ABSTRACT

Title of Document: THE EFFECT OF LIVING-LEARNING PROGRAM PARTICIPATION ON COLLEGE STUDENTS' MENTAL HEALTH

John E. Fink, Master of Arts, 2012

Directed By: Dr. Mary L. Hummel, Affiliate Faculty Member
Department of Counseling and Personnel Services

This thesis used Astin's (1993) I-E-O framework to explore how participation in a living-learning program as well as other college environments affected college students' mental health. Data from seven unique institutions that administered an additional mental health module as a part of the 2008 and 2009 National Study of Living-Learning Programs were used in this study. Independent samples t tests, chi-squared tests, and multiple regression were the statistical methods used to investigate three research questions with Keyes et al. (2008) Mental Health Continuum – Short Form (MHC-SF) as the dependent variable.

The final predictive model explained 33.5% and 37.6% of the variance in students' MHC-SF scores in 2008 and 2009, respectively. Findings did not evidence a predictive relationship between students' participation in a living-learning program and their mental health. Several aspects of the college environment favorably predicted students' mental health, including ease with transition to college, socially supportive residence hall climate, self-confidence, sense of belonging, and sense of civic engagement. Other variables unfavorably predicted students' mental health, including identification as lesbian, gay, or bisexual, as well as emotional consequences of alcohol use. This study's findings offer implications for practitioners and directions for future research.

THE EFFECT OF LIVING-LEARNING PROGRAM PARTICIPATION ON COLLEGE STUDENTS' MENTAL HEALTH

By

John E. Fink

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Advisory Committee:
Dr. Mary L. Hummel, Chair
Dr. Susan R. Komives
Dr. Julie J. Park

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CHAPTER 1: INTRODUCTION

In May of 2011 the Thiel Foundation announced the names of its first Thiel Fellows, twenty individuals younger than twenty years old whom will take their $100,000 grant and forgo or postpone a college education in order to "pursue innovative scientific and technical projects, learn entrepreneurship, and begin to build the technology companies of tomorrow" (Thiel Foundation, n.d.). Commenting on the program, venture capitalist Peter Thiel used a narrative familiar to most college and university presidents, asserting, "Tomorrow will not take care of itself. In order to solve vexing problems and increase the quality of life for people everywhere, the world's economy needs continuous scientific and technical innovation from outstanding creative minds" (Thiel Foundation, n.d.). The Thiel Fellowship reflects the growing questioning in the United States of the value of higher education institutions in equipping graduates for success. As the cost of a college education soars to record heights, works such as Arum and Roksa's (2011) *Academically Adrift* and the report from the Spellings' Commission on Higher Education (US Department of Education, 2006) reflect a sentiment shared among the public, policy-makers, and employers that students graduating from colleges and universities are not fully prepared to effectively address contemporary challenges.

Addressing the public sentiment that students are not being well-equipped in college to meet 21st century demands, scholars have argued that students need well-rounded, liberal education in college that holistically embraces their cognitive, emotional, and spiritual selves in order to promote psychological flourishing (AAC&U, 2007; Hersh et al., 2008). These scholars argued persuasively for the promotion of mental health alongside other learning outcomes as a critical outcome of a college education.

Furthermore, others have suggested that such development is an outcome of engaged pedagogies in higher education, such as the focus of the current study: living-learning programs (LLPs, Swaner, 2005). This study explores the role of LLPs, as an engaged pedagogy in higher education, in fostering the development of well-rounded graduates by promoting psychological flourishing.

As pedagogies with which students actively engage in their learning experiences, LLPs aim to provide students a place to connect their often disconnected experiences in college. As the Spellings' Commission and *Academically Adrift* suggested, the needs of both students and the broader democratic society are not being met by contemporary higher education. At the campus level, students and faculty often enter into a social contract where little is expected of each other. Additionally, campus structures, particularly at larger research universities, characterize a consumer-model wherein students construct their college educations 'a la cart' without much thought or guidance on integrating academic and social learning experiences (Hersh et al., 2008). The lack of connection across students' courses and experiences, as well as the general lack of students' engagement with the experience of learning are often identified as major impediments to the production of well-rounded graduates capable of meeting 21st century challenges (AAC&U, 2002; Boyer Commission, 1998; Hersh et al., 2008).

Calling for undergraduate reform to address the lack of integration between students' disengaged learning experiences in college, the American Association of Colleges and Universities (AAC&U, 2007) impressed the importance of a well-rounded, liberal education. In 2008, Hersh and his colleagues wrote the seminal manuscript of the College Outcomes Project, an AAC&U and Charles Englehardt Foundation supported

initiative created to offer a robust description of liberal education. Hersh et al. (2008) described well-rounded college graduates as having a wide range of knowledge and skills that equip them to be successful participants as citizens in democracy, as workers in occupational contexts, as well as the personal resilience and resources to cope with the constant flux of the contemporary world. Furthermore, AAC&U (2007) contended that liberal education is critical for a more fully engaged democracy. Liberally educated graduates, as AAC&U asserted, are equipped for effective functioning in an increasingly complex and interconnected world in which innovation and knowledge are critical to navigating constant social and economic change.

The outcomes of graduating well-rounded, liberally educated college students carry clear societal importance, and scholars have suggested that holistic learning is the vehicle for such outcomes (AAC&U, 2002, 2007; Hersh et al., 2008; NASPA/ACPA, 2004). Students experiencing holistic learning integrate learning experiences in class with experiences outside of the classroom, allowing for more personal engagement with their learning. However, scholars asserted that such holistic learning is rare in United States higher education, and that colleges and universities primarily aim to foster students' cognitive development and focus less on students' personal development (Hersh et al., 2008). Thus, many college graduates are not holistically prepared to meet post-college demands requiring not only cognitive and interpersonal competencies, but also personal resilience, a sense of self, and a sense of connectedness to society. As cognitive competencies have been the traditional focus of institutions of higher education, holistically embracing students' development in college involves promoting dimensions of students that have been traditionally ignored, such as students' mental health. While

counseling centers are the campus structures with the most explicit focus on students' mental health, Swaner (2005) argued that all campus structures and community members are responsible for the mental wellness of the campus community. Colleges and universities that fail to integrate the promotion of mental wellness into campus structures other than the counseling center falter in creating environments that nurture the holistic development of students into flourishing, productive, and responsible citizens equipped with the knowledge, skills, and resiliency necessary to address contemporary problems.

Practices that engage students in their learning are promising means toward infusing the promotion of students' mental wellness throughout college and university campuses. A body of theoretical and empirical literature organized under the Bringing Theory to Practice (BTtoP) project (Bringing Theory to Practice, n.d.) identifies the concept of "engaged pedagogies" as a best practice for furthering colleges and universities' academic missions as well as promoting students' mental wellness. These "engaged pedagogies" require that students are active participants in the learning experience, often promoting holistic development by connecting students' classroom experiences to other experiences that may take on more personal meaning for the student, such as community engagement, service, or relationship building (Swaner, 2005).

Living-learning programs (LLPs) represent an example of such "engaged pedagogies" that have gained prominence in the past thirty years as scholars in higher education searched for promising practices to revitalize undergraduate education (Inkelas & Soldner, 2011). As a form of engaged pedagogy shown to decrease students' alcohol abuse (e.g. Brower, 2008) and provide more socially and academically supportive environments (e.g. Inkelas et al., 2006a), LLPs are at the intersection between promoting

institutions' academic missions and fostering students' physical and mental wellness. However, the growing body of research locating the effect of LLPs on various college outcomes has yet to examine students' mental health outcomes. Therefore, the purpose of this study is to investigate the effect of participation in a LLP on students' mental health outcomes.

Purpose and Theoretical Framing

This study will explore how students' participation in a living-learning program (LLP) affects their mental health. In line with the emerging field of positive psychology, this study frames positive mental health as more than simply the lack of mental illness (Keyes, 2002; Seligman & Csikszentmihalyi, 2000). To explore the effect of participation in a LLP on students' mental health outcomes, this study relies upon college impact theory (Pascarella & Terenzini, 2005) and Astin's (1993) inputs-environments-outcomes (I-E-O) model of college impact.

Mental Health as a Continuum

This study builds on scholarship located in the field of positive psychology that endeavors to understand and increase the amount of psychological flourishing and well-being among individuals and communities (Seligman, 2011). This scholarship includes definitions and theories of flourishing (Keyes, 2002) and mental well-being (Seligman, 2011), which are discussed in detail in the following chapter. Ultimately, positive psychology scholars asserted that traditional notions of positive mental health as simply the absence of mental illness must be further developed in order to increase the amount of flourishing and well-being experienced by individuals and communities. Keyes (2002) helped to reframe the discourse around mental health by suggesting that mental health be

conceptualized as a continuum between languishing and flourishing. Using Keyes' (2002) mental health continuum, individuals can be located between languishing and flourishing, providing a richer description of the mental health of a population than solely the prevalence of mental illness. This study frames mental health as more than simply the prevalence of mental illness, conceptualizing mental health as a continuum in alignment with positive psychology scholars' goal of promoting mental wellness.

College Impact Theory and Astin's (1993) I-E-O Model

The study will draw upon college impact theory and will use Astin's (1993) input-environment-outcome (I-E-O) model of college impact. College impact theory attempts to explain the underlying mechanisms of college student learning and development. Pascarella and Terenzini (2005) characterized college impact theory as positing that social contexts, such as institutional environments and background characteristics of students, explain students' change in college. While individual student characteristics before college are understood to contribute to student learning and development in college, college impact theory provides practical application for college and university administrators that are most interested in how institutional environments and structures affect student learning and development above and beyond individual student characteristics.

More specifically, this study will use Astin's (1993) I-E-O model of college impact, which posited that students' college-related outcomes are influenced by students' pre-college characteristics, such as high school involvement and academic achievement, demographic characteristics, and parental education and income (inputs), as well as aspects of the college environment such as students' residential arrangement, interactions

with peers and faculty, institutional size, curriculum, mentoring relationships, and involvement in student activities. Astin's I-E-O model is a useful tool for locating the effect of college environments on students' outcomes after taking into account students' pre-college characteristics. The I-E-O model focuses on the influence of the college environment on student learning and development, allowing researchers and practitioners to gain insight into the campus practices that contribute to college-related outcomes.

Research Questions

Applying Astin's (1993) I-E-O framework to this study, living-learning programs are the college environment of interest in predicting students' mental health outcomes. This study will explore the effect of living-learning program participation on college students' mental health outcomes through the following three research questions:

1. Do students participating in living-learning programs differ on measures of mental health compared to students living in traditional residence halls?
2. After taking into account student characteristics and institutional environments, is participation in a living-learning program a significant predictor of students' mental health?
3. What student characteristics and institutional environments predict students' mental health in addition to their participation in a living-learning program?

Overview of Method

The data used in this study were from the 2008 and 2009 administrations of the National Study of Living-Learning Programs (NSLLP), a multi-institutional study of living-learning programs. The sample of data used for this study came from seven unique colleges and universities in the United States. This study operationalized mental

wellness as psychological flourishing using students' self-reported scores on Keyes' (2002) Mental Health Continuum scale as the dependent variable. The researcher analyzed the 2008 and 2009 data separately using independent samples t-tests of mean differences, as well as multiple regression to answer the research questions.

Definition of Key Terms

Mental Health

For the purposes of this study, mental health describes positive mental health, used interchangeably with mental wellness and well-being. According to the World Health Organization (2007),

> "Mental health is not just the absence of mental disorder. It is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community (p.1)."

Psychological Flourishing

As defined by Keyes (2005), psychological flourishing is a specific construct of mental wellness that posits three domains of mental wellness: emotional well-being, psychological well-being, and social well-being. Flourishing is conceptualized as occupying the positive end of a mental health continuum, which is opposite of languishing, a concept occupying the negative end of the mental health continuum.

Engaged Learning

As discussed in the following chapter, engaged learning is defined for the purposes of this study as an interactive process between an individual and his or her environment by which multiple domains of knowledge (e.g. dimensions of self,

interpersonal relations, conceptual knowledge) converge to yield the capacities necessary to be an active citizen in democratic society. The process of engaged learning represents the social context, or environment, component within the college impact and I-E-O theoretical frameworks of the current study (Astin, 1993; Pascarella & Terninzini, 2005).

Living-Learning Program

While types of living-learning programs (LLPs) vary widely from program to program, for the purposes of this study LLPs are defined most generically as "residence hall-based undergraduate programs with a particular topical or academic theme (Inkelas & Soldner, 2011, p. 1)." Regarding the theoretical framework of the current study, LLPs represent the specific institutional environment of interest in explaining the variability in students' mental health.

Traditional Residence Hall

For the purposes of this study, traditional residence halls are defined as residential environments that do not engage residents with a program organized around a particular topical or academic theme.

Significance

Examining students' mental health in living-learning programs yields various theoretical and practice-based implications for higher education administrators, researchers, students, and parents.

Scholarly Significance

Aligned with the growing field of positive psychology (Seligman & Csikszentmihalyi, 2000), this study moves away from a deficit paradigm and toward a positive mental health paradigm focused on promoting students' psychological

flourishing. Positive psychology scholars study elements of mental health through a practical approach intended to foster mental wellness. Prolific positive psychology scholar, Martin Seligman (2011), asserted that the ultimate goal of positive psychology is to increase the amount of flourishing in the lives of individuals and among communities. The current study applies this positive psychology framework to the context of higher education, investigating living-learning programs as a campus structure that might promote college students' flourishing.

This work purports to be the first study of its kind to explore the effect of living-learning program participation on students' mental health outcomes. Given the extant literature connecting college students' alcohol use with their mental health (National Center on Addiction and Substance Abuse, 2003, 2005; Petrakis, Gonzalez, Rosenheck, & Krystal, 2002), exploring students' mental health outcomes in living-learning programs is an especially fascinating line of inquiry that expands upon health-related findings that living-learning program participants reported less binge drinking and consequences of alcohol use compared to their counterparts in traditional residence halls (Brower, Golde, & Allen, 2003; Brower, 2008). Additionally, this study will join a burgeoning body of literature investigating college environments, students' well-being, and college outcomes (e. g. Cox, 2010; Howell, 2009; Maddi, Harvey, Khoshaba, Fazel, & Resurreccion, 2009; Ouweneel, Le Blanc, & Schaufeli, 2011), as well as a body of literature characterizing the effects of LLPs on the college student experience (e.g. Inkelas and Associates, 2004, 2007; Pike, Schoeder, & Berry, 1997). Finally, as this study will use a sample from multiple institutions, readers may glean broader understandings of the relationship

between living-learning program participation and students' mental health outcomes compared to similar single-institution studies (Swaner & Finley, 2007).

Practical Significance

Practically, this study responds to a shifting mental health landscape in higher education by attempting to identify living-learning programs as a campus structure that promotes students' mental health. Such a focus on students' mental wellness is timely as incoming student populations become more psychologically diverse and more emotionally and psychologically disengaged. For example, the National Survey of Counseling Center Directors at 274 institutions (Gallagher, Sysko, & Zhang, 2001) reported that 85% of center directors observed an increase of severe mental health issues in the past five years. Additionally, in an analysis of intakes from students seeking counseling services at a large research university, Pledge et al. (1998) found that mental health issues such as depression, anxiety, suicidality, and substance abuse were more prevalent compared to data from the 1950s and 60s. Scholars suggested that increases in social factors, such as divorce, family dysfunction, extraordinarily high expectations of students from family and parents, as well as earlier experimentation with drugs, alcohol and sex may explain some of the increased prevalence and severity of students' mental illness in college (Gallagher et al., 2000; Reynolds, 2009). Furthermore, the increased availability of medication has allowed individuals with mental illness to better function on campuses, thereby increasing the numbers of those with mental illness in college. While living-learning programs are not designed to treat mental illness, as forms of engaged learning they might address the increasing psychological and emotional disengagement among college students and promote flourishing among student

participants, thereby mitigating the increasing severity and prevalence of mental illness on college campuses. The current study responds to the shifting mental health landscape in higher education by exploring the role living-learning programs play in promoting mental health.

Such promotion of flourishing and mitigation of the increasing severity and prevalence of mental illness is clearly important to the entire college or university community as the shifting mental health landscape presents a challenge to the missions of higher education institutions. This challenge to institutions' missions is two-fold: (1) mental illness limits student success, and (2) typical campus structures do not promote flourishing and therefore do not yield well-rounded graduates. While many scholars demonstrated how mental illness limits student success in college (Brackney & Karabenick, 1995; Kessler, Foster, Saunders, & Stang, 1995; Megivern, 2001; Svanum & Zody, 2001) and university counseling centers have become well established as campus structures to address this first challenge (Kitzrow, 2009; Reynolds, 2009), LLPs have remained unexamined as a campus structure that might address the second challenge.

The major stakeholders in addressing this second challenge include students and their parents, faculty and administrators responsible for the execution of institutional missions, as well as policymakers and the general public reliant on institutions of higher education to produce well-rounded graduates. Noting increasingly stressful high school and college experiences, students and their parents are significantly invested in campus opportunities, such as LLPs, that might engage students in their learning experiences as well as promote flourishing throughout the college. Additionally of interest among students concerned for their general health, Keyes (2002) found flourishing to be

negatively related to a variety of mental and physical illnesses (e.g. major depression, generalized anxiety, chronic stomach and back problems). Furthermore, policymakers and the general public require colleges and universities to respond to promote mental health, as Hersh et al. (2008) argued that flourishing, well-rounded graduates are of great necessity in contemporary society.

Lastly, faculty and administrators are key stakeholders in that they play critical roles in increasing the amount of flourishing among the campus community. While faculty and staff often encounter students with mental illness and correctly refer them to experts in the counseling center (Keeling, 2000), Kitzrow (2009) argued that students' mental health must be a shared concern among the entire campus community, including faculty and staff, rather than solely those in the counseling center. Kitzrow provided faculty and staff a variety of recommendations for address mental health on college campuses, including that mental health concerns be integrated into academic and student affairs administration in ways that might raise students' awareness around mental health and resources on campus, prevent mental health incidents through cross-campus threat assessment committees, and educate campus officials around accommodating students with mental illness. Kitzrow's holistic framework positioned the entire campus community as responsible for students' mental health. While perhaps lacking the expertise to treat mental illness, faculty and administrators can act on that responsibility by establishing campus structures to promote mental health. The current study examined how living-learning programs might serve as one such campus structure that faculty and administrators might use to foster a flourishing student community.

Conclusion

Students' mental health, a critical component in fostering well-rounded college graduates, will be explored in this study. Findings of record lows on average college student emotional health alongside increasing stress and feelings of being overwhelmed (Pryor et al., 2011) illustrate the significance of examining mental wellness in college. Living-learning programs (LLPs) are positioned in this study as a campus structure that might affect students' mental health outcomes. In addition to counseling centers and mental health professionals working for more mentally healthy campuses, this study advances the notion that all members of a campus community have a responsibility to contribute to a campus environment wherein individuals and communities flourish. LLPs are conceptualized as a specific campus structure that promotes flourishing among its participants by creating an environment wherein participants actively engage in their learning and development. Furthermore, this study frames flourishing as contributing to higher education institutions' responsibility to produce graduates equipped to address complex contemporary challenges and for engaged citizenship in democracy. The following chapter, Chapter Two, will provide a detailed review of the extant literature pertaining to the current study.

CHAPTER 2: LITERATURE REVIEW

This chapter provides a review of the literature surrounding this study's investigation of the effect of living-learning program (LLP) participation on college students' mental health outcomes. This study will examine what student characteristics and institutional environments affect students' mental health outcomes, and therefore the literature related to college student mental health will be reviewed. As LLPs are hypothesized to affect college students' mental health as pedagogies of engaged learning, the concept of "engaged learning" will be explored, including the theoretical and empirical reasoning to suggest that engaged pedagogies promote mental health. The institutional characteristic of interest, LLPs, will also be a major focus in this chapter and the extant literature related to LLPs will also be reviewed. Finally, this chapter will explore the overlap between college student mental health and engaged learning, including the few studies exploring the effect of participating in a LLP on students' mental health, through a discussion of a body of literature generated as a part of the Association of American Colleges and University's Bringing Theory to Practice project.

College Student Mental Health

In reviewing the extant literature regarding students' mental health in college, this section examines mental health from a positive psychology perspective. Given the nature of the current study, which investigated the effect of living-learning program participation on psychological flourishing, a measure of mental wellness, this section will review literature related to mental wellness in college.

Defining Mental Wellness

The burgeoning field of positive psychology seeks to understand and promote positive mental health, or mental well-being (Seligman, 2011). More than simply the lack of mental illness, scholars have operationalized well-being as the measurable concept of flourishing (Keyes, 2002, 2005, 2007; Seligman, 2011). Therefore the ultimate goal of positive psychology is to increase flourishing, and positive psychology scholars investigate factors which promote flourishing among individuals and communities. Comparatively, Keyes (2002) developed the idea of languishing as opposite of flourishing on a mental health continuum. In framing mental health as a continuum, Keyes critiqued the mental illness perspective and provided a useful framework for conceptualizing mental health by enabling more holistic interventions for addressing mental health. Whereas a mental illness perspective might suggest that resources be directed toward preventing and treating mental illness, the mental health continuum perspective advanced by Keyes additionally allows for individual and community interventions aimed at promoting positive mental health, or flourishing.

Mental wellness, the opposite of mental illness, is at the center of the study of positive psychology. Hettler's (1980) description of wellness as a balance between six major dimensions of life (social, intellectual, spiritual, physical, emotional, and occupational) has become a popularized wellness model among student affairs practitioners (Mosier, 1994). However, this study concentrates on more recent and nuanced conceptualizations of wellness advanced by scholars in positive psychology that described wellness as well-being (Seligman, 2011) and flourishing (Keyes, 2005). The

following section reviews these theories of well-being and flourishing in order to provide insight into the concept of mental wellness.

Well-being. Seligman (2011) described well-being as an immeasurable construct consisting of five measurable elements: positive emotion, engagement, relationships, meaning, and achievement. Each of these elements constituting the construct of well-being is independently desirable and measureable in relation to any of the other elements. Positive emotion, described as happiness and satisfaction with life, is often the most commonly associated element of well-being. Yet, Seligman de-emphasized the element of positive emotion from a central tenet in his previous theory of Authentic Happiness (Seligman, 2002) to an equal element of well-being in his well-being theory (Seligman, 2011). Related to positive emotion, Seligman described engagement as immersion in a moment or experience, commonly referred to in expressions like "time stood still" or "completely absorbed." Additionally, Seligman claimed positive interactions and relationships with others and a sense of meaning, or a feeling of belonging to something bigger than the self, as other elements of well-being. Lastly, Seligman argued that a form of accomplishment, in which the drive to achieve is separated from external rewards and purely based on intrinsic motivation, also explained the construct of well-being. Recognizing that even an individual with extremely high well-being might not fully actualize on each of these elements, particularly the purely intrinsic drive to achieve, Seligman characterized his well-being theory as an idealistic description of well-being.

Flourishing. Offering another description of well-being, Keyes (2005) advanced the notion of mental wellness as flourishing. Keyes described flourishing as three domains of well-being: emotional, psychological, and social well-being. Furthermore,

Keyes articulated thirteen dimensions of flourishing which constitute the three domains of emotional, psychological, and social well-being: positive affect, avowed quality of life (emotional well-being), self-acceptance, personal growth, purpose in life, environmental mastery, autonomy, positive relations with others (psychological well-being), social acceptance, actualization, contribution, coherence, and integration (social well-being). The emotional well-being domain describes individuals' positive affect (i.e., cheerful, happy, peaceful) and generalized satisfaction with life. An individual described as exhibiting psychological well-being finds meaning and purposeful direction in life, accepts self, seeks continued personal development, acts and thinks autonomously, and can establish positive relationships with others. Furthermore, Keyes describes positive social functioning, or social well-being, as a general acceptance of others, a positive outlook on the potential for people, groups, and society to progress, feelings of utility and belonging in society, and feeling connected, interested, and a sense of meaning from social life and a larger society.

Intersecting well-being and flourishing. Flourishing, as described by Keyes (2005), enjoys much conceptual overlap with Seligman's (2011) theory of well-being. Seligman's theory of well-being can be thought of in terms of Keyes' (2005) three domains (emotional, psychological, and social well-being) of flourishing. Seligman's (2011) positive emotion element of well-being matches Keyes' (2005) positive affect and avowed quality of life dimensions of emotional well-being. Similarly, Seligman's (2011) positive relationships element matches Keyes' (2005) description of psychological well-being as the ability to establish positive relationships with others. Additionally, Seligman's (2011) meaning element aligns with Keyes' (2005) description of both

psychological and social well-being in the social integration, contribution, and purpose in life dimensions of flourishing. Notably, Seligman's (2011) elements of achievement and engagement are not directly matched in Keyes' (2005) description of flourishing. Furthermore, the dimensions self-acceptance, autonomy, and social contribution from Keyes' (2005) description of flourishing are not explicitly represented in Seligman's (2011) theory of well-being. Taken together, both Keyes' (2005) and Seligman's (2011) work toward a definition of mental wellness provide a more comprehensive picture of well-being than a singular definition. Practically, however, Keyes' (2005) operationalization of mental wellness as flourishing is the better mental wellness measure for an entire population as Keyes' posited that everyone's mental health could be placed on a continuum between languishing and flourishing. Rather than identifying only the varying degrees to which an individual exhibits mental well-being, Keyes' mental health measure, by including the concept of languishing, allows for greater variance in individuals' mental health scores. Thus, Keyes' mental health continuum provides a fuller picture of the mental health of a population and therefore is the more appropriate choice to operationalize mental wellness in the current study. As this study focuses on the college student population, the following section will review various outcomes associated with positive mental health in college.

Outcomes of Mental Wellness in College

As Hersh et al. (2008) argued, mental health related college outcomes are inherently valuable in graduating well-rounded citizens equipped to flourish amidst contemporary challenges. Additionally, researchers evidenced the positive relationships between students' mental health and a variety of other desirable college outcomes (Cox,

2010; Howell, 2009; Maddi, Harvey, Khoshaba, Fazel, & Resurreccion, 2009; Ouweneel, Le Blanc, & Schaufeli, 2010). Such studies were framed to explore mental health as a predictor of other college outcomes, yet, due to the common use of correlational research designs, many studies can also be interpreted to yield insight into what factors might predict students' mental health. This section will review numerous studies which were designed to connect constructs of mental wellness to other college outcomes. Additionally, possible alternate interpretations to lend insight to predictive factors of mental wellness will be suggested and further discussed in the following section.

Howell (2009) examined the relationship between well-being and students' success in college. Noting that few studies investigated the relationship between students' flourishing and their success in college, Howell (2009) used Keyes' (2005) definition of flourishing to explore the relationship between flourishing and students' goal orientation, procrastination, and self-control among undergraduate students at a large research university ($N = 397$). Ultimately, Howell attempted to triangulate students' self-regulated learning wherein students actively construct their learning experiences, as well as monitor and control goals and self-discipline in the learning process. Following common analysis techniques with Keyes' (2005) measure of flourishing, Howell (2009) analyzed the relationships between flourishing and self-regulated learning using both continuous and discrete measures of flourishing. With a continuous measure of flourishing in which each individual received a score on the mental health continuum, Howell (2009) reported significant relationships between flourishing and measures of self-regulated learning. Furthermore, after Howell split the respondents into three groups (flourishing, moderately mentally healthy, languishing) based on scores on flourishing,

Howell reported that individuals in the flourishing category reported significantly higher scores on measures of self-regulated learning compared to individuals in the moderately mentally healthy and languishing categories. Howell's study advanced the hypothesis that flourishing is associated with self-regulated learning, yet the use of correlations as the statistical method allows for the alternative interpretation that self-regulated learning may, in fact, influence students' flourishing. Howell's study will also be considered in the following section reviewing empirical research that suggested predictors of mental wellness among college students.

Ouweneel et al. (2010) advanced Howell's (2009) findings by testing a causal model between emotional well-being, academic self-efficacy and optimism, and academic engagement. Using structural equation modeling techniques, Ouweneel et al. (2010) tested their hypothesized reciprocal relationship between the three variables over time among college students ($N = 403$). Ouweneel et al. (2010) reported significant, reciprocal relationships between emotional well-being and academic self-efficacy and optimism, as well as between academic self-efficacy and optimism and academic engagement. Students' reports of positive emotional well-being at the first time point in the study contributed to higher scores on academic self-efficacy and optimism four weeks later, and conversely initial reports of high academic self-efficacy and optimism contributed to positive emotional well-being four weeks later. Additionally, students' reports of high academic self-efficacy and optimism at the first time point contributed to students' reports of dedication, vigor, and engagement with academics four weeks later, and conversely initial reports of academic engagement contributed to higher reports of academic self-efficacy and optimism four weeks later. While the dependent variables in

both Howell (2009) and Ouweneel et al.'s (2010) studies did not directly measure student learning and success in college, these studies advanced the notion that students' positive emotional well-being and flourishing in college catalyzes student learning and success, as well as suggested that aspects of the college student experience predict students' mental wellness.

Further evidencing a relationships between mental wellness and college outcomes, Cox (2010) examined the experiences of students from multiple institutions (N = 80) after an alternative break service trip. Cox was interested in the relationship between volunteerism and students' level of moral elevation, an emotional response to witnessing moral actions. Cox intended to demonstrate how elevation would affect students' level of volunteerism months later, and in a three month follow-up to the alternative break trip, Cox found that higher elevation immediately after the trip predicted students' level of volunteerism in the months following the alternative break trip. However, Cox's study also suggested that witnessing and participating in volunteer activities, such as the original alternative break trip students experienced, positively affected students' mental wellness through the construct of elevation. While Cox's sample was quite limited and the full analysis only include the 65 participants that responded across all time points, this study both contributes to the understanding of the outcomes and predictors of mental wellness among college students. Cox's study evidenced a mutual relationship between increased levels of volunteerism and feelings of elevation, suggesting volunteerism as both an outcome and predictor of mental wellness.

Additionally lending insight to the predictors and outcomes of mental wellness among college students, Maddi et al. (2009) used a quasi-experimental design (N = 349)

to assess the influence of a "hardiness" training on college students' grade point average (GPA). The training was a semester long course aiming to promote students' mental health by teaching three main "Hardy Skills": coping, social support, and self-care. Students learned coping skills, such as reconstructing stressful situations through the imagination (situational reconstruction), identifying symptoms of stress (focusing), and avoiding self-degradation (compensatory self-improvement). Students also learned social support skills, such as locating and mending interpersonal conflicts, expression and listening skills, and learning to both give and get assistance and encouragement. Lastly, Maddi et al. (2009) posited that there is an optimal state of arousal to cope with stressors and the hardiness training taught students how to recognize when they were above or below this optimal state. Students then learned relaxation, nutrition, and exercise-based interventions to maintain this optimal state of arousal. Maddi et al. found that immediately after the semester students in the hardiness treatment group reported higher GPAs compared to students in a control group that matched the treatment group in initial GPA and other student characteristics. Furthermore, Maddi et al. longitudinally tracked the treatment and control groups and found that the group differences in GPA held after two years. While Maddi et al. and Cox's (2010) constructs of mental wellness were not directly related to the previously discussed definitions of mental wellness (Keyes, 2005; Seligman, 2011), taken together, the studies provided insight into the predictors and outcomes of college students' mental health.

Predictors of Mental Wellness in College

While Hersh et al. (2008) suggested that college students' mental wellness is a critical college outcome, other scholars evidenced students' mental wellness as

contributing to other desirable college outcomes (Cox, 2010; Howell, 2009; Low, 2011; Maddi et al., 2009; Ouweneel, Le Blanc, & Schaufeli, 2010). Such evidence supports the notion that students' mental wellness is intertwined with their experience and success in college. As the current study examined factors that influenced students' mental wellness, the next section reviews scholarly work to suggest predictors of students' mental wellness. First, relevant empirical studies will be reviewed in the context of theories of well-being (Keyes, 2005; Seligman, 2011) to reveal possible predictors of mental wellness. Following, additional evidence from empirical studies and mental health promotion policy will be reviewed to further gain insight into the predictive factors of mental wellness. Readers are directed to Table 2.1 for a summary of mental wellness predictors suggested by literature reviewed in the previous and current sections of this chapter.

Table 2.1 – Predictors of Mental Wellness

Author	Dependent Variable	Predictors
Peter, Roberts, & Dengate (2011)	Flourishing	• Female (β = .19) • Higher SES (β = .08) • More spiritual/religious (β = .17) • More likely to forgive (β = .08) • Little experience of childhood trauma (β = -.11) • Lower rates of depression (β = -.41) and anxiety (β = -.20) • Better physical health, exercise, and nutrition (β = .19)
Low (2011)	Flourishing	Ratings of importance • Service • Community • Understanding problems facing society • National challenges • Global awareness • Political involvement

Keleher & Armstrong (2005)	Flourishing	VicHealth Framework (p. 22) Social Inclusion • Supportive relationships • Social and community connections • Stable and supportive environments • Access to networks and supportive relationships • Involvement in community and group activities • Variety of social and physical activities • Civic engagement • Valued social position Freedom from discrimination and violence • Valuing diversity • Physical security • Opportunity for self-determination and control of one's life Access to economic resources • Meaningful work, education, adequate housing
Howell (2009)	Flourishing (Emotional, Psychological, and Social well-being)	Negative Associations • Entity Beliefs • Mastery-avoidance • Procrastination Positive Associations • Incremental Beliefs • Mastery-approach • Self-control • Self-reported grades
Adams et al. (2000)	Generalized well-being	• Life purpose • Optimism • Sense of coherence
Byron and Miller-Perrin (2009)	Generalized well-being	• Life purpose • Faith
Lewandowski & Bizzoco, 2007	Emotional well-being	• Quality of interpersonal relationships

Ouweneel et al. (2010)	Emotional well-being	• Academic self-efficacy • Optimism
Maddi et al. (2009)	Hardiness	<u>Training of "Hardy Skills"</u> Coping • Situational reconstruction • Focusing • Compensatory self-improvement Social Support • Building and sustaining interpersonal relationships • Improving communication and listening • Learn to both give and get assistance and encouragement Self-care • Recognize own optimal state of arousal • Learn interventions to maintain the optimal state of arousal
Cox (2010)	Moral Elevation	• Witnessing and participating in volunteer activities

Theories of mental well-being suggest that students' wellness is influenced by a range of factors related to students' emotional, psychological, and social well-being, as well as engagement and achievement (Keyes, 2005; Seligman, 2011), and empirical research supported these well-being theories (Adams, Bezner, Drabbs, Zambarano, & Steinhardt, 2000; Byron & Miller-Perrin, 2009; Lewandowski & Bizzoco, 2007). Related to both Keyes (2005) and Seligman's (2011) assertions that interpersonal relationships are key contributors to well-being, researchers observed students' reported personal growth after the student dissolved a low-quality personal relationship (Lewandowski & Bizzoco, 2007). Interestingly, Lewandowski and Bizzoco (2007) found that increases in students' reported personal growth after the dissolution of a low-quality relationship were mediated by students' emotional well-being. These findings support

theories of well-being (Keyes, 2005; Seligman, 2011) by empirically connecting the quality of interpersonal relationships with well-being and demonstrating how relationships and well-being contribute to personal growth.

Meaning, finding purpose in life, and feeling connected to something larger than the self were other elements of well-being elaborated on by theories of mental wellness, and researchers have explored connections between meaning, purpose, and well-being empirically (Adams et al., 2000; Byron & Miller-Perrin, 2009). In an exploratory study, Adams et al. (2000) investigated how students' well-being was influenced by their life purpose, optimism, and sense of coherence, a factor described as one's resiliency and general confidence that uncertainties will eventually be resolved. Among a small, single-university sample ($N = 112$), Adams et al. used path analysis techniques and found life purpose, optimism, and students' sense of coherence as significant predictors of well-being. Interestingly, the relationships between students' life purpose and their well-being was mediated by students' optimism and sense of coherence, inferring that sense of purpose or meaning in life does not always positively contribute to well-being. Furthering Adams et al.'s (2000) exploratory study, Byron and Miller-Perrin (2009) included students' faith alongside life purpose in predicting well-being. Byron and Miller-Perrin found both students' life purpose and faith to significantly predict their well-being, and they reported that life purpose completely mediated the relationship between faith and well-being. These findings suggested that faith is yet another key factor in explaining college students' well-being, and in the context of Seligman's (2011) theory of well-being it may be that faith is analogous to Seligman's description of "meaning" as an element of well-being.

Consistent with theories of well-being (Keyes, 2005; Seligman, 2011), scholars (Adams et al., 2000; Byron & Miller-Perrin, 2009; Lewandowski & Bizzoco, 2007) evidenced faith, life purpose, optimism, a sense of coherence, as well as the quality of interpersonal relationships as predictors of mental wellness. Furthermore, researchers (Cox, 2010; Low, 2011; Maddi et al., 2009; Ouweneel et al., 2010; Howell, 2009) that explored mental wellness as an outcome also provided insight regarding predictors of mental wellness. As previously reviewed in the preceding section, researchers either explicitly tested for predictors of mental wellness (Cox, 2010; Low, 2011; Maddi et al., 2009; Ouweneel et al., 2010) or implicitly examined predictive factors of mental wellness through the use of correlational designs (Howell, 2009). Cox (2010) and Maddi et al. (2009) relied on an experimental intervention to increase participants' well-being in order to examine the effects of this raised well-being. Maddi et al.'s (2009) hardiness training, fostering coping skills, social support, and self-care, positively affected participants' resilience and well-being. Additionally, Cox (2010) evidenced that witnessing and participating in volunteering can result in moral elevation, or increase well-being. Similarly, Low (2011) found correlational evidence to support associations between students' membership in flourishing, moderately mentally healthy, or languishing groups and their ratings of importance for a variety of civic and community engagement items (i.e. volunteering, political involvement). Low's study was connected to the Bringing Theory to Practice project, and therefore will be review in further detail later in this chapter.

Lastly, Howell (2009) and Ouweneel et al. (2010) reported results that contribute to the understanding of which factors predict flourishing. For example, Howell (2009)

found flourishing to be negatively correlated with entity beliefs, or views that personal attributes are stable and unchangeable, and positively correlated with incremental beliefs, or views that personal attributes are malleable. Furthermore, Howell reported flourishing as negatively correlated with procrastination and positively correlated with mastery approaches to learning, self-control and discipline, as well as self-reported grades. As reviewed in the previous section, Ouweneel et al. (2010) furthered Howell's (2009) study and found evidence in a causal model to suggest an effect of students' academic self-efficacy and optimism on their emotional well-being. Overlapping as both empirically suggesting outcomes and predictors of mental wellness, these scholars contributed to a foundational understanding of college students' mental wellness.

More recently, Peter, Roberts, and Dengate (2011) explicitly focused on factors that predict college student flourishing. Peter et al. sought to better understand the factors that predicted college students' life satisfaction, psychological well-being, emotional well-being, and a combined measure of mental health consistent with Keyes' construct of psychological flourishing. Using multiple regression analysis on survey data collected from 1,245 Canadian college students, Peter et al. explored the predictive effect of depressive symptoms, anxiety, physical health and nutrition, forgiveness likelihood, childhood trauma, strength of religious faith, sex, socio-economic status, Aboriginal status, visible minority status, and sexual orientation on students mental health. Unsurprisingly, depressive symptoms ($\beta = -.41$) and anxiety ($\beta = -.20$) were among the strongest negative predictors of flourishing. Furthermore, Peter et al. reported other individual and demographic variables as moderate predictors of flourishing, such as physical health and nutrition ($\beta = .19$), strength of religious faith ($\beta = .17$), more likely to

forgive (β = .08), female (β = .19), higher socio-economic status (β = .08), less childhood trauma (β = -.11). In total, Peter et al.'s model explained 53 percent of the variance in the overall measure of flourishing. While Peter et al.'s study provided a limited explanation of flourishing by examining a limited amount of variables, not including substantial measures of the college environment, among students at a single institution, results from the study lend insight into understanding the various predictors of mental wellness.

VicHealth framework. Deeply invested in the discovery of mental health predictors are public health policymakers aiming to promote mental wellness at large in society. A recent volume produced by mental health researchers synthesized years of mental health studies and suggested a framework for promoting mental health to assist policymakers in making informed decisions on public health policy (Keleher & Armstrong, 2005). From a public policy perspective Keleher and Armstrong drew on empirical findings related to mental health and posited three broad, multifaceted, central determinants of mental health: social inclusion, freedom from discrimination and violence, and access to economic resources. These three central determinants of mental health constitute the "VicHealth" framework for promoting flourishing within Victoria, Australia. Keleher and Armstrong elaborated on these three determinants, describing social inclusion as relationship-based wherein individuals partake in a variety of social and physical activities and are civically engaged members of stable, supportive, and thriving communities. Keleher and Armstrong described freedom from discrimination and violence as another key determinant of flourishing within the VicHealth framework, suggesting that more social equity promotes mental health. Conversely, the VicHealth framework argued that prejudicial and discriminatory individuals and institutions that

threaten marginalized individuals' physical security and autonomy within society negatively affects mental health. Lastly, Keleher and Armstrong suggested that individuals' access to economic resources, such as meaningful employment, education, and adequate housing, promotes mental health within an entire population. As Keleher and Armstrong suggested, policy that embraced these three central determinants of mental health would foster flourishing individuals and communities. The VicHealth predictors of mental health, along with other reviewed predictors of mental health, are presented in Table 2.1.

While the VicHealth framework for promoting mental health was clearly tailored toward positively influencing the mental health of the general population, Keleher and Armstrong's (2005) suggestions for promoting flourishing can also be applied to yield insights relevant to college and university campuses. For example, in the context of VicHealth's third determinant, access to economic resources such as meaningful work, adequate housing, and education, colleges promote mental health at a minimum by providing basic educational opportunities, adequate residential facilities. Yet, institutions also provide more specialized opportunities to students to benefit from meaningful engagement in on-campus employment or co-curricular involvement, as well as increased access to educational opportunities through specialized academic programs such as honors colleges, study abroad, and living-learning programs. Colleges and universities take a variety of actions to promote the freedom from discrimination and prejudice on campus. Given the VicHealth framework, it is reasonable to suggest that certain campus structures and programs that foster appreciation of diversity and positive interactions across difference would also promote flourishing. Furthermore, colleges and

universities also ensure the social inclusion of the university community, aiding in the promotion of mental health as posited by the VicHealth framework. For example, students' social and academic integration into the campus community can be fostered through residential communities, student activities and campus involvement, learning communities, or participation in campus pride activities such as athletics or campus traditions. Despite being designed for the general population, the VicHealth framework (Keleher & Armstrong, 2005) provided insights related to the promotion of mental health on college and university campuses. The following section further explores how institutions of higher education have responded to promote mental wellness.

Institutional Response to Promote Mental Wellness

Promoting mental wellness affirms a holistic focus on developing well-rounded college graduates (Hersh et al., 2008) and assists in actualizing institutions' academic missions by fostering student learning and success. In addition to promoting students' success in college, institutions that foster mental wellness provide an environment for students to develop well-being, equipping graduates to engage as productive and positive citizens in a society to which they feel connected, valued, and responsible. At a campus level, institutions' response to mental illness has been well documented (Kitzrow, 2009; Reynolds, 2009). Mirroring the relatively recent development of positive psychology and the emphasis on mental wellness, campus efforts to promote mental wellness, while existent, are less documented than that of mental illness.

Since the 1980s, practitioners have drawn on theories and research related to student wellness, as well as practical experiences and campus assessments to advance programs and initiatives on college campuses to promote wellness. One such initiative

has been the creation of cross-campus wellness committees or task-forces established to promote wellness among the entire campus community (Guyton et al., 1989). Additionally, scholars have emphasized providing students with psycho-educational programming aimed at teaching behavioral self-regulation skills, such as managing time, stress, nutrition, and alcohol use (Guyton et al., 1989; Hermon & Hazler, 1999). Guyton et al. (1989) and Mosier (1994) suggested that, given the social dimension to wellness education, peer education models can be particularly effective in educational programming meant to both help students' learn to self-regulate, as well as gain awareness around eating disorders and alcohol and other drug abuse. Such programs are commonplace on the contemporary college campus, often located within the counseling center, health center, or career center (Hermon & Hazler, 1999). However, Mosier (1994) also suggested strategies for residence life staff to promote wellness in a residential setting. One such strategy endorsed the creation of "wellness houses," wherein several floors or an entire residence hall committed to community wellness and engaged in a variety of programs and initiatives with a common wellness theme. Such "themed housing" has been discussed in various typologies of LLPs (e.g. Inkelas et al., 2008), and Inkelas and Associates (2007) found 21 institutions to have at least one wellness-themed LLP. As the broad concept explaining how institutions might positively affect students' mental health through the use of pedagogies of engagement, such as LLPs, engaged learning will be reviewed in the next section of this chapter.

Engaged Learning

In postsecondary education, vast bodies of literature surround concepts of student learning and engagement in college. With varying language and definitions, discussing

"engaged learning" in college can be confusing and riddled with hollow higher education jargon. This section of the literature review endeavors to establish common language and definitions around the concept of engaged learning, as well as discuss key conceptual frameworks related to student learning and engagement in college. Swaner (2005) provided a taxonomy for discussing student learning and engagement in college by which three theoretical orientations (cognitive-structural, adult and experiential learning, and psychosocial) described student learning and two perspectives (involvement & civic engagement) characterized engagement in college. Rooted in the theoretical framework of the current study, engaged learning practices represent the institutional environments that affect students' mental health outcomes. What follows is a discussion of college learning and engagement using Swaner's taxonomy, a discussion of the concept of "engaged learning," and examples of engaged learning practices in postsecondary education.

Student Learning in College

Learning in college can be categorized into three groupings of learning-related theories: cognitive-structural theories, adult and experiential learning theories, and psychosocial theories (Swaner, 2005). Taken together, these theories provide a holistic view on student learning in college and lay the foundation for the concept of engaged learning, to be further discussed later in this section. Cognitive-structural theories (i.e. Baxter Magolda, 1992; Perry, 1999) are concerned with students' intellectual development and how students think about various types of knowledge in social and physical contexts (Evans, Forney, Guido, Patton, & Renn, 2010). Adult and experiential learning theories (i.e. Kolb, 1984; Wenger, 1998) explore how experiences can shape

learning. As adult learning theories suggest, experiences become the driver for learning as physical maturation slows after adolescence. Therefore, Swaner (2005) used the language of "adult and experiential learning" to emphasize the experiential component of adult learning. Psychosocial theories (i.e. Chickering & Reisser, 1993) focus on students' intrapersonal development, including growth related to relationships, social interdependence, emotional intelligence and disposition, and personal values (Evans et al., 2010). Traditionally, higher education has been most concerned with students' cognitive development, yet reforms to undergraduate education have called for more holistic learning (American Council on Education, 1937/1994a, 1949/1994b; American College Personnel Association, 1994) inviting psychosocial theories into conversations about teaching and learning in higher education (Swaner, 2005). In exploring students' engagement with their learning experiences, the following section provides an overview of students' engagement in college.

Student Engagement in College

Student engagement in college can be thought of through various lenses, including an involvement perspective and a civic-engagement perspective (Swaner, 2005). An involvement perspective of student engagement in college focuses on students' motivation to become involved in the learning process and emphasizes the role of the individual student in taking action and responsibility for his or her own learning. The involvement perspective of student engagement has often been championed as a key factor or best practice within undergraduate education (Astin, 1984, 1993; Kuh et al., 1991; Pascarella & Terenzini, 1991) and is most connected to engagement or involvement, as operationalized in the widely-popularized National Study of Student

Engagement (NSSE) and Cooperative Institutional Research Program (CIRP), respectively. Alternatively, the civic engagement perspective emphasizes students' connection to the broader community (campus, regional, national, global) and focuses on their civic development (Colby et al., 2003), as well as fostering an "engaged campus" as a whole (Hollander, Saltmarsh, & Zlotkowski, 2002). Furthermore, student engagement in college can be both an educational process by which students glean powerful learning and development (involvement perspective), and an outcome itself (civic engagement perspective). In the context of this study, which is focused at exploring the effects of engaged learning practices on college outcomes, student engagement in college is primarily discussed from the involvement perspective as a process by which students' attain another desirable college outcome.

Intersecting College Learning and Engagement

According to Swaner (2005), a higher education consultant commissioned by AAC&U in 2005 to author a literature review on the intersection between engaged learning, depression and substance abuse, and civic development, engaged learning encompasses three dimensions of learning (psychosocial, experiential, and cognitive/structural) and two dimensions of engagement (involvement, civic engagement). Insight into the meaning of engaged learning lies at the intersection of these dimensions of learning and engagement. First, Swaner advocates for a seamless integration between the involvement perspective of engagement and experiential and psychosocial learning theories. College students' involvement, such as the experience of interacting with faculty, study groups, student organizations, or holding an on-campus job, lends to students' growth and development through the application of experiential

learning theories. The connection to experiential learning theories is perhaps most consistent with the involvement perspective as both conceptualize the learner's engagement in an educational activity as the key process yielding positive outcomes. Additionally, aside from physical maturation, students' experiences in college often shape their psychosocial development. Thus various forms of involvement, such as participation in intergroup dialogue or student organizations, can serve as the vehicles for student growth and development when considering psychosocial theories.

Cognitive/structural theories of learning, however, are not as seamlessly connected to conceptions of involvement. Mere involvement in college activities can, but does not necessarily, lend to increasingly complex ways of knowing and doing. For example, Kuh (2003) noted that measures of student involvement, while key predictors of student learning, do not necessarily connote learning and understanding. In relation to Swaner's (2005) alternate dimension of engagement, civic engagement, theories of learning can be thought of as aiming to produce graduates that can and will be active citizens in a democratic society. Conceptualizing engaged learning through a civic engagement lens, Swaner focused on the potential outcome of engaged learning: the active citizen. From a civic engagement perspective, Swaner proposed engaged learning as a process that addresses contemporary calls for higher education to produce graduates with capacities for active citizenship in a democratic society (AAC&U, 2002).

Toward a definition of engaged learning. Bringing Theory to Practice (BTtoP), an AAC&U and Charles Engelhard Foundation project discussed later in this chapter, positioned the concept of "engaged learning" as central to its investigation of student mental health and civic development. The BTtoP project defined engaged learning as "a

process in which students are active participants in learning rather than passive recipients of information" (Bringing Theory to Practice, n.d.). By framing engaged learning as a process and happening through students' activity, the BTtoP definition endorsed Swaner's (2005) description of engaged learning through experiential learning theories and an involvement perspective of engagement. However, the BTtoP definition omits a civic aspect of engagement, which Swaner articulated as a key perspective of student engagement. This study advances a definition of engaged learning that integrates various dimensions of engagement and learning: *engaged learning is an interactive process between an individual and his or her environment by which multiple domains of knowledge (e.g. dimensions of self, interpersonal relations, conceptual knowledge) converge to yield the capacities necessary to be an active citizen in democratic society.* The following sections examine how this definition of engaged learning translates into practice through various pedagogies of engaged learning.

Engaged learning practices. Scholars have considered pedagogies of engagement throughout the twentieth century. Dewey's (1938) writings on experiential education argued that traditional pedagogies disengage the learner from the learning experience. Dewey's critique focused on the traditional form of education, what Freire (1970) would later call the "banking model," in which experts deposit knowledge into the minds of passive student recipients. Knefelkamp (1974) introduced the concept of "developmental instruction," describing classroom practices to enhance teaching and learning by engaging students personally and intellectually in classroom settings. Kneflekamp's "developmental instruction" thus provided an alternative to Freire's (1970)

critique of the "banking model" by encouraging teachers to simultaneously foster students' intellectual and identity development.

Contemporary scholars have since elaborated on how to engage students in the learning process through a discussion of pedagogies of engagement. For example, Palmer (1998) described a community of learners perusing truth through active dialogue, and Baxter Magolda (1992, 2001) characterized learning as a partnership between student and educator whereby learning is situated in learners' experiences. Swaner (2005) integrated two previous typologies of engaged learning pedagogies (Colby et al., 2003; Edgerton, 1997) into four major categories: service-learning, community-based research, collaborative learning, and problem-based learning. In practice, these pedagogies of engagement take the form of programs and initiatives such as co-curricular service-learning programs, intergroup dialogue programs, alternative break trips, undergraduate research opportunities, internships, and learning communities. Furthermore, one specific engaged learning practice is of interest for this study: the learning community.

Learning Communities

Educators use the term *learning communities* to describe a wide range of educational initiatives across many different contexts, but learning communities can broadly be defined as strategies to reform teaching and learning in higher education settings which foster seamless connections between students' social and academic realms and integrate information across educational experiences (Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Smith, MacGregor, Matthews, & Gabelnick, 2004). Lenning and Ebbers (1999), Shapiro and Levine (1999), and Smith et al. (2004) agree on some key defining qualities of a learning community, such as facilitating connections between

students' social and academic realms by creating smaller groups of students and faculty. When organized into a community focused on learning, students are encouraged to continue course-related discussions outside of the classroom. Learning communities, by connecting students' classroom settings with their peer groups, facilitate the accompaniment of learning alongside students' engagement in the college environment (Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Smith et al., 2004).

In addition to assisting students to bridge the divide between academic and social realms, researchers identify integration of learning across educational experiences as another key defining quality of a learning community (Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Smith et al., 2004). Integration of information can happen across different disciplines within the classroom and between inside and outside of the classroom experiences. For example, a cohort of students enrolling in three courses with an "environmental justice" theme, including an introductory ecology course, a contemporary social issues course, and a writing skills course that intentionally links the other two courses in writing assignments, fosters interdisciplinary connections among linked courses. Continuing with this example, these learning community students could additionally integrate information by making connections between their linked courses and service-learning experiences relevant to environmental justice in their local communities. By helping students integrate information across educational experiences in addition to providing a structure for students to seamlessly bridge their social and academic realms, learning communities are powerful vehicles for engaged learning (Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Smith et al., 2004).

Types of learning communities. In recent decades, researchers have contributed to the effort of constructing a typology of learning communities (Gabelnick, MacGregor, Matthews, & Smith, 1990; Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Love & Tokuno, 1999; Smith et al., 2004). Gabelnick et al. (1990) articulated five types of learning communities: linked courses, learning clusters, freshman interest group (FIG), federated learning communities, and coordinated studies. Linked courses are a pair of courses that students take in progression in which the curricula are coordinated. Learning clusters are expanded versions of linked courses in which a cohort of students enroll in a series of connected courses for one or more semesters, and when the foci of these learning clusters are on freshman students, it is called a FIG. Federated learning communities and coordinated studies are both immersion experiences. Federated learning communities consist of a cohort of students, including one faculty member that facilitates integration of information, whom enroll in a multi-disciplinary series of courses related to a theme. Coordinated studies are deep immersion experiences in which a group of faculty and students exclusively teach or enroll in courses focused around a particular theme.

Shapiro and Levine (1999) later expanded on Gabelnick et al.'s (1990) classifications of learning communities by grouping linked courses, learning clusters, FIGs, federated learning communities, and coordinated studies into broader categories and including a new type of learning communities, "residence-based programs," simply defined as curricular structures that include students' living arrangements and make connections across students' living and academic settings. Similarly, Lenning and Ebbers (1999) and Love and Tokuno (1999) expanded on Gabelnick et al.'s (1990)

classifications of learning communities by asserting that another type of learning community serves specific student populations, such as students from underrepresented groups and academically underprepared students, and by including a new type of learning community, residential learning communities. Recently, researchers investigated the diversity of program topics, designs, and practices within residential learning communities, or living-learning programs (LLPs) (Inkelas & Associates, 2004, 2007; Inkelas, Soldner, Longerbeam, & Leonard, 2008). Specific types and typologies of LLPs will be further discussed later in this chapter.

Living-Learning Programs

The pedagogy of engagement in focus for this study, living-learning programs (LLPs), are one type of learning community that exemplify the concept of engaged learning. Alexander Meiklejohn, a contemporary of Dewey, sought to establish a laboratory for democracy through experiential education in his Experimental College at the University of Wisconsin – Madison during the 1920s. The Experimental College, a foundational exemplar of engaged learning, is thought to be the predecessor to the contemporary LLP (Nelson, 2001; Smith, MacGregor, Matthews, Gabelnick, 2004). While Meiklejohn's Experimental College only existed for five years, other undergraduate reformers in the twentieth century continued to build upon Meiklejohn's experiment. In detailing the learning community movement in the twentieth century after Meiklejohn's Experimental College, Smith et al. (2004) described the founding of Evergreen State University in 1969 and later the Washington Center for Improving the Quality of Undergraduate Education as other key efforts led by learning community scholar-practitioners. Late twentieth century calls for undergraduate reform, particularly

at large research universities, contributed to the popularization of learning communities, LLPs included. The Boyer Commission's (1998) *Reinventing Undergraduate Education: A Blueprint for America's Research Universities* and The Association of American Colleges and Universities' (2002) *Greater Expectations: A New Vision for Learning as a Nation Goes to College* are two examples of such calls for undergraduate reform, and higher education administrators positioned LLPs as one way to address the troubled postsecondary landscape (Inkelas & Soldner, 2011; Smith et al., 2004). As a result, LLPs exploded in popularity after the 1980s in a variety of shapes and sizes, raising questions about what core practices define a LLP and to what extent do individual LLPs live up to their reputations as powerful vehicles for engaged learning. This section of the literature review will explore first how scholars have defined and categorized types of LLPs, followed by a review of literature written by LLP practitioners and researchers.

LLP Types and Typologies

While a well-established body of literature delineating and defining types of learning communities exists and consistently includes living-learning programs as one specific type of learning community (Gabelnick, MacGregor, Matthews, & Smith, 1990; Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Love & Tokuno, 1999; Smith et al., 2004), a number of studies explored specific types of living-learning programs (Inkelas & Associates, 2004, 2007; Inkelas, Soldner, Longerbeam, & Leonard, 2008; Schoem, 2004; Zeller, James, & Klippenstein, 2002). Zeller, James, and Klippenstein (2002) characterized LLPs into five categories around how academic components integrate with residence hall components, grouping LLPs into residential colleges, living-learning centers, theme housing, residential learning communities, and freshman year experience.

Similarly, Schoem (2004) classified LLPs into three groups: residential colleges, residential learning communities, and residential education programs. Schoem and Zeller et al. (2002) agreed on the meaning of residential colleges as rooted in the Oxford/Cambridge model of multi-year, liberal-arts focused programs with students and faculty living in residence halls. The categories of theme housing (Zeller et al., 2004) and residential education programs (Schoem, 2004) both describe communities of students with common interests, yet no formal academic component. Lastly, Schoem's (2004) broad conception of residential learning communities as any learning community with a residential component groups together Zeller et al.'s (2002) categories of living-learning centers, described as residential programs with strong academic partnerships, and freshman year experience, described as residential learning communities with a focus on the needs of the first year student population.

Through the development of the National Study of Living-Learning Programs (NSLLP; Inkelas & Associates, 2004, 2007), researchers furthered previous practitioner-based LLP typologies (Schoem, 2004; Zeller et al., 2002) by developing empirically-based typologies. Inkelas and Associates (2007) categorized LLPs that participated in the NSLLP into 17 thematic groupings (e.g Women's programs, Civic/social leadership programs, Cultural programs, Wellness programs). Later, Inkelas et al. (2008) developed an empirical typology of LLPs that clustered LLPs by structural components such as the size of the LLP, the extent to which the LLP is resourced, and the degree of collaboration between student and academic affairs administration in initiating and sustaining the LLP. Through cluster analysis of 207 LLPs, Inkelas et al. (2008) derived three groupings of LLPs described as "Small, limited resourced, primarily residential life emphasis,"

"Medium, moderately resourced, student affairs/academic affairs combination," and "Large, comprehensively resourced, student affairs/academic affairs collaboration" (p. 502-503).

Living-Learning Practitioner Literature

Concurrent with the increased popularity of LLPs, many seasoned practitioners contributed to a literature base regarding best practices in cultivating LLPs. In their *Higher Education Handbook* chapter, Inkelas and Soldner (2011) reviewed the extant literature on LLPs from 1980-2010, commenting that the practitioner literature base primarily advances suggestions regarding "best" or "core" LLP practices from a "lessons learned" whereby "each different source offered distinct, idiosyncratic sets of core practices" (p.18). Therefore, Inkelas and Soldner chose to synthesize the extant practitioner literature into six "principle practices" for LLPs. In order to maintain continuity with Inkelas and Soldner's comprehensive review, the following section overviews six principle practices of LLPs and the supporting literature, including one additional publication (Brower & Inkelas, 2010) not included in Inkelas and Soldner's (2011) review. The six principle practices of LLPs are (1) Establish a Clear Vision and Objectives, (2) Solicit Campus Leadership and Support, (3) Form Academic and Student Affairs Partnerships, (4) Seek and Maintain Faculty Involvement, (5) Facilitate Peer Interaction and a Supportive Residence Hall Climate, (6) Integrate and Assess LLP Activities.

Establish a clear vision and objectives. LLP practitioners wrote about the importance of establishing a clear vision and setting learning objectives. Among the practitioner literature there is wide agreement on the value of setting LLP learning

objectives. Brower and Inkelas (2010) stated that the most effective LLPs establish learning objectives with strong academic components. Similarly, Gruenewald and Brooke (2007) and Hummel, Murphy, and Zeller (2008) discussed learning outcomes as an important piece of LLPs' vision or shared goals. While Gruenewald and Brooke (2007) and Hummel et al. (2008) agreed that successful LLPs will have established a common mission and goals that may include learning outcomes, Schoem (2004) wrote about LLPs as serving the university community more broadly. Schoem suggested LLPs to be sites of scholarly integration and vehicles for educational entrepreneurship, deep learning, and democratic education.

Solicit campus leadership and support. Practitioner authors wrote of the key role campus leadership and support plays in fostering successful LLPs. Laufgraben, O'Connor, and Williams (2007) and Schoem (2004) impressed the critical role top administrators and campus leaders play as champions of LLPs in advocating for LLPs and elevating LLPs as high-impact campus practices through recognition. Hummel et al. (2008) articulated a holistic conceptualization of utilizing various parts of the campus community as resources. Specifically, Hummel et al. encouraged academic affairs partners to be sought out for assistance with curriculum and pedagogical designs, student affairs partners to be sought out to help integrate students' in and out-side of the classroom experience, and external sponsors to be utilized in order to build a space for LLPs on campus through financial support and advocacy.

Form academic and student affairs partnerships. Noting historical campus divides between academic and student affairs (Bergman & Brower, 2008; Schoem, 2004), authors of practice-based LLP scholarship positioned academic-student affairs

partnerships as a key principle. Specifically, four key facets of academic-student affairs partnerships emerged from the reviewed literature: (a) academic and student affairs stakeholders work together with shared values and receive campus support (Laufgraben et al., 2007), (b) transparent and frequent communication between faculty, staff, and students lays a foundation for effective partnerships (Gruenwalde & Brooke, 2007; Brower & Inkelas, 2010), (c) LLPs create "vital, well-defined, multiple roles for faculty, staff, and graduate students" (Brower & Inkelas, 2010, p.42), and (d) academic and student affairs share supervisory and funding oversight (Brower & Inkelas, 2010; Gruenwalde & Brooke, 2007).

Seek and maintain faculty involvement. Researchers argue that students in LLPs enjoy more faculty interaction than their counterparts not participating in LLPs (Garrett & Zabriskie, 2003; Pike, 1999), yet faculty involvement in LLPs can occur in widely varying forms including non-participation, teaching courses, sharing meals with students, or mentoring students (Bergman & Brower, 2008). Practitioner authors, while commenting on institutional barriers to faculty involvement in LLPs such as tenure processes and divides in faculty and staff cultures (Bergman & Brower, 2008; Laufgraben et al. 2004), suggested strategies to seek and maintain faculty involvement in LLPs. For example, Schoem (2004) recommended that LLPs outreach to tenured faculty or non-tenure track faculty that desire intellectual community. Additionally, Bergman and Brower (2008) suggested strategically introducing new faculty to LLP involvement through familiar activities, such as teaching or advising, followed by continued encouragement by LLP staff to explore less traditional ways of engaging with students.

Facilitate peer interaction and a supportive residence hall climate. In addition to greater faculty involvement in LLPs, LLP practitioners argued that effective LLPs promote peer interaction and a supportive residence hall climate. Schoem (2004) wrote about LLPs as vehicles for democratic education. LLPs enable participants to practice democracy by immersing students from different backgrounds in a learning-centered environment whereby students take classes, share meals, and attend social activities together. While Schoem's work conceptually ties LLP environments to democratic outcomes, researchers reported that LLP environments, such as supportive residence hall climates and peer interactions, contribute to a variety of student outcomes, supporting Schoem's conceptual framework (Inkelas, Vogt, Longerbeam, Owen, & Johnson, 2006). Additionally, Brower and Inkelas (2010) found that the most effective LLPs in their National Study of Living Learning Programs (Inkelas & Associates, 2004, 2007) "capitalize on community settings to create opportunities for learning wherever and whenever it occurs*"* (Brower & Inkelas, 2010, p. 42), further elevating facilitation of peer interaction and a supportive residence hall climate as a key LLP practice.

Integrate and assess LLP activities. Inkelas and Soldner (2011) grouped practitioners' recommendations to both integrate and assess LLP activities into one principle practice with the commonality that they "require LLP stakeholders to periodically reflect upon their work" (p. 20). Practitioners called for seamless integration of the often disconnected parts of the student experience such as students' academic and social engagement (Schoem, 2004), or students' in- and out-of-class learning (Hummel et al., 2008). Additionally, Gruenewald and Brooke (2007) and Hummel et al. (2008) stated that high-impact LLPs will reflect and assess their practices

measured against program objectives and established learning outcomes. However, Inkelas and Soldner (2011) commented that even though many LLP practitioners have called for increased assessment efforts to support the claim that LLPs' contribute to student learning outcomes, a limited body of knowledge exists to substantiate these claims empirically.

Critique of the Practitioner Literature

Inkelas and Soldner (2011) articulated three main critiques of the practitioner literature: (a) variability in definitions of LLPs, (b) variability in how practitioners categorize different types of LLPs, and (c) variability of supporting evidence to practitioners' claims regarding LLP best practices. Referring to LLPs in practice often leads to lack of commonly held descriptions or accepted definitions; LLPs are referred to as residential learning communities, living-learning centers, residential colleges, and theme houses. Such lack of common descriptions and definitions, Inkelas and Soldner argued, makes the processes of reviewing and contributing to scholarship related to LLPs cryptic and confusing. Furthermore, the lack of a comprehensive way to differentiate between types of LLPs (i.e. honors, residential colleges, transition programs) inhibits more complex approaches to suggesting powerful practices that take into account the idiosyncrasies of LLP type. Finally, Inkelas and Soldner questioned "best practices according to whom?" (p. 47), arguing that papers espousing certain LLP practices based on anything but quality learning outcomes assessment should be seriously questioned. Scholarship that demonstrates the use of assessment to inform practice often is authored from a single-institution perspective, and thus readers must question the transferability of promising practices to different institutional types and cultures. Complementing the

wealth of LLP scholarship offered from a practitioner perspective is a body of empirical studies, reviewed in the following section, that examine how students' participation in LLPs affects various college experiences and outcomes.

Living-Learning Empirical Literature

While empirical research on the effect of living-learning programs (LLPs) on college student outcomes existed prior to the National Study of Living-Learning programs (NSLLP, Inkelas & Associates, 2004, 2007), the NSLLP spurred a body of literature that examines the effect of LLPs on a multi-institutional level. In their review of LLP research between 1980 and 2010, Inkelas and Soldner (2011) noted a trend in LLP-related research that increased complexity in research design (i.e. accounting for student interactions with faculty and peers) often accompanied findings that failed to evidence LLP's direct effect on student outcomes. Therefore, the following review of the LLP empirical literature concentrates on scholarly work that employed more complex research designs in attempting to characterize the effect of LLP participation on college student outcomes. Similar to Inkelas and Soldner's (2011) review of the extant empirical literature on LLPs, the following section presents relevant research findings by college outcome. Discussed below are research studies that investigated the effect of LLP participation on college student outcomes related to academic persistence and performance, faculty and peer interactions, college transition and engagement, intellectual development, perceptions of campus climate, and attitudes and behaviors.

Academic persistence and performance. Many researchers (Edwards & Mckelfresh, 2002; Pasque & Murphy, 2005; Purdie, 2007; Stassen, 2003) explored the relationships between LLP participation and students' academic persistence and

performance by drawing from single-institution samples and employing an I-E-O (Astin, 1993) regression model. Taking into account students' background characteristics, researchers found that compared to living in traditional residence halls, LLP participation significantly predicted higher GPAs specifically among male participants (Edwards & Mckelfresh, 2005), higher GPAs among all LLP participants (Stassen, 2003; Pasque & Murphy, 2005), and higher likelihood of persisting specifically among male and non-White LLP participants (Edwards & Mckelfresh, 2002). However, research designs that accounted for more aspects of the student experience and institutional environments found less influence of LLP participation on students' academic persistence and performance. For example, Pike, Schroeder, and Barry (1997) employed path analysis to explore direct and indirect effects of LLP participation on students' GPA and persistence. Pike et al. found LLP participation to predict greater institutional commitment and social integration, yet researchers found no significant direct effects of LLP participation on students' GPA and persistence. Additionally, Pascarella and Terenzini (1980) found that the significant predictive relationships between LLP participation and student persistence was nullified when the regression model accounted for other college environments such as faculty or peer interactions.

While researchers studying the influence of LLPs on students; academic performance and persistence with more complex research designs generally have found less pronounced effects, Szelényi and Inkelas (2011) employed a complex design and yielded findings favorable for LLP participation. In their multi-institutional, longitudinal study, Szelényi and Inkelas (2011) studied three types of LLPs (female-only, STEM-focused LLP; co-educational STEM-focused LLP; non-STEM LLP) in comparison to

students in traditional residence halls. Szelényi and Inkelas found that compared to living in traditional residence halls, as well as participation in co-educational STEM-focused LLPs and non-STEM LLPs, participation in a female-only, STEM-focused LLP significantly predicted students' aspirations for STEM-related graduate school, net of their pre-college characteristics, college GPA, and factors regarding engagement in their college STEM education (confidence in math/science courses, visiting STEM work settings, etc.). Findings from Szelényi and Inkelas demonstrated a positive influence of LLP participation on students' desire to further their academic pursuits, contributing to a mixed body of literature regarding the effect of LLPs on students' academic performance and persistence. Ultimately, findings from these three studies (Pascarella & Terenzini, 1980; Pike et al., 1997; Szelényi & Inkelas, 2011) suggested that, although LLP participation may not be directly related to academic persistence and performance, participating in a LLP may provide students an experience in a developmentally rich environment that leads to positive college outcomes.

Faculty and peer interactions. Researchers that investigated the effect of LLP participation on students' faculty and peer interactions suggested that compared to living in a traditional residence hall, students living in a LLP benefit from more formal (i.e. course-related or mentorship) faculty-student interactions (Inkelas et al., 2006b; Garrett & Zabriskie, 2003; Pascarella & Terenzini, 1980; Pike, 1999), and more informal (i.e. visiting informally before/after class) faculty-student interactions (Inkelas et al., 2006a; Garrett & Zabriskie, 2003), as well as more meaningful peer interactions (Inkelas et al., 2006a; Pike, 1999). Furthermore, Garrett and Zabriskie's (2003) study, in addition to replicating the finding that LLP participation yielded more informal faculty-student

interaction compared to non-participation, found that non-LLP students living in a residence hall that hosted a LLP ("neighbors") reported more informal faculty-student interaction than non-participants that lived in wholly non-LLP residence halls. Both Inkelas et al. (2006a) and Pike (1999) sought to better understand the broad concept of peer interactions by splitting the concept into two parts, (1) academic or vocational, and social or cultural interactions (Inkelas et al., 2006a), and (1) the action of interacting with peers, and (2) the topics of conversation (Pike, 1999). Results from the extant literature examining the influence of LLP participation on faculty and peer interaction suggested that students in LLPs are likely to have more frequent and meaningful interactions with faculty and their peers compared to students living in traditional residence halls.

College transition and engagement. Studying the effect of LLP participation on students' college transition and engagement, researchers found empirical linkages between participation in a LLP and more ease with transition to college (Inkelas, Daver, Vogt, & Brown-Leonard, 2006), more academic engagement (Arms, Brower, & Cabrera, 2008; Eck, Edge, & Stephenson, 2007), and more involvement in campus life (Brower, Golde, & Allen, 2003; Inkelas et al., 2006b). Using data from multiple institutions, Inkelas et al. (2006) reported that first-year student LLP participants scored higher on self-ratings of ease with academic and social transition to college compared to first-year students living in traditional residence halls, taking into account measures of self-reported academic and social transition pre-college confidence. Regarding academic engagement, Arms, Brower, and Cabrera (2008) suggested benefits specifically to academic advising integrated into LLPs, and Eck, Edge, and Stephenson (2007) found LLP participants scored higher compared to non-participants on measures of classroom participation and

meaningful discussions. Furthermore, Brower, Golde, and Allen (2003) reported that LLP participants disproportionately represented among those who were "somewhat or very involved" in their residence hall and campus activities, and Inkelas et al. (2006b) found LLP participants reported more involvement in cross-cultural student organizations compared to students living in traditional residence halls. While extant research connects engagement in college to students' participation in a LLP, future LLP research may further investigated this relationship by trying to understand the indirect effects of engagement on other positive college outcomes throughout the college experience (Pike, Kuh, & McCormick, 2011).

Intellectual development. Researchers that studied the effect of LLP participation on students' intellectual development have found mixed results. Kohl (2009) used NSLLP data to look for differences in self-reported critical thinking ability between students in civic engagement themed LLPs, honors LLPs, and traditional residence halls, taking into account students' pre-college characteristics and various college environment measures. While Kohl did not find differences between types of LLPs, students participating in any kind of LLP reported higher critical thinking scores compared to students living in traditional residence halls. Similarly, after taking into account students' background characteristics, Pasque and Murphy (2005) suggested that student's participation in LLPs can lead to more intellectual engagement, finding LLP students responded move favorably to prompts like "will work to understand concepts in class," "motivated to learn new things," and "relates concepts between classes."

However, researchers using more complex methodology found little evidence of LLP participation influence intellectual development. Pascarella and Terenzini (1980)

found a significant relationship between LLP participation and intellectual development holding constant background characteristics, pre-college achievement, educational aspirations, and college expectations. However, the predictive effects of LLP participation in their model disappeared when faculty and peer interactions were included. Furthermore, Pike (1999) used College Student Experience Questionnaire (CSEQ) data and structural equation modeling and found no significant differences between LLP and non-LLP participants' self-reported gains in general education and intellectual development net of students' background characteristics and various college environments such as faculty and peer interaction and student involvement. While Pike suspected that measures of how students integrated course information into their personal and social lives would mediate the relationship between residence arrangement (LLP vs. non-LLP) and gains in general education and intellectual development, after accounting for the aforementioned covariates, no significant differences existed in the integration measures between the two groups. Similarly, Inkelas et al. (2006a) found mixed results across three campuses as to which LLP environments most influenced students' intellectual development. Amidst mixed evidence of the effect of LLP participation on students' intellectual development, readers may find relevant Inkelas et al.'s assertion that "…the contributions of L/L program environments on students' intellectual outcomes are not the same on any two campuses, even among those that share similar institutional characteristics" (p. 138).

Perceptions of campus climate. While researchers found LLP participants to experience more supportive residence hall climates (Inkelas et al., 2006a; Inkelas et al., 2006b; Inkelas and Wiseman, 2003), researchers have not found much evidence to

support a direct effect of LLP participation on students' perceptions of campus climate and sense of belonging. After taking into account students' background characteristics, Pascarella and Terenzini (1980) found LLP participation to predict higher scores on measures of students' sense of community. However, after Pascarella and Terenzini entered faculty and peer interactions into their model, the predictive effect of LLP participation dissipated. Years later, Inkelas and her colleagues produced multiple studies that found participants in LLPs reported more academically and socially supportive residence hall climates compared to their peers living in traditional residence halls (Inkelas et al., 2006a; Inkelas et al., 2006b; Inkelas & Weisman, 2003). Building on the findings from Inkelas and her colleagues, Johnson and her colleagues investigated the effect of LLP participation on students' perception of campus climate and sense of belonging. In two related studies, researchers replicated well documented findings regarding racial differences in perceived campus climate and sense of belonging, yet the findings did not evidence any effect of LLP participation on students' perceptions of campus climate or sense of belonging (Johnson, 2007; Johnson et al., 2007).

Attitudes and Behaviors.

Openness to diversity. Pike (2002) used path analysis to examine the relationship between students' residence arrangement and their reported openness to diversity. Pike found that living on campus, whether in traditional residence halls or LLPs, directly and favorably affected students' openness to diversity after taking into account students' background characteristics and college environments. Additionally, Pike found that participation in one specific type of LLP, the residential FIG, yielded a significant indirect effect on students' openness to diversity. Pike argued that students in this

specific residential arrangement enjoyed more meaningful relationships with their peers, leading to greater gains in their openness to diversity.

Civic engagement. Using a multi-institutional sample, Rowan-Kenyon, Soldner, and Inkelas (2007) compared scores on a measure of civic engagement among students whom participated in a civically-focused LLP, non-civically focused LLP, and traditional residence hall. Rowan-Kenyon et al. found that participants in a civically-focused LLP reported a higher sense of civic engagement compared to students living in both non-civically focused LLPs and traditional residence halls, net of pre-college importance of co-curricular involvement. However, in a broader model that included background characteristics, co-curricular involvement, peer and faculty interactions, self-reported critical thinking gains, interpersonal confidence, and personal philosophy, LLP participation did not significantly predict sense of civic engagement.

Alcohol-related behaviors. Two studies (Brower, Golde, and Allen, 2003; Brower, 2008) investigated the influence of LLP participation on students' drinking behaviors. Taking into account high school drinking behaviors and involvement, both Brower et al. (2003) and Brower (2008) found that compared to students in traditional residence halls, LLP participants reported less frequent binge drinking and fewer primary (i.e. miss class, vomit) and secondary (i.e. ruckus living environments) consequences of alcohol use. Using a multi-institutional sample, Brower (2008) also found that LLP participants were more likely to be non-drinkers than students living in traditional residence halls.

Critique of Empirical Literature

Researchers exploring how participation in a LLP affects college student outcomes struggle to design studies that minimize the limitations commonly found among the empirical LLP literature. Inkelas and Soldner (2011) synthesized the major limitations from a review of three decades of empirical studies, categorizing their critique into 5 major limitations: (a) student self-selection into LLPs, (b) lack of generalizability from single-institution studies, (c) nested data concerns among multi-institutional studies, (d) simplistic regression model designs, and (e) messiness in the operationalization of college environment and student outcome constructs. First, the selection-bias claim that LLP participants report more college outcomes because they are predisposed to college success as evidenced by their self-selection into LLPs is an omnipresent limitation found in LLP studies ranging from program assessment to multi-institutional research. Randomly assigning students to LLP or non-LLP settings would best counter the self-selection bias but this method is not always realistic. However, researchers typically take into account various student background characteristics which can help to minimize self-selection bias.

The second and third of Inkelas and Soldner's (2011) limitations both pertain to the scope of LLP studies. Single-institution studies of LLPs, while valuable to practitioners at the investigated institution, provide limited evidence regarding the experiences of students in LLPs at other institutions with varying types of students, campus resources, and definitions of LLPs. Multi-institutional studies of LLPs, while addressing the lack of generalizability of single-intuition studies, are exposed to nested data concerns. Researchers that aggregate the effects of LLPs across varying program

and institution level characteristics are prone to results that exaggerate or understate the true effects.

The fourth and fifth of Inkelas and Soldner's (2011) limitations both relate to measurement and analysis issues in LLP research. Inkelas and Soldner argued that single-equation regression models, in which researchers regress of-interest student outcomes on LLP participation using one or more covariates (i.e. background characteristics), serve as limited tools of analysis. These regression models preclude researchers from understanding how relationships between college environments and student outcomes differ between LLP and non-LLP settings. Additionally, single-equation regression models cannot explore indirect effects of college environments and intermediate outcomes on student outcomes. Inkelas and Soldner further argued that researchers vary in how they operationalize college environment and student outcome variables, providing at best, Cronbach's alpha, a coefficient of internal consistency, as opposed to measures of validity and reliability. Furthermore, even in instruments that are relatively more psychometrically sound, such as the NSSE (National Survey of Student Engagement, 2007) or the NSLLP (Inkelas & Associates, 2004), researchers argued that more complex measurement tests such as confirmatory factor analysis are needed to advance these areas of scholarship (Campbell & Cabrera, 2011; Inkelas & Soldner, 2011).

Despite dozens of empirical studies investigating the effect of LLP participation on a wide range of college outcomes, students' mental health outcomes have yet to be adequately explored in the context of LLP participation. Furthermore, numerous scholars evidenced positive outcomes of LLP participation directly related to empirically

supported factors that promote mental health among college students. More than merely a residence-hall effect, students participating in LLPs, compared to their traditional residence-hall peers, reported more favorable outcomes related to social integration (Pike et al., 1997), academic and social ease with transitioning to college (Inkelas et al., 2006a), supportive residence hall climates and increased involvement in campus activities (Inkelas et al., 2006a; Inkelas et al., 2006b; Inkelas and Wiseman, 2003), less abusive alcohol behaviors (Brower et al., 2003; Brower, 2008), and a greater sense of civic engagement (Rowan-Kenyon et al., 2007). In the context of the predictors of mental health reviewed in Table 2.1, the extant LLP literature suggests that LLP participants experience unique residential environments that ultimately promote mental health by bolstering social inclusion, support, and stability through the transition to college, as well as civic engagement and participation in community activities (Keleher & Armstrong, 2005). Despite the social support and civic engagement based linkages between the environments and outcomes demonstrated by LLPs and the literature describing factors that promote mental health, the relationship between LLPs and college students' mental health has yet to be adequately investigated. However, the following section reviews the Bringing Theory to Practice project, an initiative that connects students' mental health and wellness to engaged learning experiences such as LLP participation in college.

Bringing Theory to Practice

Connecting the two major aspects of this study, engaged learning and students' mental health, Bringing Theory to Practice (BTtoP) is an Engelhard Foundation supported project working in partnership with the Association of American Colleges and Universities (AAC&U) that encourages postsecondary institutions to promote students'

well-being. The BTtoP project operates within the framework discussed in the previous chapter; colleges and universities, by promoting flourishing and fostering the holistic development of students' well-being, both advance their academic missions and produce well-rounded graduates equipped to address complex contemporary problems and actively participate in civic society (Bringing Theory to Practice, n.d.). Initiated in 2002, the BTtoP project noted college students' increased disengagement emotionally, academically, and civically, threatening a core purpose of American higher education to produce well-rounded graduates to sustain civic society (National Center on Addiction and Substance Abuse, 2003). Therefore, BTtoP sought, as a core line of investigation, to better understand the relationship between students' mental health, civic development, and engaged learning experiences.

Connecting Engaged Learning and Mental Health in College

Through a variety of commissioned research, literature reviews, conceptual works, as well as campus-based assessments and initiatives, the BTtoP project worked toward hypotheses describing the relationships between engaged learning, civic development, and mental health. The project awarded program and assessment grants to more than seventy campuses to investigate, in their institutional contexts, the relationships between engaged learning pedagogies, students' civic development, and students' mental health. Additionally, the project awarded a total of more than one million dollars to six institutions, selected as "demonstration sites" to further explore how engaged learning pedagogies benefit students' civic development and mental health (Bringing Theory to Practice, n.d.). After a decade worth of linkages between engaged learning, civic development, and mental health substantiated by theory, research, and

assessment, the BTtoP project advances the hypothesis that students' engagement in their learning yields increased civic development and fosters mental wellness. As the current study explores the relationships between a specific engaged learning pedagogy, living-learning programs, and students' mental health, the relevant BTtoP literature surrounding engaged learning and college students' mental health will be reviewed.

Theoretical connections. In a BTtoP commissioned background paper on engaged learning and mental health, Swaner (2005) offered two major theoretical connections between engaged learning and students' mental health. The first of these theoretical connections centered on the notion that optimal developmental conditions for students in college rely on a balance between challenge and support (Sanford, 1966), asserting that engaged learning experiences create an optimal balance between challenge and support in college. Swaner (2005) cited theories of students' psychosocial development (e.g., Chickering & Reisser, 1993), building off of foundational college student identity development scholarship that characterized students' experience in college as a process of encountering various developmental challenges. Furthermore, scholars articulated theoretical links between students' depression and substance abuse in college and developmental challenges, such as establishing a sense of personal identity independent of one's family and navigating peer group pressures around substance abuse (Mann, 1982; Rivinus, 1992). Arguing that engaged learning practices help students navigate these developmental challenges in college, Swaner (2005) concluded that pedagogies of engaged learning can favorably influence students' mental health. Swaner suggested that students taking more responsibility for their learning and role in the community through engaged learning practices would likely develop meaningful

relationships with community members, such as university faculty and staff. Such relationships and community engagement could provide support to students' struggling with psychosocial developmental challenges of separation from home communities and developing a sense of identity in the college context. Participation in engaged learning practices might provide additional support to students' developmental challenges, thereby ameliorating mental health concerns, such as depression and substance abuse, associated with students' arrested psychosocial development.

Swaner (2005) also suggested a theoretical connection between engaged learning and students' mental health through students' moral and civic development. First, scholars suggested that students' moral and civic development is connected to aspects of mental health (Berkowitz, 2000; Colby et al., 2003; Swaner, 2005). In a study of moral reasoning and adolescent substance abuse, Berkowitz (2000) reported a relationship between moral development and substance abuse wherein individuals' attitudes toward substance use as immoral predicted less substance abuse. Berkowitz suggested that individuals' motivation to abstain from substance abuse resulted, in part, from an objection to the immoral act of substance abuse. Furthermore, Colby et al. (2003) argued that individuals' sense of responsibility to their community and broader society is interconnected with students' moral development, and therefore students' moral development and civic development are inextricably interlinked. Students' exhibiting high levels of civic and moral development would possess a well-established civic identity, yielding a disposition toward benefiting the broader community. Students' at this point in their moral and civic development would likely abstain from substance abuse for both personal moral objections and with concern for the impact of such activity on the

community. Thus, Swaner (2005) argued that moral and civic development fosters students' social interest and pro-social behaviors wherein students seek out positive interactions with other members of the community.

Engaged learning practices such as learning communities, service-learning, and community-based research, as Swaner argued, empower students to become invested in their communities and take responsibility for their learning, creating an optimal environment for students to develop morally and civically. Therefore, pedagogies of engaged learning, by fostering students' moral and civic development, engender social interest and positive social behaviors that, in turn, assuage negative factors of mental health such as social isolation and substance abuse. While Swaner (2005) presented a comprehensive review of theories related to engaged learning, civic and moral development, and mental health, standing alone, these theoretical connections are insufficient in substantiating the hypothesis that engaged learning contributes to students' mental health. Such theories suggested connections between engaged learning practices and students' mental health through mediating factors such as developmental challenge and support as well as moral and civic development, yet Swaner (2005) provided limited empirical support to these theoretical connections. The next section will explore related empirical studies that, along with the theoretical connections, illustrate the potential connections between engaged learning and mental health.

Empirical connections. Swaner (2005) provided two connections, supported by empirical research, between engaged learning and students' mental health in the BTtoP commissioned background paper. First, Swaner argued that students' engagement in their learning contributes to more campus involvement and therefore less social isolation

and depression. Astin's (1993) work using data from the Cooperative Institutional Research Program (CIRP) reported associations between higher self-ratings of students' emotional health and higher scores on college involvement, such as participating in intramural sports, socializing with friends, attending religious services, as well as more experience working in groups for class projects. Particularly of interest was the finding of a positive correlation between group project experiences and self-reported emotional health. Swaner (2005) argued that group project experiences are a form of engaged pedagogy in that these settings often yield a collaborative learning process, students taking responsibility for their learning, and frequent interactions with peers and faculty. Conversely, lower self-ratings of emotional health were associated with reported lack of sense of community, alcohol consumption, and time spent watching television. Thus, Astin's findings suggested that positive mental health is associated with more college involvement, less alcohol use and social isolation, as well as more engaged learning, such as group project experiences. However, as both Astin and Swaner (2005) recognized, these findings must be taken with hesitation as the correlational nature precludes readers and researchers from inferring directionality or causality in the relationships between mental health and college involvement.

Swaner (2005) made a second connection between engaged learning and students' mental health by arguing that students' engagement in their learning mitigates extreme stress-related consequences to students' well-being. In their comprehensive discussion of stress and learning at colleges and universities, Whitman, Spendlove, and Clark (1986) asserted that an optimal level of stress exists by which students will be driven to expend effort in the learning process. However, a lack of stress or an extreme amount of stress

yields little to no learning at all (Whitman et al., 1986). Furthermore, Whitman et al. argued that such extreme levels of stress might result in elements of poor mental health, such as anger, anxiety, depression, boredom, or fatigue. Connected to engaged learning, Whitman et al. asserted that by engaging students as active participants in the learning process, faculty empower students to control their learning experience. Such control, as Whitman et al. argued, alleviates many of the negative effects of students' extreme stress. Therefore, students engaged in their learning exert more control over their learning experiences which ameliorates the negative effects on students' mental health associated with extreme stress (Swaner, 2005).

Campus assessment and research. Following Swaner's (2005) comprehensive work on engaged learning, civic development, and students' mental health, a wealth of campus initiatives aimed at promoting students' mental wellness through engaged learning practices flourished with the support of the BTtoP project. One document released after a recent BTtoP conference (June, 2011) overviewed BTtoP-related initiatives across 23 different institutions (Bringing Theory to Practice, n.d.). Campus administrators and faculty conducted assessments connecting engaged learning practices to students' civic development and mental health alongside their BTtoP-sponsored campus initiatives. Limited to the campus context and often not intended for research purposes, these campus assessments are methodologically inferior to a handful of peer-reviewed BTtoP research studies that attempt to characterize the relationships between engaged learning, civic development, and students' mental health. The following section reviews the BTtoP-related assessment and research exhibiting the most rigor or the most

relevance to the current study (Low, 2011; Staub & Finley, 2007; Swaner & Finley, 2007).

Supported by the BTtoP project, Low (2011) sampled the entire entering class of a selective northeastern college to explore relationships between student flourishing, depression, ratings of importance of civic and community engagement, and substance abuse. Replicating previous methodologies for measuring flourishing (Keyes, 2002), Low (2011) split the sample into three groups based on students' scores on the mental health continuum questionnaire: flourishing, moderately mentally healthy, and languishing. Hypothesizing that flourishing would be associated with less substance abuse, less depression, and more value for civic and community engagement, Low reported no difference in substance abuse between students placed in the flourishing, moderately mentally healthy, and languishing groups. However, Low found significant differences in favor of flourishing students on self-reported importance of various aspects of civic and community engagement, such as service, community, understanding of contemporary problems, and political involvement. Among the 80 students that provided information that allowed the researcher to match the students' responses to their CIRP data, flourishing was associated with students' indication of previously working for a community organization, larger amount of service hours per week in high school, as well as higher self-ratings on academic ability and having a clear philosophy in life. While Low recognized the inability of these associations to infer a causal relationship, Low suggested that the significant CIRP variables that asked students to report on high school behavior, such as hours of service per week and work at a community organization, might be conceived as predictors of flourishing among the students' in the sample. In the

context of the BTtoP project, Low's (2011) study provides a relevant linkage between flourishing and values of civic and community engagement. Atypical among the BTtoP literature, Low's study also represents an empirical study published in a peer-reviewed journal. Yet, in addition to the limited scope of its sample, Low's (2011) study omits measures of engaged learning, a key component to the BTtoP project. Despite these limitations, Low (2011) provided additional insight into college students' along the mental health continuum (Keyes, 2002) and suggested predictors of student flourishing in college.

With a much broader sample, Swaner and Finley (2007) provided a meta-analysis that characterized the relationship between engaged learning, civic development, and students' mental health across seven campuses designated as "demonstration sites." Each of the seven campuses followed a longitudinal, quasi-experimental research protocol wherein campus administrators quantitatively or qualitatively assessed engaged learning practices by longitudinally tracking cohorts of students that did or did not experience the engaged learning intervention. Swaner and Finley aggregated the findings from these seven campus assessments, which used slightly different research designs and measures for the constructs of engaged learning, civic development, and mental health. However, the seven campuses also shared a uniform set of quantitative and qualitative measures that allowed for cross-campus comparisons and multi-institutional findings. Each of the seven campuses participated in the College Student Experiences Questionnaire (CSEQ) and versions of the National Study of Student Engagement (NSSE) that included an additional 11 questions, only administered to the seven campuses, measuring students'

mental health, well-being, and civic development. Swaner and Finley also conducted focus groups consisting of students, faculty, and staff from the seven campuses.

Using a wealth of quantitative and qualitative data from seven campuses regarding engaged learning, civic development, and students' mental health, Swaner and Finley (2007) offered insights regarding students' experiences with engaged learning pedagogies and civic development programs. Considering the individual campus assessments, Swaner and Finley found that engaged learning programs often resulted in deeper learning and personal transformation among program participants. Swaner and Finley also noted that students benefiting from more involvement and more transformational learning experiences typically reported high stress levels. This finding was evidenced in the cross-site analysis of NSSE data as well; students' reporting high levels of engagement in their learning typically also reported more stress (Swaner & Finley, 2007). However, Swaner and Finley reported that findings regarding engaged learning's effect on students' level of depression from the individual campuses were mixed and inconclusive.

Swaner and Finley's (2007) study presents a broad perspective on engaged learning, civic development, and students' mental health across multiple campuses. While their multi-institutional, mixed-methods design provided for a robust characterization of the relationship between engaged learning, civic development, and students' mental health, their meta-analysis of the seven campuses engaged learning initiatives may have muted the effects of engaged learning pedagogies. In such a design that aggregates results across multiple institutions, it may have been that the effects of a few impactful campuses were muted when included alongside the result of less effective

campuses. Furthermore, with such a multi-faceted research design, Swaner and Finley do not provide an appropriate amount of detail regarding the individual campus results, precluding readers from making inferences on campus-specific findings. The lack of detail in the dissemination of these findings is characteristic of the body of BTtoP-related literature, which is largely reported in non-peer-reviewed publications. Such lack of evidence in peer-reviewed publications should give readers hesitation in interpreting the reported findings. Lastly, as Swaner and Finley recognized, the research design did not address the self-selection effect of students into institutions' engaged learning pedagogies and civic programs. Likely, civically minded students seek out civic development experiences and students' particularly prone to engage with the learning experience seek out engaged learning opportunities. Interpretations of Swaner and Finley's study must take into account this self-selection bias, as well as the other serious limitations.

Exploring the effects of engaged learning at one of the BTtoP project's demonstration sites, Staub and Finley (2007) sought to understand how students' participation in living-learning programs (LLPs) affected their alcohol use, civic engagement, and mental health. Staub and Finley employed a quasi-experimental, mixed-method, longitudinal design wherein researchers conducted focus groups at the end of the academic year and surveyed students in LLPs and students living in traditional residence halls (TRHs) at the beginning, middle, and end of the academic year. Regarding alcohol use, there was no difference between groups at the beginning of the year, but at the middle and end time-points students in LLPs reported significantly less alcohol use compared to students in TRHs, replicating previous findings (Brower, Golde,

& Allen, 2003). Similarly, Staub and Finley (2007) observed no initial difference is students' depression self-ratings at the beginning and end of the year.

However, Staub and Finley reported that students in LLPs reported more depression at the mid-year time-point compared to students living in TRHs, and that students in LLPs with an additional service-learning component reported extraordinarily more depression. Staub and Finley shared insight from the year-end focus groups around the emergence and regression of depression among students in LLPs. Likely, the emergence of depression among students experiencing engaged learning was the manifestation of increased levels of stress resulting from the additional time commitment of participating in a LLP, particularly the LLPs with an additional service-learning component. In addition to replicating previous findings around alcohol use in LLPs, Staub and Finley's (2007) study suggested that, contrary to the hypothesis of the BTtoP project, engaged learning experiences contributed to students' self-reported depression.

Employing a longitudinal, mixed-methods design comparing students in TRHs to students in varying types of LLPs, Staub and Finley (2007) found students experiencing engaged learning in LLPs with a service-learning component to report more depression at one point during the academic year compared to a group of students experiencing less engaged learning living in TRHs. However, characteristic of the assessment focus within the BTtoP literature, Staub and Finley's paper was written for a practitioner audience and the authors did not provide detailed information regarding the methodology or results of the study. Revisiting the theoretical connections between engaged learning and students' mental health advanced by Swaner (2005), Staub and Finley's (2007) study evidenced a circumstance wherein an engaged learning practice may have not allowed for an optimal

level of developmental challenge and support for students. As the focus group findings suggested, students participating in LLPs, particularly those with additional time commitments serving the community, experienced more stress, which may have, in turn, resulted in those students reporting more depression (Staub & Finley, 2007). Findings from Staub and Finley's study appears to contrast the BTtoP-related literature exploring the relationship between engaged learning, civic development, and students' mental health by suggesting that engaged learning might negatively contribute to students' mental health. Yet, given the lack of detail shared in Staub and Finley's write-up of the study and the idiosyncrasies existent in the collection of practitioner assessments BTtoP-sponsored projects, limited conclusions regarding the relationships between engaged learning, civic development, and students' mental health can be drawn from the extant BTtoP literature.

Inconclusive findings. A plethora of single-institution, non-peer reviewed studies, such as the work of Staub and Finley (2007), yielded mixed results regarding the effect of engaged learning practices on students' mental health. While Staub and Finley employed a robust, mixed-methods design to assess a popular pedagogy of engaged learning- the living-learning program, the study joins a body of literature, including Swaner and Finley's (2007) study and various unpublished BTtoP campus assessments that, taken together, have yet to evidence a conclusive explanation of the relationship between engaged learning and students' mental health. Even Low's (2011) study, while perhaps more trustworthy as it was published in a peer-reviewed journal, similarly struggled with the common limitation of a single-institution sample. Additionally, Low did not report on measures of engaged learning, precluding inferences regarding the

relationship between engaged learning and students' mental health. Despite the multitude of empirical and theoretical connections between engaged learning and students' mental health (Swaner, 2005), empirical evidence has been mixed regarding the relationships between engaged learning and mental health.

The current study aims to build on the varied empirical and theoretical connections between engaged learning and students' mental health suggested in the BTtoP-related literature by specifically investigating the effect of LLP participation on students' mental health. In addition to contributing additional insight into the effects of LLP participation on a growing number of college outcomes (Inkelas & Soldner, 2011), this study carries promise to inform the inconclusive findings from the BTtoP-related literature. This study will systematically explore the effect of LLP participation on students' mental health across multiple institutions using robust casual-comparative and correlational research designs. By investigating the relationship between engaged learning and students' mental health using such methodology, this study answers calls from the BTtoP-related literature (Staub & Finley, 2007; Swaner & Finley, 2007) for more rigorous and systematic future research in order to work toward more conclusive findings regarding the relationship between engaged learning and students' mental health.

Summary of Literature

This chapter reviewed the extant literature relevant to college students' mental health, the concept of engaged learning in college, living-learning programs (LLPs), as well as the body of literature supporting the Bringing Theory to Practice (BTtoP) project. This review suggests that LLPs, as a form of engaged pedagogy, are promising practices for promoting students' mental wellness as well as producing well-rounded graduates.

Specifically, this study purports to address a critical gap in the literature that has yet to substantiate the claim that LLPs, as campus structures of engaged learning, foster students' mental wellness. Despite three decades of empirical studies assessing the effect of LLP participation on a variety of college outcomes, researchers have not explored this effect on students' mental health aside from a single-institution campus assessment published in a non-peer-reviewed journal (Staub & Finley, 2007). Therefore, the current study represents the first effort to systematically investigate and disseminate the effect of LLP participation on students' mental health across multiple institutions. The following chapter will discuss this study's methodology.

CHAPTER 3: METHODOLOGY

The following chapter describes the methodology of the study. After revisiting the research questions and suggesting hypotheses, this chapter will discuss the design, sample, instrument, data analysis, and limitations of the study.

Research Questions and Hypotheses

Using a quasi-experimental, *ex post facto* design, this study used causal-comparative (research question #1) and correlational (research questions #2,3) designs to explore the effect of living-learning program (LLP) participation on students' mental health. The central questions guiding this exploration were:

1. Do students participating in living-learning programs differ on measures of mental health compared to students living in traditional residence halls (TRHs)?
2. After taking into account student characteristics and institutional environments, is participation in a living-learning program a significant predictor of students' mental health?
3. What student characteristics and institutional environments predict students' mental health in addition to their participation in a living-learning program?

Based on the literature reviewed in the previous chapter, several hypotheses are presented below. These hypotheses correspond respectively to the aforementioned research questions.

Hypothesis – Research Question One

Students participating in LLPs will report significantly different mean scores on measures of mental health compared to students' living in TRHs. Specifically, it is hypothesized that LLP students will report higher scores of psychological flourishing

compared to TRH students. The extant literature supports this hypothesis theoretically and empirically. LLPs, as campus structures that provide students engaged learning experiences, ultimately foster students' mental wellness. Compared to their counterparts in TRHs, students participating in LLPs experienced more academically and socially supportive residence hall climates (Inkelas et al., 2006a; Inkelas et al., 2006b; Inkelas & Weisman, 2003), more meaningful interactions with peers and faculty (Inkelas et al., 2006a; Pike, 1999), more involvement in campus life (Brower, Golde, & Allen, 2003; Inkelas et al., 2006b), and more of a sense of civic engagement (Rowan-Kenyon, Soldner, & Inkelas, 2007). Scholars argued that components of engaged learning such as the aforementioned outcomes associated with LLP participation contribute to students' psychological flourishing in college by ameliorating developmental challenges occurring during college, mitigating extreme levels of stress by students taking control of their learning, yielding less social isolation and more pro-social behaviors, and developing meaningful relationships with community members (Low, 2011; Swaner, 2005; Whitman, Spendlove, & Clark, 1984). Therefore, it is hypothesized that students participating in a LLP will report significantly more favorable scores on measures of mental health.

Hypothesis – Research Question Two

Net of students' background characteristics and other institutional environments participation in a LLP program will predict more favorable scores on measures of mental health. Specifically, it is hypothesized that after controlling for students' pre-college characteristics and institutional environments, LLP participation will predict a significant amount of variance in students' scores on a measure of psychological flourishing. The

directionality of this hypothesized relationship between LLP participation and mental health is expected to be favorable for participation in a LLP; LLP participation will relate higher scores of flourishing. This second hypothesis is substantiated by all of the reasons discussed in relation to the first hypothesis. However, by controlling for confounding factors such as students' pre-college characteristics and other institutional environments, the second hypothesis allows for more precise attribution of students' mental health to their participation in LLPs specifically.

Hypothesis – Research Question Three

Controlling for participation in a LLP, students' favorable scores on measures of mental health will relate with a variety of other factors related to alcohol use, engaged learning, and civic engagement. In addition to LLP participation, it is hypothesized that students reporting evidence of less consequences of alcohol abuse, more social support, and more engaged learning will also report higher levels of psychological flourishing. Revisiting the research, empirical studies linking alcohol abuse to factors of poor mental health suggested that less alcohol abuse, as well as more social support, predict higher scores on measures of flourishing (National Center on Addiction and Substance Abuse, 2003, 2005; Petrakis, Gonzalez, Rosenheck, & Krystal, 2002). Additionally, taken together the wealth of scholarly work connected to the Bringing Theory to Practice project suggested that students' mental health is connected to their engagement with the learning experience and their sense of connectedness to their community and society (Low, 2011; Staub & Finley, 2007; Swaner, 2005; Swaner & Finley, 2007). Therefore, it is hypothesized that other measures of engaged learning, such as study group

participation or faculty interaction, as well as students' sense of civic engagement will predict students' mental health in addition to LLP participation.

Design of Study

This *ex post facto* study utilized data from the 2008 and 2009 administrations of the National Study of Living-Learning Programs (NSLLP, www.livelearnstudy.net). The NSLLP program is a multi-institutional study of LLPs that collected data during 2004 (34 institutions), 2007 (50 institutions), 2008 (16 institutions), 2009 (18 institutions), and 2010 (19 institutions). Two major reports (Inkelas and Associates, 2004, 2007) were publically released after the 2004 and 2007 administrations of the survey that reported national benchmarks, validity, and reliability of the instrument. All administrations of the NSLLP employed a quasi-experimental designed using Astin's (1993) Inputs-Environments-Outcomes (I-E-O) conceptual framework.

Conceptual framework. As discussed in chapter one, Astin's (1993) I-E-O model lays the conceptual groundwork for this study. The NSLLP was designed to be analyzed from Astin's framework, and the NSLLP reports (Inkelas and Associates, 2004, 2007) outline the NSLLP variables in groupings of pre-college characteristics and quasi-pre-tests (inputs), college and LLP environments (environments), as well as many measures of college outcomes. Astin (1991) used hierarchical multiple regression for statistical analysis of an I-E-O model whereby input, environment, and outcome variables were entered in sequential blocks into the regression model. In this way, researchers can use hierarchical multiple regression to explore the amount of additional variance environmental variables contribute to an outcome variable after controlling for input variables. This study specifically focused on one college environment, participation in a

LLP, and one specific college outcome, students' mental health. Variables selected to be entered into the regression model in the blocks for inputs, environments, and outcomes were chosen in consultation with the literature surrounding college impact, LLP research, and college mental health. The specific variables planned to be entered into the regression model will be reviewed later in this chapter.

Research design. This study used a quasi-experimental, causal-comparative and correlational, *ex post facto* design. Inkelas and Associates (2004, 2007) designed the quasi-experimental NSLLP to sample both students participating in LLPs and in TRHs, thereby creating a "control" group. While the NSLLP is a cross-sectional survey administered at one time point, the instrument includes quasi-pretest variables, discussed later in this chapter, which served as the pretest in the quasi-experimental design. This study sought to answer the research questions by using both causal-comparative and correlational designs. First, this study compared and described students' mental health between LLP and TRH samples using independent samples t-tests and chi-squared tests (causal-comparative). Second, this study used regression to explore the predictive effect of LLP participation on students' mental health scores (correlational). This study was a secondary data analysis (*ex post* facto) of the NSLLP. As will be discussed later in this chapter, the NSLLP is an appropriate data source for this study focusing on students' mental health outcomes in living-learning programs as it is the only national study of living-learning programs and included a mental health module in its administration.

Sample

The sample for this study was taken from the two years (2008, 2009) that the NSLLP included a mental health module in its administration. For reasons described in

the Data Analysis section of this chapter, data was analyzed separately by year. The following section overviews the larger NSLLP sample for the 2008 and 2009 administration, as well as the specific 2008 and 2009 mental health module sub-samples.

2008 and 2009 NSLLP institutional characteristics. Any higher education institution with living-learning programs was eligible to enroll in the 2008 and 2009 administrations of the NSLLP (Inkelas personal communication, 11/18/2011). Sixteen institutions enrolled in the 2008 administration of the NSLLP from a variety of Carnegie classifications, including Research University (1), Research University high (5), Research University very high (7), and Masters Larger (3). Similarly, eighteen institutions enrolled in the 2009 administrations of the NSLLP from a variety of Carnegie classifications, including Research University (2), Research University high (4), Research University very high (11), and Masters Larger (1).

2008 and 2009 NSLLP sample. The 2008 and 2009 administrations of the NSLLP followed the same sampling strategy described in Inkelas and Associates (2007, Inkelas personal communication, 11/18/2011). With IRB approval, Survey Sciences Group (SSG), the NSLLP's survey methodology contractor, worked with individual campuses to identify LLP and TRH populations from which to sample. Depending on the size of the institution, SSG officials sampled either the entire LLP population or a randomly selected subset of the LLP population. The TRH sample was selected to match student characteristics of the LLP sample, such as race, gender, academic standing, and residence hall location, as closely as possible.

Mental health module sub-sample. Data analysis carried out to explore the research questions of this study was conducted using data exclusively from a subset of

seven unique institutions that opted-in to including the mental health module as an additional component of the 2008 and 2009 NSLLP administration. Five institutions opted-in to take the mental health module in the 2008 administration of the NSLLP (N = 2,500), and four institutions, including two of the same institutions from the 2008 administration, opted-in to take the mental health module in the 2009 administration of the NSLLP (N = 2,675). Table 3.1 describes the institutional characteristics of the 2008 and 2009 mental health sub-sample and Table 3.2 describes the number of respondents participating in LLPs and living in TRHs by institution and year.

Table 3.1 – Mental Health Sub-Sample Institutional Characteristics

Institutional Characteristics	**2008 Institutions (n=5)**	**2009 Institutions (n=4)**
Control		
Public	4	4
Private	1	0
Undergraduate Population Size		
Small (0 to 3,000 students)		
Medium (3,001 to 10,000)	0	1
Large (10,001 and above)	5	3
Carnegie Classification		
Research University – Very High	2	2
Research University – High	2	1
Research University	0	0
Masters Larger	1	1
Living-Learning Programs		
Less than 10 LLPs	3	2
Between 10-20 LLPs	2	2
More than 20 LLPs	0	0

Table 3.2 – LLP and TRH Mental Health Sub-Sample Size by Institution

	N_{LLP}	N_{TRH}
2008 Institution		
Baylor University	381	195
Colorado State University	317	213
Eastern Kentucky University	217	204
Louisiana State University	338	202
Northern Illinois University	419	189
2008 Total N	*1,487*	*1,013*
2009 Institution		
Clemson University	331	214
Colorado State University	630	106
University of Central Arkansas	168	139
Louisiana State University	358	554
2009 Total N	*1,672*	*1,003*

In 2008, Baylor University, Colorado State University, Eastern Kentucky University, Louisiana State University, and Northern Illinois University administered the mental health module along with the NSLLP. In 2009, Clemson University, Colorado State University, University of Central Arkansas, and Louisiana State University administered the mental health module along with the NSLLP. Given the differences in sample size between LLP and TRH groups in the mental health sub-sample, verifications of statistical assumptions in the data analysis will be performed to support the interpretations of tests for statistical significance. Additionally, in order to ensure that all cases in data analysis are independent observations, thereby upholding an assumption of the statistical models, data from 2008 and 2009 administrations of the NSLLP will be analyzed separately.

NSLLP Instrument

In 2003, the NSLLP team, led by principle investigators Dr. Karen K. Inkelas and Dr. Aaron Brower, developed the Residence Environment Survey (RES). The first iteration of the RES was pilot tested at four large research universities (Universities of Maryland, Michigan, Wisconsin-Madison, and Illinois). Before launching the first administration of the RES to the 34 participating schools in the 2004 NSLLP, multiple efforts were taken to ensure reliability and validity of the instrument. The steps researchers took to ensure content and construct validity, as well as internal consistency of the construct scales will be further discussed later in this section. Throughout its administration in multiple years of the NSLLP, the RES core instrument has largely remained unchanged (Inkelas personal communication, 11/18/2011). What follows is an recounting of the 2008 and 2009 NSLLP data collection, a plan for managing the mental health sub-sample data, and a description of the variables that will be used in the current study, organized in Astin's (1993) I-E-O framework (Inkelas & Associates, 2007).

Data collection. The data used in this study were collected from the 2008 and 2009 administrations of the NSLLP and followed the same collection procedures as previous NSLLP administrations (Inkelas personal communication, 11/18/2011). In 2008 and 2009, schools elected to have this survey administered at various times through the academic year dependent on institutions' academic calendar. Most of the data were collected in the winter and spring terms of the academic years 2007-2008 and 2008-2009. The data were collected via a web-based survey that was open for students to respond for approximately five weeks at each institution. Prospective NSLLP participants received an email introducing the study, soliciting the student's participation, and including a link

to the web-survey. Students' received a minimum of three reminder emails over the five week period of time, yet some institutions chose to send more reminder emails in order to bolster their response rate. The web survey allowed students to revisit the survey at different time points; students' did not have to complete the survey all at once. Respondents' remuneration for participating in the survey varied by institution, and some institutions chose to raffle prizes or offer small gift certificates for completing the survey.

Sub-sample data management. The NSLLP mental health sample data were retrieved from Survey Sciences Group as two separate raw data files split by year (2008, 2009). For both 2008 and 2009 data sets, the environmental scales were computed based upon the scales used in previous administrations of the NSLLP (Inkelas & Associates, 2004, 2007). Environment scales were constructed using PASW Statistics 18 software and readers are direct to Appendix A for detailed information regarding the environment construct scales used in the analysis. In order to address missing data in the sample, the researcher used the Missing Value Analysis (MVA) function in SPSS Statistics 19 software to describe the missing values. Missing data were excluded from analysis, and results from MVA describing missing data will be presented and considered in chapters four and five.

Mental health outcome variable. The Mental Health Continuum Short Form (MHC-SF; Keyes et al., 2008) was included as a measure of mental health in the 2008 and 2009 administrations of the NSLLP and was the outcome variable of interest in this study.

MHC-SF. The MHC-SF is a questionnaire for positive mental health assessment with a foundation in Keyes (2002) conceptualization of mental health as a continuum

between "languishing" and "flourishing." The MHC-SF contains 14 items that address social, psychological, and emotional well-being, and overall scores can be computed for each respondent. Respondents' overall score for the MHC-SF is simply the summation of their response values, and respondents scores can range from 14 to 84. Higher scores correspond to the construct of flourishing, while lower scores correspond to the construct of languishing. Readers are directed to Keyes et al. (2008) for information regarding the psychometric properties of the MHC-SF. Table 3.3 describes the dependent variable used in the current study.

Table 3.3 – Dependent Variable

Dependent Variable	**Items**	**Response Range**
Mental Health Continuum (MHC-SF)	**MHC-SF scale using the following items:** **B0. Please answer the following questions about how you have been feeling in the past month.** (In the past month how often did you feel…) B0a. Happy B0b. Interested in life B0c. Satisfied B0d. That you had something important to contribute to society B0e. That you belonged to a community (like a social group, your neighborhood, your city) B0f. That our society is becoming a better place for people B0g. That people are basically good B0h. That the way our society works makes sense to you B0i. That you like most parts of your personality B0j. That you are good at managing the responsibilities of your daily life	**Never** (1) **Once or twice** (2) **About once a week** (3) **2 or 3 times a week** (4) **Almost every day** (5) **Every day** (6)

B0k. That you had warm and trusting relationships with others
B0l. That you have experiences that challenge you to grow and become a better person
B0m. Confident to think or express your own ideas and opinions
B0n. That your life has a sense of direction or meaning

Input variables. The following sections will also review the specific input and environment variables selected to be included in the statistical models for the current study. As will be discussed later in this chapter, two regression models were constructed to answer the second and third research questions of the current study. For both models, input variables were transformed into continuous or dichotomous variables in order to suit the regression analysis. The regression model associated with the second research question was confirmatory in nature, constructed to evidence the relationship between LLP participation and mental health, net of student background characteristics and institutional environments. In the regression models associated with both research questions one and two, relevant literature informed the selection of variables that would theoretically predict students' mental health. Readers are directed to Tables 3.6 and 3.7 in the following section of this chapter for a listing of variables included in both regression models for the current study.

Relevant literature informed the selection of variables in the regression models associated with the second and third research questions in order to construct a parsimonious model. Consistent with Astin's (1993) I-E-O model and Keleher and Armstrong's (2005) central determinants of mental health as freedom from discrimination and access to economic and educational resources, this study used the following input

variables in analyses: race/ethnicity, gender, sexual orientation, parents' educational level and total annual family income, as well as high school grade point average (GPA). As described in the NSLLP report (Inkelas & Associates, 2007), the input construct "high school achievement" consisted of both high school grades and SAT/ACT score. In the current study, SAT/ACT score will be omitted due to a significant amount of missing data (2008, $N_{miss} = 296$; 2009, $N_{miss} = 231$). Therefore, the variable high school grades was the sole measure of high school achievement. What follows is a description of the input variables used in the current study as well as an explanation of their suitability for the regression models.

Race/ethnicity. Students reported their race/ethnicity in seven different categories: (a) African-American, (b) Asian or Pacific Islander, (c) American Indian/Alaskan Native, (d) Hispanic/Latino, (e) White, (f) Multi-racial, multi-ethnic, or other, and (g) race/ethnicity not included. For the purposes of analysis, a variable for each racial/ethnic category was constructed with a dummy variable in which students that reported identifying with each particular race/ethnicity would be coded as 1 for the corresponding variable. For example, a student identifying as Hispanic/Latino would be coded as 1 for the Hispanic/Latino variable, whereas a student not identifying as Hispanic/Latino would be coded as 0 for the Hispanic/Latino variable. Students' that checked "other" or multiple race/ethnic categories were included in the multi-racial and multi-ethnic category. With the exception of the "White" racial category, which was excluded from analyses in order to serve as the reference group, all other racial categories were entered into the input block in the regression model.

Race/ethnicity is an appropriate input variable as numerous campus racial climate scholars found that students of color experienced and perceived more hostile racial climates compared to White students (e.g. Hurtado, 1992; Rankin & Reason, 2005). Keleher and Armstrong (2005) described such discrimination and prejudice as a central predictor of mental health.

Gender. Students reported their gender as male, female or transgender. For the purposes of analysis, gender was coded using a dummy variable whereby "male" will be coded as 0, "female" will be coded as 1, and transgender was omitted due to low number of respondents (2008, $n = 2$; 2009, $n = 2$).

Gender is an appropriate input variable as campus climate scholars characterized a chilly climate for women (e.g. Hall & Sandler, 1982; Whitt et al., 1999) suggesting that women may experience less flourishing as a result of discrimination and prejudice (Keleher & Armstrong, 2005). However, Peter, Roberts, and Dengate's (2011) finding that women tended to score higher on flourishing suggested differently. As such, gender is a relevant variable to enter into the regression models.

Sexual orientation. Students reported their sexual orientation as bisexual, gay or lesbian, and heterosexual. For the purposes of analysis, sexual orientation was coded using a dummy variable whereby "not bisexual, gay, or lesbian" was coded as 0 and "bisexual, gay, or lesbian," including participants that responded as bisexual, gay, or lesbian, was coded as 1.

Sexual orientation is an appropriate input variable as campus climate scholars characterized a hostile climate for sexual minorities (Rankin, 2005) suggesting that

sexual minorities may experience less flourishing as a result of discrimination and prejudice (Keleher & Armstrong, 2005).

Parents' educational level and total family income. Students reported levels of education for both their mother and father among the following options: (a) don't know, (b) high school or less, (c) some college, (d) Associates degree, (e) Bachelors degree, (f) Masters degree, or (g) Doctorate or professional degree. As this variable is ordinal, responses was coded on a numerical scale from "don't know" (value=0) to "Doctorate or professional degree" (value=6). While this measure is ordinal in nature, it was treated as continuous in the analysis. As the number of respondents that did not report the educational level of either their mother (2008, $N_{miss} = 25$; 2009, $N_{miss} = 27$) or father (2008, $N_{miss} = 29$; 2009, $N_{miss} = 27$) was small, only respondents that reported educational levels for both mother and father was used in analysis. Furthermore, mother and father educational level, as well as total family income were found to be highly intercorrelated ($r > .60$). Students selected from the following options in reporting their total annual family income, coded for analysis as the corresponding number in parentheses: (1) Less than $25,000, (2) $25,000 to $49,999, (3) $50,000 to $74,999, (4) $75,000 to $99,999, (5) $100,000 to $124,999, (6) $125,000 to $149,999, (7) $150,000 to $174,999, (8) $175,000 to $199,999, and (9) $200,000 or more. To prevent multicollinearity in the regression analysis, students' parents' educational level was combined into one overall score (ranging from 0-12) of parental education level, as well as combined with total family income (ranging from 1-9), to construct one variable for combined parents education and income (ranging from 1-21).

As an indicator of students' access to education and economic resources, components of Keleher and Armstong's (2005) central determinants of mental health, parental education attainment and total family income are appropriate input variables. .

High school grades. Students selected from the following options in reporting their average high school grades, which was coded for analysis as the corresponding number in parentheses: (1) A+ or A, (2) A- or B+, (3) B, (4) B- or C+ (5) C or C-, and (6) D+ or lower. While this measure is ordinal in nature, it was treated as continuous in the analysis.

As an indicator of students' access to education, one of Keleher and Armstong's (2005) central determinants of mental health, parental education attainment is an appropriate input variable.

Quasi-pretests. Participants in the NSLLP responded to a variety of questions that asked them to "think back before you start college" when answering the questions. Included in the analysis of this study are questions that asked participants to report their pre-college importance of volunteer and succeeding academically. Students selected from the following response options: (1) not at all important, (2) somewhat important, (3) important, or (4) very important. Additionally, included in the analysis were questions wherein students rated their level of preparation when starting college for math, science, English, engineering, writing, and social science courses on a Likert-type scale from 1 (very unprepared) to 5 (very prepared). To create a parsimonious model, the course preparedness responses were grouped into two categories: math, science, engineering, and social science course preparedness ("science" category), and English and writing

course preparedness ("English" category). Thus, the analyses of these variables represent all of the variables through the two categories of "science" and "English" courses.

Based on Low's (2011) suggestion of a connection between flourishing, volunteering in high school, and higher self-ratings on academic ability, the analyses in the current study included students' pre-college importance of volunteering and academic success and their self-rated academic preparedness at the beginning of college.

Environmental variables. The following section describes and justifies the inclusion of specific environment variables in the two regression models of the current study. Like the NSLLP, this study used both single variables as well as scales of multiple variables to measure college environments. Scales constructed by the NSLLP have previously demonstrated adequate internal consistency (Inkelas & Associates, 2004, 2007), and the reader is directed to Appendix A for a listing of construct scales used in the current study, the specific items that constitute the scale, and the Cronbach alpha for internal consistency with both the 2008 and 2009 sample for this study.

The regression model associated with the second research question will only include two environmental variables in addition to the pre-college input variables: students' academic class standing, and participation in a LLP. Due to the confirmatory nature of the second research question, only the environment of interest, LLPs, was included after input variables as the final block in the regression model. However, students' academic class standing, conceptualized as an institutional environment, was included in a separate block prior to LLP participation in order to account for potential confounding factors at the individual level, such as time exposed to the college environment. Thus, students' academic class standing is similar to other input variables in

the regression model and therefore was placed directly after the input variables in the model.

The regression model associated with the third research question explored factors of the institutional environment in addition to LLP participation that might be associated with students' mental health. While the nature of the third research question is exploratory, relevant literature guided the selection of variables in order to create a parsimonious model. The environments and intermediate outcomes in this study were measured by combining similar variables and constructing composite scales. Readers are directed to Appendix A, which outlines each of the composite scales, the specific items that constitute the scale, and the Cronbach alpha for internal consistency with both the 2008 and 2009 sample for this study. Table 3.4 presents a full listing of the independent variables to be used in the current study including input, environment, and intermediate outcome variables and the blocking order for the regression model associated with research question three. The blocking order will be described later in this chapter, and the environment variables used in this study will be described next.

Relevant literature on mental health drove the selection of environment variables to be included in the regression model associated with the third research question. The following environment variables were included in this study: ease with social and academic transition to college, socially supportive residence hall climate, academic and social peer interactions, course-related faculty interactions, diversity interactions, co-curricular involvement, hands-on learning experiences, and LLP participation. As discussed in the previous chapter, the VicHealth framework for predictors of flourishing (Keleher & Armstrong, 2005) suggested that supportive relationships, social and

community connections, stable and supportive environments, involvement in community and group activities, meaningful work and educational activity, as well as valuing diversity are positive predictors of flourishing. Grounded in VicHealth framework, students' ease with social and academic transition to college, socially supportive residence hall climate, co-curricular involvement, meaningful engagement with learning through hands-on experiences, LLP participation, as well as peer, faculty, and diversity-related interactions were selected for the predictive model of students' mental health.

Furthermore, additional mental health scholarship exploring predictors of flourishing (Howell, 2009), hardiness (Maddi et al., 2009), and emotional well-being (Lewandowski & Bizzoco, 2007) confirms the selection of environment variables in this study. Howell's (2009) findings that students demonstrating self-regulation and mastery approaches to learning experienced more flourishing supports the inclusion of engaged learning variables such as academic peer interactions, course related faculty interactions, ease with academic transition to college, hands-on learning experiences, and LLP participation. Additionally, Maddi et al.'s (2009) use of social support to bolster hardiness informs the inclusion of peer and diversity-related interactions, and ease with social transition to college. Lewandoski and Bizzoco's (2007) connection of students' emotional well-being to the quality of their interpersonal relationships supports the inclusion of relational-based variables such as peer interactions, diversity-related interactions, and ease with social transition to college. The following sections describe the environmental variables included in the regression models associated with the third research question (see Appendix A for composite scales).

Ease with social and academic transition to college. Students indicated on Likert-type items from one (very difficult) to six (very easy) their ease with social and academic transition to college. The ease with social transition to college scale included items measuring the degree to which students established social support in college (i.e. "ease with making new friends, "ease with getting to know other people in residence hall"). The ease with academic transition to college scale included items measuring the degree to which students established academic support in college (i.e. "ease with forming study groups", "ease with communicating with instructors outside class").

Socially supportive residence hall climate. Students responded either "Strongly disagree" (coded value = 1), "Disagree" (coded value = 2), "Agree" (coded value = 3), or "Strongly agree" (coded value = 4) to indicate the extent to which the residence hall climate was socially supportive (socially supportive residence hall climate scale, i.e. "help and support one another", "different students interact with each other").

Academic and social peer interactions. Students responded either "never" (coded value = 1), "a few times a semester" (coded value = 2), "a few times a month" (coded value = 3), or "once or more a week" (coded value = 4) to items on the "discussed academic and career issues with peers" (academic peer interactions, i.e. "talked about current news events", "discussed something learned in class") and "discussed socio-cultural issues with peers" (social peer interactions, i.e. "held discussion with those with different religious beliefs", "discussed social issues such as peace, human rights, justice") scales.

Course-related faculty interactions. Students responded either "never" (coded value = 1), "a few times a semester" (coded value = 2), "a few times a month" (coded

value = 3), or "once a week, or more" (coded value = 4) to items on the course-related faculty interactions scale (i.e. "asked instructor for info related to course", "visited informally with instructor before/after class").

Diversity interactions. Students responded either "not at all" (coded value = 1), "a little" (coded value = 2), "a lot" (coded value = 3), or "all of the time" (coded value = 4) to items on the "positive peer diversity interactions" scale (i.e. "discussing race relations outside of class", "sharing personal feelings & problems").

Co-curricular involvement. As described in Table 3.4, students' responded either "None" (coded value = 1), "1-5 hours" (coded value = 2), "6-10 hours" (coded value = 3), "11-15 hours" (coded value = 4), "16-20 hours" (coded value = 5), or "21+ hours" (coded value = 6) to the question, "During the past year, how much time did you spend during a typical week involved in the following activities?" Students responded to this question for the following items: fraternity/sorority, arts/music performances & activities, intramural or club sports, varsity sports, student government, political or social activism, religious clubs and activities, ethnic/cross-cultural activities, clubs, media activities (e.g. newspaper, radio), and "community service activity. To limit the number of variables in the regression model, the researcher averaged respondents' scores across all of the co-curricular involvement items into one co-curricular involvement score.

Hands-on learning experiences. As described in Table 3.4, students' responded either "Never" (coded value = 1), "Occasionally" (coded value = 2), "Often" (coded value = 3), or "Very Often" (coded value = 4) to indicate the frequency with which they engaged with the following activities: participated in an internship experience, been a mentor or "buddy" to another student, been a tutor, attended a lecture/presentation by a

professional in my intended field, visited the work setting of a professional in my intended field, and worked with outreach to high school students. To limit the number of variables in the regression model, the researcher averaged respondents' scores across all of the items into one hands-on learning experiences score.

LLP Participation. Students' residential arrangement, either participating in a LLP (coded value = 1) or living in a TRH (coded value = 0), was also included as an environment variable in regression models associated with both second and third research questions.

Intermediate outcomes. Conceptualized as outcome variables in previous National Study of Living Learning Program studies (e.g., Inkelas & Associates, 2004, 2007), this study conceptualizes students' self-reports of their experiences and attitudes in college as intermediate outcomes. Relevant literature on mental health drove the selection of intermediate outcome variables to be included in the regression model associated with the third research question. In addition to institutional environment and input variables, the following constructs will be used to explore the factors that influence students' mental health in addition to LLP participation in answering the third research question: self-confidence, emotional consequences of alcohol use, overall sense of belonging, as well as sense of civic engagement.

Describing the importance of social support, civic engagement, and a valued social position, the VicHealth framework (Keleher & Armstrong, 2005) supports the inclusion of students' sense of belonging and civic engagement in the predictive models. Furthermore, literature related to the Bringing Theory to Practice project evidenced students' civic development as a contributor to mental health outcomes (Low, 2011;

Swaner, 2005; Swaner & Finley, 2007), supporting the inclusion of students' sense of civic engagement as an intermediate outcome. Lastly, evidence from scholarship connecting mental health to incremental beliefs, self-control, academic self-efficacy, optimism, and sense of coherence (Adams, Bezner, Drabbs, Zambarano, & Steinhardt, 2000; Howell, 2009; Ouweneel, Le Blanc, & Schaufeli, 2010) supports the inclusion of emotional consequences of alcohol use as well as the three scales related to students' confidence: professional confidence, confidence in college success, and confidence in academic skills. The following sections describe the intermediate outcome variables included in the regression models associated with the third research question (see Appendix A for composite scales).

Self-confidence. Three self-confidence scales were included in the regression models, professional confidence scale, confidence in college success scale, and confidence in academic skills scale. On the professional confidence scale and the confidence in college success scale, students responded to Likert-type items from one (not at all confident) to five (extremely confident) indicating the extent to which they feel professionally confident (professional confidence scale, i.e. "achieve success in career", "get a good job") and confident in their college success (confidence in college success scale, i.e. "complete your degree", "do well academically"). For items on the confidence in academic skills scale (i.e. "reading skills" "research ability"), students selected either "Not at all confident" (coded value = 1), "Somewhat confident" (coded value = 2), "Confident" (coded value = 3), or "Very confident" (coded value = 4).

Emotional consequences of alcohol use. Students indicated either "not at all" (coded value = 1), "once" (coded value = 2), or "twice or more" (coded value = 3) to

items on the emotional consequences of alcohol use scale (i.e. “have been ashamed of my behaviors”, “regretted losing control of my senses”).

Overall sense of belonging. Students responded either “Strongly disagree” (coded value = 1), “Disagree” (coded value = 2), “Agree” (coded value = 3), or “Strongly agree” (coded value = 4) to indicate the extent to which they felt a sense of belonging on campus (overall sense of belonging scale, i.e. “I feel comfortable on campus”, “I feel a member of the campus community”).

Sense of civic engagement. Students responded either “Strongly disagree” (coded value = 1), “Disagree” (coded value = 2), “Agree” (coded value = 3), or “Strongly agree” (coded value = 4) to indicate the extent to which they felt a sense of civic engagement (sense of civic engagement scale, i.e. “important that I play active role in community”, “work with others to make community better place”).

Table 3.4 – Independent Variables

Block RQ3	Items	Number of Variables	Response Options
1	**Gender**	1	See Table 4.1, Referent group = Male
1	**Race/Ethnicity**	5	See Table 4.1, Referent group = White
1	**Sexual Orientation**	1	See Table 4.1, Referent group = Not Bisexual, Gay, or Lesbian
1	**Parents’ Educational Level and Total Family Income Combined**	1	See Table 4.1, Combined response range from 1-21
2	**Pre-College Importance: Volunteering, Academic Success** *Thinking back to before you started college, please rate how important you imagined*	2	1 = Not at all important 2 = Somewhat important

	these aspects of college would be: Q28i. Volunteering and/or performing community service Q28k. Doing well academically in college		3 = Important 4 = Very important
2	**Preparation for College Courses** *Thinking back to before you started college, how prepared did you feel for:* <u>Science Courses</u> Q29a. Math courses Q29b. Science courses Q29d. Engineering courses Q29f. Social science courses (e.g., sociology, political science) <u>English Courses</u> Q29c. English courses Q29e. College writing courses	2	Likert scale from Very unprepared (1) to Very prepared (5) Average scores will be calculated for Science and English course groupings
3	**High School Grades**	1	See Table 4.1
4	**Year in College**	1	1 = First year 2 = Sophomore 3 = Junior 4 = Senior 5 = Graduate student 6 = Other
5	**Transition to College** • *Ease with academic transition to college scale* • *Ease with social transition to college scale*	2	See Appendix A for scales and items
5	**Residence Hall Climate** • *Socially supportive residence hall climate scale*	1	See Appendix A for scales and items
6	**Peer Interactions** • *Discussed academic and career issues with peers scale* • *Discussed socio-cultural issues with peers scale*	2	See Appendix A for scales and items
6	**Faculty Interactions** • *Course-related faculty interaction scale*	1	See Appendix A for scales and items

6	**Diversity Interactions** • *Positive peer diversity interactions scale*	1	See Appendix A for scales and items
7	**Co-Curricular Involvement** *During the past year, how much time did you spend during a typical week involved in the following activities?* Q39c. Fraternity/sorority Q39d. Arts/music performances & activities Q39e. Intramural or club sports Q39f. Varsity sports Q39g. Student government Q39h. Political or social activism Q39i. Religious clubs and activities Q39j. Ethnic/cross-cultural activities, clubs Q39k. Media activities (e.g. newspaper, radio) Q39n Community service activity	1	1 = None 2 = 1-5 hours 3 = 6-10 hours 4 = 11-15 hours 5 = 16-20 hours 6 = 21+ hours Average scores calculated across all co-curricular involvement items
7	**Hands-on Learning Experiences** *For the activities below, please indicate how often you engaged in each during the current academic year:* Q33a. Participated in an internship experience Q33b. Been a mentor or "buddy" to another student Q33c. Been a tutor Q33d. Attended a lecture/presentation by a professional in my intended field Q33e. Visited the work setting of a professional in my intended field Q33f. Worked with outreach to high school students	1	1 = Never 2 = Occasionally 3 = Often 4 = Very Often Average scores calculated across all Hands-on Learning items
7	**Residence Hall Resources** • *Use co-curricular residence hall resources scale*	1	See Appendix A for scales and items
7	**LLP Participation**	1	0 = TRH 1 = LLP
8	**Self-confidence** • *Professional confidence scale* • *Confidence in college success scale* • *Confidence in academic skills scale*	3	See Appendix A for scales and items

8	**Alcohol-related Experiences** • *Emotional consequences of alcohol use scale*	1	See Appendix A for scales and items
8	**Sense of Belonging** • *Overall sense of belonging scale*	1	See Appendix A for scales and items
8	**Civic Engagement** • *Sense of civic engagement scale*	1	See Appendix A for scales and items

Validity. In developing the RES instrument, NSLLP researchers took steps to ensure content and construct validity of the RES measures (Inkelas, Vogt, Longerbeam, Owen, & Johnson, 2006). First, to establish content validity, the NSLLP team directed 15 LLP administrators to review the questionnaire to get their thoughts on whether the RES is measuring what it intended to measure. Second, the NSLLP researchers used the data from pilot testing in 2003 to check the construct validity through exploratory factor analysis (convergent validity) and correlation matrixes (convergent & divergent validity). NSLLP researchers found that the RES variables converged and diverged from each other in a way that was consistent with higher education theories (Inkelas & Associates, 2007). Readers are directed to Inkelas et al. (2006b) for an in-depth discussion of the development of the NSLLP and its psychometric properties.

Plan to establish validity for sub-sample. As the sub-sample of respondents that took the mental health module of the RES will be a unique sample of respondents, this study will need to re-establish the validity of the NSLLP instrument. Similar to the 2007 NSLLP methods, this study established construct validity by using correlation matrixes to verify appropriate convergent and divergent validity among the independent variables.

Reliability. NSLLP researchers took steps to ensure reliability of the RES instrument throughout the pilot testing, 2004, and 2007 administrations (Inkelas et al.,

2006b; Inkelas & Associates, 2007). Reliability has been established during these administrations of the NSLLP through measures of internal consistency (Cronbach alpha) for the numerous environment and outcome scales constructed from variables in the RES. Throughout the three administrations of the NSLLP previous to the 2008 and 2009 administrations, Cronbach alpha scores have ranged from .623 to .898 (2003 pilot), .624 to .918 (2004), and .631 to .945 (2007). Readers are directed to Inkelas et al. (2006b) for a full discussion of reliability in the pilot study and to the NSLLP reports (Inkelas and Associates, 2004, 2007) for a comprehensive set of statistics regarding measures of internal consistency among scales in the RES.

Plan to establish reliability for sub-sample. Despite many years of establishing reliability for administrations of the NSLLP, this study used a unique sub-sample of respondents that took the mental health module and therefore needed to re-establish reliability. To establish reliability, this study used consistent methods to Inkeals et al. (2006) and Inkelas and Associates (2004, 2007). The researcher computed Cronbach alpha scores for each of the environment construct scales for both 2008 and 2009 data. Readers are directed to Appendix A for a description of environment scales with Cronbach alpha scores for both 2008 and 2009 construct scales.

Data Analysis

This study used independent samples t-tests, chi-squared tests, and hierarchical multiple regression to address the research questions. As this study used data from two separate administrations of the NSLLP (2008, 2009) wherein two institutions participated in both administrations, the 2008 and 2009 data sets were kept separate in the analysis of each research questions. These data sets were analyzed separately in order to ensure all

cases were independent observations, an assumption of the statistical procedures, as well as provide a replication of the observed findings. Such replication illuminated the reliability of the effects observed in the statistical models and allowed for greater interpretation of the results. After obtaining IRB approval for the current study (see Appendix C), the researcher used a total of eight analyses to answer three research questions across two data sets: two independent samples t-tests (2008 data & 2009 data), two chi-squared tests (2008 data & 2009 data), two regression models were constructed to answer research question two (2008 data & 2009 data), and two regression models were constructed to answer research question three (2008 data & 2009 data). Prior to any data analysis, both 2008 and 2009 sample demographic characteristics were described and LLP and TRH groups were compared using chi-squared tests.

Data were managed and analyzed using PASW Statistics 18 and SPSS 19 software. The sequence of input and environmental variable blocking in the hierarchical multiple regression used to investigate research questions two and three was derived from the nature of each variable, as suggested by Astin's (1993) I-E-O model. Variables were entered into the regression analysis temporally, from least to most recent at the time of the survey. Additionally, the distal and proximal nature of the variables was taken into consideration in constructing the I-E-O models for this study. Variables were entered in sequential blocks within the regression analysis, starting with most distal and finishing with most proximal.

Research question one. To investigate the existence of a difference between LLP participants and students living in TRHs on measures of mental health, the researcher employed an independent samples t-test statistical procedure for each data set.

Independent samples t-test is an appropriate test for this research question because it produces a t statistic and probability value that can be used for statistical testing of significant differences between two categorical groups (LLP vs. TRH) of the independent variable on a continuous measure of the dependent variable (students' mental health). An independent sample t-test was run for both 2008 and 2009 data sets, with the MHC-SF as the dependent variable and LLP participation as the grouping variable. An a-priori statistical power analysis for the independent samples t-test using G*Power 3.1.2 software indicated that given the LLP and TRH group sample sizes, the *p* values used in these analyses must be set at $\alpha = .001$ for both data sets in order to observe appropriate power ($1-\beta = .99$) and a small effect size (Cohen's *d* between .2 and .25; Faul, Erdfelder, Buchner, & Lang, 2009).

Additionally, the researcher verified that the statistical assumptions of the independent samples t-test, such as identical, independent, and normal distribution of variance between comparative groups, were met before interpreting the findings. In order to ensure these statistical assumptions were met, the researcher randomly sampled cases among the LLP participants to construct a comparative sample with an equivalent sample size. Additionally, the researcher used common analysis techniques from previous studies examining the MHC-SF to sort cases into three groups: languishing, moderately mentally healthy, and flourishing. The researcher used chi-squared tests to investigate differences in these three groups between LLP and TRH respondents.

Research question two. For each data set, the researcher used hierarchical multiple regression to estimate the effect of LLP participation on measures of students' mental health net of pre-college characteristics and institutional environments. Multiple

regression is appropriate as it allows for estimation of the prediction of one independent variable on a dependent variable net of the effect of other variables on the dependent variable. Using a forced entry method to create multiple blocks in this hierarchical analysis allowed higher education theory to drive the construction of the regression model. As discussed previously in this chapter, students' pre-college characteristics were first entered into the regression model, followed by institutional environments, and finally students' LLP status (dummy coded, LLP = 1, TRH = 0). Table 3.5 outlines the input, environment, and outcome variables to be included in the regression model associated with the second research question. In order to address multicollinearity prior to the analysis, the researcher investigated highly intercorrelated predictors using a correlation matrix of all the predictors in the regression model, excluding predictors with intercorrelations greater than $r = 0.6$. Additionally, an a-priori statistical power analysis for the single regression coefficient t-test using G*Power 3.1.2 software indicated that given the sample size, the p value used for the β coefficients in this regression analysis must be set at $\alpha = .001$ for both data sets in order to observe appropriate power ($1-\beta = .99$) and a small effect size ($f^2 = .02$; Faul et al., 2009). The researcher ensured that the assumptions of the regression model, such as errors having a constant variance, independent, and normally distributed, were met before interpreting findings. The following sections describe the first blocks used in the regression models associated with both research questions two and three. In the model associated with the second research question, LLP participation was added as the final block. In order to make an inference regarding this research question, the researcher first examined the R^2 change after adding

in the final, LLP participation block in the regression analysis. Then, the researcher examined the standardized beta weights for students' LLP status.

Block one, demographics. The first block in the regression models associated with both research questions two and three included the following demographic variables: gender (referent group = male), race/ethnicity (referent group = White), sexual orientation (referent group = not Lesbian, Gay, or Bisexual), and the variable representing combined parental education level and total annual family income. Entering students' demographic characteristics in the first block of the model is consistent with Astin's (1993) I-E-O model.

Block two, pre-college measures. The second block in the regression models associated with both research questions two and three included the following pre-college measures: students' rating of importance for volunteering before college, students' rating of importance for academic success before college, as well as students' feelings of preparedness for science and English college courses. Following the quasi-experimental design of the National Study of Living-Learning Programs (NSLLP) and Astin's (1993) I-E-O model, this block enters students' estimation of their pre-college attitudes and beliefs into the regression model in order to account for their pre-college characteristics. Accounting for these pre-college measures also partially mitigates the self-selection bias inherent in the NSLLP's research design.

Block three, bridge variable. The third block in the regression models associated with both research questions two and three included students' high school grades. Students' high school grades were entered after all of the other input blocks as a bridge variable between the inputs and environments. As Astin (1993) suggested, bridge

variables describe the students' pre-college experience but they also represent aspects of the students' educational experience. Similar to the previous block, accounting for high school grades also partially mitigates the self-selection bias inherent in the NSLLP's research design. Thus, high school grades were included as the final input in the regression models.

Block four, control: years of college exposure. The fourth block in the regression models associated with both research questions two and three included students' academic class standing. This variable was entered prior to any college environment variables in order to control for the amount of exposure the individual student had in the college environment.

Table 3.5 – I-E-O Model for Research Question #2

INPUTS	ENVIRONMENTS	OUTCOME
Block 1 • Gender • Race/Ethnicity • Sexual Orientation • Parents' Educational Level • Total Annual Family Income **Block 2** • Pre-College Importance: Volunteering • Pre-College Importance: Academic Success • Preparation for College Courses **Block 3** • High School Grades	**Block 4** • Years in College **Block 5** • LLP Participation	• MHC-SF

Research question three. To explore which student characteristics and institutional environments predict students' scores on measures of mental health net of

their participation in a LLP, the researcher constructed hierarchical multiple regression models for both 2008 and 2009 data sets. Similar to the second research question, multiple regression is appropriate as it allows researchers to observe which independent variables have a significant effect on the dependent variable net of the effect of other variables on the dependent variable. Data analysis for this research question was identical to the second research question, except that the researcher identified other environmental variables that predicted students' mental health net of students' LLP status. In order to address multicollinearity prior to the analysis, the researcher investigated highly intercorrelated predictors using a correlation matrix of all the predictors in the regression model, excluding predictors with intercorrelations greater than $r = 0.6$. As the nature of this research question was exploratory, a less conservative p value will be set at $\alpha = .01$ for β coefficients in both data sets.

Table 3.6 outlines the input, environment, and outcome variables to be included in the regression model associated with the third research question. In order to make an inference regarding this research question, the researcher first examined the R^2 change after adding in each block in the regression analysis. Then, the researcher examined the standardized beta weights for the predictors in the model. The regression models associated with the third research question built upon the blocking order from the second research question. The following sections describe the blocks added to the first four blocks from the second research question in order to explore additional predictors of students' mental health.

Block five, supportive college climates. The fifth block in the regression models associated with the third research question included the following measures of a

supportive campus climate: students' ease with social and academic transition to college, and socially supportive residence hall climate. Of the environmental blocks, the supportive college climates block is the most distal and therefore was entered first in the regression model following Astin's (1993) I-E-O model.

Block six, social and academic interactions. The sixth block in the regression models associated with the third research question included students' academic and socio-cultural peer interactions, course-related faculty interactions, and positive peer diversity interactions. More proximal than the previous campus climate-based block in the regression model, the social and academic interactions block represented students' interactions with others in the college environment.

Block seven, individual engagement with college environments. The seventh block in the regression models associated with the third research question included students' co-curricular involvement, hands-on learning experiences, use of residence hall resources, and participation in a LLP. According to Astin's (1993) I-E-O model, these measures of individuals' engagement with the college environment are most proximal of the college environments and therefore were entered last in the models except for the intermediate outcomes block.

Block eight, intermediate outcomes. The eighth block in the regression models associated with the third research question included students' reported self-confidence, emotional consequences of alcohol use, overall sense of belonging, and sense of civic engagement. As Astin (1993) suggested, the intermediate outcomes were entered last into the I-E-O regression models associated with the third research question in order to

glean additional understanding as to the predictors of the dependent variable, mental health.

Table 3.6 – I-E-O Model for Research Question #3

INPUTS	**ENVIRONMENTS**	
Block 1 • Gender • Race/Ethnicity • Sexual Orientation • Parents' Educational Level • Total Annual Family Income	**Block 4** • Years in College **Block 5** • Transition to College • Residence Hall Climate	**Block 8** • Self-confidence • Alcohol-Related Consequences • Sense of Belonging • Sense of Civic Engagement
Block 2 • Pre-College Importance: Volunteering • Pre-College Importance: Academic Success • Preparation for College Courses	**Block 6** • Peer Interactions • Faculty Interactions • Diversity Interactions	**OUTCOME** • MHC-SF
Block 3 • High School Grades	**Block 7** • Co-Curricular Involvement • Hands-on Learning Experiences • Residence Hall Resources • LLP Participation	

Limitations

The methodology presents four major limitations in addressing the research questions for this study. First, by combining varying institutions and specific LLPs into two groups (LLP and TRH) that cut across these institutions and LLPs, the analysis risks accentuating or muting the effects of individual institutions or LLPs. Second, multiple regression does not allow for estimation of indirect effects of independent variables on a dependent variable which limits the ability of this research to suggest that student

characteristics or institutional environments mediate relationships between students' LLP status and their mental health outcomes. Educational researchers have addressed these limitations through multi-level and structural equation modeling analysis procedures and scholars impressed the importance of such procedures in educational research and provided insights into using these more complex analyses (Bryk & Raudenbush, 1992; Schneider, Carnoy, Kilpatrick, Schmidt, & Shavelson, 2007), yet this study does not employ those procedures. Additionally, whereas the NSLLP design includes a quasi-pretest that intends to match outcome variables, the design does not include such a directly related quasi-pretest measure related to students' mental health. This limits the study in that the quasi-pretest is even less strong. Finally, institutions that took the mental health module selected into the sub-sample of data by having an interest and resources to take this additional module. The motivations of administrators to select this additional portion of the NSLLP may vary widely from curious information gathering to being prompted by a critical mental health incident to gather more information. Furthermore, the institutions that selected to take the mental health module may not be representative of the nationally landscape of LLPs and this study cannot generalize to every LLP in the United States. These limitations will be discussed more fully in the fifth and final chapter of this study.

Summary

This chapter outlined the methodology of this study, including its research design, instrument, data collection and analysis. In order to address the research questions, this study employed a quasi-experimental, *ex post facto* design using separately analyzed data from the 2008 and 2009 administrations of the National Study of Living Learning

Programs (NSLLP). Findings from this methodology will be reported on in the following chapter.

CHAPTER 4: RESULTS

The purpose of this study was to explore the effect of living-learning program (LLP) participation on college students' mental health. This chapter will first overview the 2008 and 2009 National Study of Living-Learning Programs (NSLLP) sample characteristics, missing data, and analyses. Second, this chapter will report on independent samples t-test, chi-squared, and multiple regression findings specific to the three research questions.

Sample Characteristics

As discussed in the previous chapter, the sample for the current study was selected from the 2008 and 2009 administration of the NSLLP. The full NSLLP mental health sample included many more LLP respondents (2008 $N = 1{,}487$, 2009 $N = 1{,}672$) in comparison to respondents living in TRHs (2008 $N = 1{,}013$, 2009 $N = 1{,}003$). Such a difference in sample size would result in the comparison of non-equivalent groups in the data analysis related to the first research question. Therefore, a modified sample was used for the first research question analysis wherein LLP respondents were randomly sampled to roughly match the sample size of the TRH respondents. A post-hoc check on the equivalency of the random sample of LLP participants to the larger LLP group within the NSLLP mental health sample confirmed the randomness of the sample and revealed no discrepancies from the original LLP group. Furthermore, the full mental health sample was used for the multiple regression analysis related to the second and third research questions. Borg and Gall (1989) suggested that 10 to 15 cases should be included in regression analyses for each variable entered into the regression model. Despite excluding missing data through listwise deletion, the sample size for analysis still

exceeded Borg and Gall's standard for all of the regression models in this study. These regression models will be reported on in the last sections of this chapter. The following sections describe the student characteristics of the full 2008 and 2009 NSLLP mental health samples.

2008 Student Characteristics

Among the five institutions participating in 2008, 1,487 respondents to the NSLLP were participants in LLPs and 1,013 lived in TRHs. Of the 2008 respondents living in LLPs, 35% (n=526) were male and 65% (n=960) were female. Similarly, of those living in TRHs, 32% (n=327) were male and 67% (n=683) were female. Regarding race, 3% (n=51) of LLP participants and 4% (n=37) of TRH residents identified as Hispanic or Latino, 0.1% (n=2) of LLP participants and 0.1% (n=1) of TRH residents identified as American Indian or Alaska Native , 4% (n=62) of LLP participants and 3% (n=23) of TRH residents identified as Asian or Pacific Islander, 8% (n=114) of LLP participants and 14% (n=139) of TRH residents identified as African-American, 80% (n=1,194) of LLP participants and 75% (n=752) of TRH residents identified as White, and 8% (n=113) of LLP participants and 9% (n=92) of TRH residents identified as Multi-ethnic, Multi-racial, or "other." With relation to sexual orientation in the 2008 sample, 95% (n=1,420) of LLP participants and 95% (n=968) of TRH residents identified as not Bisexual, Gay, or Lesbian, whereas 5% (n=54) of LLP participants and 5% (n=33) of TRH residents identified as Bisexual, Gay, or Lesbian.

Readers are directed to Table 4.1 for a full demographic description of the 2008 sample, which also includes results from chi-squared tests of demographic differences between respondents living in LLPs and TRHs. Results from the chi-squared analysis

indicate that there were significant differences between LLP and TRH respondents on several of the variables. Respondents that racially identified as Asian or Pacific Islander and White were overrepresented in the group of respondents participating in LLPs compared to respondents living in TRHs, and respondents that racially identified as African-American were overrepresented in TRHs compared to LLPs. Furthermore, respondents from LLPs reported more educational degrees earned by their parents, larger annual family incomes, and higher grades in high school compared to TRH respondents. These demographic differences between respondents living in LLPs and TRHs are consistent with previous multi-institutional LLP research (Inkelas & Associates, 2004, 2007) and were included in the regression models of the current study to account for the differences between the 2008 LLP and TRH samples.

Table 4.1 – 2008 Sample Characteristics (N = 2,500)

	LLP Frequency *N*=1,487	**TRH Frequency *N*=1,013**	**LLP vs. TRH**
Gender			$\chi^2(1)= 5.377$
Male	526	327	
Female	960	683	
Race/Ethnicity			
African-American	114	139	$\chi^2(1)= 24.374$***
Asian or Pacific Islander	62	23	$\chi^2(1)= 6.594$**
American Indian or Alaska Native	2	1	$\chi^2(1)= 0.064$
Hispanic/Latino	51	37	$\chi^2(1)= 0.089$
White	1,194	752	$\chi^2(1)= 12.528$***
Multi-ethnic, Multi-racial, "other"	113	92	$\chi^2(1)= 1.726$
Sexual Orientation			$\chi^2(1)= 0.236$
Not Bisexual, Gay, or Lesbian	1420	968	
Bisexual, Gay, or Lesbian	54	33	
Fathers's Educational Level			$\chi^2(6)= 13.151$*
Don't know	28	24	
High school or less	219	188	

Some college	241	180	
Associates Degree	75	57	
Bachelors Degree	495	314	
Masters Degree	270	153	
Doctorate or Professional Degree	144	83	
Mother's Educational Level			$\chi^2(6)= 23.145$***
Don't know	22	14	
High school or less	196	201	
Some college	254	177	
Associates Degree	126	84	
Bachelors Degree	542	319	
Masters Degree	274	163	
Doctorate or Professional Degree	61	42	
Total Annual Family Income			$\chi^2(8)= 28.915$***
Less than $25,000	82	67	
$25,000 to $49,999	170	124	
$50,000 to $74,999	241	197	
$75,000 to $99,999	222	153	
$100,000 to $124,999	231	192	
$125,000 to $149,999	150	65	
$150,000 to $174,999	110	51	
$175,000 to $199,999	58	34	
$200,000 or more	143	72	
High School Grades			$\chi^2(4)= 25.400$***
A+ or A	698	383	
A- or B+	553	412	
B	169	138	
B- or C+	41	51	
C or C-	5	6	

*$p < .05$, **$p < .01$, ***$p < .001$

2009 Student Characteristics

Among the four institutions in 2009, 1,672 respondents were participants in LLPs and 1,003 lived in TRHs. Of the 2009 respondents living in LLPs, 39% (n=646) were male and 61% (n=1,025) were female. Similarly, of those living in TRHs, 36% (n=361) were male and 64% (n=639) were female. Regarding race, 6% (n=104) of LLP participants and 7% (n=70) of TRH residents identified as Hispanic or Latino, 3% (n=50)

of LLP participants and 2% (n=21) of TRH residents identified as American Indian or Alaska Native , 6% (n=99) of LLP participants and 6% (n=56) of TRH residents identified as Asian or Pacific Islander, 8% (n=125) of LLP participants and 7% (n=73) of TRH residents identified as African-American, 83% (n=1,394) of LLP participants and 83% (n=830) of TRH residents identified as White, and 10% (n=159) of LLP participants and 10% (n=98) of TRH residents identified as Multi-ethnic, Multi-racial, or "other." With relation to sexual orientation in the 2009 sample, 95% (n=1,579) of LLP participants and 95% (n=948) of TRH residents identified as not Bisexual, Gay, or Lesbian, and 5% (n=82) of LLP participants and 5% (n=48) of TRH residents identified as Bisexual, Gay, or Lesbian.

Readers are directed to Table 4.2 for a full demographic description of the 2009 sample, which also includes results from chi-squared tests of demographic differences between respondents living in LLPs and TRHs. As the results from the chi-squared analysis indicate, there were significant differences between those in LLPs and TRHs on several of the variables. Consistent with previous multi-institutional LLP research (Inkelas & Associates, 2004, 2007), LLP participants reported more educational degrees earned by their mothers, larger annual family incomes, and higher grades in high school compared to respondents living in TRHs. These significantly different demographic variables were included in the regression models of the current study to account for the differences between 2009 LLP and TRH samples.

Table 4.2 – 2009 Sample Characteristics (*N* = 2,675)

	LLP Frequency *N*=1,672	**TRH Frequency *N*=1,003**	**LLP vs. TRH**
Gender			$\chi^2(1)= 1.879$
Male	646	361	
Female	1,025	639	
Race/Ethnicity			
African-American	125	73	$\chi^2(1)= 0.034$
Asian or Pacific Islander	99	56	$\chi^2(1)= 0.128$
American Indian or Alaska Native	50	21	$\chi^2(1)= 1.945$
Hispanic/Latino	104	70	$\chi^2(1)= 0.602$
White	1,394	830	$\chi^2(1)= 0.148$
Multi-ethnic, Multi-racial, "other"	159	98	$\chi^2(1)= 0.051$
Sexual Orientation			$\chi^2(1)= 0.018$
Not Bisexual, Gay, or Lesbian	1,579	948	
Bisexual, Gay, or Lesbian	82	48	
Fathers's Educational Level			$\chi^2(6)= 7.199$
Don't know	50	42	
High school or less	336	217	
Some college	263	173	
Associates Degree	89	57	
Bachelors Degree	493	286	
Masters Degree	292	151	
Doctorate or Professional Degree	129	70	
Mother's Educational Level			$\chi^2(6)= 13.060^*$
Don't know	19	24	
High school or less	278	190	
Some college	322	204	
Associates Degree	140	95	
Bachelors Degree	559	304	
Masters Degree	271	141	
Doctorate or Professional Degree	63	38	
Total Annual Family Income			$\chi^2(8)= 22.382^{**}$
Less than $25,000	95	88	
$25,000 to $49,999	196	151	
$50,000 to $74,999	320	177	
$75,000 to $99,999	296	174	
$100,000 to $124,999	300	146	
$125,000 to $149,999	126	66	

$150,000 to $174,999	87	48	
$175,000 to $199,999	58	29	
$200,000 or more	137	97	
High School Grades			$\chi^2(5)= 43.122$***
A+ or A	656	291	
A- or B+	618	391	
B	269	195	
B- or C+	84	86	
C or C-	15	20	
D+ or lower	0	1	

*$p < .05$, **$p < .01$, ***$p < .001$

Missing Data

A substantial amount of data were not included in the final analytic samples used in the current study, and therefore the following section will explore and describe the missing data. The final model for the regression analysis associated with research question three contained the most missing data with 1,161 and 1,459 respondents out of the full samples of 2,500 and 2,675 respondents in 2008 and 2009, respectfully. While missing data is common in large data sets within social science research (Acock, 2005), researchers must explore which data are missing in order to identify how the absence of large amounts of data might bias the final analytic sample. Missing data that creates a bias in the final analytic sample is commonly referred to as missing not at random (MNAR), while missing data that does not bias the sample is referred to as missing completely at random (MCAR). In this section, results will be reported on from descriptions of the missing data, and these results will be discussed in the next chapter.

First, the percentage of missing data is reported for each variable in Table 4.3. With the exception of the variable emotional consequences of alcohol use (ALCEMOT), the amount of missing data ranges between zero and 15 percent for the variables in the

current study. Students' ALCEMOT, however, contained 40 percent missing data. Such a stark contrast in proportion of missing data warranted further investigation of the ALCEMOT variable in particular, as the larger proportion of missing data substantially increases the chance for bias in the final analytic sample. Thus, the researcher employed separate variance t-tests and found that respondents that did not answer ALCEMOT in 2008 (M = 63.62, SD = 12.55) and 2009 (M = 62.08, SD = 13.69) did not scored differently on the MHC-SF than those whom responded to the ALCEMOT items in 2008 (M = 62.68, SD = 13.44) and 2009 (M = 63.09, SD = 13.74).

Table 4.3 – Percentage of Missing Data across All Variables

Variable	% Missing, 2008 *N*=2,500	% Missing, 2009 *N*=2,675
Gender	0.2	0.1
Hispanic	0.3	0.1
American Indian	0.0	0.3
Asian Pacific Islander	0.0	0.3
African American	0.0	0.3
Multi/Bi Racial, Other	0.2	0.3
Sexual orientation	1.0	0.7
Parents' education and income	1.2	1.0
Pre-college importance: Volunteering	6.0	6.7
Pre-college importance: Academic success	5.8	6.7
Preparation for college courses: Science	6.5	7.1
Preparation for college courses: English	6.6	7.1
High school grades	1.8	1.8
Year in college	3.0	4.2
Ease with academic transition to college	7.2	7.8
Ease with social transition to college	7.1	7.9
Residence hall climate: Socially supportive	11.1	11.3
Peer interactions: Academic	10.3	10.6
Peer interactions: Socio-cultural	10.8	11.0
Course-related faculty interactions	10.7	11.2

Positive peer diversity interactions	10.0	10.5
Co-curricular involvement	12.2	11.0
Hands-on learning experiences	8.0	8.6
Use co-curricular residence hall resources	10.0	10.2
LLP participation	0.0	0.0
Professional confidence	7.6	8.9
Confidence in college success	8.2	8.9
Confidence in academic skills	10.2	11.1
Emotional consequences of alcohol use	40.9	41.0
Sense of belonging	9.8	10.5
Sense of civic engagement	10.0	10.5
Dependent variable: MHC-SF	15.3	13.3

The results from the separate variance t-tests, presented in Table 4.4, also revealed that within ALCEMOT missing data from 2008 and 2009, LLP respondents had more of the share of missing data compared to TRH respondents. In 2008 and 2009 respectively, 64 and 68 percent of the ALCEMOT missing data was from LLP respondents, whereas 36 and 32 percent of the ALCEMOT missing data was from TRH respondents. To further investigate if this uneven split between LLP and TRH groups created bias within the final analytic sample, the researcher employed an analysis of variance (ANOVA) to test for differences in the dependent variable by ALCEMOT missing and non-missing data and LLP participation. Replicating findings from the separate variance t-tests, the ANOVA did not evidence a main effect of ALCEMOT missing/non-missing data on individuals' MHC-SF score in 2008, $F(1, 2114) = 2.60$, $p > .05$, and 2009, $F(1, 2316) = 2.90$, $p > .05$. Additionally, an interaction between ALCEMOT missing/non-missing data and LLP participation on individuals' MHC-SF score would suggest a missing data related bias in the sample. However, the ANOVA did not evidence an interaction between missing/non-missing data and LLP participation on individuals MHC-SF score in 2008, $F(1, 2114) = 0.88$, $p > .05$, and 2009, $F(1, 2316) =$

0.48, $p > .05$. Readers are directed to Table 4.5 for the results of the ANOVA for students' MHC-SF score.

Lastly, Little's MCAR test is a statistical procedure used to make an inference of whether the data are MCAR or MNAR. In the Missing Value Analysis SPSS add-on the null hypothesis in Little's test is that the data are missing completely at random and the alpha level is set at $\alpha = .05$ (SPSS, 2007). Therefore, findings with a p value of less than .05 would prompt the researcher to reject the null hypothesis that the data are missing completely at random. Little's MCAR test evidenced significant findings in both 2008 $\chi^2(2815, N = 2{,}675) = 3165.02$, $p < .001$ and 2009 $\chi^2(1260, N = 2{,}500) = 1538.02$, $p < .001$. Thus, the null hypotheses that the 2008 and 2009 data are missing completely at random were rejected. Results from the analysis of missing data presented in this section will be discussed in the following chapter. Specifically, investigation of ALCEMOT missing data did not reveal evidence of bias in the final analytic sample, prompting the researcher to continue with planned analyses using the ALCEMOT variable.

Table 4.4 – Missing data separate variance t tests for emotional consequences of alcohol use on dependent variable, MHC-SF

Emotional consequences of alcohol use	**2008** ***N*=2,500**	**2009** ***N*=2,675**
$n_{missing}$	1,022	1,098
% $LLP_{missing}$	64%	68%
% $TRH_{missing}$	36%	32%
Mean $MHC\text{-}SF_{non\text{-}missing}$ (*SD*)	63.62 (*12.55)*	62.08 (*13.69*)
Mean $MHC\text{-}SF_{missing}$ (*SD*)	62.68 (*13.44*)	63.09 (*13.74*)
df	1,466	1,523
t-value	1.6	-1.7

*$p < .05$, **$p < .01$, ***$p < .001$

Table 4.5 – Missing data ANOVA table for MHC-SF by sample type and emotional consequences of alcohol use

		Emotional consequences of alcohol use			
	LLP Participation	Missing		Non-Missing	
		M	*SD*	*M*	*SD*
2008	LLP	62.85	13.57	64.35	12.09
	TRH	62.30	13.19	62.66	13.08
2009	LLP	63.51	13.72	62.31	13.87
	TRH	62.05	13.75	61.74	13.44

Analysis Overview

In order to answer the three research questions, independent samples t-tests, chi-squared tests, and multiple regression statistical techniques were used to analyze both 2008 and 2009 NSLLP samples. Organized by research question, the next section will present relevant information about these statistical techniques, verify statistical assumptions, describe analyses, as well as report on findings from analyses on both 2008 and 2009 samples.

Research Question One

The analysis for the first research question tested the hypothesis that LLP participants report higher average scores on the Mental Health Continuum – Short Form (MHC-SF; Keyes, 2005) compared to students living in TRHs. As previously discussed in this chapter, the final analytic sample for both the independent samples t-tests and chi-squared tests included a randomly sampled portion of the original LLP sample in order to control for the difference in total number of LLP and TRH respondents in the original sample.

Results from the independent samples t-test are presented in Table 4.6. Discussed in the previous chapter, an a-priori statistical power analysis revealed that a *p* value less than .001 must be observed in order to infer a meaningful difference between LLP and TRH groups. Among respondents in the 2008 sample, students participating in a LLP (*M* = 63.57, *SD* = 12.83) did not report different average scores on the MHC-SF compared to students living in TRHs (*M* = 62.55, *SD* = 13.10), $t(1,659) = 1.607$, $p = .108$. Similarly in the 2009 sample, LLP participants (*M* = 62.62, *SD* = 13.74) did not report different average scores on the MHC-SF compared to students living in TRHs (*M* = 61.82, *SD* = 13.51), $t(1,708) = 1.211$, $p = .226$.

Table 4.6 – Tests of Mean Difference between LLP and TRH on Participants' Total MHC-SF Score

Year/Sample	*n*	Mean (*SD*)	LLP vs. TRH
2008			$t(1659) = 1.607$, $p = .108$
LLP	828	63.57 (*12.83*)	
TRH	833	62.55 (*13.10*)	
2009			$t(1708) = 1.211$, $p = .226$
LLP	854	62.62 (*13.74*)	
TRH	856	61.82 (*13.51*)	

Additionally, the analysis for the first research question compared students' responses on the MHC-SF across LLP and TRH groups using previously established categorizing techniques for the MHC-SF. The following diagnostic criteria were used to categorize respondents post hoc into flourishing, languishing, and moderately mentally healthy groups based on their responses to the 14 items in the MHC-SF:

To be flourishing, individuals must report that they experience 'everyday' or 'almost everyday' at least seven of the symptoms, where one of the symptoms is

from the hedonic (i.e., EWB) cluster (i.e., happy, interested in life, or satisfied). To be languishing, individuals must report that they 'never' or 'once or twice' experienced at least seven of the symptoms, where one of the symptoms is from the hedonic (i.e., EWB) cluster (i.e., happy, interested in life, or satisfied). Individuals who do not fit the criteria for flourishing or languishing are categorized as moderately mentally healthy (Keyes et al., 2008, p. 187).

Based on these criteria, 67% (n=1,104) of all respondents in the 2008 sample were flourishing, 31% (n=520) were moderately mentally healthy, and 2% (n=37) were languishing. In 2009, 59% (n=1,012) of all respondents were flourishing, 40% (n=675) were moderately mentally healthy, and 1% (n=23) were languishing.

Unexpectedly, a chi-squared test of independence revealed different results between the 2008 and 2009 samples. The number of TRH and LLP participants in languishing, moderately mentally healthy, and flourishing categories in both 2008 and 2009 samples, as well as the results from chi-squared tests can be found in Table 4.7. In the 2008 sample, a chi-squared test indicated that diagnosis into either languishing, moderately mentally healthy, or flourishing categories did not vary between LLP and TRH groups, $\chi^2(2, N = 1{,}661) = 0.596, p > .05$. However, in the 2009 sample a chi-squared test indicated that students' were disproportionately distributed among the three MHC-SF categories between the TRH and LLP groups, $\chi^2(2, N = 1{,}710) = 60.429, p < .001$. Contrary to the hypothesis, in the 2009 sample more students living in TRHs were flourishing (n=578) compared to their peers participating in LLPs (n=434), whereas more LLP participants were moderately mentally healthy (n=414) compared to their peers

living in TRHs (n=261). Additionally, in 2009 more students living in TRHs were languishing (n=17) compared to students participating in LLPs (n=6).

Table 4.7 – Distribution of LLP and TRH Respondents along the Mental Health Continuum

	LLP Frequency	**TRH Frequency**	**LLP vs. TRH**
2008 (*N* = 1,661)	*n* = 828	*n* = 833	$\chi^2(2)= 0.596$
Flourishing	557	547	
Moderately Mentally Healthy	254	266	
Languishing	17	20	
2009 (*N* = 1,710)	*n* = 854	*n* = 856	$\chi^2(2)= 60.429$***
Flourishing	434	578	
Moderately Mentally Healthy	414	261	
Languishing	6	17	

*$p < .05$, **$p < .01$, ***$p < .001$

Research Question Two

The second research question explored the effect of LLP participation on students' mental health, net of individual characteristics. In order to answer this question, a regression model was constructed for each year 2008 and 2009 to examine various predictors of mental health, as presented in Table 3.5. This section will first describe results from testing the statistical assumptions of these two regression models then describe results from the regression models.

Appropriate model inference from regression findings requires that researchers check model assumptions of independent, normally distributed, and constantly varied errors (Lomax, 2007). First, multicollinearity was examined and the data evidenced VIF values much lower than Pallant's (2007) maximum acceptable limit of 10 (combined 2008 and 2009 range from 1.044 to 1.906). Furthermore, prior to analysis, highly

intercorrelated items ($r > .60$) were examined and the researcher either excluded one of the variables or combined the variables with similar items to prevent multicollinearity. In order to ensure that the errors were independent, normally distributed, and varied constantly, the researcher verified a random scatter on a plot of residuals of the model, a normal distribution in the histogram of residuals, and a linear pattern of residuals along a Probability-Plot. All of the checks for these assumptions supported the integrity of both regression models related to the second research question.

Model Summary

The entire model accounted for 6.2% ($R^2 = .062$) and 6.8% ($R^2 = .068$) of the variance in students' mental health in years 2008 and 2009, respectively. R^2 is the amount of variance in the dependent variable (MHC-SF) that can be explained by the independent variables. For all of the regression models in the current study, the Adjusted R^2 will be reported because this value takes into account the large sample size and number of predictor variables. Furthermore, large differences between the R^2 and Adjusted R^2 values indicate the presence of extraneous independent variables in the regression model. In the regression model associated with the second research question, the differences between R^2 and Adjusted R^2 values were small for the 2008 sample ($R^2 = .062$, Adjusted $R^2 = .069$) and the 2009 sample ($R^2 = .068$, Adjusted $R^2 = .074$). Table 4.8 presents a summary of the regression models related to the second research question for years 2008 and 2009.

The change statistics for each block indicate the magnitude of the additional variance in the dependent variable explained by each block entered into the model. The ΔR^2 value reports the amount of additional variance explained in the full model when

each block is included, and the ΔF value and its corresponding *p* value describes the magnitude and level of significance of the additional variance explained by each block. Contrary to hypotheses, the final block including LLP participation did not significantly add to the amount of variance explained by the entire model. In the 2008 sample, students' demographics were entered first in the model and explained an initial 2.1% of the variance ($\Delta F = 6.237$, $p < .001$). Next, students' pre-college measures were entered into the model and accounted for an additional 3.6% of the variance in MHC-SF scores ($\Delta F = 18.845$, $p < .001$). The bridge variable, high school grades, as well as students' years of college exposure were then entered into the model explaining an additional 0.6% of the variance in students' MHC-SF scores ($\Delta F = 13.350$, $p < .001$) and an additional 0.2% of the variance in students' MHC-SF scores ($\Delta F = 4.672$, $p < .05$), respectively. Lastly, students' participation in a LLP did not significantly add to the overall variance explained in the dependent variable, explaining less than an additional 1% of the variance in students' MHC-SF scores in the 2008 sample ($\Delta F = .175$, $p > .05$).

Mirroring results from the 2008 sample, the final block including LLP participation did not significantly add to the amount of variance explained by the entire model in the 2009 sample. Students' demographics in the 2009 sample explained an initial 2% of the variance in the dependent variable ($\Delta F = 6.685$, $p < .001$). Next, students' pre-college measures were entered into the model and accounted for an additional 4.9% of the variance in MHC-SF scores ($\Delta F = 29.825$, $p < .001$). The last three blocks in the model for the 2009 sample did not significantly contribute additional variance in students' MHC-SF scores. The bridge variable, high school grades, as well as students' years of college exposure explained an additional 0.1% of the variance in

students' MHC-SF scores ($\Delta F = 2.039$, $p > .05$) and less than an additional 0.1% of the variance in students' MHC-SF scores ($\Delta F = 0.247$, $p < .05$), respectively. Lastly, students' participation in a LLP explained an additional 0.1% of the variance in students' MHC-SF scores in the 2009 sample ($\Delta F = 1.494$, $p > .05$)

Table 4.8 – Model Summary, Research Question Two

	2008 (*N* = 1,991)					**2009 (*N* = 2,271)**				
				Change Statistics					Change Statistics	
Block/ Description	R	R^2	Adj. R^2	ΔF	ΔR^2	R	R^2	Adj. R^2	ΔF	ΔR^2
1. Demographics	.157	.025	.021	6.237	.025 ***	.152	.023	.020	6.685	.023 ***
2. Pre-college measures	.246	.060	.055	18.845	.036 ***	.269	.072	.067	29.825	.049 ***
3. Bridge variable	.258	.067	.061	13.350	.006 ***	.270	.073	.068	2.039	.001
4. Years of college exposure	.262	.069	.062	4.672	.002 *	.270	.073	.067	.247	.000
5. LLP participation	.263	.069	.062	.175	.000	.271	.074	.068	1.494	.001

*$p < .05$, **$p < .01$, ***$p < .001$

Coefficients

As discussed in the previous chapter, beta coefficients significant only to the level of $p < .001$ will be considered meaningful in these regression models. While some predictors demonstrated significance at the $p < .05$, or $p < .01$ levels, the large sample size and strong statistical power necessitate a stringent alpha level. Table 4.9 describes all of the predictors entered into the regression models related to the second research question in years 2008 and 2009.

Contrary to hypothesis, students' participation in a LLP did not significantly predict their scores on the MHC-SF, net of demographic and other pre-college variables.

Of the 15 independent variables in the regression model, sexual orientation and pre-college importance for volunteering were significant at the $p < .001$ level as predictors of students' mental health in both 2008 and 2009 samples. Across both 2008 and 2009 samples, students' identification as Bisexual, Gay, or Lesbian predicted lower scores on the MHC-SF ($\beta = -.087$, $p < .001$, 2008; $\beta = -.085$, $p < .001$, 2009). Furthermore, in both years students' higher ratings of importance for volunteering before college positively predicted their score on the MHC-SF ($\beta = .164$, $p < .001$, 2008; $\beta = .219$, $p < .001$, 2009). Two additional predictors, Asian Pacific Islander and high school grades were significant predictors in the 2008 sample. Students' identification as Asian Pacific Islander ($\beta = -.081$, $p < .001$), as well as their reporting of higher high school grades ($\beta = -.082$, $p < .001$) predicted lower scores on the MHC-SF.

Table 4.9 – Predictors of Students' MHC-SF Score, Research Question Two

		2008 (*N* = 1,991)			**2009 (*N* = 2,271)**		
		Std. β	*t*	Sig.	Std. β	*t*	Sig.
Block 1	*Demographics*						
	Gender	-.023	-1.012		.006	.285	
	Hispanic	-.002	-.101		.014	.568	
	American Indian	.016	.719		-.058	-2.455	*
	Asian Pacific Islander	-.081	-3.640	***	-.073	-3.484	**
	African American	.031	1.359		-.027	-1.278	
	Multi/Bi Racial, Other	-.056	-2.348	*	-.014	-.517	
	Sexual orientation	-.087	-3.983	***	-.085	-4.194	***
	Parents' education and income	.045	1.980	*	.045	2.145	*
Block 2	*Pre-college measures*						
	Pre-college importance: Volunteering	.164	7.224	***	.219	10.444	***
	Pre-college importance: Academic success	.038	1.714		.018	.853	
	Preparation for college courses: Science	.048	2.088	*	.029	1.355	.

	Preparation for college courses: English	-.040	-1.709		-.021	-.987	
Block 3	*Bridge variable*						
	High school grades	-.082	-3.681	***	-.028	-1.313	.
Block 4	*Years of college exposure*						
	Year in college	-.045	-1.911		-.007	-.328	
Block 5	*LLP participation*						
	LLP participation	-.010	-.419		-.025	-1.222	

*$p < .05$, **$p < .01$, ***$p < .001$

Research Question Three

The third research question explored the effect of student characteristics and institutional environments, including LLP participation, on students' mental health. In order to answer this question, a regression model was constructed for each year 2008 and 2009 to examine various predictors of mental health, as presented in Table 3.6. The same procedures used to check the statistical assumption in the previous regression models were used to verify the assumptions of the regression models constructed to answer the third research question. Data evidenced independent, normally distributed, and constantly varied errors, confirming the necessary assumptions for regression in both 2008 and 2009 data sets. This section will first describe the variance in students' MHC-SF scores explained for each block entered into the regression and then the significant predictors of students' mental health from the final model.

Model Summary

Table 4.10 presents a summary of the regression models related to the third research question for years 2008 and 2009. The entire model accounted for 33.5% (R^2 = .335) and 37.6% (R^2 = .376) of the variance in students' mental health in years 2008 and 2009, respectively. Indicating a parsimonious model, the differences between R^2 and

Adjusted R^2 values were small for the 2008 sample (R^2 = .352, Adjusted R^2 = .335) and the 2009 sample (R^2 = .389, Adjusted R^2 = .376). In the 2008 sample, students' demographics were entered first in the model and initially explained 1.8% of the variance in students' MHC-SF score ($\Delta F = 3.718$, $p < .001$). Next, students' pre-college measures were entered into the model and accounted for an additional 4.3% of the variance ($\Delta F = 13.374$, $p < .001$). The bridge variable, high school grades, as well as students' years of college exposure were then entered into the model explaining an additional 0.4% of the variance in students' MHC-SF scores ($\Delta F = 5.141$, $p < .05$) and an additional 0.1% of the variance in students' MHC-SF scores ($\Delta F = 0.946$, $p > .05$), respectively. As expected, the supportive college climates block explained a sizeable portion of variance, contributing an additional 15.4% ($\Delta F = 75.987$, $p < .001$). Next, students' social and academic interactions, as a block, explained an additional 1% of the variance in MHC-SF scores ($\Delta F = 3.758$, $p < .01$). Unexpectedly, the block for students' engagement with college environments, including LLP participation, explained a non-significant additional 0.5% of the variance in students' MHC-SF scores ($\Delta F = 1.940$, $p > .05$). However, the final block representing students' intermediate outcomes explained an additional 11% of the variance in students' MHC-SF scores ($\Delta F = 31.853$, $p < .001$).

In the 2009 sample, students' demographics were entered first in the model and explained an initial 2.1% of the variance in students' MHC-SF score ($\Delta F = 4.988$, $p < .001$). The second block, students' pre-college measures, contributed an additional 4.4% of the variance ($\Delta F = 16.950$, $p < .001$). Next, the bridge variable and students' years of college exposure were entered into the model explaining an additional 0.4% of the variance in students' MHC-SF scores ($\Delta F = 5.872$, $p < .05$) and less than an additional

0.1% of the variance in students' MHC-SF scores ($\Delta F = 0.065$, $p > .05$), respectively. Mirroring results from the 2008 sample, the supportive college climates block explained a sizeable portion of variance, contributing an additional 18% ($\Delta F = 115.71$, $p < .001$). Next, students' social and academic interactions, as a block, explained an additional 0.9% of the variance in MHC-SF scores ($\Delta F = 4.415$, $p < .01$). Unexpectedly, the block for students' engagement with college environments, including LLP participation, explained a non-significant additional 0.2% of the variance in students' MHC-SF scores ($\Delta F = 1.000$, $p > .05$). However, the final block representing students' intermediate outcomes explained an additional 12.4% of the variance in students' MHC-SF scores ($\Delta F = 48.281$, $p < .001$).

Table 4.10 – Model Summary, Research Question Three

	2008 (*N* = 1161)					**2009 (*N* = 1459)**				
				Change Statistics					Change Statistics	
Block/ Description	R	R^2	Adj. R^2	ΔF	ΔR^2	R	R^2	Adj. R^2	ΔF	ΔR^2
1. Demographics	.159	.025	.018	3.718	.025 ***	.164	.027	.021	4.988	.027 ***
2. Pre-college measures	.262	.069	.059	13.374	.043 ***	.265	.070	.063	16.950	.044 ***
3. Bridge variable	.270	.073	.062	5.141	.004 *	.272	.074	.066	5.872	.004 *
4. Years of college exposure	.271	.073	.062	.946	.001	.272	.074	.065	.065	.000
5. Supportive college climates	.477	.228	.216	75.987	.154 ***	.504	.254	.245	115.71	.180 ***
6. Social and academic interactions	.487	.238	.224	3.758	.010 **	.513	.263	.252	4.415	.009 **
7. Individual engagement with college environments	.493	.243	.226	1.940	.005	.515	.265	.252	1.000	.002

8. Intermediate outcomes	.594	.352	.335	31.853	.110 ***	.624	.389	.376	48.281	.124 ***

*$p < .05$, **$p < .01$, ***$p < .001$

Coefficients

As the nature of the third research question is exploratory the alpha level was relaxed compared to the previous research question. Beta coefficients significant to the level of $p < .01$ will be considered meaningful in the regression models associated with the third research question. Contrary to hypotheses, students' participation in a LLP was not a significant predictor of students' score on the MHC-SF in neither the 2008 nor 2009 samples. Table 4.11 describes all of the predictors entered into the regression models related to the third research question.

The following variables predicted students' MHC-SF score with significance at the $p < .01$ level from both 2008 and 2009 samples holding constant all of the other individual characteristic and institutional environment predictors in the model: ease with social transition to college, socially supportive residence hall climate, professional confidence, sense of belonging, and sense of civic engagement. Net of other individual characteristics and institutional environments, students that experienced more ease with social transition to college scored higher on the MCH-SF in both 2008 ($\beta = .134$, $p < .001$) and 2009 ($\beta = .152$, $p < .001$) samples. Students experiencing a more socially supportive residence hall climate also scored more favorably on the MHC-SF in both 2008 ($\beta = .104$, $p < .001$) and 2009 ($\beta = .079$, $p < .01$) samples. Furthermore, students' higher ratings of professional confidence were associated with higher scores on the MHC-SF in both 2008 ($\beta = .168$, $p < .001$) and 2009 ($\beta = .172$, $p < .001$) samples. Students' sense of belonging also positively predicted favorable scores on the MHC-SF

consistently across 2008 (β = .237, $p < .001$) and 2009 (β = .213, $p < .001$) samples. Lastly, students that reported a greater sense of civic engagement also enjoyed higher scores on the MHC-SF in both 2008 (β = .087, $p < .01$) and 2009 (β = .088, $p < .01$) samples.

Additionally, the following variables predicted students' MHC-SF score with significance at the $p < .01$ level from either 2008 or 2009 samples, net of other individual characteristics and institutional environments: sexual orientation (2008), ease with academic transition to college (2009), confidence in academic skills (2009), and emotional consequences of alcohol use (2008). In the 2008 sample, students' lower scores on the MHC-SF were predicted by their identification as Bisexual, Gay, or Lesbian (β = -.084, $p < .01$) as well as their emotional consequences of alcohol use (β = -.080, $p < .01$). Alternatively, in the 2009 sample students' higher scores on the MHC-SF were predicted by their greater ease with academic transition to college (β = .078, $p < .01$) as well as greater confidence in their academic skills (β = .152, $p < .001$).

Table 4.11 – Predictors of Students' MHC-SF Score, Research Question Three

		2008 (*N* = 1,161)			**2009 (*N* = 1,459)**		
		Std. β	*t*	Sig.	Std. β	*t*	Sig.
Block 1	*Demographics*						
	Gender	-.013	-.506		.015	.670	
	Hispanic	.021	.771		.027	1.026	
	American Indian	.030	1.206		-.027	-1.141	
	Asian Pacific Islander	.009	.346		-.015	-.672	
	African American	.025	.955		-.015	-.684	
	Multi/Bi Racial, Other	-.052	-1.877		-.038	-1.295	
	Sexual orientation	-.084	-3.448	**	-.049	-2.305	*
	Parents' education and income	.015	.591		.009	.427	

Block 2	*Pre-college measures*						
	Pre-college importance: Volunteering	.072	2.543	*	.062	2.526	*
	Pre-college importance: Academic success	-.014	-.530		-.048	-2.204	*
	Preparation for college courses: Science	.011	.421		.024	1.064	
	Preparation for college courses: English	-.034	-1.325		-.037	-1.663	
Block 3	*Bridge variable*						
	High school grades	-.013	-.520		.002	.071	
Block 4	*Years of college exposure*						
	Year in college	-.009	-.313		-.021	-.885	
Block 5	*Supportive college climates*						
	Ease with academic transition to college	.043	1.536		.078	3.160	**
	Ease with social transition to college	.134	4.590	***	.152	5.889	***
	Residence hall climate: Socially supportive	.104	3.771	***	.079	3.263	**
Block 6	*Social and academic interactions*						
	Peer interactions: Academic	.058	1.911		.029	1.050	
	Peer interactions: Socio-cultural	-.007	-.226		.001	.020	
	Course-related faculty interactions	-.024	-.876		-.002	-.093	
	Positive peer diversity interactions	-.003	-.093		-.024	-.973	
Block 7	*Individual engagement with college environments*						
	Co-curricular involvement	.037	1.371		-.008	-.331	
	Hands-on learning experiences	-.036	-1.307		-.021	-.826	
	Use co-curricular residence hall resources	.029	1.171		.004	.191	
	LLP participation	-.006	-.207		.022	1.046	

Block 8	*Intermediate outcomes*						
	Professional confidence	.168	6.130	***	.172	7.139	***
	Confidence in college success	.020	.710		.047	1.818	
	Confidence in academic skills	.063	2.303	*	.152	6.251	***
	Emotional consequences of alcohol use	-.080	-3.248	**	-.034	-1.570	
	Sense of belonging	.237	8.311	***	.213	8.259	***
	Sense of civic engagement	.087	2.866	**	.088	3.409	**

*$p < .05$, **$p < .01$, ***$p < .001$

Conclusion

In addition to describing the characteristics of the 2008 and 2009 samples, the fourth chapter presented results pertaining to the three research questions from independent samples t tests, chi-squared analyses, and multiple regression analyses of the 2008 and 2009 samples. The fifth and final chapter will discuss the major findings presented in this chapter and suggest directions for future research.

CHAPTER 5: DISCUSSION

This study examined the effects of living-learning program (LLP) participation and other campus environments on students' mental health, as measured by Keyes' (2002) Mental Health Continuum construct. Based on relevant mental health literature and higher education theories, the researcher investigated the three research questions through tests of mean difference, chi-squared analysis, and the construction of predictive models using multiple regression. Due to the repeat administrations of the National Study of Living Learning Programs (NSLLP), this study presented results from analyses for two years of data: 2008 and 2009. This chapter will summarize the findings in the context of the three research questions, describe the limitations inherent in the design of the study, as well as discuss the findings as they related to implications for practice and directions for future research.

Summary of Findings

Contrary to hypothesizes, the overall findings from this study consistently evidenced no effect of LLP participation on students' score on the Mental Health Continuum – Short Form (MHC-SF). Through progressively complex research questions and statistical analysis procedures, students participating in LLPs did not score more favorably on the MHC-SF, nor did they occupy more favorable MHC diagnostic categories (i.e. "flourishing") compared to students in TRHs (research question one). Furthermore, LLP participation was not a significant predictor of students' MHC-SF scores in any of the regression models associated with research questions two and three. However, numerous other individual characteristics, institutional environments, and intermediate outcomes explained significant portions of the variance in students' MHC-

SF scores. The following sections review the hypotheses and findings related to each research question.

Research Question One

The first research question investigated a difference between LLP participants and students living in TRHs on measures of Keyes' (2002) Mental Health Continuum. As described in chapter three, students participating in LLPs were hypothesized to report more favorable scores on the MHC-SF compared to students living in TRHs. Contrary to hypothesis, in both 2008 and 2009 samples LLP participants did not report significantly different scores on the MHC-SF compared to their peers living in TRHs. Ultimately, findings related to this first research question did not evidence a favorable difference in students' MHC-SF scores for LLP participation.

To further understand the distribution of students along Keyes' Mental Health Continuum between LLP and TRH groups, the researcher also categorized respondents into three groups based on previously established MHC-SF procedures (Keyes et al., 2008): languishing, moderately mentally healthy, and flourishing. Combining all respondents across LLP and TRH groups, 67%, 31%, and 2% of students in 2008 were flourishing, moderately mentally healthy, and languishing, respectively, and 59%, 40%, and 1% of students in 2009 were flourishing, moderately mentally healthy, and languishing, respectively. Such proportions of students in these three categories mirror findings from a study using the MHC-SF with 69%, 29%, and 2% of students at a selective, private East Coast institution in flourishing, moderately mentally healthy, and languishing groups, respectively (Low, 2011). Furthermore, the Healthy Minds Study (Eisenberg & Nelson, n.d.), a multi-institutional study of mental health including the

MHC-SF, evidenced a distribution of students in the three categories similar to the current study, with 52%, 45%, and 3% of students in flourishing, moderately mentally healthy, and languishing categories, respectively (Keyes, Eisenberg, Perry, Dube, Kroenke, & Dhingra, 2012).

However, the distributions of students across flourishing, moderately mentally healthy, and languishing groups observed in this study were not consistent with another study of students at a Canadian university (Peter, Roberts, & Dengate, 2011) nor consistent with Keyes' (2002) findings from a sample of United States citizens between ages 25 and 74. In both Peter et al. and Keyes' (2002) studies, the majority of the sample scored into the moderately mentally healthy category (67% & 65%, respectively) and smaller portions scored into flourishing (24% & 18%, respectively) and languishing categories (9% & 17%, respectively). Furthermore, Keyes predicted that the majority of people in a population would score into the moderately mentally healthy construct, yet the results from the current study replicated other findings from United States college student samples wherein the majority of students score into the flourishing category. The current study builds on evidence to suggest a higher prevalence of flourishing within American university samples, compared to a Canadian university sample (Peter et al., 2011) and a sample of United State citizens between the ages of 25 and 74 (Keyes, 2002).

The prevalence of flourishing within the American college student population as compared to the general United States population could be explained by numerous factors. Revisiting the Keleher and Armstrong's (2005) central determinants of mental health from the VicHealth framework, the increased access to educational and other economic resources, meaningful work, socially supportive environments, and to

community engagement activities that many college students enjoy may explain the greater prevalence of flourishing among college students compared to a broader United States sample. Simply by enrolling in a college or university, students join a larger community that often allows the student to feel a sense of belonging, purpose, and support from the campus community. Furthermore, on contemporary college campuses, students often have countless ways to engage in their campus community, participating in service-learning, student organizations, through the residence halls and LLPs, internships, or on-campus employment. Thus, it may be that college students enjoy more flourishing mental health states compared to the general population.

Such global effects of the college experience on the prevalence of flourishing in a population may overshadow specific effects of LLPs on students' mental health. When comparing students in flourishing, moderately mentally healthy, and languishing groups across LLP and TRH groups, a chi-squared analysis revealed there to be no differences between groups in the 2008 sample. However, in the 2009 sample, there was a significant difference in the proportion of individuals in the three MHC-SF categories across the LLP and TRH groups. In 2009, there were nearly equal numbers of LLP participants in moderately mentally healthy and flourishing groups compared TRH students of whom a larger majority scored into the flourishing group. Such a finding was not consistent with the 2008 sample and was contrary to the hypothesis that participants in LLPs would experience more positive mental health. Such a finding would be consistent with Staub and Finley's (2007) finding that students participating in LLPs experienced more stress and depression compared to their counterparts in TRHs. It may be that some LLPs can have adverse effects on students' mental health by increasing

students' work and stress loads. However, the distribution of LLP participants among the three MHC-SF categories in the 2009 sample may also be explained in the nuances of the LLPs in the sample that year. The distribution in the 2009 sample of LLP participants did not match that of the 2008 sample, and cautious interpretation should be made from such inconclusive findings.

Research Question Two

The second research question investigated the predictive effect of students' participation in a LLP on their mental health. As described in chapter three, students' participation in a LLP was hypothesized to favorably contribute to their scores on the MHC-SF. The regression models associated with the second research question entered the LLP variable in the last block of the model in order to account for students' demographic characteristics, pre-college measures, and years of college exposure. Overall, the model explained only a small amount of the variance in students' MHC-SF scores. In both 2008 and 2009 samples, the last block including LLP participation did not add a significant amount of variance explained in students' MHC-SF scores. Furthermore, with the previously set significance level at $p < .001$ for this research question, the LLP participation coefficient did not significantly predict students' MHC-SF scores. Contrary to hypothesis, the regression models associated with the second research question did not evidence any support for the hypothesis that students' participation in a LLP favorably contributed to their mental health. These findings were consistent with the findings from the analyses associated with the first research question and suggested that students' participation in a LLP did not contribute to their mental health.

While LLP participation was not a significant predictor of students' MHC-SF scores, multiple other predictors in the regression models associated with the second research question significantly contributed to students' mental health. Meeting the criteria for significance at $p < .001$, higher levels of importance for volunteering before college predicted more favorable scores on the MHC-SF across both 2008 and 2009 samples. Also across both 2008 and 2009 samples, students' identification as bisexual, gay, or lesbian predicted lower scores on the MHC-SF net of other predictors in the model. Furthermore, specific to the 2008 sample students' identification as Asian Pacific Islander and higher grades in high school were both associated with lower scores on the MHC-SF. These findings, uniquely significant to the 2008 sample, were peculiar and warrant further investigation. Due to past and present forms of racism and exclusion on college campuses and in United States society, the finding from 2008 that lower mental health scores were associated with identification as Asian Pacific Islander is consistent with Keleher and Armstrong's (2005) central determinant of discrimination in their framework for positive mental health. Yet, this finding is also consistent with mental health research on Asian American populations within the United States, suggesting a variety of disparities in prevalence and use of mental health services (American Psychiatric Association, 2010; Chu & Sue, 2011). While this finding is supported within the relevant literature, the finding must be interpreted with caution given the negligible overall variance explained in the model summary, the lack of replication in the 2009 sample, the lack of replication in the model associated with the third research question, and the diversity within the Asian American diaspora.

Replicated in both 2008 and 2009 samples, the predictive relationships between students' sexual orientation and pre-college importance for volunteering on students' mental health were particularly meaningful. Among these predictors, the finding that students' pre-college importance for volunteering was a strong, positive predictor of students' MHC-SF score in both 2008 and 2009 samples is consistent with Low's (2011) findings that ratings of importance for service and pre-college volunteering predicted students' scores on the MHC-SF. Additionally, in the context of Keleher and Armstrong's (2005) central determinants of mental health, the negative effect of students' identification in a sexual minority may be explained by the freedom from discrimination factor. It might be that students identifying as bisexual, gay, or lesbian do not feel like their sexual orientation is valued and affirmed in their community and they likely experience discrimination and prejudice, thereby negatively affecting their mental health. The predictive relationships of students' sexual orientation and pre-college importance for volunteering on students' mental health were particularly meaningful as they were replicated across the 2008 and 2009 samples and consistent with previous scholarship.

Research Question Three

The third research question explored which individual characteristics and college environments predicted, in addition to LLP participation, students' mental health. As described in chapter three, students' participation in a LLP, as well as fewer consequences of alcohol abuse, more social support, and more engaged learning experiences were hypothesized to contribute to more favorable MHC-SF scores. The regression model associated with the third research question built upon the first four

blocks from the model connected to the second research question, adding three college environment blocks and a final, intermediate outcome block.

Overall the model explained 33.5% and 37.6% of the variance in students' MHC-SF scores in 2008 and 2009 samples, respectively. As the analyses for this third research question were exploratory, the threshold for meaningful significance was relaxed to $p <$ .01. Contrary to hypotheses, the seventh block representing individual students' engagement with college environments and including LLP participation contributed an insignificant amount of additional variance explained within students' MHC-SF score in both 2008 and 2009 samples. However, as expected the fifth block representing supportive college climates significantly contributed additional variance in explaining students' MHC-SF score across both 2008 and 2009 samples. Also as hypothesized, students' emotional consequences of alcohol use significantly predicted lower MHC-SF scores within the 2008 samples, yet this association did not hold in the 2009 sample. This section will discuss the significant findings from the model summary, as well as the individual coefficients that significantly predicted students' MHC-SF scores.

Replicating findings from the models associated with the second research question, the first two blocks representing demographics and pre-college measures in the models associated with the third research questions significantly added to the variance explained in students' MHC-SF score across both 2008 and 2009 samples. Additionally replicating findings from the previous regression models, students' identification as bisexual, gay, or lesbian significantly predicted less favorable scores on the MHC-SF in the 2008 model associated with the third research question, net of other predictors in the model. While the first two blocks explained a significant amount of variance in the

dependent variable that was larger than the insignificant amount of additional variance explained by the third and fourth blocks in the models, the fifth block representing supportive college climates contributed a much larger amount to explain the variance in students' MHC-SF scores. The supportive college climates block added 15.4% and 18% to the variance explained in students' MHC-SF scores for the 2008 and 2009 samples, respectively. Similarly, the sixth block representing social and academic interactions contributed a significant portion of additional variance explained. Yet, at 1% and 0.9% of variance explained by the sixth block in the 2008 and 2009 samples, respectively, the social and academic interactions block was overshadowed by the significant contributions of the last, intermediate outcomes block. The intermediate outcomes block explained an additional 11% and 12.4% of variance in students' MHC-SF scores for the 2008 and 2009 samples, respectively.

Clearly, the supportive college climates and intermediate outcomes blocks stuck out in both 2008 and 2009 samples as contributing major amounts of additional variance explained in students' MHC-SF scores. These findings from the model summary were mirrored by the specific predictors that constituted each block in the models. Within the fifth block representing supportive college climates, students' ease with social transition to college and their perceptions of a socially supportive residence hall climate consistently predicted favorable scores on the MHC-SF across 2008 and 2009 samples, holding other predictors constant. Net of other predictors in the 2009 sample, students' ease with an academic transition to college also significantly predicted more favorable scores on the MHC-SF. Furthermore, within the eighth block representing intermediate outcomes, students' professional confidence, sense of belonging, and sense of civic

engagement consistently predicted favorable scores on the MHC-SF across 2008 and 2009 samples, holding all other predictors constant. Additionally, students' confidence in their academic skills significantly predicted higher scores on the MHC-SF in the 2009 sample, while students' reports of more emotional consequences of alcohol use had a significant negative effect on their MHC-SF score. From the final models, it is apparent that socially supportive climates, such as easy transitions into college and supportive residence halls, as well as and intermediate outcomes, such as sense of belonging, confidence, and a sense of civic engagement were the strongest predictors of students' mental health.

The findings from the regression models associated with the third research question were consistent with scholarship related to students' mental health and college experience.

Social support throughout the college experience has been at the foundation of student affairs theory and practice for decades (e.g. Sanford, 1966), and thus it was not surprising that this study evidenced the effect of socially supportive college climates on mental health outcomes. Such strong findings regarding social support, belonging, and civic engagement also are consistent with the VicHealth framework presented in chapter two (Keleher & Armstrong, 2005). Furthermore, the findings from this study also support Low's (2011) suggestion that college students' flourishing is associated with their perceived importance of understanding social problems, as well as being globally aware and politically involved. Finally, results from this study partially support Swaner's (2005) manuscript that aimed to empirically and theoretically connect the concepts of engaged learning, civic development, and mental health. While the connection between

students' sense of civic development and their score on the MHC-SF was clearly evidenced in this study, there was no evidence that students' participation in engaged learning experiences, such as LLPs, was associated with their mental health. Thus, the results from this study inform the research interests of the Bringing Theory to Practice project, evidencing a connection between mental health and civic development but unable to show the connection of engaged learning experiences to the other two constructs.

Overall Summary of Findings

This study explored the effect of LLP participation on students' mental health through three research questions that employed four analysis techniques across two separate samples of data. Ultimately, there was no evidence to support the hypotheses that participating in a LLP fosters students' mental health. Additionally, there was limited evidence to support the notion that engaged learning experiences promoted flourishing among college students. However, this study revealed key findings regarding predictive factors of students' mental health. Overall, bisexual, gay, or lesbian students may face barriers from discriminatory environments to fostering their mental health, and students' experiencing emotional consequences of alcohol use may also struggle with more general mental health concerns. Yet, many factors of the college environment, such as the ease with which students transition to social and academic college life, the supportive climate within a residence hall, might work alongside intermediate outcomes such as a sense of belonging and civic engagement, as well as self-confidence, to foster mentally healthy individuals.

Limitations

As previously discussed in chapter three, interpreting the findings from this study must be done cautiously due to various limitations. This section will build on limitations presented in Chapter three and suggest five major limitations for consideration: missing data, design limitations, limited scope, collapsing LLP variance, and collapsing student variance

Missing Data

Listwise deletion missing data strategies yielded substantial amounts of missing data in the final analytic samples of this study. Such large amounts of missing data may have biased the sample if the data were not missing completely at random. An examination of missing data presented in the previous chapter presented inconclusive evidence regarding how deletion of missing data may have created biased analytic samples. Table 4.3 described which variables in the 2008 and 2009 data sets contained the largest proportions of missing data, revealing that the variable emotional consequences of alcohol use (ALCEMOT) contained a substantial amount of missing data. It may have been that respondents were less likely to answer these questions due to their personal nature. In such a case, respondents that were comfortable or not threatened by responding to these questions may be a biased subset of all of the respondents presented with the survey. Therefore, the researcher used separate variance t-tests and an ANOVA to further investigate if listwise deletion of ALCEMOT missing data affected the outcome variable of interest, individuals' MHC-SF score. While the separate variance t-tests and ANOVA did not evidence an effect of listwise deletion of ALCEMOT missing data on respondents' MHC-SF score, the significant results from

Little's test prompted the researcher to reject the null hypothesis that data were missing completely at random. Results from Little's test suggested that data were missing not at random, and therefore results should be interpreted with caution because of the possibility that listwise deletion methods resulted in biased analytic samples. Thus, listwise deletion of missing data limited the interpretation of results in the current study.

Design Limitations

As discussed in the Chapter three, a number of design limitations were present in this study. First, while the National Study of Living Learning Programs was designed to be quasi-experimental by asking students to reflect back on college outcomes before college, equivalent quasi pre-test variables were not included for the mental health outcomes. Thus, the study is bounded by limitation of correlational design and results only evidence associations between variables and not casual or directional relationships. Furthermore, the statistical method of multiple regression precludes readers from understanding the indirect relationships between independent and dependent variables. The results evidence multiple significant predictors of students' mental health, yet readers are precluded from inferring relationships between the multiple predictors and the dependent variable. Finally, a factor that likely biased the sample was students' self-selection into LLPs. Student self-selection is a bias that is omnipresent in empirical LLP literature (Inkelas & Soldner, 2011), and therefore must always be considered when interpreting LLP research.

Limited Scope

In addition to this study's limitations due to missing data and the research design, the scope of this study is limited. For example, secondary data analysis was employed to

carry out this study and therefore independent variables in the predictive models must have been included in the original National Study of Living Learning Programs (NSLLP) survey. While the NSLLP included many variables of interest to construct the predictive model of students' mental health, individual characteristics and institutional environments suggested by scholars to affect students' mental health could not be included in the predictive models for this study. Most notably, information regarding students' experiences with faith, spirituality, and religion was not gathered by the NSLLP. Findings from Byron and Miller-Perrin (2009) and Peter, Roberts, and Dengate's (2011) studies suggested that factors regarding faith, spirituality, and religiously-related individual characteristics and college experiences should be included in a predictive model of students' mental health. Lastly, measuring mental health using solely one construct of Keyes' (2002) Mental Health Continuum did not fully represent the complexity with which individuals and college campuses experience mental health. While mental well-being and flourishing are critical to the betterment of individuals and communities, this study is limited to positive mental health and did not explore mental illness.

Collapsing LLP Variance

Also unexplored in this study was how the variance in LLP type affected students' experiences and outcomes. Scholars developed typologies for LLPs, highlighting important distinctions between LLPs related to LLP organization, size, resources, and thematic grouping (Inkelas and Associates, 2004, 2007; Inkelas, Soldner, Longerbeam, & Leonard, 2008). Despite the great variance in definitions and enactment of LLPs throughout American higher education, the nuances of LLP structures and

themes were not taken into account in the present study. The researcher in the current study grouped participants from LLPs with presumably varying resources, sizes, academic-student affairs partnerships, and different themes into the same category for LLP participation. Such a procedure must be noted as a limitation of this study, as grouping LLP participants across different LLPs may have muted or accentuated the LLP effect. In the context of the findings from the current study, this limitation might explain the lack of evidence for an LLP effect on students' mental health. It may be that the LLPs examined in the NSLLP ranged in their effect on students' mental health and that taking the average effect of all of these LLPs together prevented a more nuanced understanding of the LLPs that were particularly effective or ineffective at promoting students' mental health. Thus, the grouping together of varying LLP types in the design of this study should be considered as a limitation.

Collapsing Student Variance

A final, serious limitation of the current study was the way in which the effect of students' participation in a LLP was measured. For all analyses in the current study, the LLP effect was assessed by the binary of if a respondent had participated in a LLP or not. The dichotomous LLP participation variable collapsed the great variance in how students experience college as a member of a LLP or non-member into two discrete categories. Such a measurement of the main independent variable of interest in this study is a fundamental limitation of the researcher's ability to adequately answer the three research questions. It may be that of all the student members of LLPs, some are heavily engaged whereas other students are withdrawn from the LLP and hardly engage in educational activities the LLP offers. Furthermore, it may be that some students living in TRHs have

found avenues for engaged learning experiences on campus that were not captured by the measures in the NSLLP. However, all of the variability in students' experiences in LLPs and TRHs are collapsed into the binary of LLP participant or TRH resident. Thus, the methodology of the current study imprecisely measured the LLP effect that fully engaged LLP participants can access, thereby potentially muting the true effects of LLP participation on students' mental health. Taking into account these limitations, the next section will present various implications for practice.

Implications for Practice

The findings from this study have numerous implications for practice. In the next section implications for practice will be discussed in regard to setting consistent standards among LLPs and promoting mental health within LLPs.

Toward Consistent Standards for LLPs

One of the major findings from this study was the lack of evidence for a LLP effect on students' mental health. Despite theoretical and empirical connections that suggested students' engagement in their learning experiences through participation in a LLP might affect their mental health, mere participation in a LLP in this study did not affect students' mental health. Given the methodological limitations in measuring the LLP effect discussed in the previous section, one interpretation of the lack of evidence for an LLP effect is that there may be a LLP effect that the researcher imprecisely measured and therefore did not discover. The lack of evidence for a LLP effect could be explained by the use of a methodology that limited the variance in how students engaged in the residence hall and combined a variety of LLPs into one LLP category. Perhaps the

LLPs sampled in this study varied so widely that the final models combining all LLPs blended the effective and ineffective programs together, diluting the true LLP effect

This explanation is consistent with related LLP scholarship and prompts higher education administrators to focus on LLP quality control. In the past three decades, LLPs have grown in popularity within American higher education, often referred to as a high-impact practice, particularly at large research universities that struggle to provide undergraduate students engaged learning experiences. However, the literature supporting LLP best practices has lagged tremendously behind the exponential growth of LLPs on college campuses (Inkelas & Soldner, 2011). LLPs are numerous throughout American college and university campuses with widely varying structures, learning components, sizes, and definitions (Inkelas & Associates, 2004, 2007). Despite their popularity on American campuses, there is much inconsistency between LLPs from within and between higher education institutions.

Therefore, findings from this study call scholars and scholar-practitioners to develop common definitions and best practices for LLPs and for campus administrators to use this scholarship to inform the creation and recreation of LLPs on campuses. Such findings were consistent with Inkelas and Soldner (2011) suggestion that administrators and scholars should develop a clearinghouse of practice-based literature supported by empirical research to develop more consistent best practices across the wide variety of LLPs on college and university campuses. In order to work toward such a clearinghouse, it is critical that LLP scholar-practitioners continue to employ quality research and assessment of effective practices and disseminate findings throughout the scholarly community. Furthermore, a set of standards for LLPs are currently being developed as a

part of an update to the Council for the Advancement of Standard's (CAS) Housing and Residential Life standards (Komives personal communication, 4/3/2012). When these standards are released, LLP administrators should conduct assessments of their LLPs to identify areas for growth based on the standards. Through LLP scholar-practitioners' contributions to the LLP best practice literature and widespread use of the LLP CAS standards, the field of LLPs will advance in fulfilling their critical role in American higher education.

Promoting Mental Health in LLPs

As higher education administrators turn to LLPs as structures to advance the teaching and learning missions of universities and provide seamless environments wherein students can develop into well-rounded graduates, LLP administrators must be able to demonstrate the unique experience their program provides students. LLP administrators can demonstrate this by showing how programmatic structures connect to program-specific outcomes. Such a recommendation is consistent with Inkelas and Soldner's (2011) review of the LLP practitioner scholarship, suggesting that administrators must establish clear vision and objectives for their LLP supported by outcomes-driven programs and initiatives. LLP practitioners aiming to promote students' mental health should establish a vision and set objects designed to favorably influence the predictors evidenced in the current study as related to students' flourishing: students' ease with social transition to college, emotional consequences of alcohol use, sense of belonging, socially supportive residence hall, civic engagement, and self-confidence. However, it may be that many LLPs do not explicitly align their objectives and service-delivery methods in ways that support the outcomes evidenced as connected to students'

mental health in this study. Thus, the following sections provide recommendations for how LLP administrators can promote students' mental health via the significant predictors found in the current study.

Foster socially supportive residence halls. Findings from this study echo Inkelas and Soldner's (2011) synthesis from the practitioner scholarship that LLP administrators must facilitate a supportive residence hall climate. While some LLP practitioner-scholars impressed the importance of fostering faculty involvement (Bergman & Brower, 2006) and academic-student affairs partnerships (Inkelas & Brower, 2010), this study evidenced socially supportive residence hall climates as critical to promoting students' mental health. Such a supportive environment in the residence halls might be foundational in creating experiences for students to develop through interactions with others and feel supported both academically and personally. LLP administrators can foster a socially supportive residence hall through a variety of community development programming wherein students could form relationships and develop a sense of connectedness with individuals and the community. Furthermore, multiple items in the socially supportive residence hall scale related to students feeling like personal differences were valued or affirmed in the residence hall. Additionally, the predictive models in the current study evidenced an association between students' identification as gay, lesbian, or bisexual and poorer mental health. Therefore, residence life staff can promote students' mental health by simultaneously fostering a socially supportive and inclusive residence hall climate.

Ease students' transitions to college. Ease with social and academic transition to college substantially predicted students' mental health. This finding underlined the

importance of a socially supportive residence hall. Students enjoying a positive college transition by more easily making new friends, finding study groups, and getting to know others in the residence hall would likely contribute to and benefit from a socially supportive residence hall climate.

Furthermore, LLPs have the potential to positively affect students' mental health by directing efforts to promote social support at the beginning of students' college experience. Through programming during the university welcome time periods, as well as throughout the entire fall semester, LLPs can provide participants common experiences to lay the foundation for supportive relationships and residence hall climates. Knowing that students transition to college throughout the academic year, LLPs can also provide a set of common experiences at the beginning of the spring semester to re-establish connections from past semesters and bring new participants into the community. Likely, participants will desire varying levels of involvement with the LLP and therefore administrators should cater to this range of needs through scaffolding programs with different access points. For example, LLP administrators could engage almost the entire community in common experience programming occasionally, a sizable portion of the community in frequent educational programming, and a concentrated group of student leaders in daily peer leadership and education within the LLP community.

Encourage responsible use of alcohol. Students' reports of emotional consequences of alcohol use were associated with lower mental health in the current study. LLP administrators can mitigate students' emotional consequences from alcohol use by encouraging responsible use of alcohol, thereby promoting mental health. Earlier studies found less alcohol use in LLPs compared to TRHs (Brower, 2008). LLP

administrators can build upon the explicit academic values of an LLP to temper college drinking norms. Alongside educational programming and student development-focused conduct processes, LLP administrators can build a culture of responsible alcohol use through engaging, alcohol-free LLP programming that creates worthwhile experiences for students without alcohol. With common interests among LLP participants, administrators are particularly positioned to create such experiences by connecting programs to the topic of the LLP.

Promote students' sense of belonging, civic engagement, and self-confidence. Campus administrators have reason to promote intermediate outcomes such as sense of belonging, civic engagement, and self-confidence as each of these intermediate outcomes favorably predicted students' mental health in the current study. Additionally, students' sense of belonging has been found to positively affect other positive college outcomes, such as leadership development (Corbin, Fincher, Fink, zhang, Komives, & Dugan, 2011) and persistence (Hausmann, Ye, Schofield, & Woods, 2009). At large research universities, LLPs can brand themselves as a small liberal-arts college within the large university. Students participating in such an intentional, smaller community within a less personal university context may be particularly able to access a strong sense of belonging through their participation in a LLP. Thus, LLP administrators can harness the uniqueness of students' experience in the LLP to form a community identity through common experiences such as core curriculum, common reads, faculty mentorship, marketing and communication, and symbols such as a LLP logo or t-shirt.

Furthermore, LLP administrators can promote students' sense of belonging, civic engagement, and self-confidence through many types of activities that allow students to

connect to one another and their local communities. For example, community service-learning and community-based research projects allow students to engage with their community while simultaneously providing students an opportunity to form supportive relationships with others in the LLP. From such engagement, students are likely to feel more connected to their residence hall and campus communities, resulting in greater sense of belonging on campus and increased importance for civic engagement. Additionally, LLP administrators also can play a key role in boosting students' self-confidence through influencing students' self-efficacy in specific circumstances. For example, Bandura (1995) suggested that individuals' self-efficacy for a certain task could be bolstered through verbal persuasion, as well as vicarious and mastery experiences. LLP practitioners can directly affect residents' self-efficacy through encouragement or by creating supportive experiences wherein students build upon their confidence (i.e. study groups to boost students' academic self-efficacy).

While findings from this study did not support an effect of LLP participation on students' mental health, LLPs are positioned to foster a socially supportive residence hall climate, ease students' transition to college, promote responsible alcohol use, help students feel a sense of belonging and civic engagement, as well as boost students' self-confidence, all substantial predictors of mental health evidenced in this study. Furthermore, empirical research on LLPs suggested that students participating in LLPs experience less consequences of alcohol use (Brower, Golde, and Allen, 2003; Brower, 2008), more sense of civic engagement (Rowan-Kenyon, Soldner, & Inkelas, 2007), more sense of belonging (Johnson, 2007; Johnson et al., 2007), and more ease with transition to college (Inkelas, Daver, Vogt, & Brown-Leonard, 2006). Therefore, while this study did

not find evidence to support a direct, predictive relationship between LLP participation and students' mental health, substantial predictors of students' mental health suggested in this study have been established in previous empirical literature as characteristic of LLPs. However, findings from this study also have implications that extend beyond LLPs and into how campus administrators can respond to the increasing severity and prevalence of mental health on college campuses (Kitzrow, 2009).

Implications for Practice across Campus

While most of the implications suggested in this chapter focus on the role of LLPs in promoting students' mental health, findings from this study also provide key insights into the relationship between college environments and students' mental health. Students' mental health may be a difficult construct for campus administrators, particularly the majority of whom are not trained mental health professionals, to influence directly. However, ease with college transition, socially supportive residence halls, sense of belonging, civic engagement, and self-confidence are accessible intermediate outcomes that practitioners can positively affect. First, the predictive relationships observed in this study were present in both LLP and TRH settings, meaning that the previous suggestions for how LLPs can promote students' mental health can also be enacted in traditional residence halls. Findings from this study add significance to residence life professionals' efforts to build inclusive communities and ease students' transition to college. Surely, easing students' transition to college, fostering a supportive environment, and promoting a sense of belonging in the residence halls benefit both students participating in LLPs and living in TRHs.

Furthermore, campus administrators can promote students' mental health by creating supportive college environments outside of the residence hall. Other pedagogies of engagement, such as non-residential learning communities could promote students' mental health. Such non-residential learning communities were reviewed in Chapter Two with common characteristics of facilitating connections between students' social and academic realms by creating smaller groups of students and faculty (Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Smith, MacGregor, Matthews, & Gabelnick, 2004). Particularly at large research universities, such learning communities might foster students' sense of belonging at the institution by engaging them in a smaller, supportive community within the institution, similar to living in a residence hall or participating in a LLP. First-year interest groups (FIGs), a specific type of non-residential learning community, may be exceptionally designed to promote students' mental health based on the findings in the current study. As suggested by the findings in this study, FIGs, which offer coordinated learning experiences as students transition to college, could foster students' mental health by easing their transition to college and engaging them in a supportive learning community. Students experiencing this initial enclave of support may flourish throughout the college years. Thus, findings from this study have implications for how college administrators can respond to promote students' mental health outside of LLPs. Next, directions for future research will be discussed.

Directions for Future Research

Future research can build upon the findings and limitations of the current study to advance the empirical knowledge surrounding the promotion of college students' mental health, as well as the role of LLPs in promoting college outcomes. First, future

researchers could address some of the limitations of the current study to build upon the findings. One of the limitations was not taking into account LLP types in exploring the effect of LLP participation on students' mental health. Further research could investigate the LLP effect on students' mental health by looking at specific types of LLPs that might be best situated to promote students' mental health. Based on findings from this study, future researchers may consider examining smaller, well-resourced, wellness themed LLPs, with seamless academic-student affairs partnerships. Through a variety of programs, initiatives, and supportive residential environments, these types of LLPs may be best able to foster positive predictors of students' mental health evidenced in this study such as ease with transition to college and sense of belonging. Furthermore, another limitation of the current study was collapsing the variance with which students engaged in LLP and TRH environments into the dichotomous category of LLP participant and TRH resident. Thus, future research should be designed to recognize the variance with which students engage in LLPs and TRHs. For example, future researchers could include measures of students' engagement in their residential environments into the models explaining the LLP effect on students' mental health. Perhaps the LLP effect on students' mental health would surface specifically among heavily engaged students. Future research should build on findings in the current study by exploring the LLP effect on students' mental health taking into account the variation in LLP type and individual engagement with the residential environment.

Additionally, researchers can build upon the current study to progress knowledge around engaged learning and students' mental health. For example, correlational findings from the exploratory third research question set up a more complex, confirmatory model

wherein structural equation modeling could be used to examine direct and indirect effects between students' engaged learning experiences, transition to college, sense of belonging, civic engagement, and self-confidence on their mental health outcomes. Future research could also illuminate questions related to the Bringing Theory to Practice project left unanswered by the current study, such as the lack of connection between engaged learning experiences and students' mental health. Additionally, a further examination of LLPs using qualitative methodology would provide insight into the ways in which more socially supportive residence hall climates are established and how the residence hall can positively affect the ease with which students transition to college.

Future research could also advance findings from this study by taking into account methodological considerations related to missing data in the NSLLP samples. The current study explored the possibility of bias in the NSLLP samples as a result of deleting more than 40% of cases due to missing data in the emotional consequences of alcohol use variable. While this exploration did not evidence bias in the final analytic sample, Little's MCAR test suggested that overall data were not missing at random. The findings from this study could be further supported through future research with the same data sets that would employ more advanced missing data techniques, such as describing patterns of missing data or replacing missing data using multiple imputation methods. Taking into account such methodological considerations would allow for more accurate interpretations of the results from this and future studies.

Lastly, additional research on students' mental health can deepen findings from this study related to the college experience and students' mental health. The Healthy Minds Study (Eisenberg & Nelson, n.d.) is a multi-institutional study of college and

university students' mental health. This recent study includes more robust measures of students' mental health and more participating institutions compared to the 2008 and 2009 National Study of Living Learning Programs' mental health module. Therefore, future research using the Healthy Minds Study could expand upon this study's findings to get a wider sample of higher education institutions and explore aspects of students' mental health in addition to Keyes' (2002) Mental Health Continuum. Such studies could explore the extent to which the predictive relationships evidenced in this study are replicated when examining other mental health constructs, such as depression and anxiety.

Conclusion

In addition to presenting various limitations of the current study, this chapter summarized and discussed findings from the current study as they relate to implications for practice and directions for future research regarding LLPs, engaged learning, and college students' mental health. While this study did not evidence an effect of LLP participation on students' mental health, the final predictive models constructed in this study illuminated numerous predictors of students' mental health and accounted for a total of 33.5% and 37.6% of the variance in students' mental health for the 2008 and 2009 samples, respectively. This study addressed a lack of research connecting college environments and engaged learning practices, such as LLPs, to students' mental health outcomes. Further research examining the effect of LLPs on students' mental health should take into account the nuances in LLP types and practices. This study impresses the importance of intermediate outcomes such as socially supportive climates, ease with transitioning to college, sense of belonging, civic engagement, and self-confidence in

promoting flourishing in college. While LLPs may be particularly well-positioned to affect these intermediate outcomes associated with student flourishing, it is important for all members of the campus community to promote college students' mental health.

APPENDIX A: NSLLP Construct Scales used in Analysis

		Variable Name	2008 Cronbach Alpha	2009 Cronbach Alpha
PEER INTERACTIONS				
ACADPEER	*Discussed academic and career issues with peers*		.803	.800
	Shared concerns about classes and assignments	q40d		
	Discussed something learned in class	q40a		
	Talked about current news events	q40c		
SOCPEER	*Discussed socio-cultural issues with peers*		.881	.887
	Discussions with students whose political opinions very different	q40i		
	Held discussions with those with different religious beliefs	q40g		
	Discussed social issues such as peace, human rights, justice	q40f		
	Discussed views about multiculturalism and diversity	q40h		
	Discussions with students whose personal values different	q40e		
FACULTY INTERACTIONS				
CRSEFAC	*Course-related faculty interaction*		.724	.762
	Visited informally with instructor before/after class	q41b		
	Made appt to meet instructor in his/her office	q41c		
	Asked instructor for info related to course	q41a		
	Worked on research project with instructor	q41h		
DIVERSITY INTERACTIONS				
POSDIVIN	*Positive peer diversity interactions*		.929	.928
	Intellectual discussions outside class	q54d		
	Sharing personal feelings & problems	q54e		
	Sharing meal together	q54b		
	Attending social events together	q54c		
	Studying together	q54a		
	Discussing race relations outside class	q54f		

Appendix A: NSLLP Construct Scales used in Analysis

		Variable Name	2008 Cronbach Alpha	2009 Cronbach Alpha
RESIDENCE HALL RESOURCES				
USERHALL	*Use co-curricular residence hall resources*		.843	.836
	Career workshops	q44g		
	Community service projects	q44h		
	Peer study groups	q44f		
	Peer counselors	q44c		
RESIDENCE HALL CLIMATE				
RHSOC	*Socially supportive residence hall climate*		.869	.887
	Help and support one another	q45b		
	Appreciate different religions	q45e		
	Intellectually stimulating environment	q45c		
	Appreciate different races/ethnicities	q45a		
	Would recommend this residence hall	q45d		
	Different students interact with each other	q45f		
	Peer academic support	q45g		
TRANSITION TO COLLEGE OUTCOMES				
ACADTRAN	*Ease with academic transition to college*		.773	.757
	Ease with communicating with instructors outside class	q31c		
	Ease with seeking academic or personal help when needed	q31a		
	Ease with forming study groups	q31d		
SOCTRAN	*Ease with social transition to college*		.650	.690
	Ease with getting to know other people in residence hall	q31f		
	Ease with making new friends	q31b		
	Ease with getting along with roommate(s)	q31e		
ALCOHOL-RELATED EXPERIENCES				
ALCEMOT	*Emotional consequences of alcohol use*		.723	.721
	Regretted losing control of my senses	q61k		
	Have been ashamed of my behavior	q61i		
	Have fallen behind in my studies	q61j		
SELF-CONFIDENCE				
PROFCON	*Professional confidence*		.805	.826
	Achieve success in career	q34k		
	Get a good job	q34j		
	Combine professional career and personal life	q34l		

Appendix A: NSLLP Construct Scales used in Analysis

		Variable Name	2008 Cronbach Alpha	2009 Cronbach Alpha
COLLEGECON	*Confidence in college success*		.778	.802
	Do well academically	q34f		
	Make at least a B average	q34c		
	Complete your degree	q34h		
	Complete your degree on time	q34i		
	Be admitted to graduate school	q34g		
	Graduate with honors	q34b		
	Fail one or more courses (reverse coded)	q34a		
SKILLCON	*Confidence in academic skills*		.742	.756
	Writing ability	q52a		
	Expressing ideas orally	q52h		
	Reading skills	q52j		
	Research ability	q52d		
	Library skills	q52g		
SENSE OF BELONGING				
SENSBEL	*Overall sense of belonging*		.872	.888
	I feel a sense of belonging	q57d		
	I feel a member of the campus community	q57c		
	I would choose the same college over again	q57b		
	I feel comfortable on campus	q57a		
CIVIC ENGAGEMENT				
CIVENGAG	*Sense of civic engagement*		.883	.893
	Work with others to make community better place	q56d		
	Volunteer time to community	q56b		
	Believe my work has greater purpose for larger community	q56c		
	Important that I play active role in community	q56a		

APPENDIX B: University of Maryland's Institutional Review Board Approval

UNIVERSITY OF MARYLAND
INSTITUTIONAL REVIEW BOARD

Initial Application Approval

DO NOT REPLY TO THIS EMAIL ADDRESS AS IT IS UNMONITORED

To: Principal Investigator, Mary L. Hummel, Counseling and Personnel Services
Student, John E. Fink, Counseling and Personnel Services

From: James M. Hagberg
IRB Co-Chair
University of Maryland College Park

Re: IRB Protocol: 12-0061 - Effect of Living-Learning Program Participation on College Student Mental Health

Approval Date: February 08, 2012

Expiration Date: February 08, 2015

Application: Initial

Review Path: Exempt

The University of Maryland, College Park Institutional Review Board (IRB) Office approved your Initial IRB Application. This transaction was approved in accordance with the University's IRB policies and procedures and 45 CFR 46, the Federal Policy for the Protection of Human Subjects. Please reference the above-cited IRB Protocol number in any future communications with our office regarding this research.

Recruitment/Consent: For research requiring written informed consent, the IRB-approved and stamped informed consent document will be sent via mail. The IRB approval expiration date has been stamped on the informed consent document. Please note that research participants must sign a stamped version of the informed consent form and receive a copy.

Continuing Review: If you intend to continue to collect data from human subjects or to analyze private, identifiable data collected from human subjects, beyond the expiration date of this protocol, you must submit a Renewal Application to the IRB Office 45 days prior to the expiration date. If IRB Approval of your protocol expires, all human subject research activities including enrollment of new subjects, data collection and analysis of identifiable, private information must cease until the Renewal Application is approved. If work on the human subject portion of your project is complete and you wish to close the protocol, please submit a Closure Report to irb@umd.edu.

Modifications: Any changes to the approved protocol must be approved by the IRB before the change is implemented, except when a change is necessary to eliminate an apparent immediate hazard to the subjects. If you would like to modify an approved protocol, please submit an Addendum request to the IRB Office.

Unanticipated Problems Involving Risks: You must promptly report any unanticipated problems involving risks to subjects or others to the IRB Manager at 301-405-0678 or jsmith@umresearch.umd.edu

Additional Information: Please contact the IRB Office at 301-405-4212 if you have any IRB-related questions or concerns. Email: irb@umd.edu

The UMCP IRB is organized and operated according to guidelines of the United States Office for Human Research Protections and the United States Code of Federal Regulations and operates under Federal Wide Assurance No. FWA00005856.

1204 Marie Mount Hall
College Park, MD 20742-5125
TEL 301.405.4212
FAX 301.314.1475
irb@umd.edu

APPENDIX C: Correlation Matrix of Variables

See next 20 pages.

2008 Correlation Matrix of Variables

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2008 Correlation Matrix of Variables

	Gender	Hispanic	American Indian	Asian Pacific Islander	African American	Multi/Bi Racial, Other	Sexual orientation
Gender	1						
Hispanic	.018	1					
American Indian	-.041	.148	1				
Asian Pacific Islander	.011	-.026	-.004	1			
African American	.008	-.042	-.009	-.014	1		
Multi/Bi Racial, Other	-.011	.443	-.009	-.042	-.092	1	
Sexual orientation	-.024	.033	-.006	.009	.027	.066	1
Parents' education and income	-.072	-.082	-.039	-.101	-.213	-.097	-.075
Pre-college importance: Volunteering	.223	.067	.045	.022	.038	.038	.011
Pre-college importance: Academic success	.130	.001	.015	-.012	.066	-.010	-.019
Preparation for college courses: Science	.127	-.009	-.021	-.022	-.014	.021	-.017
Preparation for college courses: English	.052	-.021	-.007	-.031	-.048	.000	.012
High school grades	-.125	.051	.006	-.028	.022	.036	.008
Year in college	-.040	.017	-.015	.089	.145	.058	.019
Ease with academic transition to college	.003	-.029	.035	-.002	-.008	-.071	.003
Ease with social transition to college	-.060	.000	.008	-.025	-.001	-.063	-.021
Residence hall climate: Socially supportive	-.009	.005	.002	-.048	-.067	.007	-.018
Peer interactions: Academic	.045	-.039	.031	-.010	-.091	.005	.005
Peer interactions: Socio-cultural	-.034	-.018	-.003	-.002	-.050	.062	.104
Course-related faculty interactions	-.048	-.029	.029	.076	.005	-.007	.111
Positive peer diversity interactions	.003	.136	.020	.106	.149	.162	.035
Co-curricular involvement	-.070	.021	-.012	.023	-.005	.005	.082

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2008 Correlation Matrix of Variables

	Gender	Hispanic	American Indian	Asian Pacific Islander	African American	Multi/Bi Racial, Other	Sexual orientation
Hands-on learning experiences	-.074	-.007	-.005	.053	.080	.026	.071
Use co-curricular residence hall resources	.022	-.009	.077	.041	.000	-.047	-.035
LLP participation	.029	.029	.034	-.007	.108	.016	-.022
Professional confidence	.046	-.110	.023	-.064	.052	-.088	-.053
Confidence in college success	.065	-.046	.002	-.003	.034	-.074	-.030
Confidence in academic skills	-.008	-.051	.007	-.056	.109	.000	.028
Emotional consequences of alcohol use	.011	.044	-.018	-.032	-.057	.008	.062
Sense of belonging	-.033	-.038	-.048	-.064	-.060	-.054	-.022
Sense of civic engagement	.089	.007	.017	.006	.056	.007	.012
Dependent variable: MHC-SF	.007	-.035	.038	-.028	.019	-.093	-.112

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2008 Correlation Matrix of Variables

	Parents' education and income	Pre-college importance: Volunteering	Pre-college importance: Academic success	Preparation for college courses: Science	Preparation for college courses: English	High school grades	Year in college
Gender							
Hispanic							
American Indian							
Asian Pacific Islander							
African American							
Multi/Bi Racial, Other							
Sexual orientation							
Parents' education and income	1						
Pre-college importance: Volunteering	-.018	1					
Pre-college importance: Academic success	-.038	.182	1				
Preparation for college courses: Science	-.004	.041	.000	1			
Preparation for college courses: English	.027	.030	-.051	.334	1		
High school grades	.001	-.116	-.166	-.003	-.017	1	
Year in college	-.041	-.061	-.071	.000	-.054	-.026	1
Ease with academic transition to college	.080	.198	.119	.019	.052	-.071	-.138
Ease with social transition to college	.080	.101	.040	.065	.094	-.019	-.114
Residence hall climate: Socially supportive	.065	.107	.063	.017	.004	-.015	-.065
Peer interactions: Academic	.059	.076	.066	.015	.028	-.088	-.007
Peer interactions: Socio-cultural	.008	.105	-.049	-.034	-.022	.004	.049
Course-related faculty interactions	-.029	.145	.009	-.033	.034	.002	.132
Positive peer diversity interactions	-.118	.138	.041	-.023	-.030	.049	.081
Co-curricular involvement	.110	.221	-.067	-.022	-.004	-.043	.011

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2008 Correlation Matrix of Variables

	Parents' education and income	Pre-college importance: Volunteering	Pre-college importance: Academic success	Preparation for college courses: Science	Preparation for college courses: English	High school grades	Year in college
Hands-on learning experiences	.022	.154	-.021	-.038	-.009	-.045	.189
Use co-curricular residence hall resources	.064	.023	-.025	.063	.029	-.036	.025
LLP participation	-.091	-.090	-.022	-.038	-.056	.045	.362
Professional confidence	.055	.073	.157	.038	.017	-.082	-.059
Confidence in college success	.103	.160	.238	.049	.020	-.292	-.084
Confidence in academic skills	-.010	.087	.082	.009	-.016	-.066	.178
Emotional consequences of alcohol use	.076	-.008	-.006	-.017	.003	.073	-.059
Sense of belonging	.054	.098	.087	.036	.042	-.075	-.034
Sense of civic engagement	-.012	.442	.137	.040	.035	-.150	.077
Dependent variable: MHC-SF	.065	.189	.094	.037	.003	-.092	-.047

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2008 Correlation Matrix of Variables

	Ease with academic transition to college	Ease with social transition to college	Residence hall climate: Socially supportive	Peer interactions: Academic	Peer interactions: Socio-cultural	Course-related faculty interactions	Positive peer diversity interactions
Gender							
Hispanic							
American Indian							
Asian Pacific Islander							
African American							
Multi/Bi Racial, Other							
Sexual orientation							
Parents' education and income							
Pre-college importance: Volunteering							
Pre-college importance: Academic success							
Preparation for college courses: Science							
Preparation for college courses: English							
High school grades							
Year in college							
Ease with academic transition to college	1						
Ease with social transition to college	.407	1					
Residence hall climate: Socially supportive	.227	.360	1				
Peer interactions: Academic	.126	.128	.164	1			
Peer interactions: Socio-cultural	.090	.108	.123	.566	1		
Course-related faculty interactions	.150	.040	.042	.202	.298	1	
Positive peer diversity interactions	.043	.146	.163	.200	.418	.219	1
Co-curricular involvement	.060	.114	.053	.037	.144	.277	.155

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2008 Correlation Matrix of Variables

	Ease with academic transition to college	Ease with social transition to college	Residence hall climate: Socially supportive	Peer interactions: Academic	Peer interactions: Socio-cultural	Course-related faculty interactions	Positive peer diversity interactions
Hands-on learning experiences	.075	.071	.057	.120	.191	.338	.240
Use co-curricular residence hall resources	.042	.021	-.073	.034	.016	.052	-.022
LLP participation	-.144	-.100	-.155	-.085	-.054	-.025	.064
Professional confidence	.243	.219	.146	.115	.007	.065	-.014
Confidence in college success	.271	.139	.074	.175	.068	.103	.018
Confidence in academic skills	.219	.150	.086	.222	.246	.203	.195
Emotional consequences of alcohol use	-.042	.025	-.035	.018	.033	.017	-.010
Sense of belonging	.253	.402	.363	.171	.056	.078	.107
Sense of civic engagement	.164	.181	.201	.178	.189	.274	.226
Dependent variable: MHC-SF	.282	.368	.314	.181	.088	.067	.095

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2008 Correlation Matrix of Variables

	Co-curricular involvement	Hands-on learning experiences	Use co-curricular residence hall resources	LLP participation	Professional confidence	Confidence in college success	Confidence in academic skills
Gender							
Hispanic							
American Indian							
Asian Pacific Islander							
African American							
Multi/Bi Racial, Other							
Sexual orientation							
Parents' education and income							
Pre-college importance: Volunteering							
Pre-college importance: Academic success							
Preparation for college courses: Science							
Preparation for college courses: English							
High school grades							
Year in college							
Ease with academic transition to college							
Ease with social transition to college							
Residence hall climate: Socially supportive							
Peer interactions: Academic							
Peer interactions: Socio-cultural							
Course-related faculty interactions							
Positive peer diversity interactions							
Co-curricular involvement	1						

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2008 Correlation Matrix of Variables

	Co-curricular involvement	Hands-on learning experiences	Use co-curricular residence hall resources	LLP participation	Professional confidence	Confidence in college success	Confidence in academic skills
Hands-on learning experiences	.304	1					
Use co-curricular residence hall resources	.035	.004	1				
LLP participation	-.045	.043	.036	1			
Professional confidence	-.005	.086	.050	-.015	1		
Confidence in college success	.033	.104	.020	-.071	.356	1	
Confidence in academic skills	.083	.175	.055	.074	.187	.223	1
Emotional consequences of alcohol use	.056	-.043	.003	.000	-.106	-.064	-.114
Sense of belonging	.125	.073	.024	-.089	.269	.161	.149
Sense of civic engagement	.300	.292	.087	.000	.213	.216	.213
Dependent variable: MHC-SF	.114	.071	.063	-.073	.349	.220	.208

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2008 Correlation Matrix of Variables

	Emotional consequences of alcohol use	Sense of belonging	Sense of civic engagement	Dependent variable: MHC-SF
Gender				
Hispanic				
American Indian				
Asian Pacific Islander				
African American				
Multi/Bi Racial, Other				
Sexual orientation				
Parents' education and income				
Pre-college importance: Volunteering				
Pre-college importance: Academic success				
Preparation for college courses: Science				
Preparation for college courses: English				
High school grades				
Year in college				
Ease with academic transition to college				
Ease with social transition to college				
Residence hall climate: Socially supportive				
Peer interactions: Academic				
Peer interactions: Socio-cultural				
Course-related faculty interactions				
Positive peer diversity interactions				
Co-curricular involvement				

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2008 Correlation Matrix of Variables

	Emotional consequences of alcohol use	Sense of belonging	Sense of civic engagement	Dependent variable: MHC-SF
Hands-on learning experiences				
Use co-curricular residence hall resources				
LLP participation				
Professional confidence				
Confidence in college success				
Confidence in academic skills				
Emotional consequences of alcohol use	1			
Sense of belonging	-.008	1		
Sense of civic engagement	-.057	.270	1	
Dependent variable: MHC-SF	-.119	.440	.296	1

2009 Correlation Matrix of Variables

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2009 Correlation Matrix of Variables

	Gender	Hispanic	American Indian	Asian Pacific Islander	African American	Multi/Bi Racial, Other	Sexual orientation
Gender	1						
Hispanic	-.060	1					
American Indian	-.023	.083	1				
Asian Pacific Islander	-.050	-.053	.000	1			
African American	.040	-.048	-.042	-.028	1		
Multi/Bi Racial, Other	-.052	.552	.428	.153	-.001	1	
Sexual orientation	-.045	-.001	-.005	-.027	-.001	-.028	1
Parents' education and income	-.029	-.165	-.026	.001	-.120	-.118	-.057
Pre-college importance: Volunteering	.199	.011	.023	.028	.030	-.005	-.008
Pre-college importance: Academic success	.091	.010	-.048	-.055	.025	.006	-.010
Preparation for college courses: Science	.040	-.023	.015	.039	.027	-.007	.003
Preparation for college courses: English	-.033	.002	.028	.027	-.042	.010	.020
High school grades	-.165	.021	-.021	.027	.099	.017	.037
Year in college	-.082	-.011	.016	.045	-.015	.000	.042
Ease with academic transition to college	.022	-.035	-.055	.000	.027	-.022	-.045
Ease with social transition to college	-.052	-.025	-.038	-.031	.020	.016	-.042
Residence hall climate: Socially supportive	.009	-.022	-.028	-.004	.000	-.029	-.052
Peer interactions: Academic	.043	-.012	-.033	-.107	-.029	-.037	.003
Peer interactions: Socio-cultural	-.006	-.018	.009	-.063	.013	.008	.087
Course-related faculty interactions	-.059	.068	-.017	-.004	.074	.043	.065
Positive peer diversity interactions	.014	.133	.048	.104	.112	.125	.078
Co-curricular involvement	-.047	.046	.008	.060	.049	-.010	.029

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2009 Correlation Matrix of Variables

	Gender	Hispanic	American Indian	Asian Pacific Islander	African American	Multi/Bi Racial, Other	Sexual orientation
Hands-on learning experiences	-.032	.000	.010	.041	.025	-.005	.012
Use co-curricular residence hall resources	.014	.007	.010	-.003	.030	-.020	.066
LLP participation	.041	.014	-.034	-.017	-.080	.002	-.036
Professional confidence	.067	-.004	-.047	-.062	.007	-.018	-.068
Confidence in college success	.142	-.013	-.007	-.058	-.005	-.011	-.032
Confidence in academic skills	-.009	.003	-.045	-.072	.009	-.015	-.020
Emotional consequences of alcohol use	.019	-.038	-.034	-.017	-.004	-.031	.019
Sense of belonging	.048	-.006	-.072	-.104	-.029	-.069	-.030
Sense of civic engagement	.078	-.007	-.016	.022	-.007	-.035	-.020
Dependent variable: MHC-SF	.060	-.010	-.084	-.074	-.017	-.066	-.092

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2009 Correlation Matrix of Variables

	Parents' education and income	Pre-college importance: Volunteering	Pre-college importance: Academic success	Preparation for college courses: Science	Preparation for college courses: English	High school grades	Year in college
Gender							
Hispanic							
American Indian							
Asian Pacific Islander							
African American							
Multi/Bi Racial, Other							
Sexual orientation							
Parents' education and income	1						
Pre-college importance: Volunteering	.000	1					
Pre-college importance: Academic success	.002	.077	1				
Preparation for college courses: Science	-.013	.045	.034	1			
Preparation for college courses: English	.010	.022	-.013	.344	1		
High school grades	-.093	-.105	-.184	-.018	-.021	1	
Year in college	-.024	-.044	-.017	-.027	-.051	-.099	1
Ease with academic transition to college	.022	.138	.078	.015	-.016	-.086	-.042
Ease with social transition to college	.030	.130	.071	.040	-.002	.015	-.091
Residence hall climate: Socially supportive	.020	.109	.007	.018	.007	-.099	-.025
Peer interactions: Academic	.045	.146	.160	.034	-.025	-.113	.090
Peer interactions: Socio-cultural	.051	.153	.035	-.001	-.053	-.029	.106
Course-related faculty interactions	-.079	.145	.001	-.041	-.041	-.011	.211
Positive peer diversity interactions	-.055	.171	.018	.033	-.038	.001	.049
Co-curricular involvement	.074	.190	-.072	-.054	-.055	-.042	.083

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2009 Correlation Matrix of Variables

	Parents' education and income	Pre-college importance: Volunteering	Pre-college importance: Academic success	Preparation for college courses: Science	Preparation for college courses: English	High school grades	Year in college
Hands-on learning experiences	.031	.179	-.008	.033	-.040	-.096	.281
Use co-curricular residence hall resources	-.045	.074	.021	.072	.024	-.045	.113
LLP participation	.018	.015	-.021	-.003	.026	.066	.111
Professional confidence	.092	.096	.142	.010	.071	-.126	-.034
Confidence in college success	.108	.121	.207	.016	.021	-.309	-.032
Confidence in academic skills	.032	.084	.120	-.028	-.015	-.098	.223
Emotional consequences of alcohol use	.007	.008	-.053	-.031	-.016	.154	-.109
Sense of belonging	.006	.152	.118	.005	-.004	-.095	-.032
Sense of civic engagement	.002	.466	.117	.022	-.012	-.128	.075
Dependent variable: MHC-SF	.050	.204	.073	.023	-.018	-.100	-.017

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2009 Correlation Matrix of Variables

	Ease with academic transition to college	Ease with social transition to college	Residence hall climate: Socially supportive	Peer interactions: Academic	Peer interactions: Socio-cultural	Course-related faculty interactions	Positive peer diversity interactions
Gender							
Hispanic							
American Indian							
Asian Pacific Islander							
African American							
Multi/Bi Racial, Other							
Sexual orientation							
Parents' education and income							
Pre-college importance: Volunteering							
Pre-college importance: Academic success							
Preparation for college courses: Science							
Preparation for college courses: English							
High school grades							
Year in college							
Ease with academic transition to college	1						
Ease with social transition to college	.423	1					
Residence hall climate: Socially supportive	.266	.386	1				
Peer interactions: Academic	.151	.154	.162	1			
Peer interactions: Socio-cultural	.097	.093	.130	.581	1		
Course-related faculty interactions	.225	.092	.117	.276	.276	1	
Positive peer diversity interactions	.078	.139	.175	.265	.400	.254	1
Co-curricular involvement	.077	.060	.059	.068	.156	.250	.132

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2009 Correlation Matrix of Variables

	Ease with academic transition to college	Ease with social transition to college	Residence hall climate: Socially supportive	Peer interactions: Academic	Peer interactions: Socio-cultural	Course-related faculty interactions	Positive peer diversity interactions
Hands-on learning experiences	.191	.095	.093	.224	.235	.424	.210
Use co-curricular residence hall resources	-.006	-.010	.063	.077	.074	.098	.060
LLP participation	-.079	-.039	-.081	-.043	-.062	-.032	-.044
Professional confidence	.249	.217	.132	.150	.041	.068	.043
Confidence in college success	.244	.088	.144	.250	.136	.101	.119
Confidence in academic skills	.225	.150	.122	.283	.286	.258	.186
Emotional consequences of alcohol use	-.101	-.041	-.076	-.039	.026	-.050	-.011
Sense of belonging	.286	.423	.433	.211	.088	.134	.119
Sense of civic engagement	.123	.184	.178	.217	.213	.228	.213
Dependent variable: MHC-SF	.332	.394	.324	.216	.129	.136	.105

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2009 Correlation Matrix of Variables

	Co-curricular involvement	Hands-on learning experiences	Use co-curricular residence hall resources	LLP participation	Professional confidence	Confidence in college success	Confidence in academic skills
Gender							
Hispanic							
American Indian							
Asian Pacific Islander							
African American							
Multi/Bi Racial, Other							
Sexual orientation							
Parents' education and income							
Pre-college importance: Volunteering							
Pre-college importance: Academic success							
Preparation for college courses: Science							
Preparation for college courses: English							
High school grades							
Year in college							
Ease with academic transition to college							
Ease with social transition to college							
Residence hall climate: Socially supportive							
Peer interactions: Academic							
Peer interactions: Socio-cultural							
Course-related faculty interactions							
Positive peer diversity interactions							
Co-curricular involvement	1						

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2009 Correlation Matrix of Variables

	Co-curricular involvement	Hands-on learning experiences	Use co-curricular residence hall resources	LLP participation	Professional confidence	Confidence in college success	Confidence in academic skills
Hands-on learning experiences	.294	1					
Use co-curricular residence hall resources	.026	.142	1				
LLP participation	.000	-.016	.050	1			
Professional confidence	-.009	.121	.048	-.048	1		
Confidence in college success	.062	.157	.059	-.082	.424	1	
Confidence in academic skills	.090	.253	.053	-.019	.252	.318	1
Emotional consequences of alcohol use	.070	-.088	-.065	.042	-.109	-.174	-.130
Sense of belonging	.102	.163	.038	.002	.254	.239	.211
Sense of civic engagement	.246	.301	.105	-.023	.188	.237	.244
Dependent variable: MHC-SF	.073	.151	.043	-.010	.372	.292	.327

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2009 Correlation Matrix of Variables

	Emotional consequences of alcohol use	Sense of belonging	Sense of civic engagement	Dependent variable: MHC-SF
Gender				
Hispanic				
American Indian				
Asian Pacific Islander				
African American				
Multi/Bi Racial, Other				
Sexual orientation				
Parents' education and income				
Pre-college importance: Volunteering				
Pre-college importance: Academic success				
Preparation for college courses: Science				
Preparation for college courses: English				
High school grades				
Year in college				
Ease with academic transition to college				
Ease with social transition to college				
Residence hall climate: Socially supportive				
Peer interactions: Academic				
Peer interactions: Socio-cultural				
Course-related faculty interactions				
Positive peer diversity interactions				
Co-curricular involvement				

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2009 Correlation Matrix of Variables

	Emotional consequences of alcohol use	Sense of belonging	Sense of civic engagement	Dependent variable: MHC-SF
Hands-on learning experiences				
Use co-curricular residence hall resources				
LLP participation				
Professional confidence				
Confidence in college success				
Confidence in academic skills				
Emotional consequences of alcohol use	1			
Sense of belonging	-.047	1		
Sense of civic engagement	-.055	.302	1	
Dependent variable: MHC-SF	-.108	.461	.305	1

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