed mood and/or 2) loss of pleasure.

1. Depressed mood most of the day, nearly every day (as indicated by either subjective report, or observation made by others).

2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective report, or observation made by others).
3. Significant unintentional weight loss or gain, or decrease in appetite nearly every day.
4. Insomnia or hypersomnia (sleeping excessively) nearly every day.
5. Agitation or psychomotor retardation nearly every day, which is observable by others.
6. Fatigue or loss of energy nearly every day.
7. Diminished ability to think or concentrate, or indecisiveness.
8. Recurrent thoughts of death (recurrent suicidal ideation without a specific plan, or a suicide attempt, or a specific plan for committing suicide” (p.356).

An additional symptom often described in conjunction with feeling depressed is hopelessness. Although this specific criterion is not included in the DSM-IV-TR (2000) as a mutually exclusive criterion for clinical diagnosis/significance, hopelessness is included, in the present study, as an individual symptom that contributes to the depressive construct.

The broad scope of depressive-related diagnoses among young adults is further illustrated by national trends, which indicate that nearly 14.8 million American adults in a given year, ages 18 and older, are currently diagnosed with a depressive disorder (Kessler, Chiu, Demler, & Walters, 2005), thus rendering the college campus a fertile ground on which depressive symptoms may likely thrive.

Furthermore, Zivin, Eisenberg, Gollust, and Golberstein (2009) provide recent empirical evidence which supports the potentially chronic and severe nature of psychological distress in their assessment of mental health problems among college students. Zivin et al. (2009, p.1) conducted a two-year longitudinal web-based survey of ultimately 2843 students. The findings revealed that “mental health disorders are prevalent and persistent in a student population,” which yields an eventual and ultimate impact on educational, economic, and societal structures within the community. The majority of the students who identified as having a mental health need at baseline, later reported having a mental health problem at the two-year follow-up point, thus reinforcing the likelihood for depressive disorders to persist, for symptoms to linger, and the need for students to address their symptoms in a timely fashion (Zivin et al., 2009).

In an effort to reiterate the integral role that the college experience plays in a student’s life, Hunt and Eisenberg (2010, p.3) effectively describe the potential impact that higher education institutions have on college student mental health:

“College represents the only time in many people’s lives when a single integrated setting encompasses their main activities – both career-related and social – as well as health services and other support services. Campuses, by their scholarly nature, are also well-positioned to develop, evaluate, and disseminate best practices. In short, college offers a unique opportunity to address one of the most significant public health problems among late adolescents and young adults.”

To this extent, college may be the vehicle for navigating the rocky terrain of mental health issues for students who struggle on the path of higher learning. Essentially, college students are particularly susceptible to the effects of psychological problems, partly because of their vulnerable age bracket associated with mental illness, and due in part to the academic and social demands that accompany college life.

Relevance of the Study

Depressive-related disorders, particularly among college students, are more significant than ever. In fact, Richard Kadison, Chief of the Mental Health Service at the Harvard University Health Service claimed, “Depression is probably the most common mental health problem that college students face today” (Kadison, as cited in Arehart-Treichel, 2002, Depression section, para. 3). Similarly, Furr, Westefeld, McConnell, and Jenkins (2001) determined from a college student sample of 1455 student from four different colleges, that over 50 percent of the college students sampled from academic classes self-reported experiencing depressive symptoms since the beginning of college.

Essentially, depression remains the primary health concern for college students and their respective higher education institutions (American College Health Association-National College Health Assessment (ACHA-NCHA), 2009). In addition, according to the ACHA-NCHA (2009) report, the rate of students reporting ever being diagnosed with depression has increased 56 percent in the last six years, from 10 percent in spring 2000 to 16 percent in spring 2005. Moreover, according to a recent web survey, which assessed a range of mental health issues among a random sample of 2800 undergraduate and graduate students, students who meet criteria for depression are twice as likely to

drop out of college compared to their non-depressed peers (Eisenberg Golberstein, & Hunt, 2009).

As higher education institutions strive to educate and retain students in the midst of increasing emotional demands, concerns, and risks that often accompany students to campus, it is essential to examine the inter-relationship between depression and traditional predictor variables typically associated with academic success and persistence among college students. The rising incidence of mental health needs of today's college students continued to climb; however, traditional college student retention models may not be as applicable to students with depressive symptoms as they are with college students who do not suffer from depressive illness.

Statement of the Problem

As concerns in mental health trends continue to increase among college students, there has been a simultaneous rise in the number of undergraduates attending degree-granting post-secondary institutions each year, illustrated by a 34 percent increase (13.2 million students in 2000 to 17.6 million students in 2009) over the course of nine years (Aud, et al., 2011). Ultimately, undergraduate enrollment at degree-granting institutions is expected to reach 19.6 million by the year 2020 (Aud, et al., 2011). Conversely, as enrollment rates continue to climb, retention rates for first-year college students who return to the same college for their second year of school has dropped to their lowest percentage rate of 66 percent since 1989 (ACT Inc, 2009). Although there is typically no definitive, singular, all-encompassing answer for the exact reason a student departs from college, withdrawal for academic reasons comprises only 30 to 35 percent of national statistics for academic departures (Tinto, 2001).

Therefore, given the statistics on anticipated enrollment rates, increases in depressive symptoms among students attending college each year, and stark declines in first-to-second year enrollment rates, it is imperative to examine the potential contributing impact that depressive symptoms and associated college experiences have on retention outcomes. As Kitzrow (2003) cautions, “Although retention theory has traditionally emphasized the importance of academic and social adjustment as key factors of persistence, personal adjustment and mental health factors should not be overlooked” (p. 170). As the prevalence of depressive and other mental health illnesses among college students grow each year, declines in academic performance, retention, and graduation rates pose a broad and justified concern within higher education (Eisenberg, et al., 2009; Kitzrow, 2003).

Whereas yesterday’s college student mental health issues elicited institutional concern, today’s college student mental health problems require an efficient response to an emergent situation. The awareness of the potential relationship between depressive symptoms and retention will enable higher education institutions to structure and implement programs that focus on managing psychological symptoms, while simultaneously providing academic/educational support. The earlier depressive symptoms are identified and addressed, the greater opportunity for colleges and universities to understand and examine retention outcomes that may be linked to depressive features, and ultimately, construct and implement programs and policies geared at enhancing retention among students who suffer from depressive illness.

Importance of the First-Year Student

Much of the retention research and policy initiatives have focused on first-year students, with first-to-second year persistence rates being of particular importance. For example, Pryor, Hurtado, DeAngelo, Blake, & Tran (2011) at The Higher Education Research Institute (HERI) published national norms on American first-year college students, which revealed that, among incoming first-year students, self-reported emotional health was at its lowest level since 1985 (the year when students were originally asked about self-perceived mental health). In addition to reduced levels of perceived emotional health, these students self-reported declining optimism in reference to their expectations about being satisfied with their overall college experience.

Furthermore, Sax, Bryant, and Gilmartin (2004) assessed the emotional changes in 17,331 first-year college students, which included data points from the beginning of the completion of these students' first-year of college. The results showed considerable declines in the levels of emotional health, academic success, and peer relationships among both male and female first-year college students (Sax et al., 2004). Moreover, Sher, Wood, and Gotham (1996) conducted a four-year longitudinal study that followed 457 first-year students and found that nearly 40 percent of these students experienced peak levels of distress during their first year of college.

More recently, Pleskac, Keeney, Merritt, Schmitt, & Oswald (2011) reported their findings from a longitudinal study which included 10 colleges and universities that examined first-year students' intentions to depart from college. Withdrawal considerations were assessed according to 21 "critical" life events that were deemed "shocking," such as, death or illness of a family member, substance abuse/addiction, roommate conflict, and loss of financial aid. Among the 21 critical events included in the

study, the results revealed that there were six events to which the students appeared the most sensitive: 1) recruited by another job/institution, 2) an unexpected bad grade, 3) roommate conflict, 4) loss of financial aid, 5) clinical depression, and 6) a large increase in tuition/living costs. Of the aforementioned six self-reported “shocking” events, the most prominent event linked to first-year students contemplating a departure from college was depression (Pleskac et al., 2011).

Finally, American College Testing, Inc. (2001) also determined that the first year of college represents the most likely time for a student to depart from the post-secondary educational system, as one in four students departs from college before entering his/her sophomore year. Consequently, it is a higher education imperative to assess, create, and implement specific policies that will address the potential contributors to first-year student departure and increased attrition rates. In order to retain students, it is crucial to explore the emotional underpinnings that precede early departure decisions.

Help-Seeking Populations

Although the ideal approach would be for students to receive immediate treatment for depression, even treated depressive episodes may be associated with decreased retention rates, as the symptomatic duration of depression, lasting six weeks, or longer, may contribute to such a level of academic decline that it may be unlikely for a student to fully function in an academic and social setting.

Moreover, although students’ perceived emotional health levels appear to be declining among college campuses, there is evidence that students’ expectations to seek counseling services in college has reached its highest level (9.7%) since the question was initially asked in 1971, and received a response of 7.1% percent of students who

expressed a willingness to engage in counseling (cite). This result represents an apparent willingness for students to seek help if they believe that help is needed, which may be an essential step toward creating healthier college campuses (Pryor, et al., 2011).

Regardless of treatment, research indicates over the years, college students express similar areas of concern, such as with romantic relationships, academic performance, and study skills; however, college counseling center students self-reported more significant concerns surrounding depression and anxiety (Benton, Robertson, Wen-Chih, Newton, and Benton (2003). In addition, Green, Kopta, & Lowery (2003) determined that college counseling center students reported overall higher levels of distress and dysfunction in regard to global mental health, well-being, psychological symptoms, and life functioning, and ultimately presented as more typical of an adult outpatient population, whereas college students who were not receiving counseling expressed a more developmental focus such as choosing a major and the discernment process about post-college decisions.

Although it appears that college students, in general, are self-reporting mental health concerns, the students that seek counseling services may be representative of a more symptomatic population, in terms of level of symptom severity. For example, Erdur-Baker, Aberson, Barrow, and Draper (2006) determined that between clinical and non-clinical college student samples, clinical student samples demonstrated more chronic and severe problems as compared to the non-clinical sample.

In addition, Hunt and Eisenberg (2010, p. 5) further explain, “It is important to keep in mind that college mental health personnel report not only increased numbers of students seeking mental health services but also increased severity in the case mix.

Therefore, even if the overall prevalence has not increased dramatically, the prevalence of more severe cases may well have increased.” A synthesis of the literature regarding mental health problems among college students speaks to students’ increased willingness to seek on-campus support when symptoms create significant distress levels (Hunt & Eisenberg, 2010). With regard to the present study, a self-seeking population may provide an initial perspective into previously unexplored relationships between depressive symptoms and the college experience.

The potential determinants of mental health-related symptoms on retention and academic achievement may prompt a conceptual reconsideration of the placement of psychological constructs within the broader context of Astin’s (1993) Input-Environment-Output model. More specifically, mental health symptoms/disorders may be more aptly classified as “inputs” in this model, thus allowing for environmental assessment pertaining to mental health concerns and associated outcome measures (e.g., retention, grades).

This research is intended to provide data to higher education administrators who strive to ensure academic success among students, especially amidst the increasing and serious emotional instability that plagues college students and challenges campuses nationwide. The study aims to illustrate a trend among depressed students who may be at-risk for departing from an institution, thus allowing administrators, faculty to be more aware of depressive symptoms and more diligent in their efforts to refer that student to a resource on campus.

Although little research has been conducted on the association of emotional well-being and retention, there is evidence to support that students who endorse more fatigue

and decreased self-esteem, as compared to their peers, also self-report a greater intention to depart from college (Pritchard & Wilson, 2003). This research also represents a notable deviation from the use of traditional predictor variables for assessing academic success by incorporating emotional (stress, perfectionism, self-esteem, coping mechanisms, affective state, and optimism) and social (introversion/extraversion, romantic relationship involvement, residence status, campus organization involvement, and alcohol consumption) factors to predict academic performance and retention outcomes.

Pritchard and Wilson (2007) subsequently conducted a study using only first-year students and assessed emotional (depressive symptomatology, mood, fatigue, self-esteem, perfectionism, and optimism) and social (study group membership, residence status, and feelings of fit) factors related to academic performance and intention to depart from college. Similar to the present study, Pritchard and Wilson (2007) directed their efforts toward a first-year student population, with the rationale that one quarter of first-year students do not return for their second year of college at the same institutions and that dropout behavior is preventable. Findings revealed that decreased levels of perfectionism and increased fatigue are related to a greater propensity for intending to leave college among first-year students.

The significance of including emotional and social variables as predictor variables in retention modeling equations may aptly pertain to students who exhibit psychological symptoms, such as depression. Moreover, Astin's (1993) model provides an appropriate conceptual framework for the incorporation of broader contextual factors, including social and emotional variables in relation to retention outcomes.

Purpose and Research Questions

The purpose of this research is to examine, among depressed first-year students, how retention is influenced by academic and non-academic factors. Specifically, the study is designed to explore the following questions:

1. Among first-year college students with depressive symptoms, how do variables reflecting academic performance influence retention?
2. Among first-year college students with depressive symptoms, controlling for academic performance, do variables reflecting non-academic variables influence retention?
3. Among first-year college students with depressive symptoms, how does the interaction between academic and non-academic variables influence retention?

Using a sample of depressed, first-year college students, I have examined how retention is influenced by academic and non-academic factors. My goal is to establish a context for understanding the direct effects of depressive symptoms on educational outcomes, with the intention of conveying the importance of implementing preventive strategies, assessment, treatment, and accommodations for students in their respective endeavors to fulfill their academic potential and graduate.

Definition of Terms

According to Hagedorn (2005), “institutional retention” is considered to be the outcome of students who subsequently remain in the institution at which they initially began year after year, and ultimately until graduation. The present research focuses on a single-institution and examines the outcome of students within that particular institution,

and thus, I have applied the term “retention” to define the continuation of a student’s educational trajectory over the course of an academic year. Retention rates were examined at the end of the fall and spring semesters.

Conceptual Framework

Mental health problems are typically associated with a loss of energy to fulfill routine obligations (DSM-IV-R, 2000) thus possibly reducing a student’s ability to integrate fully into college life. Astin (1984) maintains that for a student to become fully engaged in the college experience, both academically and socially, a high level of involvement and energy must accompany student experience. Furthermore, college satisfaction, cognitive learning, and student persistence are associated with the quality and quantity of a student’s involvement in the college experience.

The conceptual framework for the present study uses Astin’s (1993) Inputs-Environment-Outputs (I-E-O) model, which is based on the premise that students enter college with varying demographic, academic, personal, and social identities. These traits influence experiential activity within and outside of the institution during the college years. In addition to cognitive development, first-year students grow and change in various capacities which ultimately contribute to subsequent academic decisions. Researchers have historically explored, assessed, and analyzed departure reasons and rates for first-year students (Pacarella & Terenzini, 1991, 2005; Tinto, 1997) often finding that the reasons for student departure are varied and interconnected. An increasingly prominent reason for academic and social changes in students is related to emotional distress, particularly depression.

Research Design

This study attempts to provide a more in depth analysis of the academic and non-academic factors that influence retention among a depressed student population who sought on-campus counseling services. This research essentially repositions psychological problems as an historical outcome measure based on Astin's (1993) conceptual framework of student persistence, to an input characteristic in order to examine how academic and other variables influence retention among depressed first-year students. Specifically, the study is designed to explore the following questions:

1. Among first year college students with depressive features, how do variables reflecting academic performance influence retention?
2. Among first-year college students with depressive features, controlling for academic performance, do variables reflecting non-academic variables influence retention?
3. Among first-year college students with depressive features, how does the interaction between academic and non-academic variables influence retention?

Table 1: Input, Environment, and Outcome Variables

Variables	
Input	Areas of Self Concern: Academic Performance/Study Skills
	Areas of Self Concern: Adjustment to College
	Areas of Self Concern: Decisions About Career/Major
	Areas of Self Concern: Procrastination/Getting Motivated

Variables	
	Areas of Self Concern: Self esteem/Self Confidence
	Areas of Self Concern: Uncertain about Life After College
	Pre-Entry Characteristics: Gender
	Pre-Entry Characteristics: High School GPA
Involvement	First Year Program
	Community Service Involvement
	Student Government
	Leadership Program Involvement
	Fitness/Exercise
	On Campus Employment
	Residential Status
Bridge: Academic and Social Characteristics/Concerns	First Semester GPA
	Making Friends
	Relationship with Friends/Peers
	Relationship with Romantic Partner
	Roommate Conflict
Outcome	Retention

Participants

The sample in the present study includes 130 help-seeking, first-year students that were selected from an existing counseling center dataset from a mid-sized, mid-Atlantic, religiously-affiliated institution of higher learning. The sample included individual cohorts of first-year students (2005 through 2009) who were symptomatic of depressive

features according to the Psychotherapy Outcome Assessment and Monitoring System (POAMS) - Counseling Center Version.

Instrumentation

The primary assessment tool from which depressive-related symptoms are evaluated in the current study is the Psychotherapy Outcome Assessment and Monitoring System (POAMS) - Counseling Center Version. The POAMS was originally developed as “a comprehensive method for assessing adult outpatients’ progress and outcome in therapy” (Lowry, 2003, p. 17). The POAMS is a self-report assessment measure designed to assist clinicians with three primary therapeutic areas: 1) initial need assessment, 2) treatment planning, and 3) client progress assessment (Lowry, 2003).

The University Counseling Center, from which the present research sample has been constructed, uses the POAMS – College Counseling Center Version, to evaluate students’ self-expressed concerns according to four scales: Psychotherapy Scale (5 items), Well-Being Scale (4 items), Symptoms Scale (29 items), and Life Functioning Scale (10 items). Within the four domains, the Well-Being Scale, Symptoms Scale, and Life Functioning Scale focus on the student-client’s overall psychological functioning throughout the past two weeks.

The Psychotherapy Scale includes five items that are designed to measure a person’s perceived need for treatment, the chronicity, or frequency of the problem, previous treatment experience, and optimism in regard to overcoming the present issue.

The Well-Being Scale consists of four questions relating to general levels of distress, emotional functioning, life satisfaction, and energy and motivation levels.

The Symptoms Scale includes 29 specific emotional, behavioral, and physical expressions which are designed to measure nine symptom clusters, one of which is depressive-related symptoms, including: not liking self, difficulty concentrating, having no energy, everything is an effort, feeling sad most of the time, difficulty falling asleep, feeling hopeless about the future, having no interest in usual activities, thoughts of ending your life, difficulty making decisions, difficulty returning to sleep.

The Life-Functioning Scale assesses level of student-client's ability to "get along" in 10 particular areas of his/her life, including: work, school, intimate relationships, relationships with children, non-family social relationships, sexual functioning, life enjoyment, physical health, self-management, money management.

Students self-rated each question within each of four domains according to a five point Likert-scale (0 = extreme distress level/poor functioning to 4 = no distress/excellent functioning). In terms of interpretation, scores of "3" and above suggest that the student is functioning within the "healthy" range, whereas scores of "2" and below indicate moderate to significant distress levels and inadequate functioning (Lowry, 2003). According to the Cronbach's Alpha measure, the POAMS demonstrates solid internal consistency and reliability (.75 to .85 for the Well-Being Scale; .91 to .93 for the Symptoms Scale, and .77 to .87 for the Life Functioning Scale).

In addition, although the Counseling Center administers the POAMS- Counseling Center Version at two time points – intake and termination, the present research includes only the data collected during the intake process in order to identify the student-client sample according to specific depressive-related symptoms that were self-reported at during the intake process.

Procedure

A factor analysis was employed to analyze the input, bridge, and environmental variables to determine the underlying structural relationship of those variables to analyze their relationship with the primary outcome measure – retention. Per the proposed statistical plan, logistic regressions were to be employed for High School GPA, followed by High School GPA along with each construct to determine their combined influence on retention. An exploratory analysis was conducted to assess the potential relationship that each independent variable had on retention. The dichotomous independent variables were analyzed with a Chi Square, and the continuous variables were analyzed using t-tests.

CHAPTER 2

Introduction

In order to expand our understanding of the structures underlying the complex issues of today's college students, it is necessary to first explore the psychosocial components that are progressively impacting existing retention theory. The current study re-examines the broadly established theoretical retention academic and social integration variables and their overarching relationship to student retention.

This chapter includes an overview of higher education retention models and developmental theories, which establish the conceptual guidelines for the proposed research. The purpose of this research is to examine, among depressed first-year students, how retention is influenced by academic and non-academic factors.

Specifically, the study is designed to explore the following questions:

1. Among first-year college students with depressive symptoms, how do variables reflecting academic performance influence retention?
2. Among first-year college students with depressive symptoms, controlling for academic performance, do variables reflecting non-academic variables influence retention?
3. Among first-year college students with depressive symptoms, how does the interaction between academic and non-academic variables influence retention?

Using a sample of first-year college students with depressive features, I examined how retention is influenced by academic and non-academic factors.

Theoretical Underpinnings

Mental health problems are typically associated with a loss of energy to fulfill routine obligations (APA, 1994), thus possibly reducing a student's ability to integrate fully into college life. Astin (1994) maintains that for a student to become fully engaged in the college experience, both academic and social, a high level of involvement and energy must accompany student experience. Furthermore, college satisfaction, cognitive learning, and student persistence are associated with the quality and quantity of a student's involvement in the college experience.

In his pivotal research study on undergraduate college students, Alexander Astin (1993) determined that one of his "most notable" findings was that students exhibit significant declines in their overall psychological well being during college. However, Astin (1993, p. 397) explained that, "The role of the college experience in the student's declining sense of psychological well being is unclear." There are recent theories that provide possible explanations for the emotional decline in college.

Empirical support for the broad constructs included in the retention literature include research by Tinto (1993), Astin (1993), Bean (1980), Berger and Milem (1999), and Stoecker, Pascarella, and Wolfe (1988). Although Bean's (1980) theory of student attrition and Tinto's (1993) theory of integration are two of the most prominent theories to which researchers have referred in their efforts to understand retention, Berger and Milem (1999) also identified individual student and institutional characteristics that could be used to develop intervention strategies designed for at-risk students who were in need of some form of institutional support, particularly as it is directed at personal, academic, and/or social concerns.

Additionally, there are several developmental and psychological theories that describe human developmental processes across the lifespan and the effect that particular life events have on one's ability to persist in college at certain times. The following section provides a brief overview of psychological and higher education student development theory in order to provide contextual parameters for understanding college student retention.

Higher Education Developmental Theory

Contextual differences in higher education populations, with a particular focus on the adolescent and young adult years, have also contributed to the emergence of developmental theory, particularly as it relates to the college student. One of the important areas for consideration includes Arthur Chickering's (1969, 1993) Theory of Student Development, which focuses exclusively on students' development throughout their college years. Chickering's (1969, 1993) developmental model differs from other developmental theories insofar as it does not attempt to span over one's life-time, but it considers the process of development specific to higher education.

Chickering's (1969) original conceptual model, presented in his book Education and Identity (1969) was based on his research on traditionally-aged undergraduates at thirteen liberal arts colleges and their respective psychosocial development of competencies throughout college. Chickering and Reisser (1993) worked together to revise this theory through the incorporation of twenty additional years of research on larger and more diverse student populations. The resulting conceptual model included a synthesis of possible developmental stages that students undergo, not necessarily in a sequential fashion, but throughout different times in college. The stages may occur

independently, or simultaneously, but represent the emerging competencies in the process of student development.

Chickering (1969, 1993) referred to these stages as “vectors” which formulate the theoretical foundation of Chickering’s Psychosocial Development Theory. Each vector, or stage, may be conceptualized as a theme under which students interact and behave within the college environment and toward achieving competencies in that particular classification. These vectors include: 1) Developing Competence, 2) Managing Emotions, 3) Managing Through Autonomy Toward Independence, 4) Developing Mature Interpersonal Relationships, 5) Establishing Identity, 6) Developing Purpose, and 7) Developing Integrity.

With specific regard to the second vector (managing emotions), Chickering and Reisser (1993) incorporate the trends in mental health within higher education, such as anxiety, depression, anger, shame, guilt, and also the recognition of positive emotions. Chickering and Reisser (1993) described the challenge to “managing emotions” by cautioning, “The problem with some emotions is that they seem to crop up unexpectedly and confound all of our hard work and planning (p. 84). Moreover, Chickering and Reisser (1993) conclude that negative emotions, such as depression and anxiety exceed a singular emotion, and traverse into behavioral and other emotional manifestations.

Chickering and Reisser (1993) maintain, “The growing diversity of our campuses requires us to become more astute about the feelings that drive students’ behaviors and more skilled at helping them manage those unruly emotions that can so easily block progress” (p.83). Similarly, as college students struggle with the impending and revealed threat of mental health eruptions, it is imperative that symptom awareness and strategic

planning become part of student development policy implementation. Mental health issues can affect academic, social, and occupational functioning. Consequently, the way in which we deal with mental health issues on campus must be integrative, multi-faceted, and comprehensive.

Whereas psychosocial models of development offer a template for understanding individual change and achievement of developmental milestones over the course of one's lifetime, impact models (Astin, 1993; Tinto, 1993) are helpful in assessing student change from within an institutional context. Astin (1993) and Tinto(1993) illustrate student change throughout the college experience, thus creating an institutional guideline for understanding factors associated with student departure and the respective structural revisions that are appropriate and pertinent for an institutional to consider as strategies for student retention.

Moreover, Chickering's (1993) student development theory is similar to Bean and Eaton's (2000) model of student retention, which incorporates three major components: 1) self-efficacy, 2) coping-behavioral (approach-avoidance), and 3) attribution theory (locus of control), especially in regard to the coping-behavioral (approach-avoidant) component. According to Bean and Eaton (1995 p. 52 in Braxton, 2000), "approach behaviors are those practices individuals use to focus attention on and respond aggressively to a stressor in order to reduce stress. Avoidance behaviors are passive practices an individual may use to avert the stressor."

Common Threads in Retention Literature

Although no model has sufficiently explained the causes of student attrition, there are established factors that have been routinely and typically identified as adding

explanatory value to student persistence models. These influencing factors include the following: **contextual influences**, such as financial support, size of institution, institutional selectivity, **social influence**, such as perceived social support, **social engagement**, such as social involvement (integration, belonging), and **academic engagement**, such as commitment to degree and/or institution (Tinto, 1993, and Bean 1980).

For example, Bean and Metzner's (1985) model, known as the Student Attrition Model, emphasizes how a number of student and institutional factors affect a student's satisfaction with college and intention to leave. Bean and Metzner (1985) assert that organizational and environmental factors impact student behavior similar to the way in which these same factors affect turnover in the workplace. Bean and Metzner (1985) maintain that an individual's experiences in college will influence that student's perceptions about the institution and will subsequently impact that student's desire to remain or depart from that institution. Bean and Metzner (1985) also considered the combination of students' background characteristics as well as students' experiences within an institution as influences upon student performance, satisfaction, and persistence.

Additionally, Nora and Cabrera (1996) developed the Student Adjustment Model which combines Tinto's Student Integration Model (1993) and Bean's (1980) Model of Student Departure. Nora and Cabrera's (1996) model illustrates the importance of the duality of the major critical domains of student experience: 1) the social domain, which incorporates experiences with fellow students, and 2) the academic domain, which involves experiences with faculty and other academic staff of the institution. The

essential idea presented in Nora and Cabrera's (1996) model is that the combination of a student's academic and cognitive development leads to subsequent academic, social, and intellectual growth, and ultimately to increasingly secure institutional and goal commitment to persisting in college. In recent years, this model has been widely applied to minority student college populations, as it addresses academic preparedness and family/community connectedness as functions of persistence among minority students.

Vincent Tinto's (1993) theory is perhaps the most prevalent in the retention literature, as it serves as the archetype for numerous retention studies. Tinto's (1975) original student integration model is based on French sociologist, Emile Durkheim's Suicide Theory (1997) which suggested that suicidal behavior was the result of one's inability to integrate socially and intellectually into society. Tinto (1975) essentially paralleled a student's withdrawal from higher education to suicide to Durkheim's (1997) description of an individual's disintegration from society and ultimate progression toward suicidal decision making. Tinto (1975) postulated that student attrition was linked to inadequate social and academic integration into the higher educational institutional structure.

Durkheim: Egoism Versus Anomie

Tinto's (1975) model illustrates the parallel between Durkheim's (1997) sociological explanation of "suicide" and student departure. Whereas student departure is often depicted as an individual psychological response, or a final decision made by an individual's perceptual point of reference regarding his/her environment, there are also sociological and environmental factors that guide the perceptions, misperceptions, and/or

ultimate maladjustment of an individual's decision to "depart" from a particular environment.

Durkheim (1997), for example, collected suicide incidence rates data from various religious, political, and domestic societies in order to develop his etiological explanation of suicide and its four constructed subtypes. More specifically, Durkheim's (1997) articulation of suicidal outcomes is presented as a distinct characteristic set of elimination strategies. They are as follows: 1) altruistic suicide, 2) anomic suicide, 3) fatalistic suicide, and 4) egoistic suicide.

Altruistic suicide implies that suicide is yielded by a primitive perspective of a devaluation an individual as a result of that person being over-integrated in a particular society. In the case of altruistic suicide, individuals are described as self-sacrificing, as they have lost sight of their individuality in order to promote the broader or "higher" needs of the society to which they belong; Anomic suicide involves an imbalance between an individual's means and needs, as means, in this situation, are not sufficient for fulfilling needs. Subsumed within the broader context of anomic suicide are four delineated categories of anomie (a. acute anomie – a decrease in an institution's ability to regulate social needs (i.e., religious schools); b. chronic economic anomie – an ongoing diminution of social regulation (i.e., Great Depression); c. acute domestic anomie – sudden and significant micro-social changes which result in an insufficiency and inability in adapting to circumstantial events (i.e., widowhood), and d. chronic domestic anomie – the regulatory inefficiency of balancing means-needs of a given institution (i.e., marriage and its associated sexual behaviors); Fatalistic suicide refers to a form of societal withdrawal that is precipitated by excessive regulation and control and the absence of

integrative functioning; and Egoistic suicide, which evolves from a lack of integration into society. Individuals who are not bound sufficiently to particular social groups, and who receive little social support and guidance often become de-stabilized and ultimately withdraw from that society.

Essentially, all forms of suicide are viewed as products of the social structure of society, and by examining the rates of suicide within a given society one is able to identify the prominent elements of social organization (Bearman, 1991). However, the context of each environment determines that type of suicide that results from that society. Durkheim (1997) distinguishes two fundamental dimensions that presuppose suicide: integration and regulation. Integration is defined as “the extent of social relations binding a person or group to others, such that they are exposed to the moral demands of the group. Regulation refers to the “normative or moral demands placed on the individual that come with membership in a group” (Bearman, 1991, p. 503). In particular reference to higher education, and to the students who are included in such a form of this society, it is the subtype of egoistic suicide that is typically applied to student departure outcomes.

Again, the essential structure of egoistic suicide presupposes a lack of social and intellectual integration into and within a given social environment. Tinto (1993) borrowed this notion of a lack of academic and social integration and paralleled it to departure outcomes in college. Tinto states, “What is important is the fact that he (Durkheim) argued that one could reduce rates of egoistical suicide and restore social stability by the restructuring of society and by the provision of more effective means for the integration of individuals into the social and intellectual fabric of society” (p. 102-103).

With specific regard to college students, a removal from higher education due to diminished levels of emotional regulation, such as depression, may require a “selfish” rather than “social” approach in order that personal needs are met in order for social roles to be fulfilled. Students who “stop-out” from college in order to obtain psychological intervention in an attempt to become “emotionally regulated” may indeed represent the temporal notion of anomie, whereas students who ultimately “drop out” from higher education altogether, subsequent to exhibiting depressive features, may represent primary result of an overall lack of integration, secondary to the absence of effective emotional regulation.

Similarly, According to Tinto (1993), individual departure from an institution evolves from a longitudinal process of interactions between individuals and other members of an academic and social institution. There is a continual process of transforming individual intention and commitment modification, whereby academic and social integration is diminished or enhanced. In other words, positive experiences, such as good relationships with roommates and/or faculty, high grades, and support from family members are likely to reinforce a student’s decision to remain at the institution. Conversely, negative experiences, such as limited financial resources, poor relationships with academic advisors, roommate difficulties, typically weaken institutional commitment, thus reinforcing a student’s decision to depart from that institution.

Tinto’s (1993) model underwent an essential metamorphosis which produced a longitudinal and explanatory model of student departure. This model represented the consideration of different student sub-types, many of whom were defined as at-risk students. These students were viewed as a distinct group and consequently needing

specific programs to address personal and institutional characteristics associated with student persistence. In order for these students and institution to remain successful, the ultimate goal is academic and social integration.

Tinto's Student Integration Model

Tinto's (1987) revised theory, and subsequent model, incorporated Van Gennep's (1960) description of "rites of passage," which essentially parallels the transition from childhood dependence to functional adulthood. VanGennep's (1960) rites of passage included a three-step process toward integration, which incorporated separation, transition, and incorporation phases. Separation refers to a severing of ties with original associations; transition includes an initial introduction and interaction with members of a new group to which membership was desired; and incorporation signifies an assimilation and consistent interaction with a new group in an effort to become established and eventually fully integrated with that group (Tinto, 1987).

In order to capture the impact of overall levels of social and academic support have on a student's decision to remain in or depart from an institution, the constructs of social influence and academic engagement must be defined. Social influence incorporates perceived social support and social engagement (represented by social involvement, including social integration and belonging). Academic engagement includes institutional commitment and commitment to degree. The interrelationship between these key constructs may be explored in the context of impairment in academic and/or social functioning related to psychological distress

According to Tinto (1993), the academic and social challenges that college students face may lead to departure from the institution, in many instances in the first six

weeks of the semester. For those students who exhibit transitional difficulties that exceed what one may deem as “normal” departure may be imminent. Tinto (1993) revisits the idea that difficulty transitioning to college involves evolves from either 1) the inability for students to separate themselves from former associations (e.g., family, friends), and/or 2) the inability to fulfill the social and academic requirements that typically challenge new college students. Fisher and Hood (1987) similarly address the probability that the transition to college will increase stress levels, and that effective social support strategies are imperative among college campuses.

In Tinto’s (1993) model, various student pre-college characteristics are determined as acting as a direct influence on a student’s initial commitment to the institution and his/her academic goals. Successful students enter college with background characteristics (e.g., aptitude and motivation) that are the basis for their initial contact with the institution. As students become more integrated into the culture of the institution, their goal commitment increases and typically enhances their continued enrollment and academic progress. A student’s initial level of commitment is hypothesized to affect how integrated he/she becomes into the social and academic fabric of the institution. The level of integration is associated with a student’s decision to remain in or depart from college. Higher levels of integration into the social and academic environment of the institution yields greater levels of institutional and goal commitment, thus reducing departure rates (Tinto, 1993).

Tinto (1993) also suggests that students may choose to reject family and friends and their prospective values when they go off to college, and these students tend to be the ones to persist from the first to second semester of their first year of college. Students’

rejection of the attitudes and values of their former environments and communities may also prompt them to re-evaluate emotional and/or psychiatric prescriptives in favor of ceasing previously prescribed medication in hopes of starting anew. In cases such as these, the current study evaluates whether those students with depressive disorders who have decided to separate from their past still tend to persist in school, or if there is evidence which indicates otherwise.

Tinto (1993) explains that some students leave because they do not have a sense of belonging within the institution, either socially and/or academically. Essentially, they feel that the institution is “not right” for them, thus exposing a level of incongruence between the student and his/her surrounding institutional elements. Moreover, according to Tinto’s (1993) model, a match between an individual’s personal characteristics and his/her respective institution’s characteristics, yields a result that is two-fold: 1) goal-commitment (a commitment to completing college), and 2) institutional commitment (a commitment to a student’s respective institution).

Tinto’s (1993) principal idea is that the greater the goal commitment of college completion and or the level of institutional commitment, the greater the likelihood that a student will persist. Research has revealed that the students themselves act as the primary agents of socialization, thus contributing to the notion that social life has a significant impact on overall institutional fit for undergraduates (Pascarella, 1985). Tinto’s (1993) theory essentially describes the motivating factors that contribute to a student’s decision to leave college prior to graduation. If the interactions between a students and his/her prospective institution are matched well according to a student’s motivation and academic ability and the institution’s academic and social characteristics,

then the theory hypothesizes that the student will persist in school. If a student's personal characteristics match the characteristics of the university or college, then goal commitment and institutional commitment are subsequently reinforced, and the probability of persistence is increased.

Bean's Student Attrition Model

Another theory of student departure is described in John Bean's (1980) Student Attrition Model. Bean's (1980) longitudinal model is premised on the psychological underpinnings of Price's (1977) model of turnover in workplace organizations as it relates to job satisfaction/dissatisfaction and decisions to remain or depart from a particular workplace. Price (1977) evaluated the influence of six independent variables (pay, having close friends, participation in decision-making, repetitiveness of work, knowledge of the work role, and being treated fairly) on employee retention. Bean (1980) determined that there were three components to Price's (1977) model that contributed to the structure of ultimate departure decisions: 1) the external variable of "opportunity" which represents an external influence of an employee's decision making process, 2) the absence of background characteristics and prior work experience, and 3) the specificity of turnover determinants, as opposed to a general variability of potential influencing factors for departure.

Bean (1980) expanded on Price's (1977) model by including background variables (high school grades, parental support, etc) that were expected to influence a student's interaction within an institution. Bean (1980) also incorporated social and academic integration variables, a parallel to Price's (1977) organizational variables, into his model. Additionally, Bean's (1980) model was the first to include intervening

“attitudinal variables” to predict departure decisions that were expected to be associated with institutional commitment. Finally, Bean (1980) assessed six environmental characteristics (opportunity to transfer, opportunity to get a job, family approval of the institution, family responsibilities, likelihood of marrying, and difficulty financing one’s education) as variables that were anticipated to produce a student’s direct commitment/departure decisions (Bean, 1981). A student’s simultaneous interaction with the academic, social, organizational, components of his/her respective institution essentially influences retention outcomes, although it is the overarching institutional commitment that represents the most cogent indicator of dropout decisions.

Although Bean’s (1980) model illustrates similar characteristics to Tinto’s (1975) model, Bean’s (1980) model differed from Tinto’s (1975) model in two distinct ways: 1) Bean’s (1980) incorporation of environmental variables and 2) students’ intentions, which Tint eventually included in his revised (1993) model.

Furthermore, Bean and Metzner (1985) suggests that goal/degree attainment may already be implied, expected, and “taken for granted” by the junior and senior years. However, as the pressures of a social life may be diminishing, new prospects of career opportunities may arise, thus producing newfound sources of stress and emotional distress. Students in this category may introduce new contexts of mental health needs, as they begin to navigate the often turbulent experiences of finalizing their college careers in hopes that they are prepared for the “real world.”

A synopsis of each the Tinto (1993) and Bean and Metzner (1985) respectively reveal that academic integration, social integration, institutional and goal commitment and external factors (e.g., encouragement by family and friends) and finances predict

levels of retention. Whereas Bean (1980) has made explicit the significance of external factors on college persistence, it is also important to dissect several of Tinto's (1993) predominant themes in relation to depressive symptomatology, such as institutional fit and goal commitment in order to determine if these characteristics can compensate for certain depressive disorders.

Bean and Eaton's Psychological Model of Student Retention

Bean and Eaton (2000) utilized and integrated four psychological theories in an attempt to develop a psychological model of student retention: Attitude-Behavior Theory, Coping Behavioral Theory, Self-Efficacy Theory, and Attribution Theory. An overview of these theories is as follows: The Attitude-Behavior Theory, otherwise known as the Theory of planned behavior, was developed by Fishbein and Ajzen (1975) and suggests that human action, or behavior is guided by three primary considerations: 1) Behavioral beliefs (beliefs about probable consequences of behaviors, 2) Normative beliefs (beliefs about the normative expectations of others, and 3) Control beliefs (beliefs about the presence of certain factors that may either augment or diminish behavioral performance). In addition to a pre-existing knowledge set, these three beliefs contribute to subsequent behavioral intentions, and ultimately to behavior itself.

Lazarus (1966) and Lazarus and Folkman (1984) offer a broad research scope regarding coping mechanisms and an overview of The Coping Behavioral Theory. Folkman and Lazarus (1980, p. 223) define coping as, "the cognitive and behavioral efforts made to master, tolerate, or reduce external and internal demands and conflicts among them." Essentially, the coping process is demonstrated according to an individual's behavioral and cognitive reaction, which consists of sequentially occurring

responses that comprise an entire coping episode. The experience of repeated coping episode responses influences the appraisal of additional stressful situations and one's associated responses to them.

The Self-Efficacy Theory is based on the Bandura's (1986) social cognitive perspective that through self-reflection and self-evaluation, an individual is able to synthesize personal experiences, formulate reactions, and execute plans of actions that are consistent with cognitive interpretations to experiences. Self-efficacy refers to an individual's own perception of competence and abilities in order to address, influence, and persist under certain environmental circumstances. If an individual perceives a situation to be beyond his or her capabilities to respond effectively to that situation, the individual will most likely refrain from an attempt to address the situation. Conversely, if an individual perceives his or her skill set to be sufficient enough to access the situation and experience its accompanying circumstances, the individual will most likely expose him/herself to the experience.

Essentially, Bean and Eaton's (2000) model illustrates, similar to Astin's (1993), that students arrive to college with a complex set of personal attributes and background characteristics that influence level of integration within an institution. According to Bean and Eaton (2000) and based on Bandura's (1997) concept that "action precedes outcomes," students' characteristics and behaviors prior to matriculation to higher education and the subsequent interaction between students and their respective higher education institutions precede departure or persistence decisions. Bean and Eaton (2000) emphasize the impact of both academic and non-academic factors associated with student retention. In essence, Bean and Eaton (2000, p. 58) suggest that "the social environment

is important only as it is perceived by the individual.” Similarly, Astin’s I-E-O model incorporates pre-entry and environmental characteristics as potential predictors of retention outcomes.

Astin’s Theory of Student Involvement

Astin (1984) offers a theory of student involvement that is a widely adopted college impact model of student development. According to Astin’s (1984) theory, the student plays the central role in determining the extent to which he/she will utilize the resources offered to him/her by the institution. Astin’s (1984) theory is rooted in the Freudian notion of *cathexis*, by which individuals seek the energy from objects outside of themselves (e.g., family friends, jobs, school) in order to gain satisfaction and achievement. This idea is applied to college students insofar as their time in engaging in resources provided by an institution enhances their satisfaction with the institution, and thus increases levels of student persistence.

Pascarella and Terenzini (1991) suggest that Astin’s (1984) conceptual framework combines both psychological and sociological explanations student change, noting that, “The student must actively exploit the opportunities presented by the environment. Thus, development or change is not seen merely as the consequence of collegiate “impact” on a student. Rather, the individual plays a central role in determining the extent and nature of growth according to the quality of effort or involvement with the resources provided by the institution” (Pascarella and Terenzini, 1991, p. 51).

Although Astin (1993) discusses the potential of an expected decline in students’ psychological well-being, the effect that mental health problems, especially depression,

has on students must not be under-estimated. Furthermore, there is evidence that students who are exhibiting a decline in mental health utilize on-campus counseling services. Increasing various forms of student involvement (e.g., socializing, exercising, participating in sports) appears to be associated with positive self-ratings (Astin, 1993). Levine and Cureton (1998) also reported that the increase in use of college counseling centers reiterates the complexity regarding the growing trend of mental health problems among college students.

Astin and Inputs, Environment, and Outputs

Astin's previous training as a clinical psychologist and his developmental perspective of assessing human behavior provide a fitting accompaniment to this research which combines both psychological and educational literature to determine predictors of academic success among depressed students. Astin's (1993) I-E-O model was deductively created to control for the input characteristics, or experiences that students bring with them when they enter college. According to Astin and Sax (1998, p. 252), "the I-E-O model was designed to address the basic methodological problem with all non-experimental studies in social sciences, namely random assignment of people (inputs) to programs (environments)."

Inputs ("I") represent the first component of Astin's (1993) I-E-O model. Specifically, inputs "refer to those personal qualities the student brings initially to the education program (including the student's initial level of developed talent at the time of entry (Astin, 1993, p. 18). Other pre-existing conditions, such as behavioral patterns, student demographic information, and financial status, etc. are also representative of student input characteristics. For the purpose of this study, student input information

includes: gender, age, major, and depressive symptomatology. These student input characteristics are essentially filtered through the environment in order to determine possible direct and indirect environmental effects on student outcomes, in this case, retention.

The second component of Astin's model includes the environment itself. According to Astin (1993, p.18), environment "refers to the student's actual experiences during the educational program." Essentially, the environment includes exposure to any experiences during an educational experience that may contribute, or impact a student's reaction during his/her time in that educational environment. Astin (1993) includes exposure to faculty, extra-curricular activities, institutional climate, facilities, roommates, organizational affiliation all to be considered environmental factors. In the present study, environmental variables includes first-year students' participation in: first-year programs, service programs, honor council, college disciplinary board, student government, scholarship requirements, leadership programs, campus ministry organizations, Dean's list, employment, residential status, and recreational sports.

The final component of Astin's (1993) model is outputs, which "refer to the 'talents' we are trying to develop in our educational program" (Astin, 1993, p.18). Outputs represent basic outcome measures, such as grade point average, persistence rates, and overall satisfaction. An output measure is the culmination of specific outcomes that are yielded after a distinct set of student characteristics are filtered through various environmental experiences. Retention is the output measure assessed in the proposed study.

Involvement

College student involvement represents a primary construct relating to positive outcome measures in college. Astin (1999) emphasizes the significance of student involvement as the basis of evaluating and assessing institutional policies and practices. According to Astin (1999) student involvement is generally defined as “the quantity and quality of the physical and psychological energy that students invest in the college experience” (p. 528). Astin’s (1999) involvement theory includes five basic components: 1) involvement is the investment of physical and psychological energy in various objects, 2) Involvement presupposes a continuous process, different students engage in varying degrees of involvement in various activities, 3) involvement includes both quantitative and qualitative components, 4) the degree to which a student exhibits student and personal development associated with a given educational program is directly proportional to the quality and quantity involvement in that program, and 5) there is a direct relation between the effectiveness of any educational policy or practice and the capacity of that policy or practice to increase student involvement (Astin, 1999).

Involvement subsumes a behavioral component which is imperative to understanding the essential structure of student integration. Astin (1999, p. 519) specifically states, “It is not so much what the individual thinks or feels, but what the individual does, how he or she behaves, that defines and identifies involvement.” This emphasis on behavioral characteristics is a foundational component of Astin’s (1999) student involvement theory.

In terms of specific forms of involvement, residential status is positively associated with student-faculty interaction, participation in student government, and

involvement in social fraternities and sororities (Astin, 1999). In fact, on-campus residential status is consistently indicated as the most “important and pervasive” environmental factor that contributes to student retention (Astin, 1993). Moreover, according to Astin (1999, p. 525), “Living on campus substantially increases the student’s chances of persisting and aspiring to a graduate and professional degree.” Student who live on-campus also demonstrate integration and satisfaction in the social life of the campus, extra-curricular activities, leadership positions, faculty-student relations, and student friendships (Astin, 1999).

With specific regard to academic involvement, (Astin, 1999) presents evidence that participation in honors programs also contributes to student persistence and desire to graduate and pursue professional degrees. Honors participation is also associated with increases in interpersonal and intellectual self-esteem (Astin, 1999). Interestingly, general academic involvement within an institution is strongly related to overall satisfaction with college life, with the exception of students’ friendships with other students. Furthermore, student-faculty interaction provides the strongest association with college satisfaction, surpassing any other individual student, or institutional characteristic (Astin, 1999).

Athletic involvement is similar to academic involvement insofar as its respective obligations contribute to social isolation, thus minimizing the benefits of peer group association which typically accompany college life (Astin, 1999). Conversely, student government affiliation increases students’ interactions with their peers, and “this interaction seems to accentuate the changes normally resulting from the college experience” (Astin, 1999).

Finally, student involvement may be circumstantial in some cases, but may nonetheless augment retention. In particular, Astin (1993, 1999) determined that on-campus job positions were one of the “most interesting” environmental factors that was associated with student persistence. Astin (1993, p. 389), in reference to on-campus employment, states, “Apparently, this greater degree of immersion in the collegiate environment and culture more than compensates, in terms of student outcomes, for the time students must devote to a part-time job on campus. Similar trade-offs are simply not available to the student whose part-time job is located off-campus.” However, students who were required to work fewer than 15 hours a week, or not at all, reported having had better student-faculty relationships than those students whose work demands exceeded 15 hours a week. Again, student-faculty interaction is often associated with student satisfaction and persistence (Astin, 1999). In addition, King (2002) determined that college students who maintain off-campus, full-time jobs express a disconnection to the college, and a subsequent lack of degree attainment.

Consequently, as the landscape of college campuses changes according to financial needs, work requirements, emotional concerns, and social and academic demands, provisions have been established to address these recent, yet ongoing, transformations. For example, courses pertaining specifically toward first-year students and their typically associated concerns, have begun to spout up all over higher education institutions. Astin (1984) conducted a study which assessed involvement in learning which attempted to connect academic and student affairs in order to create an awareness surrounding the social and academic demands of college and to augment peer relations from the outset of school.

Level and duration of student involvement is of particular importance during the college years. Similar to Astin's (1984) emphasis on the importance of student involvement, Pascarella and Terenzini (1991) attest that, "a large part of the impact of college is determined by the extent and content of one's interactions with major agents of socialization on campus, namely, faculty members and student peers. The influence of interpersonal interaction with these groups is manifest in intellectual outcomes as well as in changes in attitudes, aspirations, and a number of psychological characteristics" (Pascarella and Terenzini, 1991, p. 620).

Essentially, a powerful, albeit inadvertent, persistence barrier that is often filtered through a student's overall commitment to an institution involves level of emotional functioning. In an effort to integrate the educational and psychological bodies of literature, it may be helpful to address the similarities that link them. As Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004) discuss, psychological factors are typically not used as predictors, but as outcome measures (e.g., desire to succeed, social involvement). The potential determinants of mental health-related symptoms on retention and academic achievement may prompt a conceptual reconsideration of the placement of psychological constructs within the broader context of Astin's (1993) I-E-O model. More specifically, mental health symptoms/disorders may be more aptly classified as "inputs" in Astin's (1993), thus allowing for environmental assessment pertaining to mental health concerns and associated retention outcome measures.

Conceptual Framework

The conceptual framework for present study follows Astin's (1993) Inputs-Environment-Outputs (I-E-O) approach, which is based on the premise that students enter

college with varying demographic, academic, personal, and social identities. These traits influence experiential activity within and outside of the institution during the college years. In addition to cognitive development, first-year students grow and change in various capacities which ultimately contribute to subsequent academic decisions. Researchers have historically explored, assessed, and analyzed departure reasons and rates for first-year students (Tinto, 1997, Pacarella and Terenzini, 1991, 2005) often finding that the reasons for student departure are varied and interconnected. An increasingly prominent reason for academic and social declines in students is related to emotional distress, particularly depression.

According to Pascarella and Terenzini (1991, p. 50), “Astin’s (1985) conception occupies something of a middle ground between psychological and sociological explanations of student change.” Whereas Astin’s earlier frameworks regarded students’ roles as being somewhat “passive” in the sense that students were considered a “part” of the institution by virtue of simply being enrolled at an institution, Astin (1985) reconsidered his stance by recognizing that institutions offer many opportunities for various levels and forms of engagement. The onus is on the student to take advantage of such opportunities in order to be “impacted” by the institution in some way, and thus reinforces to remain at that institution.

In their attempt to empirically and conceptually identify risk-factors for first-year students, Reason, Terenzini, and Domingo (2006) introduced the idea of an additional domain to Astin’s (1993) I-E-O model which accounts for “institutional context, “ or an “institution’s organizational characteristics, structures, practices, and policies, and the campus’s faculty and peer cultures and environments” (Reason, Terenzini, and Domingo

(2006, p. 153). Similarly, this study focuses on policy implementation potential for students who are emotionally at-risk students. Reason et al. (2006) maintain that students' perceptions of environmental support structures and systems is a robust predictor of growth in regards to academic competence. If academic competence is reinforced by systemic efforts to initiate and sustain student support efforts, preventative initiatives to address warning signs of psychological support may represent a logical precursor to academic support strategies.

According to Astin (1990, p.518), "Quite simply, student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience." This theory provides a guideline for understanding the contribution of degrees of various types of involvement have on educational outcomes. Astin's theory was spawned by a discontent that Astin had in regard to academicians' tendency to "black-box" their students. In other words, Astin (1999) draws the parallel between involvement and cathexis, a psychological term which refers to a psychological or emotional investment of energy toward people and objects, excluding themselves. Involvement subsumes a behavioral component which is imperative to understanding the essential structure of student integration. Astin (1999, p. 519) specifically states, "It is not so much what the individual thinks or feels, but what the individual does, how he or she behaves, that defines and identifies involvement." This emphasis on behavioral characteristics is a foundational component of Astin's (1999) student involvement theory.

Astin (1999) explained that his student involvement theory includes five basic premises: 1) Involvement is a combination of psychological and physical energy toward various objects. These "objects" may vary from general (student experiences in college)

to specific (preparing for a particular test); 2) Involvement occurs along a continuum by which different students exhibit different levels of involvement to one particular, or more than one set of activities at different times; 3) Involvement incorporates both quantitative and qualitative characteristics (e.g., hours spent working on a project, versus degree of comprehension); 4) Student learning and personal development is directly proportional to both the quantitative and qualitative efforts that students expend on educational programs; and 5) there is a direct association between policy and institutional practice effectiveness and the potential of that policy or practice to augment student involvement.

Conceptual Model

Retention depends on the re-evaluation and adaptation of existing retention theory in order to accommodate the changing demographics of American students in higher education. An extensive examination of the literature reveals that there is substantial opportunity for psychological predictors, in addition to traditional predictors of persistence, to contribute to our understanding of students' decisions to persist or depart from college prior to graduation. It would be helpful to assess the interrelationship between key constructs cited in these educational persistence models and psychological literature on depressive disorders in order to determine how academic and social integration retention predictors interact with mood symptoms, particularly depressive disorders.

Similarly, as the psychological demographics of incoming students continue to evolve and erupt across college campuses nationwide, response strategies are becoming an integral part of emotional awareness, problem identification, and retention management. As Barefoot (2004, p. 13) cautions, "Because dropout has so many

potential root causes, “average” or even above-average students may also benefit from special assistance during the sometimes difficult transition to higher education.”

Structural innovations that include a discussion of warning signs and resource awareness may offer the potential for at-risk students to locate and utilize the help that is available to them.

Whereas previous research has focused on demographic, academic, and social variables independently in predicting student persistence in college, this study is designed to add to the extant literature and assess the relationship of key retention predictors and their intersection with a depressed student population. DeBerard, Scott, Speilman, and Julka, (2004) reinforce the importance of assessing students who may be at-risk for departure. For example, DeBerard, et al., (2004) examined the role of social support as a potential predictor of first-year academic achievement and retention. Their findings determined that total level of social support among college first-year was a significant predictor of overall academic achievement (DeBerard, et al., 2004).

Essentially, a major persistence barrier that is often filtered through a student’s overall commitment to an institution involves level of emotional functioning. In an effort to integrate the educational and psychological bodies of literature, it may be helpful to address the similarities that link them. As Robbins, et al. (2004) discuss, psychological factors are typically not used as predictors, but as outcome measures (e.g., desire to succeed, social involvement). The potential determinants of depressive-related symptoms on retention may prompt a conceptual reconsideration of the placement of psychological constructs within the broader context of retention theory

The theoretical and empirical retention literature describes a host of factors associated with student persistence, one of which is the emotional and psychological state of students throughout their college careers. However, most of the literature is focused broadly on the secondary characteristics typically associated with depressive features, such as social and academic integration, without a direct focus on how particular mood states/disorders influence academic and social functioning. For example, Tinto's (1993) conceptual model emphasizes the core concepts of social and academic integration. A student enters college with a particular set of pre-college characteristics, including personal attributes, family background, and secondary school experiences, all of which contribute to ultimate levels of academic and social integration.

However, similar to Tierney's (1992) critique of Tinto's interactionalist model in terms of lacking a durable cultural component within the construct, Tierney (as cited in Braxton, 2000, p. 223) maintains that "the idea that those individuals who have been labeled 'at-risk' or are likely to drop out have much greater potential than previous frameworks suggest." A depressed student, for example, presents with an inherent risk for departure if emotional stability is not achieved.

An institution's role may become vital in establishing structural support systems that facilitate a depressed student's progress throughout college. Therefore, for the intention of the proposed study, Astin's (1985) model is an appropriate choice, as it "is predicated on the assumption that the principal means by which assessment can be used to improve educational practice is by enlightening the educator about the comparative effectiveness of different educational policies and practices. The I-E-O model is

specifically designed to produce information to produce information on how outcomes are affected by different educational policies and practices.

Astin's (1985) model is an appropriate framework for the proposed study as Astin (1985) postulates that students must exert adequate levels of "psychological energy" in order to persist in higher education. Thus, in regard to the overall intention of the proposed study it appears conceptually advantageous to utilize Astin's (1985) model, as it limits the complexity of having to assess for psychological changes (attitudes and intentions) and associated symptomatic reinterpretations of psychological processes as student continue in school.

Proposed Conceptual Model

The conceptual model that is used in the proposed study follows Astin's (1993) Inputs-Environment-Output model, which is a longitudinal persistence model that is designed to emphasize the interaction between students' background characteristics and the college environment on various outcome measures. In the present study, the input variables include: academic performance/study skills, adjustment to college, decisions about career/major, finances, making friends, procrastination/getting motivated, relationship with friend/peers, relationship with romantic partner, roommate conflict, self-esteem/self-confidence, and uncertain about life after college (self-perception) and first-semester GPA, making friends, relationships with friends/peers, relationship with romantic partner, and roommate conflict, in addition to gender and high school grade point average.

The environmental variables include first-year students' participation in: first-year programs, service programs, student government, leadership programs, and recreational sports. Additional environmental include: employment and residential status.

First-year student retention rates at the end of the spring semester were used as the primary outcome measure of the proposed study. According to Astin (1993, p.17), "The output of an institution or program whether we measure this in terms of how many graduates earn advanced degrees, how much money the alumni earn, or whatever - does not really tell us much about its educational impact or educational effectiveness in developing talent. Rather, outputs must always be evaluated in terms of inputs." The importance of the environment is paramount to the I-E-O model, as it is the assessment of the environmental component that provides insight into ways in which to structure and modify higher education institutions. The direct comparison of input variables on outcome measures does not provide substantial value for understanding the intermediate effects of environmental influences among college students. Therefore, a conceptual framework, such as Astin's (1993, p. 19) framework, that does "allow us to correct or adjust for (such) input differences in order to get a less biased estimate of the comparative effects of different environments on outputs." Astin's (1985) model is designed to reduce outcome ambiguity and misinterpretation by controlling for input differences, a helpful approach to understanding why some students have very different college outcomes from other students.

Astin's (1993) I-E-O model was be used for the purpose of assessing the influence of particular input and environmental variables on retention among depressed first-year students. Astin's (1993) model was employed with the intention of illustrating

the dynamic interplay of students' background characteristics and the ways in which environmental influences impact a depressed student's decision to remain or depart from college. There is opportunity for higher education institutions to re-evaluate particular programmatic endeavors and policy initiatives in order to effect change and provide services for student who struggle with depression, or other mental health challenges.

Using Astin's (1993) conceptual framework as a structural guideline for understanding the influence of particular personal characteristics in conjunction with institutional experience will allow researchers to recognize the distinct differences between the needs of depressed students, as compared to students who are not currently struggling with emotional distress, to achieve a more accurate perspective on the possible structural advancements that will enhance a depressed student's ability to ultimately remain in school, and to create tangible opportunities for higher education institutions to meet the challenge of the addressing the increasing mental health demands of students.

CHAPTER 3

This chapter describes the research methodology that was used in the study. The chapter includes the following sections: Research Design, Data Collection Procedures, Participants, Instrumentation, Outcome Characteristics, and Statistical Analysis.

Research Design

This study attempted to provide a more in depth analysis of the academic and non-academic factors that influence retention among first-year student who were symptomatic of depressive features as determined by a self-report assessment administered at the on-campus counseling center. This research repositioned psychological problems from an outcome measure based on Astin's (1993) conceptual framework of student persistence, to a cohort type characteristic in order to examine how academic and other variables influence retention among depressed first-year students. Specifically, the proposed study is designed to explore the following questions:

1. Among first-year college students with depressive symptoms, how do variables reflecting academic performance influence retention?
2. Among first-year college students with depressive symptoms, controlling for academic performance, do variables reflecting non-academic variables influence retention?
3. Among first-year college students with depressive symptoms, how does the interaction between academic and non-academic variables influence retention?

Table 2: Input, Environment, and Outcome Variables

Variables	
Input	Areas of Self Concern: Academic Performance/Study Skills (1=concern)
	Areas of Self Concern: Adjustment to College (1=concern)
	Areas of Self Concern: Decisions About Career/Major (1=concern)
	Areas of Self Concern: Procrastination/Getting Motivated (1=concern)
	Areas of Self Concern: Self esteem/Self Confidence (1=concern)
	Areas of Self Concern: Uncertain about Life After College (1=concern)
	Pre-Entry Characteristics: Gender (1=male)
	Pre-Entry Characteristics: High School GPA
Environment	First Year Program (1=involved in FYP)
	Community Service Involvement (hours)
	Student Government (1=participated in Student Government)
	Leadership Program Involvement (1=Involvement)
	Fitness/Exercise (hours)
	On Campus Employment (1=employed)
	Residential Status (1=reside on campus)
Bridge: Academic and Social Characteristics/Concerns	First Semester GPA
	Making Friends (1=concern)
	Relationship with Friends/Peers (1=concern)
	Relationship with Romantic Partner (1=concern)
	Roommate Conflict (1=concern)
Outcome	Retention (1=retained)

Data Collection Procedures

Prior to data analysis, I requested permission to conduct the study from the Institutional Review Board for Research Involving Human Subjects at the university from whom I have received the data, and from the university with which I am currently affiliated. The institution from which the data were derived is a mid-sized private, Catholic, liberal arts university located in the mid-Atlantic region of the United States. De-identified datasets were retrieved from the institution's counseling center, institutional research department, student development department, and human resources, all of which include first-year student cohorts from the 2005 fall semester, through the spring 2009 semester. The data are collected by individual offices using four basic methods: self-report, sign-in sheets, swipe card access, and automated participation registration.

I requested that the counseling center data were merged with the data from the Institutional Research Department and other individual campus departments in order to assess for environmental factors. I requested a fully de-identified data set in order to protect confidentiality.

Participants

The population for this study included a sample of 130 first-year students who were selected from an existing counseling data set from a mid-sized, mid-Atlantic, private, non-profit institution of higher learning. The sample included individual cohorts of first-year students (2005 through 2009) who were symptomatic of depressive features according to the on-campus Counseling Center's symptom checklist. Although the data were collected separately each academic year, hence cohort data, the data were pooled together as one data set to include all first-year students who were symptomatic of

depressive features. The analyses were conducted on the pooled data set, rather than on each cohort in order to allow for a larger sample for analysis.

The counseling center assesses current psychiatric functioning on each student who enters the center using the Psychotherapy Outcome Assessment and Monitoring System (POAMS). Those students who endorsed at least 4 depressive symptoms according to the POAMS comprised the analysis sample. Depressive symptoms include: Not liking yourself, difficulty concentrating, having no energy/everything is an effort, feeling sad most of the time, difficulty falling asleep, feeling hopeless about the future, having no interest in usual activities, thoughts of ending your life, difficulty making decisions, difficulty returning to sleep. In order to operationalize a minimal sub-threshold depressive symptom construct according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), four out of eight symptoms must have occurred most of the day nearly every day for the majority of the 2 weeks prior to the assessment.

Outcome Characteristics

According to Astin (1993, p. 38), when considering the entire I-E-O model, outcomes are, generally, the most critical and important to educators and researchers.” Astin (1993) cautions that although outcome measures are essentially “value-based,” making the distinction between a value statement that expresses a desire for a particular outcome (conceptual outcome), versus the measure itself that is selected for assessment (outcome measure). The outcome measure in this study is the retention rate at the end of the first academic year.

Symptom Criteria

The primary assessment tool from which depressive symptom criteria is derived in the proposed study is the Psychotherapy Outcome Assessment and Monitoring System (POAMS). The college counseling center uses a version of the POAMS, which was adapted from S.M. Kopta and J.L. Lowery (1997). The POAMS is “a comprehensive method for assessing adult outpatients’ progress and outcome in therapy” (Lowry, 2003, p. 17). The POAMS consists of three forms that are completed at 3 different time periods: 1) an intake form, 2) a monitoring scale, or a therapist-assessment/ problem list that the therapist completes during intake, and 3) a final outcome form that the client completes at treatment termination. All of the questions on both the intake and termination forms include Likert-based responses from 0 (extreme distress/poor functioning) to 4 (no distress/excellent functioning). In terms of interpretation, scores of 3 and above suggest that an individual is functioning in the “healthy” range, whereas individuals with score of 2 and under imply a level of distress for the particular item they are endorsing (Lowry, 2003).

The intake form consists of four scales: 1) psychotherapy scale, 2) well-being scale, 3) symptoms scale, and 4) life functioning scale.

The Psychotherapy Scale includes five items that are designed to measure a person’s perceived need for treatment, the chronicity of the problem, previous treatment experience, and optimism in regards to overcoming the present problem.

The Well-Being Scale consists of four questions relating to general levels of distress, emotional functioning, life satisfaction, and energy and motivation levels, specifically within the past two weeks.

The Symptoms Scale includes 29 specific emotional, behavioral, and physical expressions which are designed to measure nine symptoms clusters, one of which is depression.

The Life-Functioning Scale assessed level of client's ability to "get along" in particular areas of his/her life (e.g., school, relationships with others).

The Outcome Monitoring Scale is comprised of questions pertaining to the therapist's evaluation of the client and his/her respective assessment of the problem in terms of problem type, problem severity, and problem duration. This scale includes a Problem List of 25 potential areas of concern, from which the therapist is required to select his/her client's most important/significant area of concern, followed by a rating of the problem according to severity (2=mildly severe, 1= moderately severe, and 0= extremely severe) and duration (5= less than one month, 4=one to three months, 3=three to six months, 2=six months to one year, 1=one to two years, and 0=more than two years).

The Termination Scale is an essential replica of the intake form, with the exclusion of the "psychotherapy scale" portion of the form.

According to the Cronbach's Alpha measure, the POAMS exhibits solid internal consistency and reliability (.75 to .85 for the Well-Being Scale; .91 to .93 for Symptoms Scale; and .77 to .87 for the Life Functioning Scale (Lowry, 2003).

I-E-O Presentation

I used Astin's I-E-O model as a conceptual guideline for selecting the Input, Environment, and Output variables in the proposed study. First, with specific regard to academic self-perception, Astin's (1993) concept of "Intellectual Self-Esteem" parallels

the Self-Perception Input characteristics in the proposed study, as Intellectual Self-Esteem incorporates self-ratings of students' academic ability, drive to achieve, and intellectual self-confidence as part of its construct.

Second, in terms of social characteristics, Astin (1993, p. 398) determined that, "the students peer group is the single most potent source of influence on growth and development during the undergraduate years." Furthermore, Pascarella and Terenzini (1991, p. 204) determined that "postsecondary educational attainment appears to be related positively to changes in students' ratings of themselves relative to their peers. This positive relation appears to hold true in terms of both academic self concept (writing and mathematical abilities, general academic abilities, and intellectual self-confidence) and social self-concept (leadership ability, popularity in general and with the opposite gender, public speaking ability, and general social self-confidence)."

In the present study, self-perception and social characteristic input variables were extracted from the college's counseling center client information form, which asks students to rate themselves in the following areas of college life: academic performance/study skills, adjustment to college, decisions about career/major, finances, making friends, procrastination/getting motivated, relationship with friend/peers, relationship with romantic partner, roommate conflict, self-esteem/self-confidence, and uncertain about life after college. These variables are coded as 0 = no self-reported student concern or 1= self-reported student concern. In addition, I obtained first-semester GPA, High School Grade Point Average (HSGPA) calculated on a 4.0 scale from the college's institutional research department.

Astin (1993, p. 193) demonstrated that “the single strongest predictor of degree completion is the student’s high school GPA.” Additionally, Astin (1993) concluded that women were among those entering first-year students who were expected to complete a bachelor’s degree in four years. The present research similarly includes high school GPA and gender as input predictor variables.

Environment Characteristics

Astin (1993, p. 394) concludes that his assessment of college students “underscores the tremendous potential that student involvement has for enhancing most aspects of the undergraduate student’s cognitive and affective development. Learning, academic performance, and retention are positively associated with academic involvement, involvement with faculty, and involvement with student peer groups.” Moreover, Pascarella and Terenzini (1991) presented preliminary evidence that institutional social and academic integration is especially important throughout the first year of college. Living on-campus during the first year is also associated with student retention (Pascarella and Terenzini, 1991).

In order to assess “environment” variables and subsequent experiential influence, I used data gathered by the Institutional Research (IR) department, individual departments within the student development division, and the human resource department to assess environmental interaction. In an attempt to incorporate Astin’s (1993) theoretical environmental components within the proposed study, the environment variables included first-year students’ participation in (0 = not participate in, 1= participate in): first-year programs, service programs, student government, leadership programs, and recreational sports. Additional environment variables include:

employment (0=not employed, 1= employed at least part-time), residential status, (0= living off campus, 1= living in residential halls).

Statistical Analysis

Descriptive Statistics

The IBM SPSS Statistics Version 19, statistical package was used to analyze the data sets. Descriptive statistics were used to present the mean, median, standard deviations of the value of continuous variables used in the current study. The frequencies of binary and categorical variables were also reported. Internal consistency reliability estimates were calculated using Cronbach's Alpha on each of the Input and Involvement variables. Missing data were imputed using the mean replacement method (Afifi & Elashoff, 1966).

Principal Components Analysis

Principal components analyses were employed to analyze the Input and Environmental variables to determine the underlying structural relationship with retention. Correlation matrices were run to review the relationship between the variables. The principal components were to be selected based upon Kaiser's rule (Kaiser, 1960), which recommends the use of components whose eigenvalues are greater than one. Bartlett's test of sphericity was used to test if the null hypothesis that the correlation matrix is an identity matrix can be rejected. Graphically, the eigenvalues were plotted, in a scree plot, against their ordinal numbers to visually determine the number of components to retain for interpretation. The factor variance was maximized by using varimax rotation which attempted to maximize the variances of the variable loadings on

each factor. The regression weights in the component matrix and the rotated component matrix were reviewed and interpreted.

The principle components analysis was data driven, and thus, anticipated to produce a reduced set of components for each of the Input (Self-Perception, Pre-Entry Characteristics, Social Characteristics) and Environment (Participation) constructs. These factors were intended to be included in the equations using individual logistic regressions to address each research question independently.

Logistic Regression Analysis

Multiple regression techniques were utilized as a statistical tool to analyze I-E-O models (Astin, 1991). This technique enables researchers to control for variables, other than those that are of interest. Unlike ordinary least squares (OLS) regression, logistic regression models were used to examine the relationship between binary/dichotomous dependent and independent variables. In the present study, a logistic regression model was used to analyze the relationship between retention (the dependent variable) and the variables reflecting the constructs from the I-E-O model (Hosmer & Lemeshow, 2000). A multi-step (blocks of conceptually linked predictor variables) approach was employed to enter conceptually-similar predictor variables into the equation.

Astin (1993, p. 105) suggests that a regression analysis is a “powerful and efficient technique for controlling large numbers of variables at the same time,” and he used multiple regression analysis when conducting I-E-O studies. According to Astin (1993) the I-E-O design does not require that the input variables be modeled in a particular way. However, Astin (1993) suggests that for the purpose of theoretical explanation it may be useful to model the input variables according to the general

expectation of predictive occurrence. Therefore the present study attempted to include the use of three statistical models, employing logistic regression analysis.

Model 1

$$g(x) = \beta_0 + \beta_1 x_{High\ School\ GPA}$$

Astin (1993) described the “complexity” of the “retention phenomenon,” and determined that among the thirty-three significant student input characteristics that predicted degree completion, high school GPA represented the strongest overall predictor of completion. Model 1, the base model, was intended to examine if retention is influenced by academic performance, High School GPA. High school GPA was incorporated in the model in order to examine the influence of grade point average on retention.

Model 2

$$g(x) = \beta_0 + \beta_1 x_{High\ School\ GPA} + \beta_2 x_{self-perception} + \beta_3 x_{pre-entry\ characteristics} \\ + \beta_4 x_{first\ semester\ GPA} + \beta_5 x_{social\ characteristics} + \beta_6 x_{participation}$$

Model 2 was intended to add into the equation the reduced set of variables, from the principal components analysis of self-perception, pre-entry components (gender), first-semester GPA, social characteristics and participation.

Model 3

$$\begin{aligned}
 g(x) &= \beta_0 + \beta_1 x_{\text{High School GPA}} + \beta_1 x_{\text{High School GPA}} \times \beta_2 x_{\text{self-perception}} \\
 &+ \beta_1 x_{\text{High School GPA}} \times \beta_3 x_{\text{pre-entry characteristics}} \\
 &+ \beta_1 x_{\text{High School GPA}} \times \beta_4 x_{\text{first semester GPA}} \\
 &+ \beta_1 x_{\text{High School GPA}} \times \beta_5 x_{\text{social characteristics}} + \beta_1 x_{\text{High School GPA}} \times \beta_6 x_{\text{participation}}
 \end{aligned}$$

Model 3 was designed to potentially analyze the interaction effects of High School GPA and each of the academic and non-academic variables that are significant, ($p < 0.05$) from Model 2. The interaction effects are limited to those academic and non-academic variables that are significantly related to retention while holding High School GPA constant. This model sought to explore if relationships between High School GPA and both academic and non-academic factors concur with previous findings in the literature in non-depressed student sub-populations.

Because the present study involved the use of multiple cohorts that were pooled as one group, fixed-effects logistic regression, I employed the maximum likelihood estimation (MLE) techniques. Both fixed-effects and random-effects models take into account unobserved differences or cohort heterogeneity.

Fixed-effects models allow for unobserved group heterogeneity or the group error term to be correlated with the independent variables. Random effects models assume the group error is not associated with the independent variables and hence have more restrictive assumptions. Random-effects models, however, allow for time-invariant variables to play a role as explanatory variables. In fixed-effects models, time-invariant variables are absorbed by the intercept.

Hausman specification tests were used to further validate the use of a fixed-effects regression versus a random-effects logistic regression model. Based on the results of the Hausman specification test, the estimated beta coefficients and corresponding odd-ratios were intended to be shown for either the fixed- or random-effects logistic model in order to assess the probability of depressed students being retained, given their particular background characteristics and exposure to certain experiences.

Global testing of the null hypothesis for each of the models was conducted using the likelihood ratio test. Each of the individual estimated coefficients, within a model, was tested with the Wald statistic. The likelihood ratios tests using the G statistic as noted in Hosmer and Lemeshow (2000) was employed to compare the difference between the models, two models at a time. As each variable set is added to the model, self-perception, pre-entry characteristics, social characteristics and participation variables, the current model will be compared to the previous model to determine if the additional explanatory variables significantly contribute to determining student retention.

The logistic regression models' results are presented in tabular format. For each model the variable, coefficient, standard error, Wald statistic, degrees of freedom, probability and odds ratio is presented.

CHAPTER 4

Participants

The sample in the present study included 130 help-seeking, first-year students who were selected from an existing counseling center dataset from a mid-sized, mid-Atlantic, religiously-affiliated institution of higher learning. The sample included individual cohorts of first-year students (2005 through 2009) who were symptomatic of depressive features according to the Psychotherapy Outcome Assessment Monitoring System (POAMS, Lowry, 2003).

Descriptive Statistics

De-identified datasets, inclusive of all first-year cohorts from 2005 through 2009 were received from the Counseling Center, which included the Student ID, age, and data from Symptoms Scale on the intake version of the POAMS (which included 29 symptoms). Depressive symptoms included: difficulty concentrating, having no energy/everything is an effort, feeling sad most of the time, difficulty falling asleep, feeling hopeless about the future, having no interest in usual activities, thoughts of ending your life, difficulty making decisions, and difficulty returning to sleep. A total of 99 students met the *a priori* definition of depressive features, having at least five out of nine endorsed depressive symptoms. Each symptom was evaluated according to having been present for most of the day, nearly every day for the majority of the two weeks prior to the assessment. In an attempt to increase the sample size without compromising the description of the depressive construct, the symptom criteria were reduced from five

endorsed symptoms to four endorsed symptoms; this change increased the sample to 130 students.

Although the data were collected separately for each academic year, the data were pooled together to form one data set that included all first-year students who were symptomatic of depressive features. The reason for conducting the analyses on a pooled dataset, rather than in individual cohorts, was to allow for a larger sample size for analysis. Table 1 illustrates the number of students by cohort. The total number of first-year students between the academic years of 2005-2009 was 4863 (fall 2005 = 898, fall 2006 = 946, fall 2007 = 983, fall 2008 = 1068, and fall 2009 = 968). Respectively, the number of students who were symptomatic of depressive features by cohort were 17 (6 % male), 19, (26 % male), 17 (29 %male), 46 (37%male), and 31 (29 %male). The average age of the students was 18.31 years (see Table 1). Students were on average 18 years of age and predominantly female.

Table 3: Cohort Demographics

Cohort	Total Number in Cohort	Number who met Depressive Symptom Criteria	Depressive Symptom Sample	
			Gender (Percent Male)	Age (Average)
Fall05	898	17	6%	18.65
Fall06	946	19	26%	18.16
Fall07	983	17	29%	18.24
Fall08	1068	46	37%	18.39
Fall09	968	31	29%	18.13
Total	4863	130	28%	18.31

There were only four missing data points (18, 10, 14, and 25) in the POAMS depressive symptom dataset, but despite these missing symptoms, these students had

already met the minimum criteria of at least four endorsed depressive features.

Consequently, imputing data for these points was unnecessary. The primary endorsed depressive features are as follows: “feeling sad most of the time,” “difficulty concentrating,” “difficulty falling asleep,” “having no energy/everything is an effort” and “difficulty making decisions” (see Table 2).

Table 4: Reporting Profile and Missing Data of POAMS Responses

Scale	Almost Always (0)	Often (1)	Sometimes (2)	A little bit (3)	Never (4)	# of Missing Data Points
Difficulty Concentrating	29	54	35	8	4	0
Having no energy, everything is an effort	8	32	42	34	13	1
Feeling sad most of the time	36	42	37	9	5	1
Difficulty falling asleep	32	37	34	14	13	0
Feeling hopeless about the future	16	28	34	34	17	1
Having no interest in usual activities	8	24	32	35	31	0
Thoughts of ending your life	1	5	8	25	91	0
Difficulty making decisions	16	26	36	36	15	1
Difficulty returning to sleep	23	35	22	21	29	0

Input Variables

There were no missing data points for the input variables, environmental variables, or retention variable (outcome). There were only six missing data points

within the bridge dataset, all of which were first-semester GPA, and one missing data point for High School GPA. The missing GPA's were imputed by taking the average of the respective cohort in order to impute those data points. Thus, out of a total 2730 possible data points (130 students and 19 input, environmental, and bridge variables) only 0.27% were missing (7/2730).

Table 5: Student Descriptive of Input, Environmental, Bridge, and Retention Data

Variables		Min	Max	Percent or Average	Stdev
Input	Areas of Self Concern: Academic Performance/Study Skills (1=concern)	0	1	45%	0.50
	Areas of Self Concern: Adjustment to College (1=concern)	0	1	52%	0.50
	Areas of Self Concern: Decisions About Career/Major (1=concern)	0	1	21%	0.41
	Areas of Self Concern: Procrastination/Getting Motivated (1=concern)	0	1	28%	0.45
	Areas of Self Concern: Self esteem/Self Confidence (1=concern)	0	1	28%	0.45
	Areas of Self Concern: Uncertain about Life After College (1=concern)	0	1	15%	0.36
	Pre-Entry Characteristics: Gender (1=male)	0	1	28%	0.45
	Pre-Entry Characteristics: High School GPA	2	4	3.45	0.39
Environment	First Year Program (1=involved in FYP)	1	1	100%	0.00
	Community Service Involvement (hours)	0	80	2.48	8.51

Variables		Min	Max	Percent or Average	Stdev
	Student Government (1=participated in Student Government)	0	0	0%	0.00
	Leadership Program Involvement (1=Involvement)	0	1	17%	0.38
	Fitness/Exercise (hours)	0	94	3.63	14.06
	On Campus Employment (1=employed)	0	1	27%	0.45
	Residential Status (1=reside on campus)	0	1	98%	0.12
Bridge: Academic and Social Characteristics/Concerns	First Semester GPA	1	4	2.98	0.61
	Making Friends (1=concern)	0	1	28%	0.45
	Relationship with Friends/Peers (1=concern)	0	1	17%	0.38
	Relationship with Romantic Partner (1=concern)	0	1	22%	0.41
	Roommate Conflict (1=concern)	0	1	15%	0.35
Outcome	Retention (1=retained)	0	1	68%	0.47

Table 3 illustrates several findings worth mentioning with regard to the variables:

First, in reference to self-concern, “adjustment to college,” “academic performance/study skills,” “procrastination/getting motivated,” and “self-esteem/self-concept” were overall primary areas of self-concern. Twenty-eight percent of the sample was male, and the average high school GPA was 3.45. Interestingly, students in the sample only participated in an average of 2.48 service hours over the course of the academic year and visited the fitness center an average of 3.63 times over the year. No student held a student government position, yet 100% of students participated in first-year programs. Students resided primarily on campus (98 %). Relationship concerns included in the bridge block, ranged from 15 % (concern over a roommate conflict) to 28 % concern with making friends). The overall retention rate for the sample include in this study is 68 %

which is about the same as the national average retention rate for four-year private universities (68.7%) but much lower than the average retention rate for the particular institution from which this sample is derived (89%).

Principal Components Analysis

A principal components analysis was employed to analyze the input, bridge, and environmental variables to determine the structural relationship of those variables on retention. Student Government and First Year Program Involvement variables were not included in the analyses, as **no** students participated in Student Government and **all** students participated in a First-Year Program. Cronbach Alpha scores were calculated for each factor that had an Eigenvalue greater than 1 so that the internal consistency and reliability of each factor could be determined. None of the factors produced a Cronbach Alpha score of greater than 0.6, the minimum accepted standard of reliability. Consequently, the utilization of the factors was not employed in the logistic regressions. No further data reduction methods were employed. Instead, the proposed models were preformed utilizing all of the input, bridge, and environmental variables.

Logistic Regression Analysis

A series of logistic regressions, for the pooled cohort data, were employed on the following models: Pre-entry Characteristics; Pre-entry Characteristics + Self Perception; Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics; Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment (Involvement). The final model included individual cohorts in order to determine potential cohort effects. The fall 2005 cohort was selected as the reference group, which created the following model: Pre-Entry Characteristics + Self Perception +

Academic/Social Characteristics (Bridge) + Environment (Involvement) + Cohort.

Again, the variables of First-Year Programs and Student Government were not included due to the fact that all of the students participated in First-Year Programs and none of the student were elected to, or participated in, Student Government. The logistic regressions yielded significance for two of the models: 1) Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment (Involvement) (Chi Square = 43.203, $df = 18$, $p = .001$) and 2) Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment (Involvement) + Individual Cohort model (Chi Square = 52.572, $df = 22$, $p = .000$). Table 4 illustrates the results of these models.

More specifically, Table 5 represents the individual effect of the first significant model, Pre-Entry Characteristics + Self Perception + Academic Social Characteristics + Environment (Involvement). The significant effects included: Self-Concern with Academic Performance/Study Skills, First-Semester GPA and Exercise. The students who do not have a concern for academic adjustment are 3.0 more times likely to be retained than students who do have a concern with academic adjustment. First semester GPA had a positive impact on retention to the extent that for each one point increase in GPA, students were 2.6 times more likely to be retained in the institution. An inverse relationship is noted for exercise, as students who did not utilize the institution's on-campus fitness center were 1.8 times more likely to be retained than students who did not exercise at the institution's fitness center. The final model controlled for cohort, and that model is described in Table 7.

Table 6: Model Characteristics Logistic Regressions

	Chi-square	df	Sig.
Pre-Entry Characteristics	1.644	2	.440
Pre-Entry Characteristics + Self Perception	10.875	8	.209
Pre-Entry Characteristics + Self Perception + Academic Social Characteristics	16.584	13	.219
Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment	43.203	18	.001
Pre-Entry Characteristics + Self Perception + Academic Social Characteristics + Environment + Cohort	52.572	22	.000

Table 7: Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment Logistic Regressions

	B	S.E	Wald	df	Sig.	Odds Ratio
Self Concern Academic Performance/Study Skills	.763	.565	1.825	1	.177	2.145
Self Concern Adjustment to College	-1.123	.541	4.310	1	.038	.325
Self Concern with decisions about Career/Major	-.475	.644	.544	1	.461	.622

	B	S.E	Wald	df	Sig.	Odds Ratio
Self Concern Procrastination/Getting Motivated	.621	.704	.776	1	.378	1.860
Self Concern Self Esteem/Self- Confidence	.383	.601	.407	1	.523	1.467
Self Concern with Being Uncertain about Life After College	-.320	.735	.189	1	.664	.726
Gender	.692	.552	1.574	1	.210	1.998
HSGPA	.217	.712	.093	1	.760	1.243
First-semester GPA	.971	.476	4.167	1	.041	2.640
Concern with Making Friends	.054	.597	.008	1	.928	1.055
Concern with Relationship with Friends/Peers	-.316	.751	.177	1	.674	.729
Concern with Relationship with Romantic Partner	.050	.618	.006	1	.936	1.051
Concern with Roommate conflict	.576	.849	.460	1	.498	1.778
Service Program	.119	.066	3.228	1	.072	1.127
Leadership Program	.618	.776	.634	1	.426	1.855
Exercise	-.166	.062	7.164	1	.007	.847
Employment	.323	.612	.279	1	.597	1.381

	B	S.E	Wald	df	Sig.	Odds Ratio
Residential Status	- 20.735	25191.015	.000	1	.999	.000
Constant	17.778	25191.015	.000	1	.999	52574615.901

The results for adjusting the input, bridge, and environmental variables by cohort are presented in Table 6. Interestingly, none of the analyses revealed unobserved cohort effects. However, there was one significant model, the final model, Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment (Involvement) + Individual Cohort model ($\chi^2 = 52.572$, $df = 22$, $p = .000$). As shown in Table 7, the significant effects were Self-Concern for Academic Performance/Study Skills, First-semester GPA, and Exercise. The students who did not express a self-concern for academic adjustment were 3.7 times more likely to be retained than students who did not express a self-concern for academic adjustment in college. Moreover, first semester GPA had a positive impact on student retention, illustrated by the fact that for each one-point increase in GPA, students were 3.2 times more likely to be retained in school. An inverse relationship is noted for exercise, as students who did not appear to exercise at the institution's fitness center were 1.2 more times likely to be retained than students who exercised at the on-campus fitness center.

Table 8: Model Characteristics and Cohort Logistic Regressions

	Chi-square	df	Sig.
Pre-Entry Characteristics + Cohort	4.135	6	.658
Pre-Entry Characteristics + Self Perception + Cohort	12.633	12	.396
Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Cohort	18.879	17	.336
Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment + Cohort	52.572	22	.000

Table 9: Pre-Entry Characteristics + Self Perception + Academic Social Characteristics + Environment + Cohort Logistic Regressions

	B	S.E.	Wald	df	Sig.	Odds Ratio
Self Concern with Academic Performance/Study Skills	.752	.603	1.556	1	.212	2.122
Self Concern with Adjustment to College	-1.328	.587	5.117	1	.024	.265
Self Concern with Decisions about Career/Major	-.378	.699	.294	1	.588	.685
Self Concern with Procrastination/getting Motivated	.613	.749	.670	1	.413	1.847
Self Concern Self Esteem/Self-Confidence	.437	.625	.490	1	.484	1.548
Self Concern with Being Uncertain about Life After College	-.388	.786	.243	1	.622	.678
Gender	1.022	.605	2.851	1	.091	2.779
HSGPA	.513	.777	.436	1	.509	1.671
First-semester GPA	1.182	.521	5.160	1	.023	3.262
Concern with Making Friends	.019	.635	.001	1	.976	1.019
Concern with Relationship with Friends/peers	-.043	.810	.003	1	.958	.958
Concern with Relationship with Romantic Partner	-.134	.646	.043	1	.836	.875
Concern with Roommate Conflict	.398	.907	.193	1	.660	1.489
Service Programs	.107	.076	1.949	1	.163	1.112
Leadership Programs	.979	.829	1.397	1	.237	2.663

	B	S.E.	Wald	df	Sig.	Odds Ratio
Exercise	-.251	.080	9.851	1	.002	.778
Employment	.125	.653	.037	1	.848	1.133
Residential Status	- 20.562	25856.563	.000	1	.999	.000
Fall06	-1.510	1.489	1.028	1	.311	.221
Fall07	-.747	1.337	.312	1	.576	.474
Fall08	-2.685	1.239	4.698	1	.030	.068
Fall09	-2.339	1.234	3.593	1	.058	.096
Constant	15.820	25856.564	.000	1	1.000	7419435.893

A final set of exploratory analyses were conducted to assess the relationship that each independent variable had on retention. The dichotomous independent variables were analyzed using a Chi Square test, and the continuous variables were analyzed using *t*-tests. The only significant results were the self-concern with adjustment to college variable. Of the students who reported a self-concern with their adjustment to college, 67% of them were not retained by the end of the academic year ($\chi^2 = 5.12$, $df = 1$, $p = 0.024$). Students who were retained at the institution had fewer visits to the fitness center (< 1 visit per year versus 10.4 visits/per year, respectively; $t = 40.12$, $df = 128$, $p = 0.00$) compared to those students who were retained by the end of the year (<1 visit per/year).

CHAPTER 5

This study explored possible factors associated with retention among first-year students with depressive features. Research demonstrates that mental health issues among college students have grown to epidemic proportions over the last three decades (Benton et al., 2003; Kitzrow, 2003), thus forcing higher education institutions to develop and implement support systems for students who are in need of emotional assistance. In particular, the first-year student cohort represents a significant concern for two main reasons: 1) most first-year students depart by the end of their first year of college (Tinto, 1993) and 2) first-year students' lowest self-reported emotional health ratings in the past 25 years (Pryor, et al., 2010). However, although there is empirical evidence that casts a somewhat negative light on the state of mental health across college campuses, there is also a level of optimism surrounding the potential for preventing student departure (Levitz & Noel, 1989), especially as it relates to mental health issues and prospects for future research.

I conducted a principal components analysis to determine which, if any, predictor variables were associated with retention among first-year students who presented at the on-campus counseling center with depressive symptoms. The sample included individual cohorts of first-year students (2005-2009) who were symptomatic of depressive features according to POAMS.

The study produced only one significant result, which is illustrated in the final "Transition" model: Pre-Entry Characteristics + Self Perception + Academic/Social Characteristics + Environment (Involvement) + Individual Cohort. Nevertheless, there is also substantial opportunity for theoretical consideration of the results of the current

study, most notably as they pertain to a unique sample of students with depressive features. The individual significant effects were Self-Concern for Academic Performance/Study Skills, First-semester GPA, and Exercise.

The students who did not express a self-concern for academic adjustment were 3.7 times more likely to be retained than those students who did express a self-concern for academic adjustment in college. Moreover, first semester GPA had a positive impact on student retention, illustrated by the fact that for each one-point increase in GPA, students were 3.2 times more likely to be retained in school. An inverse relationship is noted for exercise, as students who did not appear to exercise at the institution's fitness center were 1.2 times more likely to be retained than students who exercised at the on-campus fitness center.

Benton et al. (2003) similarly revealed, from their 13-year longitudinal study of college counseling center data, that "academic skills" were among the self-reported "problem areas" exhibited in a linear trend across the three time periods that were assessed. It is also important to note that Benton et al. (2003) revealed upward linear trends in "situational" concerns, which may capture elements of "adjustment," although the exact context of "situational" is unclear. Admittedly, Benton et al. (2003) suggest that the lack of specificity in relation to self-reported "situational" problems promotes speculation and requires further clarification.

Essentially, the significant finding of the present research revealed that self-perception, along with academic performance and first-semester GPA were positively associated with retention. Similar to Astin's (1993) "chicken-egg" analogy, the result begs the question of whether students' depressive symptoms occurred prior to a decline

in self-perception, academic functioning, and GPA, or if a decline in self-perception, academic functioning, and/or GPA precipitated depressive symptoms.

Self-Reported Concerns

There were four primary areas of self-reported concern for first-year students upon intake at the counseling center which included: adjustment to college (52%), academic performance/study skills (45%), procrastination/getting motivated (28%), and self-esteem/self-concept (28%). These four areas of expressed self-concern are consistent with recent literature which reveals chronic academic and adjustment concerns among a clinical college student population (Erdur-Baker, et al., 2006). Additionally, “self-esteem/self-concept” concerns ranked third, and tied with concern about “procrastination/getting motivated”. These findings may provide utility for the institution assessed in the present study, as the university offers numerous programs through various offices in campus that direct efforts regarding these particular concerns. The university may benefit from extending information beyond orientation to first-year programs, advisors, and peer groups in order to facilitate retention among students who struggle in the aforementioned areas.

These descriptive data collected in the present study lend credence to the possibility that overall adjustment to college is a broad category which captures over 50% of first-year students’ self-reported concerns within the college counseling center. Self-concern with academic performance/study skills represents almost half of the self-reported concerns of first-year students within the Counseling Center. It is noteworthy that adjustment and academic concerns pose such an influence among these students and

raises the distinct possibility that depression may co-occur with learning issues/differences/disabilities, which may be an area of future research.

Furthermore, in terms of the institution's 2005-2009 gender demographic, women comprise the majority of first-year students for each cohort (2005-2006 = 58.6%, 2006-2007 = 63.0%, 2007-2008 = 55.4%, 2008-2009 = 59.6%, and 2009-2010 = 61.2%), with an overall percentage of 59.6% for first-year female students entering the institution between 2005 and 2009. Although women comprise over half of the first-year student population, the incidence rates for depressive symptoms among women in each cohort included in the present sample are considerably higher and not necessarily commensurate with the general female population at the present institution. More specifically, the results of the present study reveal that almost 75% of the pooled participant sample was comprised of women. Percentages for first-year, female students per cohort are as follows: (2005-2006 = 94%, 2006-2007 = 74%, 2007-2008 = 71%, 2008-2009 = 63%, and 2009-2010 = 71%). This finding illustrates the potential opportunity for the institution to focus its efforts toward first-year female students who report/demonstrate depressive symptoms.

In addition to focusing on women with depressive features, it may be useful to better understand the characteristics associated with a help-seeking population. In general, over 60% of the students who are seen at the counseling center each year are self-referred for a variety of reasons. However, future research may focus on self-referred first-year students, in particular in order to discern the nature of first-year students' concerns and whether these students demonstrate the emotional wherewithal to

seek help when needed and the particular concerns they reveal once they arrive in the counseling center.

Furthermore, of the individual cohorts derived from the institution's counseling center, the overall percentage of students who were considered to be "depressive" according to the construct created in the current study were quite low, although they did increase slightly in the last two years within the collected dataset (2008-2009). More specifically, respective percentages of "depressive" students, as determined by the outcome of the counseling center assessment are as follows: cohort 2005 – 1.9%, cohort 2006 – 2.0%, cohort 2007 – 1.7%, cohort 2008 – 4.3 %, and cohort 2009 – 3.2 %, thus illustrating a slight increase in 2008 and 2009. Even though the 2008 and 2009 academic years may be somewhat reflective of the growing number of college students with depressive features, it is important to note that these students were self-seeking, although the probability that non-clinical samples are symptomatic of depressive features must not be undermined.

Depressive Construct

The three primary areas of concern relating to the depressive construct in the present study include self-reports of: 1) "feeling sad most of the time," 2) difficulty concentrating, and 3) difficulty falling asleep. The research revealed that within the depressive construct, "thoughts of ending your life" ranked as the lowest concern among the sample, with only one person having these thoughts "often," while 91 students reported "never" having thoughts of ending your own life." For the particular institution from which the data have been gathered, this finding is re-assuring, especially given the fact that severe depressive symptoms, such as suicidality, are a startling reality at higher

education institutions nationwide. For example, the National Research Consortium of Counseling Centers in Higher Education based at the UT-Austin recently determined that of the 15,010 undergraduate students that were included as part of the consortium, within the “past 12 months,” 37% of students have thought, “I wish this would all just end;” 11% “wishing I was dead;” and 6% “seriously considered attempting suicide.” Additionally, Benton (2003) determined that the number of suicidal students tripled between the years of 1988 and 2001.

Limitations

There are several limitations of the current study. Primarily, the small sample size was a significant impediment to obtaining enough power to detect a difference in retention. The reduced sample size was most likely attributable to two factors: 1) the narrow symptomatic scope of the derived sample (depressive symptoms only) and 2) using only a first-year student population who sought services at the on-campus counseling center. Generalizability is minimal, although the results achieved in the present research are pertinent to the institution from which the sample is derived.

Additionally, in the present study, the principal components analysis did not yield any reduction of input variables for the logistic regressions. Future research may benefit from a-priori theoretical selection of input and output variables associated with a depressive student population. A reduced variable set may have provided a more focused research question and ultimately contributed to statistical significance within the regression models. Furthermore, the incorporation of a control group would have allowed for a comparison between students with depressive features and the general student population and retention outcomes. Another possibility would be to compare

students with depressive features to students with depressive features who have actively engaged the campus equivalent of disability support services in order to determine the possible relational impact that appropriate accommodations for students with depressive features have on retention.

Although depressive symptoms have remained at the forefront of the mental health discussion in higher education, there are many other psychological/psychiatric syndromes that may be assessed independent of depressive illness, or in conjunction with depressive illness. The present study examined only depressive features, without the consideration of additional mental health symptoms, thus allowing for the possibility that additional psychological symptoms would have yielded higher percentages of emotional health disturbances. More specifically, if anxiety symptoms would have been included in the current research, this addition may have provided a broader contextual perspective of mental health issues in college.

The “psychological well-being” construct that Astin (1993) originally included on the CIRP survey and remains on the survey today, consists of only 2 components: 1) “felt depressed,” and 2) “felt overwhelmed by all I had to do.” Student endorsements of “felt depressed” and “felt overwhelmed by all I had to do” capture only a limited depressive/anxiety profile. In 2011, the CIRP survey revealed scores of 6.7% (“felt depressed”) and 28.5% (“felt overwhelmed by all I had to do”), for all baccalaureate institutions and 6.5% (“felt depressed”) and 30.0% (“felt overwhelmed by all I had to do”) for four-year Catholic colleges. This result draws attention to the importance of more closely examining the anxiety component of mental health among college students,

as percentages for “feeling overwhelmed” surpassed “depressed” symptoms endorsements.

The current sample included only first-year students. Although the first year is a critical time for many college students, it would be prudent to examine the overall landscape of mental health issues across class years at individual institutions. Such information would be useful for policy development and implementation based on the institution’s mental health demographic, related retention outcomes, and ability to work with students who have stopped out to address mental health issues and subsequently returned to school.

Third, the sample is self-seeking of therapeutic care from the counseling center. As previously mentioned, self-seeking populations tend to present with a greater degree of symptom severity (Hunt & Eisenberg, 2010). Whether or not these students were being treated therapeutically and/or with medication was not assessed. The possibility exists that depressive symptoms may have been reduced and academic functioning restored to a higher level if the student had been engaged in a therapeutic and/or psychiatric (medication) regimen.

The fourth limitation is the use of a self-report assessment, rather than a clinical diagnostic tool, which would have yielded greater accuracy. However, diagnostic clinical assessments are more costly and require a highly trained staff. These assessments require a much longer time frame to administer compared to a self-report questionnaire. The benefit of a diagnostic assessment is illustrated in a national epidemiological study of psychiatric conditions among young adults ages 19-25, which revealed that almost 45.8 % of college students met diagnostic criteria for at least one psychiatric disorder and were

not likely to receive treatment for any disorder (Blanca, Okuda, Wright, Hasin, Grant, Liu, & Olfson, 2008). This epidemiological survey utilized diagnostic tools for conducting assessments, which allowed for greater clinical accuracy compared to self-administered questionnaires.

Most colleges and universities do not have the time and/or resources to conduct diagnostic interviews. Instead, they rely on self-reported information/symptoms obtained by questionnaires and check-lists. However, although diagnostic accuracy may be reduced by using self-report measures, student endorsement of other significant symptoms remains a valid component for profiling mood disorders, such as depression.

It is the “disabling symptoms” that often contribute to a student’s temporary or permanent departure from higher education. The implication for policy initiatives surrounds supportive structures for those students who intend to depart, or who have stopped out and since returned to college. Given the fact that Benton, et al., (2003) demonstrated that depression rates for students doubled over a 13 year period, it is essential to begin creating models of retention for emotionally at-risk student populations.

With regard to particular variables included in the study, namely the yearly total number of hours of community service involvement, the hourly total for both variables was much lower than expected. Although the institution from which these data were collected espouses the importance of community outreach, the results indicated that first-year students with depressive features engaged in minimal service projects. The question remains whether students with depressive features demonstrate a reduction in community service hours as a function of depressive illness, or if first-year students, in general, do not participate in community service to the degree that other class years may participate.

Implications for Future Research

We have learned that mental health problems across college campuses are pervasive (Kitzrow, 2003). We are learning that longitudinal studies have provided much needed information with regard to the scope of mental health problem among college students (Benton et al., 2003); Zivin et al., 2010). Research also has provided information regarding the pervasiveness and increasing symptom level and severity of emotional problems between baseline and follow-up measures in college (Zivin et al., 2010). There is also evidence that many students who need psychological treatment are not obtaining treatment (Zivin et al., 2009).

Reflecting on Astin's (1993) work, it is once again important to remember that the data collected on first-year students between 1985-1989 revealed that "the most notable declines observed during the college years are in the students' sense of psychological well-being"(p. 136). Compared to the 63.3% of first-year students between 1985-1989 who self-reported emotional health ratings at the highest 10 %, or "above average, the 2011 CIRP survey data, which assessed the exact same emotional health construct, revealed that only 52.6% of students rated themselves as "above average" in that same category.

Astin (1993) cautioned that there is a great lack of clarity in terms of the specific role that the overall college experience plays in the decline of a student's psychological well-being. A similar circumstance prevails today, which is that students' overall emotional well-being is declining, but the extent to which universities play a role is unclear. The data do not capture students with depressive features who do not self-report, who may already be receiving counseling for pre-existing/ongoing symptoms, and/or

those students who present to other offices on campus, such as the Dean of Students Office due to an emergent depressive situation.

However, through my own research efforts to date, it appears that there is limited research on effective strategies and policies to enhance retention among emotionally at-risk students. Based on the present study, the results may indicate the possibility that traditional retention models are not as applicable to a “clinical” population. As research shows that the general college population struggles with mental health issues and emotionally at-risk populations, it is imperative that innovative strategies are applied to such populations.

A recent report entitled, “Completing College: Assessing Graduation Rates at Four Year Colleges” (DeAngelo, Franke, Hurtado, Pryor & Tran, 2011) introduces the positive association between four, five, and six year graduation rates and self-ratings of emotional health and drive to achieve. This finding has provided the impetus for the development of innovative strategies that aim to enhance retention among college students. The report implores institutions to consider “more personal characteristics” in the admissions process, only of which is self-reported emotional health. By using a technique that secures a more cohesive set of broad personal characteristics, precision of graduation-rate prediction can be significantly increased over time (66% for four years, 54% for five years, and 53% by six years). To this effect, it is essential to examine institutional capacity for applying cutting-edge techniques to emotionally at-risk college student populations.

The overall result of the present study determined that 68% of the students sampled were retained from their first-to-second year of school. This number is almost

exactly on par with national first-to-second year retention rates for private, four-year, BA/BS institutions, which is 68.7% (CIRP, 2011). However, for retention rates for the institution studies in the current research, first-to-second year retention rates are generally much higher, hovering at roughly 89% (average 2005-2009 cohort data). This outcome is relevant to the institution's strategy to improve retention rates among at-risk populations.

I have been unable to find any educational and/or psychological studies that explain the ways in which mental health is influenced by the traditional college "involvement" characteristics that are considered to be the theoretical underpinnings of persistence. Efforts to address mental health issues on college campuses often focus upon the counseling components and/or recommendations for therapy. Instead, the development of a cohesive institutional policy that introduces community and institutional support networks may be an effective technique for promoting mental health and overall retention rates.

Essentially, not all mental health issues are captured in the counseling center, despite evidence of reduced stigma associated with mental health problems. As overall prevalence rates of emotional distress among college students seem to be increasing each year (Zivin et al., 2009), an appropriate approach may be to look at the totality of higher education institutions as potential agents of change in the college student mental health crisis. Recent research on college student mental health may spawn a transformation of retention models – with a shift in focus from involvement to an emphasis on "support." Hunt and Eisenberg (2010) succinctly state:

"Campuses have many channels through which they might have a positive effect on mental health. College represents the only time in many people's lives when a

single integrated setting encompasses their main activities – both career related and social – as well as health services and other support services. Campuses, by their scholarly nature, are also well-positioned to develop, evaluate, and disseminate best practices. In short, colleges offer a unique opportunity to address one of the most significant public health problems among late adolescents and young adults” (p. 3).

There is variation among institutional practices in terms of intervention programs. As Hunt and Eisenberg (2010) describe, “the variation across campuses in resources, programs, and policies does not appear to be based on systematic evidence about what works best in different types of settings” (p. 7). Instead, it may be useful to shift our attention from the “involvement” construct of understanding the persistence process to a more “supportive model” that would speak to the mental health needs of students who should be able to be retained in higher education with the appropriate support networks. Our attention should be re-focused as a comprehensive institutional effort of policy development and implementation.

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