

Predicting and assessing college students' mental health

by

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TABLE OF CONTENTS

ABSTRACT.....	iv
CHAPTER 1. INTRODUCTION	1
Dual Continuum of Mental Health	1
Optimal Human Potential	2
Outline of Dissertation.....	4
References.....	5
CHAPTER 2. PERCEPTIONS OF CAMPUS CLIMATES FOR CIVIC LEARNING AS PREDICTORS OF COLLEGE STUDENTS' MENTAL HEALTH	8
Abstract.....	8
Civic Engagement and Mental Health.....	10
Mental Health, Development, and Education	10
Campus Climate and Civic Learning	11
Mental Health in College	12
Responsibility, Engagement, and Mental Health.....	13
Methods	13
Sample.....	13
Outcome Variable	14
Predictor Variables.....	15
Analysis	15
Results.....	17
Limitations	18
Discussion.....	19
Conclusion	21
References.....	21
CHAPTER 3. INFLUENCES OF CAMPUS CLIMATES THAT SUPPORT CIVIC LEARNING ON MENTAL HEALTH BY RACE AND ETHNICITY	33
Abstract.....	33
Significance	35
Civic Learning and Mental Health.....	37
Learning, Development, and Mental Health.....	37
Campus Climates that Support Civic Learning	39
College Students' Mental Health	40
Data Collection	42
Data Sources	42
Sample.....	42

Data Analysis	43
Predictor Variables.....	44
Outcome Variable	44
Regression Models and Interactions	45
Results.....	46
Regression Models and Interactions	46
Significant Interactions and Simple Effects.....	47
Discussion.....	50
Consistency Across Groups	51
Contributing to Community and Perspective Taking	51
Ethical and Moral Reasoning.....	52
Ethical and Moral Discernment	53
Limitations	54
Conclusion	55
References.....	56
CHAPTER 4. ASSESSING MENTAL HEALTH: RELIABILITY, VALIDITY, AND FACTOR STRUCTURE OF THE MENTAL HEALTH CONTINUUM-SHORT FORM....	66
Abstract.....	66
Purpose.....	68
Contemporary Approaches to Mental Health	69
Theoretical and Conceptual Frameworks for Mental Health.....	69
Operationalizing Mental Health using the MHC-SF	70
Reliability.....	71
Validity	72
Data Collection	74
Data Analysis.....	75
Bi-Factor Analysis	76
Results.....	76
Confirmatory Factor Analysis.....	77
Bi-Factor Analysis	78
Discussion.....	79
Conclusion	80
References.....	81
CHAPTER 5. CONCLUSION.....	92
Perceptions of Campus Climates	92
Mental Health Factor Structure.....	94
Future Research	94

ABSTRACT

Concerns about college students' mental health have prompted attention in recent years. Studies have shown that mental health problems can negatively influence academic performance. Fortunately, positive mental health can serve as a buffer against mental health problems. Integrating a focus on mental health into policies and practices can enhance the educational environment. Not only can policies, practices, and campus community members influence campus climates, but also campus climates can encourage mental health. This dissertation makes two broad contributions to the literature. First, it examines perceptions of campus climates that support civic learning and their influence on mental health. It also explores whether the relationship between campus climates and mental health vary by race or ethnicity. Second, it explores the factor structure of mental health for college students, an area seldom examined despite increasing emphasis on mental health.

Findings indicated that mental health was not different for students in the sample and that the institution a student attended had little influence on mental health. Perceived campus climates related to ethical and moral reasoning, perspective taking, and contributing to a larger community were significant predictors of mental health for many students. Findings indicated that a bi-factor structure of mental health provided the best fit for the data. The broad Mental Health factor accounted for most of the variance, thus making it the most reliable measure. The specific emotional, social, and psychological well-being factors minimally contributed.

CHAPTER 1.

INTRODUCTION

Concerns about college students' mental health (American College Health Association, 2014, 2015; Clay, 2013; Keyes et al., 2012) have prompted attention from the White House (2013) and several higher education organizations (Bringing Theory to Practice, n.d.; Clay, 2013; Douce & Keeling, 2014). In a national report, Douce and Keeling (2014) acknowledged the negative effects mental health *problems* have on student learning and development—including the development of personal and social responsibility. Mental health problems such as stress, anxiety, and depression are prevalent among college students (Douce & Keeling, 2014; Hunt & Eisenberg, 2010). The American College Health Association (ACHA, 2014, 2015) found that 22% of students indicated that anxiety negatively influenced their academic performance within the past 12 months, while 14% indicated that depression negatively influenced their academic performance. In the same studies, 30% of students indicated that stress—which can contribute to mental health problems (Slavich, in press)—negatively influenced academic performance (ACHA, 2014, 2015). Fortunately, positive mental health can protect against mental health problems and psychopathology (Keyes, Dhingra, & Simoes, 2010; Trompetter, Kleine, & Bohlmeijer, 2016).

Dual Continuum of Mental Health

Although one cannot deny the importance of addressing mental health problems to enhance the learning experience, mental health problems only represent half of a dual continuum (Keyes, 2002, 2009). On one continuum, there are mental health problems or

psychopathology (e.g., anxiety, depression); on the other continuum, there is mental health or flourishing. Keyes's (2002, 2009) definition of mental health includes positive appraisals of emotional, social, and psychological well-being, not merely the absence of mental illness. This definition aligns with the World Health Organization's (Herrman, Saxena, & Moodie, 2005) definitions of general health and mental health, recognizing the importance of psychological and social influences. In this dissertation, I distinguish between mental health and mental illness. The term *mental health* is used to represent the positive continuum. *Mental illness* and specific psychopathologies (e.g., depression, anxiety) represent the negative continuum.

While simultaneously supporting the significance of research on mental illness and other serious problems, Keyes and Haidt (2003) provided a valuable reminder: "preventing the worst from happening does not equal promoting the best in people" (p. 5). Scholars have stressed the distinction between positive affect and negative affect in mental health and well-being (Bradburn, 1969; Keyes, 2009; Ryff, 1989). Furthermore, these scholars posited the need for research to shift away from a long-held focus predominantly on negative experiences (Bradburn, 1969; Keyes, 2009; Ryff, 1989). Ryff (1989) emphasized the need to incorporate aspects that theoretically and empirically extend the literature on positive experiences and human potential. Because mental health and mental illness represent distinct but related continua, research should aid in understanding each continuum as well as their intersection (Herrman et al., 2005; Hone, Jarden, Schofield, & Duncan, 2014; Keyes, 2002).

Optimal Human Potential

Research on topics such as thriving (Schreiner, 2013), flourishing (Fink, 2014; Keyes, 2002; Low, 2011; Seligman, 2011), and personal growth (Robitschek & Keyes, 2009; Ryff,

1989) have helped shift the focus of scholarship from preventing or minimizing negative experiences to identifying and promoting positive experiences. This shift toward promoting positive experiences aids in focusing opportunities, practices, and policies on maximizing and realizing human potential as a pathway to mental health.

Psychological well-being—an essential component of mental health (Herrman et al., 2005; Keyes, 2009; Ryff, 1989)—was identified as a student learning outcome for the Wabash National Study (King, Kendall Brown, Lindsay, & VanHecke, 2007). In addition, mental health has been identified as a core component of the Bringing Theory to Practice Project's (BTtoP, n.d.) Psychosocial Well-being Initiative as well as an intermediate outcome that can hinder learning if not present (Reason, Flanagan, Stanton, & Knefelkamp, 2016). Keyes's (2009) operationalization of mental health has been used with college students in studies connected to the BTtoP Project (Low, 2011), the Personal Growth Initiative scale (Robitschek & Keyes, 2009), the National Study of Living-Living Programs (Fink, 2014), and the Personal and Social Responsibility Inventory (Reason et al., 2016).

When mental health is broadly conceptualized as optimal functioning and the maximization of potential—including the ability to adapt to change, act on personal beliefs, manage emotions, develop meaningful relationships, and find a purpose in life—the connections to learning and development become more apparent (Chickering & Reisser, 1993; Sanford, 1966). This nuanced conceptualization of mental health assists in understanding its connection to learning and development. In fact, an examination of the Council for the Advancement of Standards in Higher Education's (CAS, 2009) learning and developmental outcomes indicated substantial overlap among contemporary understandings of mental health (Keyes, 2009), aspects that support civic learning, and multiple student

outcome domains. These outcome domains include intrapersonal development (e.g., self-understanding, identity, integrity), interpersonal competence (e.g., meaningful relationships, collaboration), humanitarianism and civic engagement (e.g., social and civic responsibility), and practical competence (e.g., pursuing goals, managing responsibilities, living a purposeful and satisfying life).

Integrating a focus on mental health into the institution's policies and practices can enhance the educational environment and contribute to the institution's mission (Dunkle & Presley, 2009). This integration is an important step for campus professionals interested in promoting mental health, because not only can policies, practices, and campus community members influence campus climates, but also campus climates can encourage or hinder mental health (Peterson, Cameron, Jones, Mets, & Ettington, 1986). A broad purpose of this dissertation is to provide a better understanding of the aspects of campus (e.g., climates, practices) that can positively influence mental health.

Outline of Dissertation

This dissertation includes five chapters. Chapter 1 provided an introduction to the concept of mental health and its role in optimizing human potential, which includes learning and development. Chapter 2 is the first of three articles. This article explores the relationship between mental health and campus climates that support civic learning. Chapter 3 is the second of three articles. This article delves deeper into the relationship between mental health and campus climates that support civic learning by exploring the relationship across four racial and ethnic groups. Chapter 4 is the final of the three articles. This article focuses on the methodological approaches used to determine the best fitting factor structure

of mental health in a college student sample. Chapter 5 provides a brief overview of the results of the articles.

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CHAPTER 2.

PERCEPTIONS OF CAMPUS CLIMATES FOR CIVIC LEARNING AS PREDICTORS OF COLLEGE STUDENTS' MENTAL HEALTH

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Abstract

This study explored whether three broad areas promoted students' mental health: perceptions of the climate related to civic learning, experiences on campus, and civic engagement. Campus climates for civic learning including the development of ethical and moral reasoning and the importance of contributing to community were the strongest predictors of students' mental health scores. Additional predictors included experiences that develop skills to change society for the better, and a well-developed ability to consider ethical and moral consequences of actions. Civic engagement through participation in community service was a significant, although weak, predictor.

It seems obvious that society benefits from college students' civic engagement (Harper & Yeung, 2013), especially if civic engagement is understood as "working to make a difference in the civic life of our communities" (Ehrlich, 2000, p. vi). Scholars have linked

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civic engagement behaviors (e.g., service-learning, volunteerism, community-based programs) to such civic outcomes as more informed, responsible, and action-oriented citizenship (Einfeld & Collins, 2008; Steinberg, Hatcher, & Bringle, 2011); pluralistic orientation (Hurtado & DeAngelo, 2012); and openness to diversity (Bowman, 2011).

The connection between college students' civic engagement and their health seems less apparent. Although scholars have posited that civic engagement promotes mental health (Keyes, 2012; Low, 2011; Piliavin, 2003), this link is understudied. This is a salient topic given the call for a renewed emphasis on civic outcomes of higher education (Adelman, Ewell, Gaston, & Schneider, 2014; National Task Force on Civic Learning and Democratic Engagement, 2012) and the increased attention mental health has received in current events.

Across the nation, mental health concerns are prompting action from college campuses, national organizations (American College Health Association, 2009; Clay, 2013; Keyes, 2012), and the White House (2013). To aid in this discourse, we examined the influence of students' behaviors and perceptions of campus climates for civic learning as measured by the Personal and Social Responsibility Inventory (PSRI) on students' mental health as measured by the MHC-SF (Keyes, 2009). The framework for this study takes a more complete look at mental health, which includes life satisfaction, affect (Bradburn, 1969), personal functioning (Ryff & Keyes, 1995), and social well-being (Keyes, 1998). Together, these form the basis for the Mental Health Continuum-Short Form (Keyes, 2009).

Scholars' (Keyes, 2012; Low, 2011; Piliavin, 2003) argued that one of the pathways to doing well is by doing good, which informed the connection we made between civic engagement and mental health. Pascarella and Terenzini's (2005) synthesis of environmental influences as well as other ecological scholarship (Renn & Arnold, 2003) framed our

understanding of the influences of campus climate and the peer environment on student learning. Two research questions guided this study:

1. To what extent are student ratings on the Personal and Social Responsibility Inventory dimensions associated with mental health, as measured by the Mental Health Continuum-Short Form?
2. Which climate measures related to civic learning are the strongest predictors of mental health?

Civic Engagement and Mental Health

Given the increased attention to college students' mental health and its important role in student learning, we provide a brief overview of the link among mental health, development, and education as well as campus climate and civic learning. Then, we shift our attention to college student mental health and the factors that affect it.

Mental Health, Development, and Education

Keyes's (2009) definition of mental health includes positive assessments of emotional, social, and psychological dimensions, not merely the absence of mental illness. Mental health, as defined, has long been a focus of educational, psychological, and human development research. When mental health is broadly conceptualized as happiness, optimal functioning, and the maximization of potential—including the ability to adapt to change, act on personal beliefs, manage emotions, develop meaningful relationships, and find a purpose in life—the connections to learning and development become more apparent (Chickering & Reisser, 1993; Sanford, 1966). This nuanced conceptualization of mental health allows us to begin to understand its connection to civic learning.

Educational and psychosocial scholars (Chickering & Reisser, 1993; Sanford, 1966) described the factors affecting education and mental health. Chickering's (1969) well-known vectors of psychosocial development, which were later modified by Chickering and Reisser (1993), included managing emotions, developing interpersonal relationships, developing purpose, and developing integrity (Chickering & Reisser)—all of which relate to current understandings of mental health (Keyes, 2009). Sanford (1966) stressed the important role social and educational institutions play in maximizing individual development and mental health. He stated that, at times, the dissonance—uncertainty, tension, or conflict—created by situations that promote development and further education might also threaten mental health. When this occurs, learning may suffer.

Campus Climate and Civic Learning

Students' civic learning improves when they engage with new experiences, intellectual diversity, and the perspectives of others (Reason, 2013). These improvements during the learning process are associated with the dissonance Sanford (1966) described. Campus environments can aid in reinforcing and encouraging learning, while minimizing the potentially negative effects of dissonance. Reason (2013) found that “the individual student's experiences account for the vast majority of learning, but these experiences are encouraged or discouraged by peers, faculty members, and institutional policies that make up the overall campus climate for learning” (p. 40).

Ryder and Mitchell (2013) defined “climate as a measure of people's attitudes about, perceptions of, and experiences within a specified environment” (p. 34). Although most commonly associated with racial climate or the climate for diversity (Hurtado, Griffin, Arellano, & Cuellar, 2008), campus climate is also associated with academic culture

(Peterson & Spencer, 1990), student learning (Reason, 2013), and civic outcomes such as civic engagement (Barnhardt, Sheets, & Pasquesi, 2015; Broadhurst & Martin, 2014).

Barnhardt and colleagues (2015) found students' perceptions of campus climate were directly related to the development of a commitment to and the skills associated with contributing to the larger community. Their finding demonstrates the importance of considering students' perception of campus climate when conducting research tied to student outcomes related to making a difference in their community—a concept central to Ehrlich's (2000) conceptualization of civic engagement.

Mental Health in College

Keyes (2009) operationalized mental health using three subscales of well-being (emotional, social, and psychological), which form the MHC-SF. The MHC-SF has been used extensively in the study of adolescent (12-18) and adult (25 and older) mental health. However, we only found four articles published in peer-reviewed journals using the MHC-SF to study college students in the United States.

Robitschek and Keyes (2009) published the first study supporting use of the MHC-SF with college student populations. The three remaining studies focused on substance use and engagement (Low, 2011), suicide and academic progress (Keyes et al., 2012), and environmental predictors of mental health (Fink, 2014). In the latter two studies, the authors did not report on the methodological concerns that arise from the nested nature of multi-institutional data (Niehaus, Campbell, & Inkelas, 2014; Raudenbush & Bryk, 2002). Additionally, we found no studies examining civic outcomes and the theorized connections to mental health, representing gaps in existing literature.

Responsibility, Engagement, and Mental Health

Keyes and others (Keyes, 2012; Keyes & Waterman, 2003; Piliavin, 2003) proposed civic outcomes (e.g., sense of contributing to a larger community, an increased ability to assume the perspectives of others, and greater ethical and moral reasoning) promote mental health. Until now, however, these outcomes have neither been easily assessed, nor linked empirically to college student mental health. The development of the PSRI as part of the Association of American Colleges and Universities' Core Commitments Initiative (Dey & Associates, 2009) has allowed for better assessment of civic outcomes. Further, the pairing of the MHC-SF with the PSRI allowed us to explore the relationships among civic engagement behaviors, campus climates for civic learning, and mental health.

Methods

Data for this study came from five institutions that participated in the 2014 administration of the PSRI—a nationally administered web-based climate assessment that measures individual students' behaviors and perceptions of civic learning in higher education; we explored how students' civic engagement behaviors (e.g., community service, service learning) and their perceptions of campus climates for civic learning related to mental health. Mental health was measured using the MHC-SF (Keyes, 2009). Because of the nested nature of our data—students within institutions—we employed a multi-level analytic technique.

Sample

We analyzed data from a weighted sample of 2,596 undergraduate students (60% White, 55% female, and 48% college senior) at five colleges and universities (see Table 1). Prior to analysis, we imputed missing data using an expectation-maximization algorithm to

account for bias related to item nonresponse (Cox, McIntosh, Reason, & Terenzini, 2014) and weighted the data by students' sex, class year, race (White/non-White), and institutional representation to account for survey nonresponse (Pike, 2007).

Outcome Variable

Our outcome variable was students' self-reported mental health, as measured by the MHC-SF (Keyes, 2009). Keyes proposed a model of mental health that included one general factor (mental health score) comprised of three sub-factors. The three-factor structure has been used with multiple groups, but research also suggests the single, general factor is appropriate (Keyes, 2009; Jovanovic, 2015).

The results of our exploratory and confirmatory factor analyses (Kline, 2013) supported that the single, general mental health factor was appropriate for our data. We preceded with the general factor structure because it was supported by previous research (Keyes, 2009; Jovanovic, 2015) and aligned with our interest in students' mental health (not specific factors of well-being). DeVellis (2011) suggested that researchers consider three forms of validity: content, criterion, and construct. The single factor structure is rooted in literature and theory (content/face validity), has been used in some other manuscripts and studies (criterion/expert validity), and hangs together in the current data, which suggests it measures a single construct of mental health (construct validity).

For this study, therefore, we used students' self-reported mental health as our outcome variable. Students' mental health ($\alpha = 0.94$, $M = 3.18$, $SD = 1.11$) was measured as a continuous variable representing the mean response to all 14 items of the MHC-SF—three items related to emotional well-being (e.g., happiness), five items related to social well-being (e.g., having something important to contribute to society), and six items related to

psychological well-being (e.g., sense of direction and meaning in life). Item responses ranged from 0 (*never*) to 5 (*everyday*).

Predictor Variables

The individual (Level 1) predictor variables included input variables such as student demographic items (i.e., gender, race, class year), students' self-assessed commitment and development related to personal and social responsibility at college entry, and activities (e.g., socializing, prayer, fitness). In addition, we included perceptions of the campus climate along with self-reported experiences and civic engagement (i.e., service-learning courses and community service). The predictor variables were group-mean centered at Level 1 (Enders & Tofghi, 2007), which allowed us to have a meaningful zero point (the average student rating on a given campus) when interpreting the results. This study did not include Level 2 predictor variables.

Composite items and scales for climate factors from the PSRI are presented in Table 2. Exploratory factor analysis provided support for the existing factor structures for the climate scales, while Ryder and Mitchell (2013) support the factors' validity. A complete list of predictors along with descriptive statistics are in Table 3. Results are presented in Table 4. It is important to note that gender is not a dichotomous sex variable; it included a transgender option. Because this was a control variable, we did not recode it for further analysis on sex or gender differences.

Analysis

Multilevel Modeling (MLM), a regression-based approach for analyzing nested data, was the primary analytic tool (Niehaus et al., 2014; Raudenbush & Bryk, 2002). We began with an unconditional model, which did not contain any predictor variables, to parse the

variance accounted for by the individual (i.e., Level 1 variable) and institution (i.e., Level 2 variable) on the outcome variable.

We calculated the intraclass correlation ($ICC = 0.0035$; $p = 0.511$) using the results of the unconditional model (Raudenbush & Bryk, 2002) and found that 99.6% of the variance in students' self-reported mental health occurred at the individual level. The ICC illustrated that even in a perfect model, we could account for less than 0.5% of the variance in a students' mental health at the institution level. This level of variance was neither practically, nor statistically, significant.

Although not required, we proceeded in what we believe to be the most conservative approach: we conducted MLM using only Level 1 predictor variables (Niehaus et al., 2014) and entered the predictors in blocks as described below. MLM is more parsimonious, accounts for the nested nature of the data, and decreases the risk of committing Type I errors (Niehaus et al., 2014; Raudenbush & Bryk, 2002). In order to increase our own confidence in our decision to use MLM, we compared the results of our analysis with results using Ordinary Least Squares regression. No substantive differences were found.

We modeled our outcome variable—students' self-reported mental health—on input variables relating to students' precollege characteristics such as demographics and self-assessed commitment to community and development of ethical and moral reasoning at college entry (Model 1) and frequency of out of class activities (Model 2). Students' precollege characteristics (Model 1) accounted for 17% of the variance in their mental health score. Separate analysis showed most of that variance was related to students' self-reported commitment to community and development of ethical and moral reasoning at college entry.

The frequency of out of class activities (Model 2) increased the variance accounted for in mental health to 23%.

Next, we added variables related to perceptions of campus climates (Model 3), self-reported experiences (Model 4), and self-reported participation in civic engagement (Model 5). Variables related to perceptions of campus climates (Model 3) increased the variance explained to 35%. Individual student experiences (Model 4) increased the variance explained to 37%. Participation in civic engagement (Model 5) and the parsimonious model (Model 6), which only included significant predictors from Model 5, resulted in negligible changes to the variance in mental health.

Results

In the parsimonious model, self-reported ratings of mental health were significantly ($p \leq 0.001$) and positively predicted by (a) climates students perceived as developing their ethical and moral reasoning ($b = 0.270$; $p \leq 0.001$), (b) students' self-reported development of the skills necessary to change society for the better ($b = 0.183$; $p \leq 0.001$), and (c) climates that further developed students' perception of the importance of contributing to a larger community ($b = 0.151$; $p \leq 0.001$), as well as a stronger perception that the student entered college with a well-developed ability to consider the moral and ethical consequences of his or her own actions ($b = 0.151$; $p \leq 0.001$). In contrast, experiences that contributed to the development of the ability to consider the moral or ethical consequences of one's actions while at college ($b = -0.135$; $p \leq 0.001$) significantly and negatively predicted of mental health. See Table 4 for complete parameter estimates and model summaries.

Of the civic engagement variables included within the study, volunteering ($b = 0.055$; $p \leq 0.001$) was a weak, but statistically significant, positive predictor. Participation in

service-learning courses ($b = -0.024$) was not a significant predictor, despite being referenced in previous literature (Low, 2011).

Limitations

This study has limitations that should be considered when interpreting, generalizing, or using the results—primarily with regard to the sample and measurement. The undergraduate students who were invited and responded to the survey used in this study were predominantly from small (<5,000), private, liberal arts colleges. Although a weight was applied to adjust for differing institutional response rates, caution in interpreting the findings is warranted.

This study relied on students' self-reported mental health as the outcome measure. Although self-reported measures are open to challenges to their criterion and construct validity, a body of evidence suggests they can be reasonable proxies for more objective or direct measures (Anaya, 1999; Kuh, 2005; Pike, 1996). Kuh (2005) identified five conditions to guide the appropriate use of self-reported measures:

- (1) the information requested is known to the respondents;
- (2) the questions are phrased clearly and unambiguously;
- (3) the questions refer to recent activities;
- (4) the respondents think the questions merit a serious and thoughtful response; and
- (5) answering the questions does not threaten, embarrass, or violate the privacy of the respondent or encourage the respondent to answer in socially desirable ways. (p. 158)

We believe the self-reported measures used in this study meet these five conditions. Moreover, while self-reports have their limitations, more objective measures come with their own limitations (e.g., length, cost, administration requirements, and relevance to the question

at hand). Further, the availability of objective measures of mental health, as defined in our study, is limited.

Discussion

Previous research highlighted the benefits of students' engagement with community (e.g., active citizenship, social responsibility, and mental health). Our findings lend strength to the belief that there is an important link between students' perceptions of climates for civic learning and students' mental health. We found that students' perceptions of climates for civic learning were among the strongest predictors of self-reported mental health. Individual experiences mattered less than perceptions of campus climate related to civic learning when considering the positive influences on students' mental health. Although college and university educators can encourage positive outcomes by providing experiences, the intentional development of a campus ethos has the greatest effect on the student.

Colleges and university educators concerned about student mental health should be mindful of student experiences and, importantly, perceptions of climates that can influence mental health. By understanding these factors and their influence, we can intentionally and thoughtfully aid in the creation of climates and experiences that benefit students' mental health as well as promote civic learning for the betterment of society.

Students' perceptions of climates that support developing moral reasoning and deepening students' commitment to contributing to a larger community were both positively related to students' mental health. However, when students are faced with confronting the consequences of their actions, tension can occur and hinder mental health. It is during these times that Sanford's (1966) notion of support comes into play for student affairs professionals and educators engaging with students throughout the process. Providing the

necessary support while the student is confronted with challenge can ease the struggles—assuming the student is ready to face such challenge and is willing to accept and use the support.

Experiences that further developed the ability to consider ethical and moral consequences of one's actions was a significant ($p \leq 0.001$), negative predictor of mental health. However, in line with Sanford (1966), it is important to remember that not all experiences that aid in learning and development will promote mental health—at least in the short term. The tension that is created in the learning and development processes can challenge students—be it through classroom and campus experiences that have them consider the consequences of their action or through encounters with student conduct offices. Although challenge can decrease mental health in the short term, managed correctly challenge can support learning (Sanford, 1966). Our results allow us to build on that foundation and make the case that civic learning can, in turn, have a positive influence on mental health. We can see that those students who came to college with a greater ability to consider the consequences of their actions reported greater mental health; this scenario lends strength to the claim that just because it may create tension now does not mean it will not result in positive outcomes later. Student experiences that prompt moral discernment and consideration of the consequences of one's actions were related to lower ratings of mental health. In contrast, students' perceptions of climates that support ethical and moral reasoning were related to higher ratings of mental health.

Our findings support the importance of an integrated set of civic experiences and curricula, which offer a pathway to a larger sense of purpose within the institution and students' lives as well as greater community awareness. Administrators, educators, and

scholars can seek to develop their campus's civic climates through articulating civic outcomes for students within and across programs, including within the co-curricula and general education. Campuses can also encourage students' reflection across civic experiences and the applicability of those experiences to other types of learning.

Conclusion

Previous research highlights the benefits of students' engagement with community: active citizenship, social responsibility, and mental health. Our findings lend strength to the belief that there is an important link between campus climates that promote civic engagement and students' mental health. Although perceptions of campus climates for civic learning were strong predictors of mental health, civic engagement behaviors (i.e., community service, service-learning) were not. Creating experiences and climates that support students as they think about, discern, and act upon their values and beliefs responsibly will help encourage civic learning and mental health.

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Table 1

Demographic Characteristics of Respondents

	<i>n</i>	%		<i>n</i>	%
First-year	224	8.7	Nonresident	28	1.1
Sophomore	373	14.4	Hispanic	380	14.7
Junior	751	29.0	American Indian	8	0.3
Senior	1,241	47.9	Asian	140	5.4
Total	2,589		Black	211	8.1
			Hawaiian	8	0.3
Male	1,119	43.6	White	1,562	60.3
Female	1,407	54.9	Multiracial	253	9.8
Transgender/Gender Nonconforming	38	1.5	Total	2,590	
Total	2,564				

Table 2

PSRI Factor Component Items, Descriptive Statistics, and Reliability Summary (n = 2,596)

	<i>α</i>	<i>M</i>	<i>SD</i>
Importance of Contributing to a Larger Community	0.85	4.05	0.82
The importance of contributing to a larger community <i>is</i> a major focus of this campus			
...contributing to a community <i>should be</i> a major focus of this campus			
Contributing to a larger community is a responsibility that this campus values and promotes			
My experiences at this campus have helped expand my awareness of the importance of being involved in the community and contributing to the greater good			
Advocating for Contributing to a Larger Community	0.87	3.40	0.99
How often do <i>senior administrators</i> publicly advocate the need for students to become active and involved students?			
... <i>faculty members</i> publicly advocate the need for students to become active and involved students?			
... <i>student affairs professionals</i> publicly advocate the need for students to become active and involved students?			
... <i>students</i> publicly advocate the need for students to become active and involved students?			
Developing a Commitment to Contributing to a Larger Community	0.77	2.58	1.04
I participate in community-based projects that <i>are</i> officially connected to a course			
I participate in community-based projects that <i>are not</i> officially connected to a course			
I have meaningful discussions with other students about the need to contribute to the greater good			
Developing Perspective Taking	0.93	4.15	0.90
My experiences at this campus have increased my ability to <i>learn from diverse perspectives</i>			
...increased my ability to <i>gather and thoughtfully use evidence to support my ideas</i>			
...increased my ability to <i>understand the evidence, analysis, and perspectives of others, even when I disagree with them</i>			
Developing Ethical and Moral Reasoning	0.93	3.72	0.95
Helping students to develop their ethical and moral reasoning <i>is</i> a major focus of this campus			
This campus helps students to develop their ethical and moral reasoning, including the ability to express and act upon personal values responsibly			
The importance of developing a personal sense of ethical and moral reasoning is frequently communicated to students			
This campus provides opportunities for students to develop their ethical and moral reasoning in their <i>personal life</i>			
...develop their ethical and moral reasoning in their <i>academic work</i>			

Table 2 Continued

	<i>α</i>	<i>M</i>	<i>SD</i>
Sources of Support for Ethical and Moral Reasoning	0.83	3.62	0.95
Students feel they can go to <i>senior administrators</i> to discuss questions or concerns they have about their own ethical and moral thinking and the challenges they face			
... <i>faculty members</i> to discuss questions or concerns they have about their own ethical and moral thinking and the challenges they face			
... <i>student affairs professionals</i> to discuss questions or concerns they have about their own ethical and moral thinking and the challenges they face			
... <i>students</i> to discuss questions or concerns they have about their own ethical and moral thinking and the challenges they face			

Note: Factor scores are calculated as the average of the items that compose each subscale. Item means are based on a scaled response ranging from 1 (*Strongly Disagree* or *Almost Never*) to 5 (*Strongly Agree* or *Almost Always*).

Table 3

Mean and Standard Deviation of Model Items (n=2,596)

	<i>M</i>	<i>SD</i>
I came to college with a strong commitment to contribute to the greater good	4.06	0.99
I came to college with a well-developed ability to consider the moral or ethical dimensions of issues	4.43	0.76
I came to college with a well-developed ability to consider the moral or ethical consequences of my own actions	4.56	0.69
Socializing with friends in person*	2.54	1.67
Socializing with friends online*	1.62	0.71
Prayer*	0.71	1.02
Fitness*	1.65	1.35
Meditation*	0.45	0.88
Learning Community*	0.65	1.49
Students at this campus are encouraged to take actions to promote a more moral and ethical world	3.89	1.05
My experiences at this campus have helped me learn the skills necessary to effectively change society for the better	3.71	1.14
My experiences at this campus have helped me deepen my commitment to contribute to the greater good	3.75	1.17
My experiences at this campus have further developed my ability to consider the moral or ethical dimensions of issues	3.91	1.10
My experiences at this campus have further developed my ability to consider the moral or ethical consequences of my own actions	3.93	1.10
Volunteering*	0.88	1.28
Service Learning*	0.92	1.16

*Scale ranges from 0 (*Never*) to 3 (*Three or more times*). All other items scale ranges from 1 (*Strongly Disagree or Almost Never*) to 5 (*Strongly Agree or Almost Always*).

Table 4

Parameter Estimates: Perceptions of Campus Experiences Predicting Mental Health (n=2,596)

Model	Unconditional	1	2	3	4	5	6
Intercept	3.12***	3.12***	3.13***	3.16**	3.15***	3.15***	3.15***
Input Variables							
Gender		-0.056	-0.028	-0.043	-0.042	-0.044	
Class year		0.028	0.040	0.038	0.027	0.028	
Race (White/Non-White)		-0.004	0.022	0.122**	0.109**	0.112**	0.128***
I came to college with a strong commitment to contribute to the greater good		0.344***	0.320***	0.129***	0.098***	0.093***	0.098***
...well-developed ability to consider the moral or ethical dimensions of issues		0.145***	0.109**	0.111***	0.134***	0.133***	0.124***
...well-developed ability to consider the moral or ethical consequences of my own actions		0.181***	0.204***	0.146***	0.141***	0.136***	0.151***
Socializing with friends in person			0.109***	0.075***	0.086***	0.084***	0.090***
Socializing with friends online			0.008	0.015	0.015	0.014	
Prayer or worship			0.176***	0.151***	0.148***	0.139***	0.133***
Fitness or exercise			0.094***	0.082***	0.078***	0.073***	0.068***
Meditation			0.001	-0.019	-0.026	-0.029	
Learning Community				0.032**	0.032**	0.033**	0.031**

Table 4 Continued

Model	Unconditional	1	2	3	4	5	6
Perceptions of Campus Climates							
Students at this campus are encouraged to take actions to promote a more moral and ethical world				-0.040	-0.023	-0.025	
Importance of Contributing to a Larger Community (factor)				0.217***	0.163***	0.164***	0.151***
Developing Commitment to Contributing to a Larger Community (factor)				0.111***	0.095***	0.075**	0.053*
Advocating for Contributing to a Larger Community (factor)				-0.011	-0.060*	-0.054	
Developing Perspective Taking (factor)				0.041	0.044	0.042	
Developing Ethical and Moral Reasoning (factor)				0.301***	0.316***	0.318***	0.270***
Sources of Support for Ethical and Moral Reasoning (factor)				-0.062*	-0.028	-0.020	
Self-Reported Experiences							
My experiences at this campus have helped me learn the skills necessary to effectively change society for the better					0.154***	0.150***	0.183***
...helped me deepen my commitment to contribute to the greater good					0.046	0.049	
...further developed my ability to consider the moral or ethical dimensions of issues					-0.015	-0.019	
...further developed my ability to consider the moral or ethical consequences of my own actions					-0.148***	-0.141***	-0.135***

Table 4 Continued

Model	Unconditional	1	2	3	4	5	6
Self-reported Participation in Civic Engagement							
Volunteering or community service						0.055**	0.055***
Service-learning						-0.024	
Model Summary							
σ^2 (Sigma squared)	1.271***	1.062***	0.976***	0.824***	0.803***	0.800***	0.801***
T (Tau)	0.004	0.003	0.003	0.001	0.002	0.002	0.001
Intraclass Correlation	0.003						
Percent of Level 1 Variance Explained		16.46%	23.20%	35.17%	36.84%	37.06%	36.94%
Change in Variance Explained			6.74%	11.97%	1.67%	0.23%	- 0.13%

* $p < 0.05$. ** $p < 0.01$. *** $p \leq 0.001$.

CHAPTER 3.**INFLUENCES OF CAMPUS CLIMATES THAT SUPPORT CIVIC LEARNING
ON MENTAL HEALTH BY RACE AND ETHNICITY****Abstract**

College students are increasingly diverse, and it is important to understand how different students perceive campus and how those perceptions, in turn, influence mental health. This study explores how students' perceptions of campus climates that support civic learning influence mental health and how the influence varies by four race or ethnicity groups: Asian, Black, Hispanic, and White students. Findings indicate that mental health was not significantly different across institution or racial or ethnic group. Of the climate factors, ethical and moral reasoning was the only factor that was a significant, positive predictor of mental health across the groups.

College students' civic learning and mental health are distal, yet related, topics that have received increased attention in recent years (Fink, 2014; Low, 2011; Mitchell, Reason, Hemer, & Finley, 2016). Although the connection between civic learning and mental health may not be clear, Keyes and others (Keyes, 2012; Keyes & Waterman, 2003; Piliavin, 2003) proposed that civic learning outcomes (e.g., contributing to a larger community, ability to assume the perspectives of others, and ethical and moral reasoning) may promote mental health—the integration of positive appraisals of emotional, social, and psychological well-being (Keyes, 2009). Additionally, Peterson, Cameron, Jones, Mets, and Ettington (1986) explained that campus climates—which may encourage feelings of satisfaction, motivation, and anxiety—have a presumed influence on students' well-being.

Although mental health has received more attention in recent years, most research has focused on mental health *problems* (Matthews-Ewald & Zullig, 2013; Northern, O'Brien, & Goetz, 2010) and negative experiences (Cox, Dean, & Kowalski, 2015; Kaier, Cromer, Johnson, Strunk, & Davis, 2015). However, a few scholars have explored the connections among students' *positive* mental health, experiences on campus, and aspects related to civic learning (Fink, 2014; Low, 2011; Mitchell et al., 2016). Studies of positive mental health are important contributions to the literature so that scholars and educators have a more complete understanding of the positive and negative aspects related to mental health.

Despite preliminary studies, which focused on the link between positive mental health and aspects related to civic learning (Fink, 2014; Low, 2011; Mitchell et al., 2016), little is known about the influence perceptions of campus climates that support civic learning have on the mental health of college students for different racial or ethnic groups. Renn and Arnold (2003) point out that controlling for student characteristics (e.g., race, ethnicity, gender) is a common approach in higher education research. However, they added that it is important to understand the interactions between individual characteristics (e.g., race, ethnicity) and campus environments or campus climates.

Mitchell and colleagues (2016) found that students' perceptions of campus climates that support civic learning predicted self-reported mental health. They found that the messages sent by campus members about the importance of contributing to a larger community and developing ethical and moral reasoning might matter as much as students' civic engagement behaviors when predicting mental health. However, Mitchell and colleagues (2016) controlled for student demographics (e.g., race, ethnicity) and did not explore potential interactions between race or ethnicity and campus climates. Understanding

the influence of the interaction between race or ethnicity and perceptions of campus climates on outcomes such as mental health is a salient topic given the emphasis placed on understanding the experiences and outcomes of the increasingly diverse students attending colleges and universities in the United States. Accordingly, the purposes of this study are (a) to explore the variation in the influence of students' perceptions of campus climates that support civic learning on their mental health by race or ethnicity and (b) to gain a better understanding of the how the interaction between race or ethnicity and perceptions of campus climate influence mental health.

Significance

The increased attention given to understanding the experiences and outcomes of diverse students contributes to the importance of this study (Hurtado, Alvarado, & Guillermo-Wann, 2015; Patton, Renn, Guido, & Quaye, 2016). Mitchell and colleagues (2016) found that perceptions of campus climates that support civic learning are significant predictors of mental health, but they did not explore differences by race or ethnicity. Research demonstrates that “people from different racial and ethnic groups experience education, including higher education, in different ways and with different outcomes” (Renn & Reason, 2013, p. 150). Moreover, Eisenberg, Hunt, and Speer (2013) found that race and ethnicity were significantly related to mental health issues and psychopathology (e.g., self-harm and depression, respectively) in their study. On the other hand, positive mental health can protect against psychopathology (Keyes, Dhingra, & Simoes, 2010; Trompetter, Kleine, & Bohlmeijer, 2016). If race and ethnicity are significantly related to psychopathology, but mental health can protect against psychopathology, these relationships provide motive to

explore how race or ethnicity relate to perceptions of campus climates as predictors of college student mental health.

Theoretical Framework

Lewin (1936) proposed that behavior is a function of the interaction between the person and the environment. Lewin's formula provided an early foundation for understanding that the environment in which people learn and develop influences behaviors and outcomes of interest. More recently, psychosocial theories and ecological theories have been used to emphasize and explore the interaction between the person and the environment (Newman & Newman, 2016, Renn & Arnold, 2003).

Renn and Arnold (2003) applied Bronfenbrenner's (1993) ecological theory to their research on the racial identity of college students to better understand the developmental influences of peer culture. Renn and Arnold (2003) stated that Bronfenbrenner's ecological approach incorporates the theories and models many student affairs professionals already use in their work, such as challenge, support, and readiness (Sanford, 1966), which framed Mitchell and colleagues (2016) study of the influences of campus climates that support civic learning on mental health. Renn and Arnold (2003) described how ecological scholarship expands the work of psychosocial scholars, such as Pascarella and Terenzini (2005), to not only understand how college affects students, but also to understand how environments affect development. Renn and Arnold advocated for more research focused on the interactions among person and environment and more application of theoretical frameworks that help scholars and educators understand and improve the college experience.

This study will add to the conversation about the potential interactions between student characteristics and their perceptions of campus. Ecological and psychosocial

scholarship provide a framework for understanding and interpreting the results of this study (Newman & Newman, 2016; Renn & Arnold, 2003; Sanford, 1966). Understanding how race or ethnicity relate to mental health and interact with perceptions of campus climate that support civic learning could inform policies and practices created by campus professionals interested in enhancing learning and development outcomes as well as mental health. Understanding whether the interaction of student characteristics (e.g., race or ethnicity) and perceptions of campus climates that support civic learning enhance or hinder aspects of learning and development is critical to designing, refining, and assessing students' experiences.

Civic Learning and Mental Health

Given the increased attention to college students' mental health and its important role in student learning, I begin by synthesizing the connections among learning, development, and mental health. Next, I discuss the assessment and definition of campus climates, with an emphasis on climates that promote civic learning. I conclude this section by focusing on scholarship that explored predictors of college student mental health. Together, these three bodies of literature provide a foundation to better understand the relationship learning, development, and campus climates have with mental health.

Learning, Development, and Mental Health

Keyes (2009) defined mental health as more than the absence of mental illness, incorporating positive appraisals of emotional, social, and psychological dimensions of well-being. When mental health is broadly conceptualized as the integration of happiness, optimal functioning, and the maximization of potential—including the ability to adapt to change, act on personal beliefs, develop meaningful relationships, and find a purpose in life—the

connections to learning and development become more apparent (Chickering & Reisser, 1993; Sanford, 1966). This nuanced understanding of mental health reinforces its connection to civic learning. According to Howard (2001), civic learning relates to the knowledge, skills, and values that prepare students for civic engagement (e.g., community service). Aspects of campus culture (e.g., values), campus climate (e.g., perceptions, environment), and student experiences work collectively to influence student outcomes and behaviors (Lewin, 1936; Peterson & Spencer, 1990; Renn & Arnold, 2003).

Prominent psychosocial scholars (Chickering & Reisser, 1993; Sanford, 1966) described the elements that not only affected learning and development, but also affected mental health. Chickering's (1969) well-known vectors of psychosocial development, which were later modified by Chickering and Reisser (1993), include managing emotions, developing interpersonal relationships, and developing purpose—all of which relate to the conceptualization of mental health used for this study (Keyes, 2009). Additionally, Sanford (1966) stressed the important role social and educational institutions play in maximizing individual development and mental health. He stated that, at times, the dissonance—uncertainty, tension, or conflict—created by situations that promote development and further learning might also threaten mental health. When mental health is threatened, learning suffers, unless campus professionals create supportive environments in which students can learn from and reflect on their experiences (Mitchell et al., 2016). Integrating a focus on mental health into the institution's policies and practices can enhance the educational environment and contribute to the institution's mission (Dunkle & Presley, 2009).

Campus Climates that Support Civic Learning

Students' civic learning improves when they engage with new experiences, intellectual diversity, and the perspectives of others (Reason, 2013). These improvements during the learning process result from an appropriate combination of dissonance and support (Sanford, 1966). Campus climates can aid in reinforcing and encouraging learning, while minimizing the potentially negative effects of dissonance. Reason (2013) found, "the individual student's experiences account for the vast majority of learning, but these experiences are encouraged or discouraged by peers, faculty members, and institutional policies that make up the overall campus climate for learning" (p. 40).

Ryder and Mitchell (2013) defined "climate as a measure of people's attitudes about, perceptions of, and experiences within a specified environment" (p. 34). Although most campus climate research is associated with racial climate or the climate for diversity (Hurtado, Griffin, Arellano, & Cuellar, 2008), it is also associated with academic culture (Peterson & Spencer, 1990), student learning (Reason, 2013), and civic outcomes (Barnhardt, Sheets, & Pasquesi, 2015; Broadhurst & Martin, 2014; Ryder, Reason, Mitchell, Gillon, & Hemer, 2015). Scholars have found that campus climates that support civic learning influence outcomes such as civic engagement (Barnhardt et al., 2015), openness to diversity and challenge (Ryder et al., 2015), and mental health (Mitchell et al., 2016).

Predictors of Mental Health

Social and emotional engagement through peer groups, formal organizations, social relationships, and activities are important for well-being. In their review of multiple studies, Eccles, Templeton, Barber, and Stone (2003) stated that strong social connections, strong moral character, an opportunity to make a difference, and spirituality or a sense of purpose in

life are important for well-being (Eccles et al., 2003). Emmons (2003), Graham and Crown (2014), and Keyes and Waterman (2003) identified similar influences on well-being, but Keyes and Waterman added that individual characteristics such as sex, race, and religion can influence happiness and well-being as well. Schneider and Davidson (2003) and Conner (2003) identified physical health and activity (e.g., fitness and exercise) as important components of well-being. In a study of college students, Mitchell and colleagues (2016) found that socializing with friends, participating in prayer, and participating in fitness were individual activities that influence mental health.

College Students' Mental Health

Keyes (2009) operationalized a general factor of mental health using three dimensions of well-being (emotional, social, and psychological), which form the Mental Health Continuum-Short Form (MHC-SF). The MHC-SF has been used extensively when studying adolescent (age 12-18) and adult (age 25 and older) mental health. The MHC-SF has been used with college-age students (e.g., 18-25) in multiple countries outside of the United States (De Bruin & Du Plessis, 2015, Hides et al., 2016; Jovanovic, 2015). However, few articles published in peer-reviewed journals use the MHC-SF to study college students in the United States. Although multiple studies referenced Keyes' framework, fewer studies used the MHC-SF to collect data. In my review of college student mental health, I focused on studies in the United States that used the MHC-SF to collect data.

Robitschek and Keyes (2009) published a study supporting use of the MHC-SF with college student populations. They replicated the theorized three-factor structure of the MHC-SF (Keyes, 2009) in two college student samples. Additionally, Robitschek and Keyes found that personal growth was a statistically significant, positive predictor of mental health. Other

studies focused on substance use and engagement (Low, 2011), suicide and academic progress (Keyes et al., 2012), environmental predictors of mental health (Fink, 2014), and perceptions of campus climates as predictors of mental health (Mitchell et al., 2016). In two of the existing studies (Fink, 2014; Keyes et al., 2012), the authors did not address the methodological concerns that arise from the nested nature of multi-institutional data (Niehaus, Campbell, & Inkelas, 2014; Raudenbush & Bryk, 2002). Low (2011) collected data at one institution for her study, which mitigated the concerns of nested data. When working with multi-institutional data, it is important to understand the influence of individual- and institutional-level variables. When institutional influences are not considered, correlated errors could result in Type I error, which increases the likelihood of finding an effect when one does not actually exist.

Mitchell and colleagues (2016) examined civic outcomes and their theorized connections to mental health using multilevel modeling, which accounted for the nested nature of their data. Their findings supported the proposed link between mental health and aspects related to civic learning—campus climates that support civic learning can be important predictors of mental health. However, they did not examine the influence of perceptions of campus climates by race or ethnicity. This represents an important gap in the literature given the emphasis on civic outcomes (Adelman et al., 2014; National Task Force, 2012), mental health (Keyes, 2012), and understanding the experiences of diverse students (Hurtado et al., 2015; Patton et al., 2016). This study addresses this gap by exploring how the influence of students' perceptions of campus climates that support civic learning on their mental health varies by race or ethnicity.

Data Collection

Data for this study came from nine four-year colleges and universities that participated in the Personal and Social Responsibility Inventory (PSRI) with the MHC-SF between 2014 and 2015. The Bringing Theory to Practice (BTtoP) Project's Psychosocial Well-being Initiative provided support for this research. One of the goals of the BTtoP initiative was to explore the connections between students' mental health and well-being and aspects related to civic learning.

Data Sources

The PSRI is a nationally administered, web-based climate survey that assesses students' behaviors and perceptions that influence civic learning in higher education. The PSRI provided the predictor variables and campus climate factors used in this study. Mental health—the outcome variable—was measured using the MHC-SF (Keyes, 2009). The development of the PSRI as part of the Association of American Colleges and Universities' Core Commitments Initiative (Dey, Barnhardt, Antonaros, Ott, & Holsapple, 2009) has allowed for better assessment of civic outcomes. Furthermore, pairing of the MHC-SF with the PSRI as part of the BTtoP Project allowed for the exploration of how the influence of students' perceptions of campus climates that support civic learning on their mental health varied by race or ethnicity.

Sample

I analyzed data from a weighted sample of 3,450 undergraduate students (68% White, 55% female, and 47% college senior) at nine colleges and universities (see Table 1). Prior to analysis, I imputed missing data in SPSS 22 using an expectation-maximization algorithm to account for item nonresponse (Cox, McIntosh, Reason, & Terenzini, 2014) and weighted the

data by students' sex, class year, race (White/Students of Color), and institutional representation to account for survey nonresponse (Pike, 2007).

Data Analysis

Given the nested nature of the data (i.e., students within institutions) I began with an unconditional model—a multilevel modeling protocol recommended by Raudenbush and Bryk (2002). The unconditional model only included the outcome variable, which allowed me to parse the variance accounted for by the individual (i.e., Level 1) and institution (i.e., Level 2) on mental health. An unconditional model is the first step to determine whether one should proceed with multilevel modeling or whether ordinary least squares (OLS) regression is a viable option (Astin & Denson, 2009; Raudenbush & Bryk, 2002). Multilevel modeling is the most appropriate method when an unconditional model reveals variance in the outcome variable at the individual and institutional levels (i.e., when there is a nested effect). Regression is an option when the variance is only found at the individual level (i.e., when there is not a nested effect) and the researcher is not looking at cross-level effects (Astin & Denson, 2009).

I calculated the intraclass correlation coefficient ($ICC = 0.0000$) using the results of the unconditional model (Raudenbush & Bryk, 2002). More than 99.9% of the variance in students' self-reported mental health occurred at the individual level; even in a perfect model the institution level would not account for any substantive variance in a students' mental health. Therefore, the college or university the student attended had neither a substantive nor statistically significant influence on the students' mental health. Due to the lack of institution-level variance, I used OLS regression as my primary analytic technique and included only individual-level variables.

Predictor Variables

The individual predictor variables included student demographic items (i.e., sex, class year), students' self-assessed commitment and development related to multiple aspects of civic learning at college entry, activities (e.g., socializing, fitness), and self-reported experiences. Descriptive statistics for the individual predictor variables are presented in Table 2. In addition, I included perceptions of the campus climate factors as predictor variables. Descriptive statistics for the climate factors by race and ethnicity are presented in Table 3. Exploratory factor analysis supported the existing factor structures for the climate factors; Ryder and Mitchell (2013) supported the validity of the climate factors. Internal consistency for the factors ranged from respectable ($\alpha = 0.75$) to high ($\alpha = 0.95$) for all groups (DeVellis, 2017).

Outcome Variable

The outcome variable was students' self-reported mental health, as measured by the MHC-SF (Keyes, 2009). Keyes proposed a model of mental health that included one general Mental Health factor and three sub-factors related to the emotional, social, and psychological well-being. I proceeded with the Mental Health factor because research supported a single, general factor structure (Hides et al., 2016; Keyes, 2009; Jovanovic, 2015), and the single factor aligned with my interest in mental health as opposed to specific well-being factors.

DeVellis (2017) suggested that researchers consider three forms of validity (i.e., content, criterion, and construct) when choosing appropriate measures in survey research. The Mental Health factor is rooted in literature and theory (i.e., content validity) and has been used in various national and international manuscripts and studies (i.e., criterion

validity). Additionally, research supports a single construct of mental health (i.e., construct validity).

The Mental Health factor demonstrated high internal consistency ($\alpha \geq 0.91$) across all groups (DeVellis, 2017). The MHC-SF measures mental health as a continuous variable representing the mean response to 14 items—three emotional well-being items (e.g., happiness), five social well-being items (e.g., having something important to contribute to society), and six psychological well-being items (e.g., sense of direction and meaning in life). Item responses ranged from 0 (*never*) to 5 (*everyday*). Descriptive statistics for the Mental Health factor by race and ethnicity are presented in Table 2.

Regression Models and Interactions

To parse the variance explained by the addition of each set of predictor variables, I entered the variables into the regression analysis in blocks. Each block is discussed as a model. To understand how the variables for this study predicted mental health, I modeled the outcome variable—students' self-reported mental health—on demographic characteristics and frequency of out of class activities (Model 1), then added self-assessments at college entry (Model 2), self-reported experiences (Model 3), perceptions of campus climates (Model 4). To add depth to the analysis, interactions between race or ethnicity and perceptions of campus climate were added in Model 5 (Cohen, Cohen, West, & Aiken, 2003). Each significant interaction was followed by a simple effects analysis to identify which campus climate factors were significant predictors for each racial or ethnic group when interactions indicated a there was a difference in perceived campus climate based on race or ethnicity (Keppel & Wickens, 2004). Simple effects analysis allow for a comparison of the specific influence of each racial or ethnic group's perception of climate on the outcome. Race and

ethnicity variables were dummy coded, and White students served as the reference group for the analyses (Cohen et al., 2003).

Results

This section begins with a summary of the results of the regression models. Then, attention shifts to a summary of the results of the significant interactions between race or ethnicity and perceptions of campus climates factors. This section concludes with a summary of the simple effects analyses conducted to better understand the significant interactions in the study.

Regression Models and Interactions

Prior to the regression models, I conducted an analysis of variance (ANOVA) among the group means on the predictor variables as well as the outcome variable. Results indicated that there were not statistically significant differences ($p > 0.05$) in self-reported mental health among Asian, Black, Hispanic, and White students. In addition, all of the predictor variables had a statistically significant difference ($p \leq 0.01$) among the racial or ethnic groups, except for class year, self-assessed pre-college commitment to community, and the Developing Perspective Taking factor. To better understand the influence of the predictor variables on the outcome variable, I entered predictor variables into five regression models. The addition of each block of predictor variables in the regression models increased the variance explained in students' self-reported mental health from 11% in Model 1 to 32% in Model 5. Model 1, which included demographic variables and frequency of out of class activities, accounted for less than 11% of the total variance explained in college students' mental health. Adding students' self-assessments related to commitment to contributing to a larger community and the ability to consider moral and ethical consequences at college entry

(Model 2) increased the variance explained to about 21%. The introduction of self-reported experiences on campus that helped students learn the skills necessary to change society for the better as well as experiences that further developed students' ability to consider the more and ethical consequences of their actions (Model 3) increased the variance explained to 28%. The introduction of perceptions of campus climates that support civic learning, such as contributing to a larger community, perspective taking, and ethical and moral reasoning (Model 4), increased the variance explained to 31%. Finally, the addition of interactions between race or ethnicity and perceptions of campus climates (Model 5) increased the variance explained to 32%. Table 3 provides a complete summary of model statistics and significant predictor variables.

Significant Interactions and Simple Effects

There were eight campus climate factors and three racial or ethnic groups, excluding White students who served as the reference group, which produced 24 interactions in Model 5. Of those 24 interactions, seven were statistically significant (see Table 3). The seven significant interactions spanned six of the eight perceptions of campus climate factors: (a) Importance of Contributing to a Larger Community, (b) Advocating for Contributing to a Larger Community, (c) Advocating for Perspective Taking, (d) Developing Perspective Taking factor, (e) Developing Ethical and Moral Reasoning, and (f) Supporting Ethical and Moral Reasoning. In the simple effects analysis—as in the initial regression analyses reported in Table 3—demographics, activities, self-assessments, and experiences explained a cumulative 28% of the total variance in students' mental health. The addition of five of the six perceived campus climate factors that had significant interactions in Model 5 of the initial analyses, resulted in statistically significant changes in the total variance explained in

students' mental health. The interactions and simple effects for each factor are described below.

Importance of Contributing to a Larger Community. Model 5, in the initial analyses, indicated that there was a statistically significant difference between White and Hispanic students' perceptions on the Importance of Contributing to a Larger Community factor. Simple effects analysis indicated that the Importance of Contributing to a Larger Community factor was a statistically significant, positive predictor of mental health for Hispanic students ($\beta = 0.228, p < 0.001$), but the factor was not a statistically significant predictor of mental health for White, Asian, or Black students. The addition of the Importance of Contributing to a Larger Community factor in the simple effects analysis resulted in a small, but significantly ($p < 0.001$) increase in the total variance explained by the previous models that included demographics, out of class activities, self-assessments, and experiences from 28% to 28.6%.

Advocating for Contributing to a Larger Community. Although Model 5 in the initial analyses indicated a statistically significant interaction between White and Asian students' perceptions of the Advocating for Contributing to a Larger Community factor, the simple effects analysis indicated that the addition of the factor to the models did not result in a statistically significant change in the total variance explained (i.e., 28.5%). However, the simple effects analysis did reveal that the Advocating for Contributing to a Larger Community was a statistically significant negative predictor of mental health for White students ($\beta = -0.087, p < 0.01$), but was not statistically significant for Asian, Black, or Hispanic students.

Advocating for Perspective Taking. The interactions in Model 5 revealed that Hispanic and White students had statistically significant differences in their perceptions on the Advocating for Perspective Taking factor. Simple effects analyses indicated that the Advocating for Perspective Taking factor was a statistically significant, positive predictor of mental health for Hispanic students ($\beta = 0.240, p < 0.001$) and White students ($\beta = 0.094, p < 0.01$). The parameter estimates indicate that although the factor is significant for both groups of students, it is a more positive predictor of mental health for Hispanic students than for White students. Adding the factor to the simple effects analyses resulted in small, but statistically significant ($p < 0.001$) increase in the total variance explained to 29.6%.

Developing Perspective Taking. The interactions in Model 5 revealed that Hispanic and White students had statistically significant differences in their perceptions on the Developing Perspective Taking factor. Simple effects analyses indicated that the Developing Perspective Taking factor was a statistically significant, negative predictor of mental health for Hispanic students ($\beta = -0.149, p < 0.05$) and a statistically significant, positive predictor for White students ($\beta = 0.083, p < 0.01$). Adding the factor to the simple effects analyses resulted in small, but statistically significant ($p < 0.001$) increase in the total variance explained to 30%.

Developing Ethical and Moral Reasoning. Model 5 of the initial analyses indicated that there was a statistically significant difference between Black and White students on the Developing Ethical and Moral Reasoning factor. Simple effects analyses revealed that the Developing Ethical and Moral Reasoning factor was a statistically significant, positive predictor of mental health for Black students ($\beta = 0.502, p < 0.001$), Hispanic students ($\beta = 0.178, p < 0.01$), and White students ($\beta = 0.144, p < 0.001$). The parameter estimates

indicate that although the factor is statistically significant for three of the four racial or ethnic groups, it is a more positive predictor of mental health for Black students, followed by Hispanic and White students, respectively. Adding the Developing Ethical and Moral Reasoning factor to the simple effects analyses resulted in small, but statistically significant ($p < 0.001$) increase in the total variance explained to 30.9%.

Supporting Ethical and Moral Reasoning. Model 5 of the initial analyses indicated that there was a statistically significant difference between Black and White students as well as between Hispanic and White students on the Supporting Ethical and Moral Reasoning factor. Simple effects analyses revealed that the Supporting Ethical and Moral Reasoning factor was a statistically significant, negative predictor of mental health for Black students ($\beta = -0.240, p < 0.05$), but a statistically significant, positive predictor for White students ($\beta = 0.076, p < 0.05$). Adding the Supporting Ethical and Moral Reasoning factor to the simple effects analyses resulted in small, but statistically significant ($p < 0.01$) increase in the total variance explained to 31.1%.

Discussion

Previous research suggested that there is a link between mental health and aspects of civic learning (Fink, 2014; Low, 2011; Mitchell et al., 2016) and that race and ethnicity influence mental health and perceptions of campus (Eisenberg et al., 2013; Renn & Arnold, 2003; Renn & Reason, 2013). In this study, I explored these connections by examining how the interaction of perceptions of campus climates that support civic learning and race or ethnicity affected self-reported mental health for Asian, Black, Hispanic, and White students. I not only identified which campus climate factors predicted mental health for these four

racial or ethnic groups, I also explored the interactions between perceptions campus climates and students race or ethnicity when predicting mental health.

I found four overarching themes in the data: (a) the consistency across groups, (b) the differences in perceptions of campus climates related to community contribution and perspective taking, (c) the importance of developing ethical and moral reasoning, and (d) the importance of supporting students as they navigate through ethical and moral discernment. Each of these findings is discussed in this section.

Consistency Across Groups

Two findings were consistent across the four groups of students in this study. First, the college or university the student attended had neither a statistically significant nor a substantive effect on the student's mental health. This suggests that individual characteristics, experiences, and perceptions of campus climates matter more than institution one attends. Second, self-reported mental health was not statistically different for Asian, Black, Hispanic, and White students. Although previous research suggested that individual characteristics such as race and sex are related to aspects of mental health and mental illness, this link was not observed for students' self-reported mental health in this study. This difference must be interpreted with caution because of the difference between the conceptualization and measurement of mental health and mental illness. Mental health and mental illness represent related, but distinct constructs on the dual continuum of mental health (Keyes, 2009).

Contributing to Community and Perspective Taking

The results of the analyses provide additional support that students from racial and ethnic groups experience and perceive campus differently, and these students' experiences

and perceptions affect outcomes—such as mental health—differently in some instances. For example, students in the four racial or ethnic groups had statistically different perceptions of how often members of the campus community advocated for contributing to a larger community on their campus. Advocating for community also influenced these students' mental health differently. It was a negative predictor for White students, but did not predict mental health for Asian, Black, or Hispanic students.

Mitchell and colleagues (2016) found that after controlling for race or ethnicity, the importance campus members placed on contributing to a larger community was a significant, positive predictor for mental health for students in their analysis. The results of the simple effects analysis in this study indicate that Importance of Contributing to a Larger Community factor was a significant, positive predictor of mental health for Hispanic students, but not for Asian, Black, or White students.

Engaging with perspective taking is an important consideration for discourse given the landscape higher education, the United States, and—more broadly—the world. Emphasizing the consideration of diverse perspectives and encouraging students to think about the implications of their choices (i.e., ethical and moral reasoning) before they act and speak can converge to strengthen the skills and dispositions students need in order to more appropriately engage in a diverse society as well as to promote individual (e.g., mental health) and societal good.

Ethical and Moral Reasoning

Similar to Mitchell and colleagues' (2016) study, the results of this study suggest that campus professionals, who are focused on students' civic learning and mental health should pay special attention to the importance placed on, and messages communicated about, the

development of ethical and moral reasoning during the college experience. Students' perceptions of the campus climates for ethical and moral reasoning were significant predictors for Black, Hispanic, and White students, even after controlling for individual characteristics, such as class year, and self-reported ability to consider ethical and moral aspects at college entry. Although differences exist in the pathways to promote students' mental health, developing ethical and moral reasoning seems to be an interwoven thread. Conceptually, this may be due to its relationship to psychological well-being, a component of mental health, that includes having a purpose in life and acting on and expressing personal values.

To promote the development of ethical and moral reasoning, campus professionals should communicate frequently the importance of ethical and moral reasoning to students. Communicating the importance of ethical and moral reasoning will reinforce the importance the college or university places on this aspect of development. However, campus professionals should not only communicate and reinforce the importance of ethical and moral reasoning, but also they should create programs and experiences that provide opportunities for students to develop their ethical and moral reasoning academically (e.g., integrity, honesty) and personally (e.g., acting on and expressing values responsibly).

Ethical and Moral Discernment

In a previous study, Mitchell and colleagues (2016) found that experiences on campus that allow students to confront the consequences of their actions can result in feelings of dissonance, which might hinder mental health—at least in the short term. As students experience the dissonance associated with moral discernment, student affairs professionals and other educators should reflect on the importance of and apply Sanford's (1966) notion of

support. Supporting students as they reflect on their experiences and facilitating meaningful learning experiences through purposeful discussion could help mitigate the negative influence of the experience on students' mental health. However, the provisions of this support is dependent upon students' readiness to face the challenges ahead—as well as the potential consequences of his or her actions—and willingness to accept and use the support. The Supporting Ethical and Moral Reasoning factor was a statistically significant, negative predictor of Black students' mental health and a statistically significant, positive predictor for White students, despite Black students having a higher average perception of support than White students. This could be because Black students face more challenges related to racial discrimination and prejudice than White students, which could negatively influence mental health. Although the support is available, it might not mitigate the recurring challenges. This should be explored in more depth in future research to gain a better understanding of this relationship.

Limitations

This study relied on students' self-reported mental health as the outcome measure. Although self-reported measures are open to challenges to their criterion and construct validity, research suggests self-reported measures can be reasonable proxies for more objective or direct measures (Kuh, 2005; Pike, 1996). Kuh (2005) identified five conditions to guide the appropriate use of self-reported measures (e.g., information is known and recent enough to recall, questions are clear, responses options do not violate privacy). The self-reported measures used in this study meet these conditions. Moreover, while self-reports have limitations, more objective measures have limitations as well (e.g., length, cost,

administration requirements, relevance to the question). In this instance, the availability of objective measures of mental health, as defined in our study, is limited.

Conclusion

In this study, I set out to understand whether—and how—perceptions of campus climates that support civic learning influence students' mental health across four racial and ethnic groups: Asian, Black, Hispanic, and White students. Results indicated that more than 99% of the variance in an individual student's mental health was accounted for by individual-level variables. Simply put, the college or university the student attended had no practical or statistical influence—at least in the current study—on student's mental health. Additionally, students' self-reported mental health scores were not statistically different across the groups. Campus professionals interested in promoting students' mental health should focus their efforts on aspects related to civic learning—namely ethical and moral reasoning, perspective taking, and contributing to a larger community—to enhance mental health on their campuses.

Importantly, the dissonance created in the learning and development processes—specifically as it relates to moral discernment—can challenge students. Although challenging situations have the potential to decrease mental health, when it is managed appropriately by campus professionals and student feel they have support in their development of ethical and moral reasoning, challenge can be an important aspect of supporting and enhancing learning and development (Sanford, 1966). Assisting and supporting students as they navigate these challenges can have positive influences on learning, development, and mental health.

Although this study used an ecological framework for understanding learning and development—and attention was given to racial and ethnic identity groups—further studies

could provide a more in-depth look at the intersectionality of social identities and their influence on students' perceptions of campus climates. Additionally, given the importance of ethical and moral reasoning to mental health in this study and previous work by Mitchell and colleagues (2016), researchers could use qualitative interviews or focus groups to further explore the substantive connection between ethical and moral reasoning and mental health.

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Table 1

Respondents Characteristics by Sex, Class Year, and Race and Ethnicity (n = 3,450)

	<i>n</i>	<i>%</i>		<i>n</i>	<i>%</i>		<i>n</i>	<i>%</i>
Male	1,565	45	First year	322	9	Asian	241	7
Female	1,885	55	Sophomore	482	14	Black	277	8
			Junior	1,026	30	Hispanic	572	17
			Senior	1,620	47	White	2,361	68

Table 2

Descriptive Statistics for Predictor and Outcome Variables by Race and Ethnicity

	Asian		Black		Hispanic		White	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Covariates								
Class year ¹	3.04	1.04	3.26	0.96	3.12	0.99	3.15	0.97
Socializing with friends ¹	2.54	1.80	2.31	1.49	2.33	1.63	2.65	1.69
Prayer or worship ¹	1.00	1.38	1.42	1.27	0.66	0.98	0.57	0.93
Fitness or exercise ¹	1.56	1.48	1.48	1.22	1.72	1.45	1.75	1.33
Volunteering or community service ¹	1.23	1.67	0.93	1.27	0.95	1.37	0.82	1.23
Learning community ²	0.98	1.19	1.09	1.27	0.61	0.97	0.68	1.46
I came to college with a strong commitment to contributing to the greater good ³	4.01	1.06	4.04	1.07	3.95	1.05	4.07	0.95
...a well-developed ability to consider the moral and ethical dimensions of issues ³	4.12	0.81	4.53	0.71	4.31	0.85	4.43	0.75
...a well-developed ability to consider the moral and ethical consequences of my own actions ³	4.30	0.81	4.58	0.74	4.44	0.78	4.58	0.63
My experiences at this campus have helped me learn the skills necessary to effectively change society for the better ³	3.87	1.10	3.98	1.22	3.79	1.11	3.67	1.13
...further developed my ability to consider the moral and ethical consequences of my own actions ³	3.84	1.11	4.20	1.00	4.01	1.07	3.89	1.09
Perceptions of Campus Climates (Factors)								
Importance of Contributing to a Larger Community ³	3.91	0.84	4.07	0.90	4.13	0.80	4.05	0.79
Advocating for Contributing to a Larger Community ³	3.31	0.94	3.78	0.95	3.59	0.96	3.36	0.98
Engaging with a Larger Community ³	2.76	1.05	2.77	1.11	2.56	1.10	2.57	1.01
Importance of Perspective Taking ³	3.70	0.83	4.05	0.80	3.90	0.82	3.81	0.85
Advocating for Perspective Taking ³	3.56	0.96	3.81	0.91	3.65	0.91	3.55	0.89
Developing Perspective Taking ³	4.09	0.92	4.27	0.91	4.19	0.85	4.14	0.87
Developing Ethical and Moral Reasoning ³	3.64	0.86	4.06	0.88	3.79	0.94	3.69	0.92
Supporting Ethical and Moral Reasoning ³	3.57	0.94	3.91	0.90	3.55	0.97	3.61	0.90

Table 2 Continued.

	Asian		Black		Hispanic		White	
	M	SD	M	SD	M	SD	M	SD
Outcome Variable								
Mental Health ⁴	3.04	0.94	3.29	1.19	3.26	1.15	3.23	1.04

Note: ¹Scale = 0 (None) to 7 (30 or more). ²Scale = 0 (Never) to 3 (3 or more). ³Scale = 1 (Almost never or Strongly disagree) to 5 (Almost always or Strongly agree). ⁴Scale = 0 (Never) to 5 (Everyday).

Table 3

Model Statistics and Significant Predictors of College Student Mental Health

Model	1	2	3	4	5
Covariates					
Sex (0 = Female, 1 = Male)	-0.04*	0.00	0.01	0.02	0.02
Hispanic (0 = No, 1 = Yes)	0.02	0.04*	0.02	0.02	0.05
Asian (0 = No, 1 = Yes)	-0.07***	-0.04**	-0.05***	-0.05***	0.00
Black (0 = No, 1 = Yes)	-0.02	-0.01	-0.04*	-0.04*	-0.25**
Class year	0.07***	0.07***	0.05***	0.06***	0.06***
Socializing with friends	0.15***	0.15***	0.14***	0.13***	0.13***
Prayer or worship	0.16***	0.14***	0.14***	0.13***	0.12***
Fitness or exercise	0.12***	0.11***	0.08***	0.08***	0.08***
Volunteering or community service	0.10***	0.07***	0.05***	0.03*	0.03**
Learning community	0.11***	0.10***	0.06***	0.04**	0.05**
I came to college with a strong commitment to contribute to the greater good		0.23***	0.11***	0.07***	0.07***
...well-developed ability to consider the moral or ethical dimensions of issues		0.10***	0.11***	0.09***	0.09***
...well-developed ability to consider the moral or ethical consequences of my own actions		0.06**	0.07***	0.06**	0.06**
My experiences at this campus have helped me learn the skills necessary to effectively change society for the better			0.29***	0.20***	0.20***
...further developed my ability to consider the moral or ethical consequences of my own actions			0.03	-0.09***	-0.07***
Perceptions of Campus Climates (Factors)					
Importance of Contributing to a Larger Community				0.03	-0.02
Advocating for Contributing to a Larger Community				-0.09***	-0.10***
Engaging with a Larger Community				0.09***	0.09***
Importance of Perspective Taking				0.04	0.06
Advocating for Perspective Taking				0.08**	0.06
Developing Perspective Taking				0.03	0.05**
Developing Ethical and Moral Reasoning				0.14***	0.11***
Supporting Ethical and Moral Reasoning				0.01	0.06**

Table 3 Continued

Model	1	2	3	4	5
Climate and Race/Ethnicity Interactions					
Importance of Contributing to a Larger Community X Hispanic					0.41***
Advocating for Contributing to a Larger Community X Hispanic					-0.03
Engaging with a Larger Community X Hispanic					0.00
Importance of Perspective Taking X Hispanic					-0.23
Advocating for Perspective Taking X Hispanic					0.26**
Developing Perspective Taking X Hispanic					-0.31**
Developing Ethical and Moral Reasoning X Hispanic					0.11
Supporting Ethical and Moral Reasoning X Hispanic					-0.23**
Importance of Contributing to a Larger Community X Asian					0.15
Advocating for Contributing to a Larger Community X Asian					0.18**
Engaging with a Larger Community X Asian					-0.04
Importance of Perspective Taking X Asian					-0.20
Advocating for Perspective Taking X Asian					-0.08
Developing Perspective Taking X Asian					-0.12
Developing Ethical and Moral Reasoning X Asian					0.08
Supporting Ethical and Moral Reasoning X Asian					-0.02
Importance of Contributing to a Larger Community X Black					0.00
Advocating for Contributing to a Larger Community X Black					-0.07
Engaging with a Larger Community X Black					0.08
Importance of Perspective Taking X Black					0.27
Advocating for Perspective Taking X Black					-0.05
Developing Perspective Taking X Black					0.00
Developing Ethical and Moral Reasoning X Black					0.29**
Supporting Ethical and Moral Reasoning X Black					-0.31**
Total Variance Explained	0.114	0.207	0.280	0.309	0.317
Change in Variance Explained		0.093	0.073	0.029	0.008

Note: * $p < 0.05$. ** $p < 0.01$. *** $p \leq 0.001$. White students serve as the reference group.

CHAPTER 4.**ASSESSING MENTAL HEALTH: RELIABILITY, VALIDITY, AND FACTOR STRUCTURE OF THE MENTAL HEALTH CONTINUUM-SHORT FORM****Abstract**

College student mental health is an increasingly important topic in higher education and across the nation. To fully engage in the conversation and address concerns on college and universities campuses about mental health, campus professionals need brief, reliable, and valid assessments. Reliable and valid assessments strengthen statistical power and better inform the development of policies and practices. The Mental Health Continuum-Short Form is an internationally administered assessment of mental health, but few studies have explored the adequacy of the factor structure in college student samples in the United States. This study explores which of four published factor structures provides the best fit for the data in this college student sample. Findings indicate that a bi-factor structure provides the best fit for the college student sample used in this study.

Concerns about college students' mental health have prompted scholars and educators to give it substantial attention during the past several years (Douce & Keeling, 2014; Keyes et al., 2012, Low, 2011). More than five years before President Obama (White House, 2013) called for a national conversation regarding mental health, the Wabash National Study identified psychological well-being—an essential component of mental health (Ryff, 1989; Ryff & Keyes, 1995; Keyes, 2002)—as a student learning outcome (King, Brown, Lindsay, & VanHecke, 2007). Entering the search terms 'mental health' into the *Project MUSE* database revealed that, on average, the number of mental health-related articles published in

the *Journal of College Student Development* increased each year between 2003 and 2015. A brief analysis indicated most those were published after 2010, thus providing an additional indicator that college students' mental health is increasingly important among higher education professionals.

Although mental health has received more attention in recent years, most research has focused on mental health *problems* (Matthews-Ewald & Zullig, 2013; Northern, O'Brien, & Goetz, 2010) and negative experiences (Cox, Dean, & Kowalski, 2015; Kaier, Cromer, Johnson, Strunk, & Davis, 2015). Even though there is value in understanding negative experiences (e.g., prejudice, loneliness) and addressing mental health *problems* (e.g., anxiety, depression), "preventing the worst from happening does not equal promoting the best in people" (Keyes & Haidt, 2003, p. 5). Fortunately, several scholars (Diener et al., 2010; Huppert & So, 2013; Keyes, 2002; Seligman, 2011) are shifting the conversation outside of the higher education literature from a focus on mental health *problems* (e.g., psychopathology, negative experiences) to include aspects of mental health or *flourishing* (e.g., positive functioning, positive affect).

To aid in the assessment of mental health, Keyes (2002, 2009) developed the Mental Health Continuum-Short Form (MHC-SF). In conjunction, he proposed a comprehensive model of mental health. Importantly, Keyes (2002) found that *mental health* and *mental illness* represent distinct, yet related continua. The existence of a dual continuum provides further support that an emphasis solely on mental illness provides an incomplete understanding of the needs and experiences of college students (Hone, Jarden, Schofield, & Duncan, 2014; Keyes, 2002). Although Keyes (2009) identified multiple studies that have explored the factor structure of the MHC-SF among adolescents (ages 12-18) and adults

(ages 25 and older) in the United States and abroad, only one study has explicitly explored the factor structure in college students in the United States (Robitschek & Keyes, 2009). Understanding the factor structure and appropriateness of the MHC-SF in college student samples is an important step in identifying scales that demonstrate reliability and validity for assessing college student mental health.

Purpose

The purpose of this study is to conduct confirmatory analyses (Brown, 2015; DeVellis, 2017; Kelloway, 2015) on the factor structure of the MHC-SF with a sample of college students ($n=4,088$). Reliable and valid scales increase statistical power and confidence in findings (DeVellis, 2017). These findings can, in turn, inform policies and practices related to mental health on college and university campuses. If campus professionals have a brief, reliable, and valid assessment of college students' mental health, they can work toward assessing mental health and identifying policies, practices, and influential campus components that promote positive experiences and create pathways to mental health (Dunkle & Presley, 2009; Mitchell, Reason, Hemer, & Finley, 2016).

Focusing on positive experiences and mental health could contribute to improved student retention and academic performance (Douce & Keeling, 2014), as well as student learning outcomes (Mitchell et al., 2016; Reason, Flanagan, Stanton, & Knefelkamp, 2016). An examination of the Council for the Advancement of Standards (CAS) in Higher Education's (2009) learning and developmental outcomes indicates substantial overlap among contemporary understandings of mental health (Keyes, 2009) and student outcome domains. These domains include intrapersonal development (e.g., self-understanding, identity, integrity), interpersonal competence (e.g., meaningful relationships, collaboration),

humanitarianism and civic engagement (social and civic responsibility), and practical competence (e.g., pursuing goals, managing responsibilities, living a purposeful and satisfying life).

Contemporary Approaches to Mental Health

To add context for the analysis, first, I summarize existing frameworks for mental health. A summary of frameworks helps position this study within the larger conversation related to contemporary approaches to operationalize mental health. Second, I review existing literature on mental health to better understand how mental health has been operationalized using the MHC-SF, which serves as the data source for this study. Third, I summarize the reliability and validity of the MHC-SF as it is presented in extant literature because they are essential characteristics of good measurement.

Theoretical and Conceptual Frameworks for Mental Health

Although mental health has long been a focus of educational, psychological, and human development research (Chickering & Reisser, 1993; Ryff, 1989; Sanford, 1966), traditional and contemporary approaches to its definition and operationalization are inconsistent (Ryan & Deci, 2001). Contemporary scholars (Hone et al., 2014; Ryan & Deci, 2001) take a more comprehensive look at mental health, moving beyond singular assessments of affective constructs (e.g., happiness, satisfaction) to focus on flourishing (Diener et al., 2010; Huppert & So, 2013; Keyes, 2002; Seligman, 2011). Keyes (2002, 2009) is among the scholars promoting a positive-focused, comprehensive approach. His theoretically-driven approach—which includes life satisfaction, affect (Bradburn, 1969), personal functioning (Ryff, 1989; Ryff & Keyes, 1995), and social well-being (Keyes, 1998)—provided a framework for this study.

Operationalizing Mental Health using the MHC-SF

Hone and colleagues (2014) provided an in-depth overview of four approaches to operationalize flourishing (Diener et al., 2010; Huppert & So, 2013; Keyes, 2002; Seligman, 2011). According to Hone and colleagues, scholars (Diener et al., 2010; Huppert & So, 2013; Keyes, 2002; Seligman, 2011) have reached a consensus that flourishing includes aspects of positive affect and positive functioning. Additionally, three of the four scholars include aspects of self-acceptance or self-esteem (Diener et al., 2010; Huppert & So, 2013; Keyes, 2002), three include competence (Diener et al., 2010; Huppert & So, 2013; Seligman, 2011), three include positive emotion (Huppert & So, 2013; Keyes, 2002; Seligman, 2011), and two include social contribution (Diener et al., 2010; Keyes, 2002).

Despite these scholars' agreement on the inclusion of positive affect and positive functioning, their approach to operationalizing positive functioning are somewhat divergent. Although each operationalization incorporates aspects of psychological well-being (i.e., positive relationships, purpose), only two include a specific focus on social well-being (i.e., social contribution)—some scholars argue that positive functioning includes aspects of social and psychological well-being (Diener et al., 2010; Keyes, 2002). Importantly, all four scholars recognized the value of positive relationships—an aspect of positive functioning most often associated with psychological well-being (Diener et al., 2010; Ryff, 1989; Ryff & Keyes, 1995; Keyes, 2002). Given its social nature, positive relationships could be a conceptually-interrelated item of social well-being and psychological well-being that reflects a larger, global factor of mental health (Gallagher, Lopez, & Preacher, 2009; Hides et al., 2016).

This emphasis on positive functioning—which underscores psychosocial development—aligns mental health with learning and development (CAS, 2009; Chickering & Reisser, 1993; Sanford, 1966; Mitchell et al., 2016). When mental health is broadly conceptualized as optimal functioning and the maximization of potential—including the ability to adapt to change, act on personal beliefs, manage emotions, develop meaningful relationships, and find a purpose in life—the connections to learning and development become more apparent (CAS, 2009; Chickering & Reisser, 1993; Sanford, 1966). Integrating a focus on mental health into the institution’s policies and practices can enhance the educational environment and contribute to the institution mission (Dunkle & Presley, 2009).

Keyes’s (2009) operationalization of mental health has been used with college student samples in conjunction with Bringing Theory to Practice Project (Low, 2011), the Personal Growth Initiative scale (Robitschek & Keyes, 2009), the National Study of Living-Living Programs (Fink, 2014), and the Personal and Social Responsibility Inventory (Mitchell et al., 2016; Reason et al., 2016). With a framework for understanding Keyes’s (2002, 2009) operationalization of mental health, I shift the focus to the research supporting the reliability and validity of the MHC-SF.

Reliability

DeVellis (2017) describes reliability as a psychological measurement term used to explain how consistently an instrument reflects the true score of the construct it is intended to measure. Reliability is important to assessment and research because it increases scholars’ and external audiences’ confidence in the assessment (DeVellis). Researchers can demonstrate reliability through multiple means, including internal consistency (e.g., coefficient alpha, coefficient omega) and temporal stability (e.g., test-retest reliability).

Multiple studies have indicated that the MHC-SF has good internal consistency (Keyes, 2005; Lamers et al. 2011; Mitchell et al., 2016; Westerhoff & Keyes, 2009) and temporal stability (Lamers et al. 2011; Robitschek & Keyes, 2009), including previous studies involving students attending colleges and universities in the United States (Mitchell et al., 2016; Robitschek & Keyes, 2009). Although other scholars have used the MHC-SF with college students in the United States, they did not provide reliability information (Fink, 2014; Low, 2011).

Validity

In addition to operationalizing a variable and understanding its reliability, DeVellis (2017) suggested that researchers consider three forms of validity to assess whether the underlying cause of item covariance it related to the construct: content, criterion, and construct.

Content validity. Content validity refers to how well a set items reflect the intended construct. Although content validity is best assessed by a panel of experts from the field, Keyes's (2002, 2009) development of the MHC-SF using existing theory and instruments (Bradburn, 1969; Ryff, 1989; Ryff & Keyes, 1995; Keyes, 1998) provides some indication of content validity as do reviews by other scholars (Gallagher et al., 2009; Hone et al., 2014).

Criterion validity. Criterion validity refers to the empirical association between the instrument with other variables. Scholars support the criterion validity of the MHC-SF through its use predicting physical, psychological, and psychosocial functioning (Keyes, 2005), work-related productivity (Keyes & Grzywacz, 2005), risk of mortality (Keyes & Simoes, 2012), mental illness (Keyes, Dhingra, & Simoes, 2010), and risk of suicide among college students (Keyes et al., 2012).

Construct validity. Construct validity refers to how well an instrument reflects the theoretical relationship expected among variables. Many of the scholars who examined reliability and/or criterion validity support the construct validity of the MHC-SF through demonstrations of discriminant validity (Keyes, 2005; Keyes & Grzywacz, 2005; Lamers et al., 2011; Low, 2011). As theorized in the dual continuum of mental health (Keyes, 2009), studies have indicated that scores on the MHC-SF have a negative relationship with mental illness and psychopathology, supporting that positive mental health and negative mental health are distinct constructs. Hides and colleagues (2016) included the MHC-SF as a measure of positive mental health. Their analysis indicated that the general Mental Health factor from the MHC-SF was more strongly and positively associated with other measures of aspects of positive mental health (e.g., global well-being, social well-being) than the specific emotional, social, and psychological well-being factors of the MHC-SF. In addition, they found that the Mental Health factor was more strongly and negatively associated with measures of mental health problems (e.g., negative affect, depression) than the three specific well-being factors of the MHC-SF.

Factor Structure

Although the discriminant validity of the MCH-SF has been supported, scholars disagree about the factor structure—how to best represent the relationship among the items and latent construct(s). Some scholars found support for a unidimensional, or single factor, structure (Machado & Bandeira, 2015; Mitchell et al., 2016), while others found support for a bi-factor structure with most the variance accounted for by a general factor (De Bruin & Du Plessis, 2015; Chen, Jing, Hayes, & Lee, 2013; Hides et al., 2016; Jovanovic, 2015). In contrast, other scholars found support for a three-factor structure (Joshani, Wissing,

Khumalo, & Lamers, 2013; Lamers et al., 2011; Robitschek & Keyes, 2009). Of these factor structures, the single factor and three-factor models have been tested and reported with college student samples in the United States, but the bi-factor structure has not been analyzed with these college student samples.

Robitschek and Keyes (2009) supported the three-factor structure using confirmatory factor analysis in their sample, while Mitchell and colleagues (2016) supported the unidimensional factor structure using exploratory and confirmatory factor analytic approaches in their sample. However, the other published research using the MHC-SF with college students in the United States does not report on whether the factor structure was tested in the sample (Fink, 2014; Keyes et al., 2012; Low, 2011). Given the inconsistency in findings, it is important to understand the factor structure of the MHC-SF in its use with college students so that higher education professionals can reliably and validly assess mental health. This study was guided by the following research question: What factor structure provides the best fit for the data in this college student sample? To answer this question, I used confirmatory factor analysis to compare the fit of four factor structures identified in the literature: (a) a unidimensional factor structure; (b) a three-factor structure; (c) a higher-order structure; and (d) a bi-factor structure.

Data Collection

Data for this study came from nine four-year colleges and universities that participated in a survey that included the MHC-SF between 2013 and 2015. The research was supported by the Bringing Theory to Practice (BTtoP) Project's Psychosocial Well-being Initiative. The MHC-SF is an internationally used measure of mental health (Keyes, 2009). To understand the factor structure of the MHC-SF in its use with college students, I analyzed

data from a sample of 2,373 undergraduates (67% White, 67% female, 37% college senior) from nine four-year colleges and universities (see Table 1). Students in the sample ranged from 18 to 63 years old ($M = 23$, $SD = 7$).

Data Analysis

Prior to analysis, I imputed missing data in MPLus 7.11 using full information maximum likelihood (FIML) to account for the bias related to item nonresponse (Kelloway, 2015; Cox, McIntosh, Reason, & Terenzini, 2014). I used structural equation modeling-based (SEM) approaches to conduct factor analysis using Mplus 7.11 (Brown, 2015; DeVellis, 2017; Kelloway, 2015). The SEM-based approaches, which included exploratory structural equation modeling (ESEM), are more flexible than conventional principal axis factoring or principal components analyses (DeVellis, 2017). This flexibility allowed me to test (a) a unidimensional factor structure; (b) a three-factor structure; (c) a higher-order structure; and (d) a bi-factor structure. These four factor structures are depicted in Figure 1 and Figure 2.

Confirmatory Factor Analysis

I used confirmatory factor analysis (CFA) to explore the model fit for multiple factor structures. First, I tested the simplest factor structure: a unidimensional structure (Model 1) representing a Mental Health factor with the 14 items from the MHC-SF loading onto a single factor. Second, I tested a correlated three-factor structure (Model 2) to represent the three theorized well-being factors measured using the MHC-SF (Keyes, 2009). I specified three items (i.e., items 1-3) to load onto the Emotional Well-being factor, five items (i.e., items 4-8) to load onto the Social Well-being factor, and six items (i.e., items 9-14) to load onto the Psychological Well-being factor. Third, I tested a higher-order factor structure

(Model 3) that accounted for three first-order factors (i.e., emotional, social, and psychological well-being) using the 14 items from the MHC-SF and a second-order factor (i.e., mental health) using the three first-order factors.

Bi-Factor Analysis

Although CFA is commonly used as the methodological approach to confirm latent factor structure (DeVellis, 2017), it does not allow for items to load on a general factor (i.e., second-order factor) as well as a set of specific factors (i.e., first-order factors). In CFA, the first-order factors—not the individual items—load onto the second-order factor. CFA is an appropriate method if the correlation among the items is solely attributed to the first-order factors. However, if the second-order factor accounts for a relationship with the items, CFA is inappropriate because items are restricted to load onto a single factor (Brown, 2015).

Fortunately, bi-factor analysis using ESEM is a more flexible approach that allows researchers to account for the dual nature of the item loadings across general (i.e., mental health) and specific (i.e., emotional, social, and psychological) factors, while examining the potential higher-order factor structure (Brown, 2015; DeVellis, 2017; Kelloway, 2015). Factors in this model (Model 4) were not allowed to correlate. I calculated coefficient omega (ω) and coefficient omega hierarchical (ω_h), estimates of internal consistency, using the Omega software program (Watkins, 2013).

Results

The purpose of this article was to identify which factor structure provided the best fit for the data in this college student sample. I conducted factor analyses on the MHC-SF to test multiple factor structures proposed in previous literature using contemporary SEM-based approaches (models 1-4). The results indicated that the bi-factor structure provided the best

fit without any model respecification. Below, I summarize the results for the CFA and bifactor approaches used with this college student sample.

Confirmatory Factor Analysis

Using CFA and conventional model fit indicators (Hu & Bentler, 1999), I found the unidimensional factor structure (Model 1) achieved poor fit for the data without respecifying the model. The chi-square ($\chi^2[77] = 3,645.91$) was the first indicator of poor fit. This was not surprising given the large sample size ($n = 2,373$), which increases the likelihood of significant findings even if they are trivial (Brown, 2015). In addition, the comparative fit index (CFI = 0.83) and Tucker-Lewis index (TLI = 0.80) did not fit the data well (CFI and TLI > 0.95). The root mean square error of approximation (RMSEA = 0.14) provided an additional indicator of poor model fit (RMSEA < 0.06). The standardized root mean square residual (SRMR = 0.07) was the only indicator that achieved good fit (SRMR < 0.08). Correlations among the emotional, social, and psychological factors from Model 1 ranged from 0.77 to 0.82 and were statistically significant ($p < 0.001$). See Table 2 for a complete summary of model fit statistics and Table 3 for a complete list of standardized factor loadings for Model 1.

The three-factor (Model 2) and higher-order factor (Model 3) structures fit the data equally without respecifying the model. Both Model 2 and Model 3 provided better fit than Model 1 (i.e., unidimensional structure). Despite demonstrating improved model fit, not all indices met the conventional criteria outlined by Hu and Bentler (1999). Although the SRMR (0.06) met the criteria for good fit, CFI (0.91) and TLI (0.89) indicated marginal fit for both models. The RMSEA (0.10) indicated poor fit. The $\chi^2(74) = 1,984.50$ also indicated poor model fit for the data. See Table 2 for a complete summary of model fit

statistics and Table 3 for a complete list of standardized factor loadings for Model 2 and Model 3.

The results indicate that the three-factor model fits as well as the higher-order model. In these instances, Kline (2013) stated that the less complex of the competing models is preferred. Less complex models are easier to explain and interpret. In this case, support would go to the three-factor model because, although the two models have equal fit, the three-factor model is less complex than the higher-order factor model.

Bi-Factor Analysis

The results of the bi-factor structure (Model 4) using ESEM provided the best fit for the data without model respecification. All indices except the χ^2 indicated good fit in the bi-factor structure. The $\chi^2 (63) = 655.89, p < 0.001$ indicated improved fit over previous models. However, the χ^2 remained statistically significant. The bi-factor structure provided the best fit on all indices when compared to the previous factor structures. The CFI, TLI, SRMR, and RMSEA indicated the model fit the data well (CFI and TLI > 0.95 ; SRMR = 0.02; RMSEA = 0.06). All model parameter estimates were statistically significant ($p \leq 0.01$). See Table 2 for a complete summary of model fit statistics.

These results indicate the existence of a broader Mental Health factor, which accounts for most the variance in the true-score, in addition to three specific factors of Emotional Well-being, Social Well-being, and Psychological Well-being, which make minimal contributions to the true-score. Despite coefficient omega indicating that all four factors have reliability ($\omega \geq 0.87$), coefficient omega hierarchical (ω_h) illustrated that the greatest percentage of the variance (i.e., nearly 87%) in the true-score was attributable to the Mental Health factor ($\omega_h = 0.867$). The Emotional Well-being factor ($\omega_h = 0.222$), Social Well-

being factor ($\omega_h = 0.263$), and Psychological Well-being factor ($\omega_h = 0.135$) minimally contributed to the true-score. Given their minimal contribution, the coefficient omega hierarchical indicated that they are not reliable measures of their specific variance (Rodriguez, Reise, & Haviland, 2016). See Table 4 for internal consistency estimates and the percentage of variance explained in Model 4.

Discussion

The broad purpose of this study was to provide higher education professionals with a greater understanding of the reliability, validity, and factor structure of the MHC-SF. It is important to understand the reliability and validity of assessment instruments to increase confidence in the findings as well as to increase the statistical power of associated analyses. Brief, reliable, and valid assessments of college students' mental health are essential to inform higher education professionals as they create and implement policies and design programs and experiences on college and university campuses that promote mental health.

Previous research, as well as the results of this study, support the internal consistency of the MHC-SF. These findings suggest that the MHC-SF is a reliable assessment of mental health. Additionally, model fit indices for the bi-factor structure indicate that not only is the theorized three-factor structure with a general mental health factor appropriate, but also it provides the best fit for the data. The correlated nature of the emotional, social, and psychological well-being factors, along with the Mental Health factor, demonstrate that testing a bi-factor structure using ESEM was the most appropriate method for examining model fit in this college student sample.

Without any model respecification, the bi-factor structure achieved the best model fit of any of the proposed factor structures. The bi-factor structure demonstrates that although

there is a general Mental Health factor that accounts for a large portion of the variance, the specific Emotional Well-being factor, Social Well-being factor, and Psychological Well-being factor account for additional, domain-specific variance.

In addition to confirming factor structure, researchers need to further explore the measurement properties of the instrument (Brown, 2015). In this case, further exploration of the measurement properties of the MHC-SF is needed in college student samples (e.g., replication, invariance). Future research should explore the factor invariance of the MHC-SF across student populations, including sex, race, ethnicity, and class year. Future research should also explore the validity of the MHC-SF. For example, (a) do the specific factors predict outcomes of interest to higher education professionals or (b) are there indications of convergent and discriminant validity for the four factors in college student samples? Understanding the structure, invariance, and validity of the MHC-SF will increase the value-added to higher education professionals through research studies and information for decision-making.

Conclusion

The MHC-SF is an internationally-used measure of mental health. However, previous research demonstrated inconsistent findings related to the appropriate factor structure of the MHC-SF. Additionally, few studies have explored the factor structure in college student samples in the United States. This study is important because of the increasing emphasis placed on college student mental health. The results indicate that the MHC-SF has good support for its reliability, validity, and stability as an assessment tool for higher education professionals. Instruments that demonstrate reliability and validity increase confidence in the findings as well as the statistical power of associated analyses.

Assessments of college students' mental health that are brief and demonstrate reliability and validity are essential to inform higher education professionals as they make decisions about policies and practices to promote mental health on college and university campuses.

Findings indicated that a bi-factor structure of mental health provided the best fit for the data.

The bi-factor structure indicates that the Mental Health Continuum-Short Form is most reliably represented by an overall Mental Health factor when used with college students.

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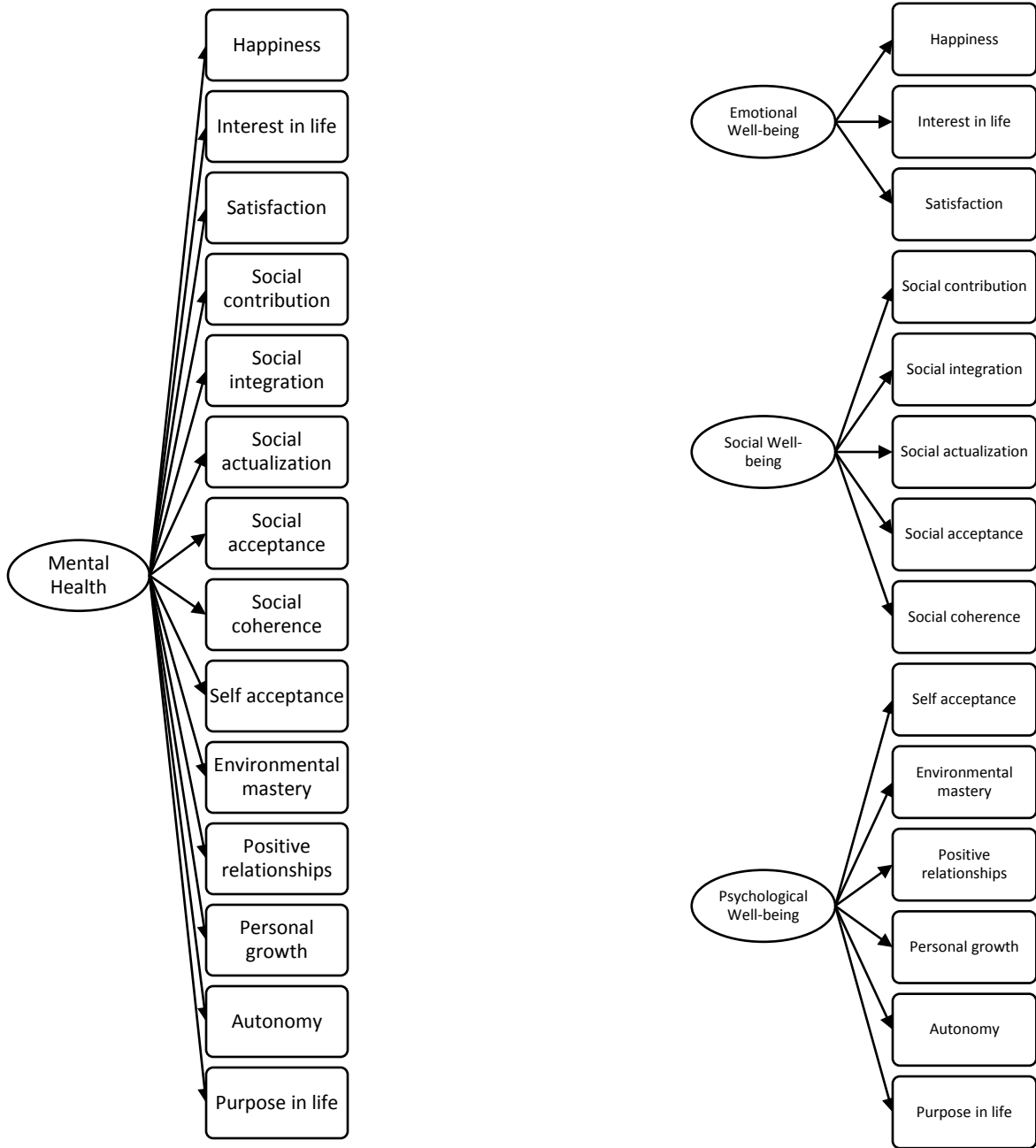


Figure 1. Model 1. Unidimensional factor structure for mental health (left) and Model 2. Three-factor model for mental health (right).

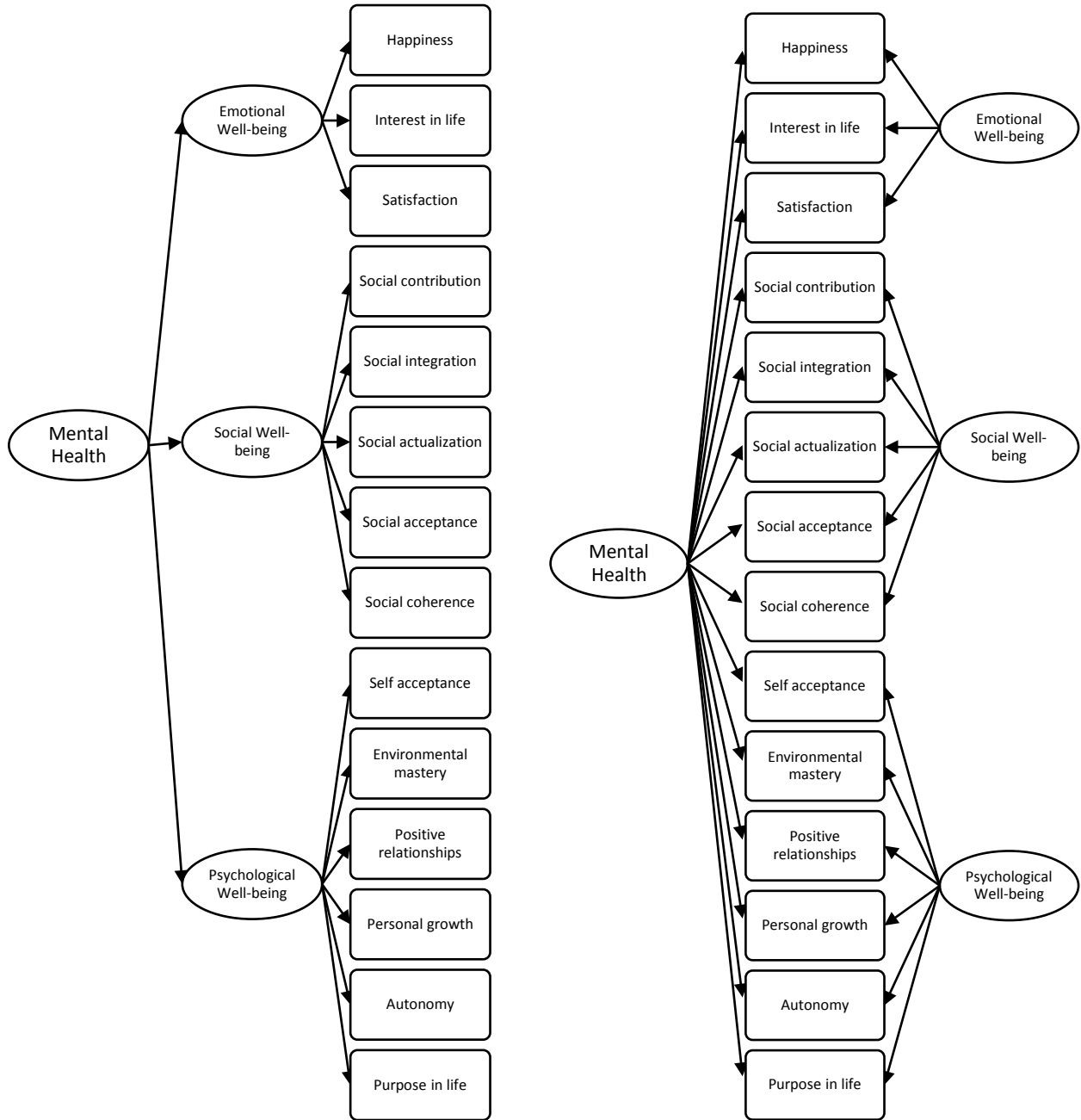


Figure 2. Model 3. Higher-order factor structure for mental health (left) and Model 4. Bi-factor structure for mental health (right).

Table 1

Percentage of Respondents by Sex, Class Year, and Race and Ethnicity (n = 2,373)

	<i>n</i>	<i>%</i>		<i>n</i>	<i>%</i>
Male	776	33	American Indian or Alaska Native	13	<1
Female	1,597	67	Asian	173	7
			Black or African American	88	4
First year	391	17	Hawaiian or Other Pacific Islander	11	<1
Sophomore	394	17	Hispanic	293	12
Junior	720	30	White	1,577	67
Senior	868	37	Multiracial	218	9

Table 2

Model Fit Statistics for Factor Analyses (n = 2,373)

Model	χ^2	df	CFI	TLI	SRMR	RMSEA	90% CI for RMSEA	
							LL	UL
1	3,645.91	77	0.831	0.800	0.068	0.140	0.136	0.144
2	1,984.50	74	0.909	0.889	0.055	0.104	0.100	0.108
3	1,984.50	74	0.909	0.889	0.055	0.104	0.100	0.108
4	655.89	63	0.972	0.959	0.023	0.063	0.059	0.067

Note: All χ^2 values are significant at $p < 0.001$. CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CI = confidence interval; LL = lower limit; UL = upper limit. Model 1 = unidimensional structure; Model 2 = three-factor structure; Model 3 = higher-order factor structure; Model 4 = bi-factor structure. Models 1-3 use confirmatory factor analysis. Model 4 uses bi-factor analysis. Hu and Bentler (1999) suggest that models with good fit include CFI and TLI > 0.95, SRMR < 0.08, and RMSEA < 0.06. Indices meeting these criteria are in boldface.

Table 3

Standardized Factor Loadings for Factor Analyses

Model	1		2		3		4	
	MH	Three-factor	Three-factor	MH	Three-factor	MH		
EWB				0.877				
Item 1	0.769	0.866	0.866		0.603	0.711		
Item 2	0.822	0.878	0.878		0.339	0.794		
Item 3	0.814	0.874	0.874		0.354	0.786		
SWB				0.879				
Item 4	0.755	0.754	0.754		0.040	0.790		
Item 5	0.730	0.759	0.759		0.125	0.743		
Item 6	0.579	0.725	0.725		0.659	0.552		
Item 7	0.560	0.676	0.676		0.578	0.520		
Item 8	0.484	0.608	0.608		0.594	0.430		
PWB				0.938				
Item 9	0.757	0.785	0.785		0.340	0.713		
Item 10	0.658	0.693	0.693		0.351	0.617		
Item 11	0.718	0.745	0.745		0.295	0.682		
Item 12	0.700	0.730	0.730		0.250	0.682		
Item 13	0.709	0.748	0.748		0.299	0.687		
Item 14	0.798	0.827	0.827		0.231	0.794		

Note: EWB = Emotional Well-being factor; SWB = Social Well-being factor; PWB = Psychological Well-being factor; MH = Mental Health factor. Loadings ≥ 0.4 are in boldface.

Table 4

Internal Consistency and Variance Explained in the Bi-Factor Structure (Model 4)

	MH	EWB	SWB	PWB	Unique
% of Total Variance	0.472	0.043	0.081	0.038	0.365
% of Common Variance	0.744	0.068	0.128	0.060	
ω	0.951	0.916	0.873	0.890	
ω_h	0.867	0.222	0.263	0.135	

Note: EWB = Emotional Well-being factor; SWB = Social Well-being factor; PWB = Psychological Well-being factor; MH = Mental Health factor. ω = coefficient omega (reliability estimate). ω_h = coefficient omega hierarchical (percentage of variance in true-score attributed to factor).

CHAPTER 5.

CONCLUSION

College student mental health is an important consideration for campus professionals. Given its importance, more research is needed not only to describe college students' mental health across the United States and explore the factors that influence it, but also to identify and test reliable and valid mental health assessment tools. Chapter 1 outlined the general importance of college student mental health. It reinforced the difference between *mental health* or flourishing and *mental illness* or psychopathology, advocating for a greater focus on the positive experiences and outcomes related to mental health.

Perceptions of Campus Climates

Chapter 2 provided a preliminary look at the connection between campus climates that support civic learning and their relationships to mental health using data from five colleges and universities in the United States. Chapter 3 further explored the relationship between campus climates and mental health by focusing on the perceptions and mental health of Asian, Black, Hispanic, and White students at nine four-year colleges and universities in the United States. In Chapter 3, I found that self-reported mental health was not statistically different for Asian, Black, Hispanic, and White students in the sample.

Together, Chapter 2 and Chapter 3 culminate in a more nuanced understanding of college student mental health and bring attention to the influence students' perceptions of campus climates that support civic learning—specifically ethical and moral reasoning—have on mental health. Although the samples used for Chapter 2 and Chapter 3 included different groups of students, both studies found that students' perceptions of the campus climate for

developing ethical and moral reasoning had a positive influence on most students' mental health. In both studies, more than 99% of the variance in students' self-reported mental health was attributed to individual-level aspects. In both studies, the college or university the student attended had little influence on their mental health. However, campus professionals can positively influence students' mental health by (a) communicating the importance the campus places on helping students develop ethical and moral reasoning and (b) providing opportunities for students to develop ethical and moral reasoning in their academic work and personal life, and (c) helping students develop their ability to act on and express their personal values in a responsible manner.

In some cases, helping students learn the skills necessary to change society for the better has a positive influence on mental health. Additionally, the studies found that for some students, the messages conveyed by the campus community about contributing to a larger community and perspective taking has positive influences on students' mental health. Engaging with perspective taking is an important consideration for discourse given the landscape higher education, the United States, and—more broadly—the world. Emphasizing the importance of perspective taking and encouraging students to think about the implications of their choices (i.e., ethical and moral reasoning) before they act and speak can converge to strengthen the skills and dispositions students need in order to more appropriately engage in a diverse society as well as to promote individual (e.g., mental health) and societal good. However, as students consider the consequences of their choices and actions, campus professionals should be prepared to provide appropriate support and guidance. Supporting students as they reflect on their experiences and facilitating meaningful learning experiences

through purposeful discussion could help mitigate the negative influence of the experience on students' mental health.

Mental Health Factor Structure

Chapter 4 sought to explore which of four mental health factor structures identified by previous research provided the best fit for the college student sample. Findings indicated that a bi-factor structure of mental health, as identified by exploratory structural equation modeling, provided the best fit for the data. The bi-factor structure indicates that the Mental Health Continuum-Short Form is best represented by an overall Mental Health factor when used with college students. The Mental Health factor accounted for 87% of the variance in the true-score. In contrast, the specific Emotional Well-being factor, Social Well-being factor, and Psychological Well-being factor each accounted for between 14% to 27% of variance in the true score. With the minimal contributions of the specific factors, the Mental Health factor is the most reliable measure.

Future Research

To more fully explore the influence race, ethnicity, and other social identities have on perceptions of climates that support civic learning and on mental health, further research should provide a more in-depth look at the intersectionality of social identities and their influence on students' perceptions of campus climates. Additionally, given the importance of ethical and moral reasoning to mental health, researchers could use qualitative interviews or focus groups to further explore the substantive connection between ethical and moral reasoning and mental health.

Future research should explore the factor invariance of the MHC-SF across student populations, including sex, race and ethnicity, and class year. Future research should also

explore the validity of the MHC-SF. For example, (a) do the specific factors predict outcomes of interest to higher education professionals or (b) are there indications of convergent and discriminant validity for the four factors in college student samples? Understanding the structure, invariance, and validity of the MHC-SF will increase the value-added to higher education professionals through research studies and information for decision-making.