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Validation of the Dual-Factor Model of Mental Health in College Students: An Investigation of Group Characteristics

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VALIDATION OF THE DUAL-FACTOR MODEL OF MENTAL HEALTH IN COLLEGE STUDENTS: AN INVESTIGATION OF GROUP CHARACTERISTICS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Psychology

by

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This dissertation is affectionately dedicated to my loving family. Their endless love and support have made this project a possibility. Particularly, my little brother, Ethan, who epitomizes strength, perseverance, and courage. His resilience deeply moves and motivates me to work every day to become unstoppable, just like him.

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iii
ABSTRACT.....	vi
CHAPTER 1. INTRODUCTION.....	1
Transitioning to a Complete Model of Mental Health.....	3
Dual-Factor Model of Mental Health.....	6
CHAPTER 2. REVIEW OF THE LITERATURE	8
Research Conducted using the Dual-Factor Model.....	8
Mental Health of College Students.....	19
The Present Study.....	20
CHAPTER 3. METHOD.....	23
Data Collection and Participants.....	23
Measures	25
Overview of Data Analysis	32
CHAPTER 4. RESULTS	36
Handling of Missing Data.....	36
Assumption Checks	38
Descriptive Statistics, Intercorrelations, and Formation of Groups	40
Primary Analyses.....	44
CHAPTER 5. DISCUSSION.....	56
Dual-Factor Model Groups	57
Differences in Psychopathology by Group	62
Dual-Factor Model Mental Health Group Outcomes	65
Moderation Analyses	75
Examination of Group Characteristics as they Relate to Outcomes	77
Strengths, Limitations, and Future Directions.....	80
Implications for Screening and Treatment.....	82
Conclusion.....	85
APPENDIX A. CONSENT FORM.....	86
APPENDIX B. DEMOGRAPHIC INFORMATION FORM.....	88
APPENDIX C. DEPRESSION-ANXIETY-STRESS SCALE.....	89
APPENDIX D. ADULT ADHD SELF-REPORT SCALE.....	91
APPENDIX E. SATISFACTION WITH LIFE SCALE.....	92

APPENDIX F. COLLEGE STUDENT SUBJECTIVE WELLBEING QUESTIONNAIRE	93
APPENDIX G. REVISED UCLA LONELINESS SCALE.....	94
APPENDIX H. THE BRIEF RESILIENCE SCALE.....	95
APPENDIX I. IRB FORM.....	96
REFERENCES.....	97
VITA.....	112

ABSTRACT

The dual-factor model of mental health proposes that symptoms of mental illness and markers of mental wellness can occur simultaneously, while functioning as discrete factors that contribute to mental health and adaptive functioning (Keyes, 2005). The current study investigated the utility of the dual-factor model of mental health (cf. Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011) in college students ($N = 1,023$). Using self-reported symptoms of depression, anxiety, stress, inattention, and hyperactivity/impulsivity as indicators of psychopathology, in combination with self-reported subjective well-being (SWB) as an indicator of wellness, participants were classified into one of four mental health groups (i.e., complete mental health, vulnerable, symptomatic but content, troubled) and investigated whether mental health groups differ significantly with respect to their levels of school-based performance (i.e., GPA), adjustment (e.g., academic efficacy, academic satisfaction), engagement (e.g., academic engagement, student-staff engagement), social connectedness, and resilience. The present study also assessed whether the two mental health groups characterized by elevated levels of psychopathology (i.e., symptomatic but content and troubled groups) exhibited significantly different types of symptoms. Finally, exploratory moderation analyses were conducted to assess whether SWB significantly moderated the relationship between psychopathology and outcomes of interest. Study findings support the existence of the dual-factor model of mental health in college students, as each of the four possible mental health groups were observable parts of the total sample, with each group encompassing a sizable number of students. In addition, results demonstrated that of the two groups characterized by elevated levels of psychopathology, the troubled group evidenced significantly higher levels of depression, anxiety, and stress, compared to participants classified

as part of the symptomatic but content group. Finally, results further established the utility of this model by detecting differences in functioning between mental health groups. Moderation analyses yielded no evidence of interaction effects; however, SWB consistently emerged as the most robust predictor of each of the dependent variables, further validating the significance of SWB as it relates to important college student outcomes. Implications for theory, practice, and research are discussed.

CHAPTER 1. INTRODUCTION

Three main views of health have predominated throughout human history (Keyes, 2007), the first of which is referred to as the “pathogenic approach.” The pathogenic approach has historically been the most dominant view. This approach conceptualizes health as the absence of disease, disability, and premature death. The second main conception of health is termed the “salutogenic” approach, which was popularized by Antonovsky (1979) and by key individuals associated with the humanistic approach such as Carl Rogers and Abraham Maslow. The salutogenic approach defines health as, “the presence of positive states of human capacities and functioning in thinking, feeling, and behavior” (Strümpfer, 1995). The third approach is referred to as the “complete state model,” which subsumes both the pathogenic and the salutogenic models. This third paradigm views overall health as a complete state, including both the absence of disease as well as the “presence of a positive state of human capacities and functioning” (Keyes, 2007). Although views of overall health have continued to evolve, key societal structures have failed to reflect this shift.

The United States, along with other industrialized countries, underwent what is referred to as the “epidemiological transition” during the 20th century. The epidemiological transition is a long-term shift primarily characterized by changes in disease patterns, in which acute, infectious diseases were steadily replaced by chronic, degenerative diseases as the primary causes of death (Omran, 2005). This transition reliably coincides with the process of industrialization, as there are expansions in public health efforts and routine sanitation practices, ultimately increasing the life expectancy of the general population. The epidemiological transition occurring in the United States increased life expectancy by an average of 30 years (Keyes, 2007). This change was accompanied by an overly narrow focus on increasing longevity and the assumption that the

reduction of premature death was the most important goal in achieving general population health. Nonetheless, the steady rise of multiple health-related conditions has had a sobering effect on the American population. Specifically, with respect to mental health, 1 in 5 adults (over 40 million Americans), have a mental illness. In addition, youth adjustment has been declining. Rates of youth depression have increased from 8.5% in 2011 to 11.1% in 2014 (Mental Health America, 2017). The age-adjusted suicide rate increased by 24% from 1999 to 2014 in both males and females, across ages 10 to 74 (Curtin, Warner, & Hedegaard, 2016).

The increasing prevalence of mental illness has also proven to be a substantial economic burden. In 2013, the Agency for Healthcare Research and Quality (AHRQ) published a ranking of conditions with the highest spending for the civilian, noninstitutionalized population. Mental disorders ranked third on the list of health spending, preceded only by trauma and heart conditions (Roehrig, 2016). The Health Care Satellite Account, released by the Commerce Department's Bureau of Economic Analysis, provided a similar list of estimates, but included institutionalized populations. With this inclusion, which accounted for over 40 percent of spending, mental disorders occupied the top position for highest spending by a significant margin, at \$201 billion, followed by spending related to heart conditions (\$147 billion; Roehrig, 2016).

Ultimately, an increase in longevity has seen a corresponding increase in the number of years spent living with chronic disease and psychological disorder, as opposed to increased health and quality of life. As previously mentioned, this transition has failed to stimulate a concrete shift in the way the American health care system is structured.

Transitioning to a Complete Model of Mental Health

Although the field of psychology has recently begun to emphasize aspects of positive development with the birth of positive psychology in the late 1990's, to date, the majority of psychological research has been framed by the current version of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), with almost an exclusive focus on psychopathology (American Psychiatric Association, 2013; Evans, et al., 2005). Seligman and colleagues (2005) acknowledged the importance of investigating positive indicators of well-being by emphasizing that:

There are huge differences between a teenager who is not depressed or anxious and one who bounds out of bed in the morning with twinkling eyes; between an adolescent who says no to drugs and one who says yes to meaningful involvement in family, school, and community activities; and between one who costs society little and one who actually benefits it. (p. 498)

Indeed, the above quote poignantly demonstrates the significance of investigating positive indicators of mental health functioning, as the mere absence of negative indicators is insufficient for attaining a complete state of life satisfaction and well-being.

Defining positive indicators of mental health. The past three decades of psychological research have shown an increased emphasis on examining positive indicators of mental health. Prior to this, such indicators were severely under-researched, and therefore, largely undefined, unmeasured, and as a result, unrecognized by both governmental and non-governmental agencies (Keyes, 2007). Subjective well-being (SWB) is one of the main constructs examined by recent research and was dubbed the “scientific term for happiness” by Suldo and Shaffer (2008). SWB is composed of three components: (1) life satisfaction (LS), (2) positive affect (PA), and (3) negative affect (NA; Diener, 2000). Life satisfaction makes up the cognitive component of SWB, as it includes cognitive appraisals of one's happiness. Appraisals may include both global and

domain-specific (e.g., school, family) cognitions. Affect is the frequency of positive (e.g., elation, joy) versus negative (e.g., anger, sadness) emotional experiences over time (Diener, Lucas, & Oishi, 2002; Suldo, et al., 2011). Therefore, an individual considered to have high levels of SWB would be expected to report positive judgments regarding his or her quality of life. Such an individual would also be expected to report the experience of more positive versus negative emotions (Diener, Scollon, & Lucas, 2009). SWB can either be measured by calculating a composite score using all three domains of SWB (i.e., $SWB = [LS + PA] - NA$; Sheldon, Kasser, Houser-Marko, Jones, & Turban, 2005; Suldo & Shaffer, 2008) or by examining the three components of SWB independently of one another (Fergusson, McLeod, Horwood, Swain, Chapple, & Poulton, 2015; Lyubomirsky, King, & Diener, 2005; Pavot & Diener, 2008).

Much of the existing research has investigated LS in isolation. In college students, high LS, in addition to an absence of psychological distress, is important for facilitating student engagement, as well as academic success (Antaramian, 2015). Additional studies conducted by Ojeda, Flores and Navarro (2011), as well as Duffy, Allan, and Bott (2012) have shown that college students with higher LS tend to be more satisfied with their academic experiences. Higher LS among college students has also been associated with greater academic self-efficacy, more favorable academic expectations, less academically-related stress, and greater perceived progress towards goals (Ojeda et al., 2011; O'Sullivan, 2011). There is even some research suggesting that greater levels of LS are associated with higher GPAs in college students (Rode, et al., 2005; Howell, 2009). Although there is a scarcity of research investigating all three components of SWB simultaneously, existing research (e.g., Heffner & Antaramian, 2016) has demonstrated that LS provides incremental validity over affective states in predicting a range of

student outcomes. Therefore, it is generally recommended that all three components of SWB are used in combination when investigating specific outcomes of interest.

To date, much of the research conducted within the field of positive psychology has focused on isolated indicators of well-being [e.g., *hope* (Snyder, et al., 1991), *optimism* (Scheier & Carver, 1985), *gratitude* (McCullough, Emmons, & Tsang, 2002), and *self-efficacy* (Schwarzer & Jerusalem, 1995)], and their relationships to specific outcomes of interest. For example, previous research has shown that hope is an important predictor of both GPA and college student graduation rates (Curry, Snyder, Cook, Ruby, & Rehm, 1997; Rand, 2009). More recently; however, there has been a shift in focus from investigating positive psychological constructs in isolation, to the assessment of positive traits in combination with one another. One of the central ideas, or meta-constructs, that have been borne of this shift is termed *covitality*, which is defined by Furlong and colleagues (2014) as “the synergistic effect of positive mental health resulting from the interplay among multiple positive-psychological building blocks” (p. 3), and has been conceptually contrasted with the widely-used clinical psychology concept of comorbidity. From a statistical perspective, covitality has been described more concretely as, “the latent, second-order positive mental health construct accounting for the presence of several co-occurring, first-order positive mental health indicators” (p. 3). In an effort to further clarify how covitality relates to first-order positive mental health indicators, Renshaw et al., (2016) likened it to the development and use of the full-scale Intelligence Quotient (IQ). More specifically, just as an individual’s full-scale IQ is considered to be a more complete indicator of overall cognitive functioning when compared to index scores in isolation, so too is covitality considered to be a more complete indicator of an individual’s cumulative SWB and important quality-of-life outcomes (Furlong et al., 2014) compared to individual indicators of well-being.

Dual-Factor Model of Mental Health

Conventionally, mental health diagnoses are determined by either the presence or absence of associated symptoms and their negative outcomes. In general, one is said to “meet criteria” for a psychological disorder if they exhibit sufficient symptoms of the disorder, and if such symptoms result in unfavorable states (e.g., distress, impairment). If insufficient symptoms are present, one is often labeled as “subclinical” and subsequent intervention is unlikely to follow (Suldo, Thalji-Raitano, Kiefer, & Ferron, 2016). By these standards, mental health comes to be an incidental outcome in the absence of mental illness (Suldo & Shaffer, 2008). This view is often referred to as the “unidimensional model” of mental health, which places psychological distress and well-being on opposite ends of a single mental health continuum, indicating that reductions in an individual’s level of psychological distress is tantamount to improvements in well-being (Renshaw, et al., 2014; See Figure 1). Keyes (2007) argues that “one of the simplest and inexplicably untested empirical hypotheses” within health-related fields “...is that the absence of mental illness is the presence of mental health.” Although there is a propensity for mental health to improve as symptoms of psychopathology abate, research has shown that this link is only modest (2007).



Figure 1. The unidimensional model of mental health

Part of the persistence of the one-dimensional model can be attributed to its parsimonious and intuitive portrayal of mental health. Nevertheless, recent research has begun to question whether this predominant standard effectively conveys a comprehensive image of psychological

functioning. Thus, research has increasingly begun to examine the “dual-factor model” (also referred to as the multiple-component, two-continua, bidimensional, and complete state models of mental health). The dual-factor model was proposed to demonstrate that symptoms of mental illness and markers of mental wellness can occur simultaneously, while functioning as discrete factors that contribute to mental health and adaptive functioning. Therefore, the dual-factor model posits that mental illness and aspects of mental health form two distinct continua, as opposed to being located on opposite ends of the same continuum (Keyes, 2005; See Figure 2).

Consistent with this notion, in 2004, the World Health Organization published a momentous report on the promotion of mental health. The report conceptualized mental health as the absence of mental illness as well as “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (World Health Organization, 2004). This definition is reflective of recent shifts occurring in the field of psychological research, in that mental health is increasingly being viewed as a complete state of being.

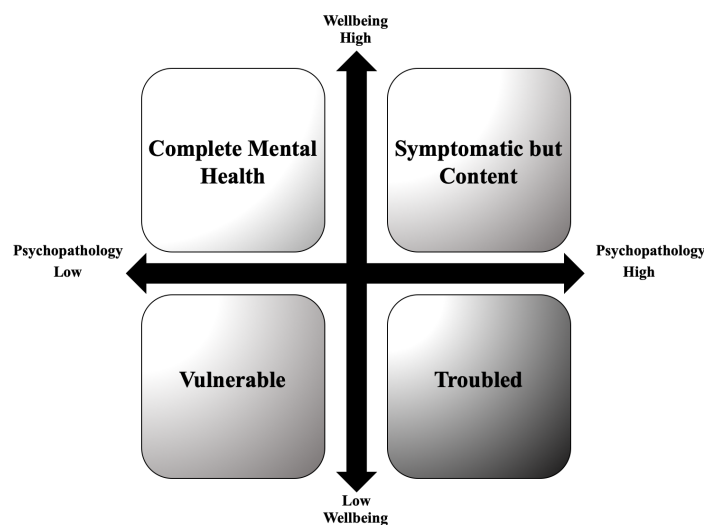


Figure 2. The bidimensional model of mental health

CHAPTER 2. REVIEW OF THE LITERATURE

Research Conducted using the Dual-Factor Model

Elementary and middle school students. Greenspoon and Saklofske (2001) were the first to utilize the dual-factor model in their investigation of elementary students in Canada. Participants were classified as either high or low on measures of psychopathology (PTH) and subjective well-being (SWB), thereby yielding four distinct research groups: (1) low PTH, high SWB (2) low PTH, low SWB, (3) high PTH, high SWB, and (4) high PTH, low SWB. In constructing these groups, Greenspoon and Saklofske purported that some students may be free of psychopathology, yet experience low levels of life satisfaction, and conversely, despite the presence of psychopathology, may display high levels of life satisfaction. The authors noted that the latter of the two groups would traditionally be flagged by screening practices designed to detect psychopathological symptoms. Greenspoon and Saklofske found discernable group differences between children with high psychopathology and either low versus high SWB. Specifically, children with high psychopathology and SWB had better sociability and interpersonal relationships relative to children with high psychopathology and low SWB. Thus, despite the presence of psychopathology, the youths' SWB was the main factor distinguishing group outcomes. The former group of children, who were free of psychopathology, yet had lower levels of SWB, displayed poorer interpersonal relationships, relatively lower self-concepts, and lower levels of perceived academic competence. Traditionally, such children would not be identified as targets of intervention due to their absence of psychopathological symptoms. Thus, the study demonstrated that measuring both psychopathology and SWB has incremental validity in predicting outcomes and exemplified the advantages of the dual-factor model.

Suldo and Shaffer (2008) extended the research to U.S. adolescents, while also aiming to investigate a greater variety of important outcome measures (i.e., educational functioning, social functioning, and physical health). Similar to Greenspoon and Saklofske (2001), Suldo and Shaffer identified four distinct mental health groups within their sample of 341 middle school students. Group one (57% of the sample) was determined to have “complete mental health”, characterized by low psychopathology and high levels of SWB. The composition of group one approximated that of the total sample with respect to grade level, gender, and ethnicity; however, students with low SES and/or whose parents were unmarried were underrepresented. Group two (13% of the sample) was referred to as the “vulnerable” group, due to their low levels of psychopathology and low levels of SWB. Individuals in this group were termed as such given their reduced likelihood of being identified as targets of interventions. Group three (13% of the sample) was termed “symptomatic but content”; these students reported high levels of psychopathology and SWB. The fourth and final group (17% of the sample) was termed “troubled”, and consisted of students reporting high levels of psychopathology and low levels of SWB. The composition of group four approximated that of the total sample in terms of gender and age; however, low SES youth with unmarried parents, and American Indians were overrepresented.

With respect to educational functioning (measured by examining GPA, attendance, standardized reading and math test scores, academic self-perceptions, attitudes towards school, valuing of school, motivation, and self-regulation), those in the complete mental health group scored favorably on 5 of 8 indicators compared to their vulnerable peers. Group members also obtained significantly higher achievement tests scores compared to the troubled and symptomatic but content groups. The troubled group and the symptomatic but content groups did not differ

significantly from each other with respect to any of the indicators of educational functioning. Indicators of social functioning (e.g., negative interactions with peers, “socially awkward” behavior, and perceived social support from teachers, peers, and parents) suggested that youth with complete mental health reported overall better outcomes compared to the other groups; however, the symptomatic but content group’s scores were significantly higher than those obtained from the troubled group on all social functioning indicators. Finally, the physical health (e.g., feelings of overall health, frequency of illness) of youth in the complete mental health group was significantly better than that of all other groups. In addition, perceptions of physical health among the symptomatic but content group was greater than those of troubled youth on all indicators measured.

Given that outcomes differed among all four groups, Suldo and Shaffer’s results supported the dual-factor model of mental health, suggesting that positive and negative indicators of mental health are not opposite ends of a single mental health continuum. Similar to the results obtained from the Greenspoon and Saklofske (2001), the results indicated that there is a smaller number of adolescents who do not report significant levels of psychopathology, however, exhibit low levels of subjective well-being who would not be identified when using the traditional one-factor model.

Suldo, Thalji, and Ferron (2011) conducted a follow-up study to Suldo and Shaffer. The study evaluated the predictive power associated with the four-group categorization on academic achievement and school behavior. Using a longitudinal design, the study examined three indicators of achievement (i.e., reading and math test scores, GPA) and two indicators of school-based behavior (i.e. office discipline referrals, number of absences). The study found that group membership predicted academic and behavioral outcomes one year later. Specifically, students in

the complete mental health, symptomatic but content, and vulnerable groups maintained their GPA over time; however, students in the troubled group demonstrated a decline in their GPA. Further, youth with higher levels of psychopathology accumulated more absences throughout the year, irrespective of their SWB. Nevertheless, students in the complete mental health group displayed the best school attendance, highest GPAs, and highest average math skills one year later. Overall, results of this study support the utility of assessing both positive and negative indicators of mental health with respect to predicting academic and behavioral outcomes.

Antaramian, Huebner, Hills, and Valois (2010) further investigated the benefits of a dual-factor approach by examining 764 seventh and eighth graders from a different geographic region. They expanded on Suldo and Shaffer's (2008) original study by examining various domains of student engagement (including behavioral, cognitive, and emotional components) in addition to environmental variables that may serve as antecedents to engagement (e.g., quality of peer, teacher, and parent relationships). Findings indicated that the groups of students varied in their level of engagement, with students in the complete mental health group consistently displaying the highest behavioral, cognitive, and emotional engagement. Students in the symptomatic but content group, who, according to traditional screening practices, would be considered at-risk due to their reported levels of psychopathology, demonstrated significantly higher levels of engagement across all three domains in comparison to youth in the troubled group. Overall, youth in the vulnerable (typically unidentified by traditional screening practices) and troubled groups displayed the lowest levels of school engagement. Effect sizes were determined to range from moderate to large, which suggested that the differences observed were not merely statistically significant, but also clinically significant.

Two follow-up studies were conducted using the Antaramian (2010) dataset. The first was conducted by Kelly, Hills, Huebner, and McQuillin (2012), which employed a short-term (5-month) longitudinal design to evaluate the stability of predictors of group membership. Results indicated that students in the complete mental health group (termed “flourishing” within this study) demonstrated the highest stability, with 85% of students maintaining this classification at time 2. Youth determined to be in the vulnerable group exhibited the lowest stability, with a mere 29% of students retaining this classification at time 2. Forty-two percent and 47% of students classified in the symptomatic but content and troubled groups, respectively, maintained their initial classifications. Additional analyses revealed that social support significantly predicted changes in group membership. A second study was conducted by Lyons, Huebner, and Hills (2013) and employed both variable- and person-centered approaches in examining how positive and negative indicators of health influenced youths’ school engagement and academic performance (i.e., GPA) longitudinally (5 months). Overall results supported previous findings. Students in the complete mental health group reported the highest levels of engagement and had the highest average GPAs five months later, with students in the troubled group displaying considerably less stability. Youth in the vulnerable group demonstrated a significantly faster rate of decline in their GPA compared to the complete mental health group. Additional findings also revealed significant differences regarding behavioral, cognitive, and emotional engagement between the four mental health groups.

High school students. Suldo and colleagues (2016) conducted the first study with high school students. The study sample consisted of 500 students from two public high schools. The primary goal of the study was to examine the potential additive value of SWB in explaining youth adjustment. Specifically, the study examined factors indicative of academic adjustment,

social adjustment, identity development, and physical health. The sample was distributed among four groups as follows: the complete mental health group constituted the majority of the sample (62.2%), the vulnerable group and the symptomatic but content group each independently constituted an additional 11.4%, whereas the troubled group accounted for 15% of the sample. This distribution was consistent with previous study findings suggesting that approximately two-thirds of youth are reasonably mentally healthy at any given time, and are therefore not likely to be in need of intervention.

Although studies conducted with middle school students demonstrated that those with complete mental health had higher GPAs (Antaramian et al., 2010) and higher rates of attendance and reading scores (Suldo & Schaffer, 2008) than members of the other groups, results obtained from Suldo et al., (2016) suggest that levels of psychopathology (rather than SWB) may be more indicative of academic achievement for high school students. Specifically, the two groups with elevated psychopathology (i.e., symptomatic but content and troubled groups) had lower GPAs and rates of attendance, and more ODRs than the complete mental health and vulnerable groups. This suggests that elevated levels of psychopathology are more likely to result in academic difficulty, regardless of student well-being. This was untrue of subjective measures of academic adjustment, as individuals in the complete mental health and symptomatic but content groups had better academic self-perceptions, valuing of school, and attitudes towards school than their comparison groups (i.e., vulnerable and troubled groups, respectively). This relationship was also not observed in regard to social functioning. When compared to their vulnerable peers, students in the complete mental health group indicated higher levels of social support and greater satisfaction with their romantic relationships. Students deemed symptomatic but content demonstrated better overall social adjustment when compared

to their troubled peers, including higher levels of social support (across all sources), greater levels of satisfaction with romantic relationships, as well as reduced instances of peer victimization.

This study extended the array of outcomes assessed with respect to the dual-factor model by examining identity development. Results indicated that students' level of SWB may be more closely related to identity development compared to levels of psychopathology. As would be expected, students in the complete mental health group demonstrated the highest average levels of all three indicators (i.e., self-esteem, clarity of self-concept, and involvement in meaningful activities) associated with identity development. The symptomatic but content group demonstrated the second highest mean levels of indicators of identity development, followed by students in the vulnerable group, and lastly in the troubled group. Finally, findings indicated that SWB provided additive information regarding students' physical health. Overall, students with higher levels of SWB reported higher levels of perceived physical health, compared to their vulnerable peers, however, activity limitations related to health was most strongly predicted by students' level of psychopathology, regardless of their level of SWB.

College students. Eklund and colleagues (2011) published the first study investigating the validity of the dual-factor model among college students. A sample of 246 undergraduate students were divided into four groups based on their responses to measures of both psychopathology and well-being. Results revealed that college students with low levels of psychopathology and high levels of well-being (i.e., life-satisfaction) displayed fewer attention problems as well as lower reported alcohol use. Group members also reported higher levels of several positive constructs measured (e.g., grit, hope, and gratitude) compared with students who reported low levels of both psychopathology and well-being. Results further indicated that the

combination of measures more strongly predicted certain outcomes (e.g., locus of control) compared to the use of positive versus negative indicators of mental health, independently. The results were consistent with earlier research demonstrating that positive and negative indicators of mental health do not form opposite ends of a single continuum.

A second study by Renshaw and Cohen (2013) aimed to further validate the dual-factor model among college students by classifying a sample of 1,356 undergraduates into four mental health groups. Somatization, anxiety, and depression were measured as markers of distress and life-satisfaction was measured as an indicator of psychological well-being. Outcomes of interest were academic achievement, interpersonal connectedness, and physical health, considered key indicators of college student functioning. Results of the study demonstrated that the complete mental health group had the highest levels of overall academic achievement and physical health. The symptomatic but content group reported a level of interpersonal connectedness similar to those in the complete mental health group. Participants in the symptomatic but content group also reported significantly more interpersonal connectedness and better physical health than those in the vulnerable and troubled groups, although their reported physical health was still significantly lower than those in the complete mental health group. When looking at indicators of functioning overall, academic achievement appeared to be the least affected by mental health status, with significant group differences observed between only those in the complete mental health and symptomatic but content groups. Physical health appeared to be most affected by mental health status, yielding significant differences among all four groups. Findings from this study provided further validation of the dual-factor model as applied to a college student population.

A third study by Antaramian (2015) extended previous research by examining the applicability of the dual-factor model to 561 undergraduate students. Whereas previous research (e.g., Eklund et al., 2011) examined the dual-factor model in relation to other measures of psychological functioning, Antaramian investigated the model in the context of undergraduates' educational outcomes. Specifically, this study investigated student engagement (further subdivided into academic engagement, peer engagement, faculty engagement, intellectual engagement, and beyond-class engagement), which is a well-established indicator of academic functioning and success. Although definitions may vary across studies, college student engagement as conceptualized by Krause and Coates (2008) as a broad construct that encompasses both an individual's social involvement within his/her university community, as well as an individual's personal investment in academic activities. Several studies have demonstrated that student engagement is related to various important academic factors. Higher levels of engagement have been associated with higher GPAs, better critical thinking skills, greater likelihood of returning to a university, and greater degree attainment (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Carini, Kuh & Klein, 2006; Svanum & Bigatti, 2009). Furthermore, students with higher levels of engagement have been shown to be roughly 1.5 times more likely to graduate and graduate one semester earlier, on average, when compared to peers with lower levels of engagement (2009).

Antaramian's (2015) study yielded four distinct groups classified according to varying levels of psychopathology and subjective well-being. Of particular note, the group with low levels of psychopathology and low levels of subjective well-being, termed the "at-risk" group, was found to make up a larger percentage (i.e., 26 percent) than that found in studies conducted with children and adolescents, which may suggest that undergraduates may be more susceptible

to having low levels of subjective well-being. Results further demonstrated that students who had low levels of psychopathology and high levels of subjective well-being, termed the “well-adjusted” group, had the highest levels of engagement and highest GPAs, overall. Group differences in GPA were found in the expected direction; however, the only statistically significant difference was found to be between the well-adjusted group and the “distressed” group (i.e., students with high levels of psychopathology and low levels of subjective well-being). With respect to levels of engagement, individuals in the well-adjusted group had significantly higher levels of all types of engagement compared to individuals in the at-risk group. This suggests that despite having low levels of psychopathology, individuals in the at-risk group had poorer study habits, were less engaged with peers and faculty, had lower intrinsic motivation, and felt a lesser sense of belonging when compared to individuals with higher levels of subjective well-being, suggesting that well-being may be a key component of an ideal college experience. There were no significant differences in GPA or engagement (with the exception of beyond-class engagement) between the at-risk and the distressed groups. This is important to note given that the at-risk group makes up a larger percentage than the distressed group (i.e., 26 versus 21 percent, respectively); however, the at-risk group would fail to be identified as being in potential need of supports or services when traditional screening practices are employed.

Categorical versus continuous analytic approaches. Renshaw, Eklund, Bolognino, and Adodo (2016) conducted the first and only study, to date, assessing the concurrent validity of the dual-factor model by comparing two analytic approaches: categorical versus continuous. The authors divided a sample of 951 undergraduate students into two subsamples measuring the same outcome variables (i.e., social connectedness, life satisfaction, physical health, academic achievement). The first subsample ($n = 461$) was analyzed using the categorical approach (i.e.,

univariate ANOVAs), where participants were assigned membership to one of the four dual-factor model mental health groups based on their self-reported symptoms of psychopathology and indicators of wellness. Conversely, the second subsample ($n = 490$) was analyzed using a continuous analytic approach (i.e., latent variables path analyses), in which psychopathology and indicators of wellness were both assessed as continuous variables. Results of the categorical approach, which compared groups unidimensionally (i.e., high vs. low psychopathology and high vs. low well-being) and bidimensionally (i.e., dual-factor model), demonstrated greater incremental validity for the dual-factor model, as compared to either group, individually. Alternatively, findings from the continuous approach, indicated that the model containing indicators of wellness in isolation was a stronger predictor of outcomes than models containing only-distress and models containing both distress and wellness indicators, as predictors. Overall, findings from the continuous analyses also produced significantly larger effect sizes compared to results from the categorical approach. Together, results of this study suggest that categorical and continuous approaches to the dual-factor model may produce incongruent findings, which in turn, may lead to differing theoretical and practical implications. Despite observed differences, findings from both analytic approaches suggest a misguided emphasis on the exclusive screening and treatment of negative mental health indicators.

Taken together, findings from the existing literature examining the applicability of the dual-factor model across several age groups (i.e., elementary, middle, high school, and college students) strongly suggest that although psychopathology and well-being are related, they form distinct dimensions of psychological functioning. Such dimensions may be simultaneously investigated in order to afford researchers a more comprehensive depiction of mental health and its relationship to a host of outcomes.

Mental Health of College Students

The college years coincide with a key developmental period, during which time students are making the transition from adolescence to young adulthood (Arnett, 2000). Existing research has demonstrated that the nature of the transition to undergraduate education may be uniquely associated with certain negative outcomes. For example, previous research has shown that this transition period is associated with depression, concentration problems, appetite disturbance, and homesickness (Lee, Olson, Locke, Michelson, & Odes, 2009; Price, McLeod, Gleich, & Hand, 2007; Thurber & Watson, 2012). Epidemiological studies suggest that between 12 and 50% of college students meet criteria for one or more psychological disorders (Blanco et al., 2008; Hunt & Eisenberg, 2010; Verger et al., 2010). For example, in the United States, nearly 10% of college students have been diagnosed with and/or treated for depression in the last twelve months (Wolfram, 2010). Furthermore, an abundance of recent data has shown that both the prevalence and severity of mental health concerns among college students is increasing (Kitzrow, 2003; Gallagher, 2007, American College Health Association, 2008; Mackenzie et al., 2011).

The specific type of impairment experienced by college students with mental health disorders has also been an important focus area of research. For example, previous studies have shown that college students with mental health disorders are twice as likely to drop out without obtaining an undergraduate degree when compared to their mentally healthy counterparts (Kessler, Foster, Saunders, & Stang, 1995; Hartley, 2010). Research has further shown that there are longer-term consequences associated with mental health disorders experienced in early adulthood. For instance, mental health disorders in early adulthood have been linked to persisting emotional and physical health problems (Scott, Lim, Al-Hamzawi, Alonso, Bruffaerts, & Caldas-

de-Almeida, 2016), labor market marginalization (Niederkrotenthaler, et al., 2014), and relationship dysfunction (Kerr & Capaldi, 2011) in later adulthood.

Although the differences between college students and their non-college-attending peers has been understudied, existing data suggests that these groups have approximately equal overall 12-month prevalence of mental health disorders, including roughly equal prevalence of mood and anxiety disorders (Blanco et al., 2008). While the mental health of college students has been an area of increasing concern, it also presents a unique opportunity for research and intervention, given the large number of individuals that can be reached during this pivotal developmental period. Specifically, over 65% of students who graduate from high school next enroll in postsecondary education (Planty et al., 2008), with mental health disorders accounting for approximately one-half of the disease burden for young adults in the U.S. (Mathers, Fat, Boerma, & World Health Organization, 2008), with the majority of lifelong mental health disorders first manifesting by age 24 years (Kessler, et al., 2005). As such, research that is conducted within the university setting offers a unique opportunity to assess and address a significant public health problem among individuals within this age group.

The Present Study

The overarching aim of the present study is to further explore the utility of the dual-factor model of mental health (cf. Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011) in college students. To date, the bulk of the research conducted on the dual-factor model has examined its utility for school-aged and high school students; however, the evidence is far more limited for the model's applicability to college students. Although early research supports its use with college-age students (e.g., Eklund, Dowdy, Hones, & Furlong, 2011; Renshaw & Cohen, 2013; Antaramian, 2015), additional evidence is needed to conclude

whether the dual-factor model is suitable for classifying and understanding the specific mental health needs of college students.

The present study also aims to build on the existing dual-factor model research by exploring novel variables of concurrent functioning (e.g., resilience), and investigating the specific symptom makeup of symptomatic mental health groups. Given that previous research suggests that poor adjustment is more likely to occur as life satisfaction declines (Suldo & Huebner, 2004; Funk, Huebner, & Valois, 2006), it is hypothesized that the mental health groups will significantly differ on a range of other measures of psychosocial and educational functioning.

After classifying participants into one of four dual-factor model mental health groups, the present study primarily aims to answer three main questions:

- (1) What proportion of college students make up each mental health group (i.e., complete mental health, vulnerable, symptomatic but content, troubled) yielded from the dual-factor model classification system?
- (2) Do the two mental health groups characterized by elevated levels of psychopathology (i.e., symptomatic by content vs. troubled) exhibit significantly different types of symptoms (e.g., higher anxiety, depression, inattention)?
- (3) Do mental health groups differ significantly with respect to their levels of school-based performance (i.e., GPA), adjustment (e.g., academic efficacy, academic satisfaction), engagement (e.g., academic engagement, student-staff engagement, beyond-class engagement), social connectedness, and resilience?

The secondary aim of the present study was predominantly exploratory in nature. Specifically, the current study aims to investigate whether the relationship between

psychopathology and the outcomes of interest are moderated by participants' self-reported levels of subjective well-being.

CHAPTER 3. METHOD

Data Collection and Participants

Data were collected between July 2018 and November 2018. The present sample consisted of 1,023 undergraduate students enrolled at Louisiana State University. Participants ranged in age from 18 to 50 ($M = 19.32$, $SD = 2.26$), with 80.4% of students identifying as female. Available data indicated that 79.6% of participants identified as Caucasian, 10.8% identified as Black/African American, 6.4% identified as Hispanic/Latino, 4.8% identified as Asian, 2.5% identified as Biracial/Multiracial, 0.9% identified as American Indian/Alaska Native, and 1.3% of participants declined to answer. Regarding year of undergraduate education, the majority of the sample was comprised of first year students (46.9%), with just over half of the sample (51.2%) reporting that they were employed at the time of data collection. Additional descriptive statistics can be found in Table 1.

Table 1. Demographic characteristics of participants in mental health groups

		Mental Health Group, %				Total Sample (<i>N</i> = 1023), %
		Complete Mental Health (<i>n</i> = 710)	Vulnerable (<i>n</i> = 56)	Symptomatic but Content (<i>n</i> = 145)	Troubled (<i>n</i> = 102)	
Demographic Variable						
Gender						
	Male	21.0	12.5	13.1	20.6	19.4
	Female	78.9	87.5	86.2	79.4	80.4
Ethnicity						
	American Indian/Alaska Native	0.8	.	2.1	.	0.9
	Asian	4.9	7.1	2.8	5.9	4.8
	Black/African American	10.1	19.6	9.7	11.8	10.8
	Caucasian	80.1	69.6	82.8	75.5	79.6
	Biracial/Multiracial	2.8	1.8	1.4	2.9	2.5

(table cont'd.)

Demographic Variable		Mental Health Group, %				Total Sample (N = 1023), %
		Complete Mental Health (n = 710)	Vulnerable (n = 56)	Symptomatic but Content (n = 145)	Troubled (n = 102)	
Year in School	Hispanic/Latino	7.0	3.6	3.4	7.8	6.4
	Declined to Answer	1.1	1.8	0.7	2.9	1.3
	First Year	46.1	50.0	47.6	47.1	46.9
	Second Year	20.1	25.0	19.3	15.7	19.6
	Third Year	18.6	12.5	17.2	14.7	17.7
	Fourth Year	11.4	7.1	11.7	16.7	11.6
	Fifth Year +	3.1	3.6	3.4	5.9	3.4
Employment	Employed	50.0	50.0	60.0	51.0	51.2
	Unemployed	50.0	50.0	39.3	49.0	48.7
Extracurriculars	None	37.5	46.4	33.1	46.1	38.5
	One	33.4	33.9	37.2	36.3	34.1
	Two	22.7	12.5	21.4	13.7	20.9
	Three or more	6.5	7.1	8.3	3.9	6.5
Parental Marital Status	Married	44.2	42.9	55.2	45.1	45.8
	Living w/ Partner	0.8	1.8	0.7	2.0	1.0
	Separated	2.1	3.6	1.4	.	1.9
	Divorced	17.5	16.1	10.3	15.7	16.3
	Widowed	1.8	3.6	0.7	3.9	2.0
	Never Married	33.5	32.1	30.3	33.3	32.8

Following deletion of duplicate responses, initial sample size consisted of 1,057 students. Imbedded validity items were reviewed to assess for invalid response patterns, which resulted in the removal of 28 individuals. Six more individuals were then removed due to incomplete answers on imbedded validity items. All participants were recruited through the use of SONA, which was only made accessible to students enrolled in undergraduate psychology courses. Participation was open to all undergraduate students who were at least age 18 years. Although enrollment in an undergraduate psychology course was necessary for participation, participation

was not restricted by additional factors (e.g., academic major, mental health status). Participants provided demographic information and completed a series of self-report questionnaires using a secure online server (i.e., Qualtrics). Participants received partial course credit for participation in the present study and were also entered into a raffle for one of two chances to win a \$25 gift card. Institutional Review Board approval was obtained prior to initiation of the study. Informed consent was obtained for all participants prior to completing the online survey.

Measures

Demographic Questionnaire. Participants completed a brief demographic questionnaire, which collected information regarding basic identifying information, (e.g., age, race, gender, and grade, parents' marital status).

Depression – Anxiety – Stress Scale (DASS; Lovibond & Lovibond, 2004). The DASS is a 42-item, self-report measure designed to assess the negative emotional states of depression, anxiety, and stress. The measure can be subdivided into three scales containing 14 items each and can be further subdivided into related subscales ranging in length from 2-5 items. The Depression scale assesses aspects of depression such as lack of interest/involvement, self-deprecation, devaluation of life, hopelessness, and dysphoria. The Anxiety scale assesses areas such as general autonomic arousal, situational anxiety, and the subjective experience of anxious affect. Finally, the Stress scale assesses chronic and non-specific arousal (e.g., being easily upset/agitated, difficulty relaxing, irritable/over-reactive, impatient; Lovibond & Lovibond, 2004). Participants utilize a 4-point severity/frequency scale, ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*), to rate the extent to which they have experienced each item over the past week. Higher scores on each or the three subscales suggest greater severity of symptoms associated with depression, anxiety, or stress. Studies have

demonstrated high internal consistency for each of the scales, ranging from .96 to .97 for DASS-Depression, .84 to .92 for DASS-Anxiety, and .90 to .95 for DASS-Stress (Lovibond & Lovibond, 2004; Brown, Korotitsch, Chorpita, & Barlow, 1997; Antony, Bieling, Cox, Enns, & Swinson, 1998; Clara, Cox, & Enns, 2001; Page, Hooke, & Morrison, 2007). Evidence suggests that each of the scales show stability over time (Brown, Korotitsch, Chorpita, & Barlow, 1997) and are responsive to treatment that targets mood and emotional functioning (Ng, Trauer, Dodd, Callaly, Campbell, & Berk, 2007). The anxiety and depression scales have been found to have both construct and convergent validity (Lovibond & Lovibond, 2004; Crawford & Henry, 2003).

For the purposes of the present study, all three subscales (i.e., depression, anxiety, stress) were utilized to assess the relative prevalence of associated symptoms. The internal reliability of these scales based on data from the present sample was excellent: depression ($\alpha = .94$), anxiety ($\alpha = .87$), and stress ($\alpha = .92$).

Adult ADHD Self-Report Scale v1.1 Symptoms Checklist (ASRS-v1.1). The ASRS was developed in conjunction with the revision of the WHO Composite international Diagnostic Interview (CIDI; Kessler & Ustun, 2004) for the WHO World Mental Health (WMH) Survey Initiative (Demyttenaere et al., 2004). It is an 18-item measure containing questions consistent with the DSM-IV-TR criteria for ADHD. The ASRS is generally divided into two parts. Part A consists of the first 6 items, which make up a screener commonly utilized to identify adults with ADHD, as these items were found to be the most predictive of symptoms consistent with ADHD (Kessler et al., 2005; Ustun et al., 2017). Part B of the questionnaire contains the remaining 12 items and is typically used to assess additional symptoms of ADHD. Both parts A and B use a 5-point Likert scale, with responses ranging from 0 (*never*) to 4 (*very often*). Depending on the specific question, responses of “sometimes”, “often”, or “very often” may be suggestive of

clinical impairment for that particular item. As a whole, the measure exhibits high internal consistency and concurrent validity (Adler, Spencer, & Faraone, 2006). Part A demonstrates a sound consistency with clinician diagnoses, with an area under the receiver operating characteristic curve (AUC) of .90 (Kessler et al., 2005).

With regard to the current study, the ASRS was subdivided to reflect two clusters of symptoms, namely, inattentive symptoms versus hyperactive/impulsive symptoms. Each subscale contained 9 items. With respect to the current study, the ASRS, as a whole, demonstrated high internal consistency ($\alpha = .87$). Internal consistency for both of the subscales of interest were similarly strong: inattention ($\alpha = .83$) and hyperactivity/impulsivity ($\alpha = .81$).

Satisfaction with Life Scale (SLS; Diener et al., 1985). The cognitive component of subjective well-being was measured using the SLS. The SLS is a brief, 5-item self-report measure that assesses global, cognitive judgments of satisfaction with one's life. Participants rate positively-worded items (e.g., "I am completely satisfied with my life") using a seven-point scale, with responses ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The SLS has been shown to have strong internal consistency ranging from .78 to .92 and test-retest reliability, as well as strong concurrent validity with other measures of emotional wellbeing (Diener et al. 1985; Pavot & Diener 1993, Kaczmarek, Bujacz, & Eid, 2015). Cronbach's alpha of the SWLS for the present study was .84.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The affective components of subjective well-being (i.e., positive and negative affect) were measured through the use of the PANAS. The PANAS is a widely used scale containing 20 items, which are further subdivided into two subscales assessing global positive affect and global negative affect (Watson et al., 1988). Each subscale consists of 10 items represented by either

positive emotion words (e.g., “interested”, “enthusiastic”, “inspired”) on the positive affect scale, or negative emotion words (e.g., “distressed”, “irritable”, “ashamed”) on the negative affect scale. Participants are asked to rate the extent to which they have experienced each emotion over the past week using a 5-point scale, with responses ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). Previous research has demonstrated that the PANAS has a bidimensional factor structure, and that the subscales have concurrent validity with both each other and with other measure of emotionality, strong internal consistency (ranging from .84 to .90), and moderate to strong test-retest reliability (Crawford & Henry, 2004; Watson et al., 1988). In the current sample, Cronbach’s alpha for the positive affect subscale was .88 and was similarly strong for the negative affect subscale ($\alpha = .84$).

College Student Subjective Wellbeing Questionnaire (CSSWQ; Renshaw, 2016). The CSSWQ is a 15-item, self-report measure that was designed to be used as a domain-specific measure of college student covitality. Given that the CSSWQ was meant for use as a population-based screening instrument, it was designed to be a brief, cumulative measure of domain-specific SWB. As a result, only four items were selected to represent each domain of well-being. Specifically, the measure is designed to assess students’ academic satisfaction (cognitive domain; e.g., “I am satisfied with my academic achievements since coming to this college”), academic efficacy (behavioral domain; e.g., “I study well for my classes”), school connectedness (social domain; e.g., “I feel like a real part of this school”), and college gratitude (emotional domain; e.g., “I am grateful to the professors and other students who have helped me in class”). Participants are asked to provide answers on a 7-point Likert scale, with responses ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Reliability analyses have shown that each of the four CSSWQ scales have strong internal consistency, with Cronbach’s alpha $\geq .80$ (Renshaw &

Bolognino, 2016). With respect to the present study, the CSSWQ, as a whole, was observed to have excellent internal consistency ($\alpha = .91$). Each of the four subscales also evidenced strong internal consistency: academic satisfaction ($\alpha = .89$), academic efficacy ($\alpha = .89$), school connectedness ($\alpha = .81$), and college gratitude ($\alpha = .81$).

First-Year Experience Questionnaire (FYEQ; Krause & Coates, 2008). The FYEQ was utilized to measure college student engagement. This scale, designed by Krause and Coates (2008), was developed to assess multiple domains of college student engagement with their university. This 61-item measure is subdivided into 7 subscales: transition engagement scale (TES), academic engagement scale (AES), peer engagement scale (PES), student-staff engagement scale (SES), intellectual engagement scale (IES), online engagement scale (OES), and the beyond-class engagement scale (BES). Participants are asked to rate their level of agreement with each item using a 5-point scale, with higher scores indicating a greater degree of engagement.

It is important to note that this measure was originally designed to be used with college freshmen; however, consistent with the methodology of Antaramian (2015), only select subscales were used in the present study to ask about more general university experiences that may be applicable to all university students, regardless of what year of schooling they are in. Specifically, 5 of the 7 subscales were used, totaling 41 items. The academic engagement scale was used to assess participants behaviors related to their classes (e.g., attendance, studying, workload management; “I usually come to class having completed readings or assignments”). The peer engagement scale was used to investigate the degree to which participants engage with peers in course-related activities (e.g., “I regularly study with other students”). The student-staff engagement scale assesses students’ interactions with faculty (e.g., “most of the academic staff

are approachable”). The intellectual engagement scale was used to measure general satisfaction (e.g., “I enjoy the intellectual challenge of subjects I am studying”), as well as intrinsic motivation to complete academic activities (e.g., “I am usually motivated to study”). Finally, the beyond-class engagement scale was used to assess students’ perceived level of belongingness in the university community (e.g., “I feel I belong to the university community”) and student connectedness (e.g., “I have made at least one or two close friends at university”). Factor analyses demonstrate support the proposed factor structure of the scale, with high loadings of individual items on their respective scales. Previous research has also demonstrated internal consistency that ranges from adequate to strong for the subscales, ranging from .67 to .86 (Krause & Coates, 2008). In the current sample, alpha coefficients were: AES ($\alpha = .71$), PES ($\alpha = .89$), SES ($\alpha = .89$), IES ($\alpha = .83$), and BES ($\alpha = .82$).

Revised UCLA Loneliness Scale (LS-R; Russell, Peplau, & Cutrona, 1980). The LS-R is a 20-item self-report questionnaire that may be used as a measure of social connectedness. Items are rated on a four-point response scale, ranging from 1 (*never*) to 4 (*often*). Items are both positively (e.g., “there are people I feel close to”) and negatively (e.g., “there is no one I can turn to”) worded. In accordance with the practice of Renshaw and colleagues (2016), the negative items were reverse coded in order to generate a score that reflected social connectedness as opposed to a loneliness score. Past research has demonstrated that the LS-R has excellent internal consistency (.94) as well as strong 1-month test-retest reliability. Additionally, the LS-R has been shown to be concurrently valid with emotionality, personality, as well as other interpersonally-related variables (Russell, 1996; Russell et al., 1980). With respect to the present study, the LS-R was observed to have excellent internal consistency ($\alpha = .91$).

The Brief Resilience Scale (BRS; Smith, Dalen, Wiggins, Tooley, Christopher, &

Bernard, 2008). The BRS is a measure of an individual's ability to "bounce back" after the experience of stressful life events. It is composed of 6 items total. Each item is rated on a 5-point Likert scale with responses ranging from "strongly disagree" to "strongly agree". The measure contains an equal number of positively (e.g., "I tend to bounce back quickly after hard times") and negatively (e.g., "I have a hard time making it through stressful events") worded items in order to reduce the effects of social desirability and positive response bias. Research has demonstrated that the BRS has good internal consistency, ranging from .80 to .91. The 1-month test-retest reliability was .69. The BRS was predictably related to social relationships, personal characteristics, coping, and health-related outcomes. Additionally, it was negatively related to anxiety, depression, negative affect, and physical symptoms (Smith et al., 2008). A study conducted by Windle, Bennett, & Noyes (2011) reviewed the strengths and weaknesses of nineteen different measures of resilience. Results indicated that the BRS ranked within the top three as having the highest psychometric ratings. The internal consistency of this measure with the present sample was strong ($\alpha = .84$)

Self-Reported Grade-point average (GPA). In an effort to obtain a more objective measure of academic achievement, students were asked to report their current GPAs (in the event that they were a second-year student or beyond) and estimate their GPAs (if they were a first-year student). Given the university's grading standards, possible GPAs ranged from 0 (indicating all F's/grades that are non-passing) to 4 (indicating all A's, or highest possible passing grades). Many of the previous studies conducted on the dual-factor model across the lifespan have assessed academic achievement through the examination of students' GPAs (e.g., Antaramian, 2010; Suldo et al., 2016; Renshaw & Cohen 2013; Antaramian, 2015; Renshaw et al., 2016). Additionally, previous research has demonstrated that college students' GPAs are significantly

positively correlated with measures of emotional well-being, and significantly negatively correlated with measures of emotional distress, although, these relationships were observed to have small effect sizes, (Richardson, Abraham, & Bond, 2012). Therefore, it was decided that GPA would be measured to assess whether findings from previous studies would be replicated.

Overview of Data Analysis

Data entry and screening. Questionnaire data was downloaded from Qualtrics and entered into SPSS. Once data was entered, it was screened for duplicate responses, which were deleted. The data was also screened for values outside of the possible range of scores for a given variable. Following deletion of duplicate responses, initial sample size consisted of 1,057 students. Imbedded validity items were reviewed to assess for invalid response patterns, which resulted in the removal of 28 individuals. Six more individuals were then removed due to incomplete answers on imbedded validity items.

The dataset was further inspected for missing data. Participants that were missing more than 20% of responses on a given measure were excluded from further analyses. Multiple imputation was utilized to address participants with 20% or less missing data on a given measure. The dataset was assessed for outliers and the skewness and kurtosis for each variable was reviewed.

Preliminary analyses. In order to assess the nature and distribution of variables of interest, descriptive statistics were calculated using the raw scores of each variable (e.g., depression composite score, satisfaction with life composite score, social connectedness). Descriptive statistics were also calculated for all categorical variables (e.g., mental health group status, SWB status). Next, Pearson product-moment correlation coefficients were calculated among all continuous variables. Given that multiple analyses of variance (ANOVAs) were

planned to address the third research question (i.e., regarding whether mental health groups significantly differ with respect to a range of outcomes), the statistical assumptions that underlie appropriate use of one-way, between-subjects ANOVAs were assessed. Although, traditionally, conducting a series of hypothesis tests warrants that an a priori adjustment be made to the alpha level in order to control for the inflation of the family-wise error rate, given the exploratory nature of the present study, no correction will be applied in order to increase the chances of detecting a significant difference between groups, which may serve to inform future research within this line of study. Finally, an a priori power analysis was conducted. The power analysis was carried out using G* Power. Given that a series of multiple regression analyses were planned to address the secondary, exploratory aim of the present study (i.e., whether the relationships between psychopathology and the outcomes of interest are moderated by participants' self-reported levels of subjective well-being), the statistical assumptions that underlie appropriate use of multiple regression analyses were assessed. All other preliminary analyses were carried out using SPSS version 25.

Primary analyses. In order to address the first research question of interest (i.e., what proportion of college students make up each mental health group yielded from the dual-factor model classification system?), participants were categorized into one of four mental health groups (i.e., complete mental health, vulnerable, symptomatic but content, troubled). Given that the subscales used to create the psychopathology (PTH) and subjective well-being (SWB) composite scores were made up of differing numbers of items, most of which had varying response scales, consistent with the methodology used by Renshaw and Cohen (2014) and Renshaw et al. (2016), all raw subscale composite scores were first transformed into z-scores. Next, the standardized subscale composite scores were summed together to create standardized

meta-composite scores for both PTH (i.e., $\text{depression}_z + \text{anxiety}_z + \text{stress}_z + \text{inattention}_z + \text{hyperactivity}_z$) and SWB (i.e., $[\text{life satisfaction}_z + \text{positive affect}_z] - \text{negative affect}_z$). The method of calculating participants' SWB composite scores is similarly consistent with previous research (e.g., Kasser & Sheldon, 2002; Sheldon, Kasser, Houser-Marko, Jones, & Turban, 2005; Suldo & Shaffer, 2008; Antaramian et al., 2010; Suldo et al., 2011; Antaramian, 2015; Suldo et al., 2016). By using the standardized meta-composite scores, participants were able to next be classified as having either "low" PTH (standardized meta-composite score $< 1 SD$) or "high" PTH (standardized meta-composite score of $\geq 1 SD$). Similarly, participants were classified as having either "low" SWB (standardized meta-composite score $\leq -1 SD$) or "high" SWB (standardized meta-composite score $> -1 SD$). These classifications were then considered in combination with one another in to determine a participant's dual-factor model mental health group status, namely, complete mental health ("low" PTH and "high" SWB), vulnerable ("low" PTH and "low" SWB), symptomatic but content ("high" PTH and "high" SWB), or troubled ("high" PTH and "low" SWB). See Table 2.

Table 2. Mental health group membership criteria as informed by the dual-factor model of mental health

	"Low" SWB	"High" SWB
"Low" PTH	Vulnerable SWB composite $\leq -1 SD$ <u>and</u> PTH composite $< 1 SD$	Complete Mental Health SWB composite $> -1 SD$ <u>and</u> PTH composite $< 1 SD$
	Troubled SWB composite $\leq -1 SD$ <u>and</u> PTH composite $\geq 1 SD$	Symptomatic but Content SWB composite $> -1 SD$ <u>and</u> PTH composite $\geq 1 SD$

Note. PTH = psychopathology; SWB = subjective well-being.

In order to address the second major research question regarding whether the two mental health groups characterized by elevated levels of psychopathology (i.e., symptomatic but content

vs. troubled) exhibit significantly different types of PTH symptoms (e.g., higher anxiety, depression, inattention), 5 unpaired, two-sample t-test were conducted and corresponding effect sizes were calculated.

Finally, in order to address the third major research question, regarding whether mental health groups significantly differ with respect to a range of outcomes, twelve univariate, between-subjects ANOVAs were conducted using mental health group status as the independent variable and the outcomes of interest (i.e., academic satisfaction, academic efficacy, school connectedness, college gratitude, academic engagement, peer engagement, student-staff engagement, intellectual engagement, beyond-class engagement, social connectedness, resilience, and self-reported GPA), respectively, as the dependent variables. Given the exploratory nature of the present study, post hoc tests to assess all possible pairwise comparisons were planned and effect sizes were calculated.

To address the secondary aim of the present study, regarding whether the relationship between psychopathology and the outcomes of interest are moderated by participants' self-reported levels of subjective well-being, a series of multiple regression analyses were conducted. Standardized, meta-composite psychopathology and SWB scores (computed according to the procedure described above) were utilized as predictor variables. Additionally, an interaction term ($SWB_z \times PTH_z$) was calculated for use within the analyses. Although centering is a common approach that is recommended to minimize the impact of multicollinearity (Aiken & West, 1991), centering was not necessary given that the predictor variables had already been standardized.

CHAPTER 4. RESULTS

This chapter contains the results of each of the analyses that were conducted to satisfy the research questions investigated within the present study. Results related to data entry and screening procedures are first described, followed by details regarding the handling of missing data. Assumptions underlying appropriate use of all primary analyses were tested. Preliminary analyses were conducted, including intercorrelations among variables and descriptive statistics. The sample was subdivided into four mental health groups based on individuals' self-reported levels of psychopathology and subjective well-being. These groups were used in order to investigate the first research question regarding what proportion of individuals would make up each mental health group. The two groups characterized by high levels of psychopathology (i.e., the symptomatic but content and the troubled groups) were examined to address the second research question, which investigated whether these two groups exhibited significantly different types of psychopathological symptoms. Next, mental health groups were further examined to determine whether they differed significantly on outcomes of interest. Finally, results of the exploratory moderation analyses are presented.

Handling of Missing Data

A total of 279 participants (27.27%) were missing at least one item on the self-report packet, leaving a total of 744 participants (72.73%) with zero missing data points. The demographic questionnaire items were not factored into the initial examination of missing data. Of the 279 participants who were missing data, the average number of missing items was $M = 2.76$ (range = 1 to 43, mode = 1). The measure that contained the most missing data was the FYEQ, with 104 participants missing at least one item. The FYEQ was the longest questionnaire within the study packet and was also the last one presented, which may, in part, help to explain

the large amount of missing data on this specific measure. The next two other measures containing the most missing data were the DASS and the PANAS, with 84 and 76 participants who skipped at least one item, respectively.

A Missing Values Analysis was performed in SPSS to assess whether there were discernible patterns of missing values. Specifically, Little's MCAR test was used to determine whether values were missing completely at random. Given that the p value for Little's MCAR test was significant ($p < .05$), the data could not be assumed to be MCAR and listwise deletion of observations with missing values was not utilized. Separate Variance t Tests to assess whether missingness was related to the DV were unable to be produced as there were no variables with 5% or more missing values. According to Tabachnick and Fidell (2013), if 5% or less of data points are missing, then problems with missing data are considered to be less serious and almost any procedure for handling missing values has been shown to yield similar results. As such, multiple imputation was employed to address missing values, given that Garson (2015) states that although multiple imputation assumes data is missing at random (MAR), imputation is as good as listwise deletion even when MAR assumptions are violated.

Multiple imputation was used, including all analysis variables, under the assumption that missing values were missing at random. Multiple imputation was only used if a participant had data for at least 80% of the items on a given subscale measure (e.g., DASS-Depression). Five imputed datasets were generated and two iterations were specified. Analyses run on each dataset were pooled in accordance with Rubin's (1987) rules. Results based on pooled, imputed data are presented below.

The revised dataset ($N = 1,023$) was screened for univariate outliers using the boxplot method in SPSS. SPSS identifies two categories of outliers when using this method. Only

outliers flagged as being 3 box-length away from the edge of their box, which are regarded as extreme outliers, were considered for removal. Screening of the data identified 3 extreme outliers. These outliers presented in 3 of the 4 mental health groups (i.e., complete mental health, vulnerable, and symptomatic but content) while examining the College Gratitude Scale from the CSSWQ. Given the extreme values observed, participant data for all three values were deleted. All other outliers (lying between 1.5 to 3 box-lengths away from the edge of their box) were retained in the dataset, as it was determined that the mental health profiles in question were not a result of invalid responding nor data entry errors. Instead, these cases were deemed to be naturally occurring variances within young adult mental health profiles and therefore, were of particular interest for the present study.

Assumption Checks

Assumption checks for the use of univariate ANOVAs and unpaired, two-sample t-test revealed that the following assumptions were positively met: the independent variable (i.e., mental health group) was categorical, while the dependent variables of interest (e.g., academic efficacy, academic engagement, social connectedness, resilience) were all non-categorical. Additionally, all observations were regarded as independent.

To test whether the assumption of normality was violated, skewness and kurtosis of each of the 20 variables were calculated. Given the large sample sizes, the Shapiro Wilk test of normality was not deemed to be an appropriate method of assessment. Seventeen variables had approximately normal distributions, while three variables (i.e., depression: skew = 1.673, kurtosis = 2.643; anxiety: skew = 1.226, kurtosis = 1.552; college gratitude: skew = -1.407, kurtosis = 2.321) demonstrated skew that was outside normal limits. All additional information regarding variable skew and kurtosis can be found in Table 3.

Of the variables that would be used in the ANOVA, six of the 12 dependent variables violated the assumption of homogeneity of variance, as assessed by Levene's test for equality of variances. Specifically, Levene's statistic for academic satisfaction (4.128), academic efficacy (5.016), school connectedness (5.390), college gratitude (5.010), beyond-class engagement (5.647), and social connectedness (6.454) were significant at the $p < .05$ level. Given that these failed assumptions were also complemented by fairly unequal test group sizes (see Table 1), it was determined that the traditional ANOVA statistics would be insufficiently robust. As such, it was decided that all ANOVAs would be conducted using Welch's tests and all post hoc tests would use Games-Howell's tests, given that these methods have been shown to be sufficiently robust in the context of these assumption violations (cf. Klockars, 2010). This assumption was also tested with respect to the variables of interest for the independent samples t -tests. Of the five variables examined, only one variable (i.e., stress) violated the assumption as assessed by Levene's test for equality of variances ($p = .019$). Given this violated assumption, as well as unequal group sizes, it was determined that a Welch t -test would be used, which is consistent with the recommendation of Howell (2010). As discussed earlier, although multiple ANOVA were planned, an a priori Bonferroni's correction was not applied given the exploratory nature of the present study. An a priori power analysis was conducted assuming a moderate effect size (0.30) and a minimum desired power of level of 0.80. Results suggested that a minimum of 32 participants would be required per test group, with a total minimum sample size of 128. Given that the smallest mental-health-status group (i.e., vulnerable group) consisted of 56 participants (see Table 1) and that the total sample size (i.e., 1,023) far exceeded the minimum required sample size, it was determined that there was ample power to conduct all of the planned primary analyses.

Prior to running moderation analyses, data was first assessed for multicollinearity, where all variance inflation factors were less than 4 indicating acceptable levels of multicollinearity (O'Brien, 2007). The three predictor variables remained consistent throughout analyses, which included the standardized SWB meta-composite score, the standardized psychopathology meta-composite score, and an interaction term (product of the two). All three independent variables were included within a single block and this approach was repeated across all regression analyses.

Descriptive Statistics, Intercorrelations, and Formation of Groups

Descriptive statistics and correlations for all variables of interest are presented in Table 3. Moderate negative correlations between the variables representing PTH (i.e., ASR Composite, DASS Composite) and SWB, are consistent with the assertion that well-being and psychopathology are distinct, yet related constructs (Keyes, 2005). The significant positive correlations observed between measures of engagement and self-reported GPA were also anticipated, given that prior research has demonstrated that student engagement facilitates academic success (Carini et al., 2006; Kuh et al., 2008; Svanum & Bigatti, 2009).

According to the classification system above, 248 participants (24.3% of the sample) had elevated PTH levels (i.e., significant elevations on the DASS and/or ASRS). With respect to subjective well-being, 155 participants (15.2% of the total sample) were considered to have significantly low levels.

When considering both psychopathology and subjective well-being together, participants were classified according to the classification rules described above. The sample was divided into the four dual-factor model mental health groups, which yielded the following distribution across groups (ordered from largest to smallest group): 710 participants (70.1% of the total

Table 3. Descriptive statistics and variable intercorrelations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. ASR Composite	.														
2. DASS Composite	.507**	.													
3. SWB	-.402**	-.668**	.												
4. Academic Satisfaction	-.268**	-.335**	.494**	.											
5. Academic Efficacy	-.291**	-.223**	.417**	.654**	.										
6. School Connectedness	-.171**	-.333**	.491**	.514**	.407**	.									
7. College Gratitude	-0.039	-.148**	.314**	.391**	.348**	.512**	.								
8. Academic Engagement	-.170**	-.149**	.310**	.391**	.561**	.267**	.226**	.							
9. Peer Engagement	-0.019	-.132**	.240**	.248**	.261**	.395**	.225**	.454**	.						
10. Student-Staff Engagement	-.085**	-.144**	.255**	.364**	.233**	.388**	.386**	.375**	.337**	.					
11. Intellectual Engagement	-.146**	-.167**	.310**	.418**	.404**	.334**	.320**	.527**	.358**	.599**	.				
12. Beyond-Class Engagement	-0.045	-.220**	.335**	.347**	.288**	.612**	.374**	.354**	.487**	.437**	.428**	.			
13. Social Connectedness	-.227**	-.425**	.468**	.257**	.243**	.551**	.293**	.179**	.386**	.225**	.206**	.476**	.		
14. Resilience	-.234**	-.417**	.437**	.218**	.127**	.254**	.122**	.107**	.115**	.159**	.180**	.175**	.272**	.	
15. GPA	-.133**	-.116**	.192**	.495**	.437**	.242**	.162**	.190**	.124**	.117**	.154**	.177**	.113**	.087**	.
<i>M</i>	0	0	0	19.65	21.55	21.38	25.58	32.58	30.87	42.72	18.53	23.69	62.87	19.71	3.36
<i>SD</i>	1	1	1	5.64	4.87	4.24	2.64	6.25	8.19	7.93	4.17	5.06	10.13	4.65	.50
Skewness	0.12	1.13	-0.32	-0.58	-0.8	-0.73	-1.41	-0.1	-0.4	-0.71	-0.56	-0.84	-0.78	-0.19	-0.77
Kurtosis	0.05	1.12	-0.13	-0.41	0.24	0.5	2.32	0.38	-0.61	0.76	0.07	0.4	0.16	-0.27	0.36

Note. * $p < .05$; ** $p < .01$ level

sample) were classified as having complete mental health, 145 participants (14.3% of the total sample) were categorized into the symptomatic but content group, 102 participants (10.1% of the total sample) were categorized into the troubled group, and 56 participants (5.5% of the total sample) were categorized into the vulnerable group. See Table 4.

Table 4. Sample breakdown by mental health group as yielded by the dual-factor model

	"Low" SWB	"High" SWB
	Vulnerable	Complete Mental Health
"Low" PTH	5.5% (<i>n</i> = 56)	70.1% (<i>n</i> = 710)
	Troubled	Symptomatic but Content
"High" PTH	10.1% (<i>n</i> = 102)	14.3% (<i>n</i> = 145)

Descriptive statistics were also calculated by mental health group in order to preliminarily assess trends and relationships within the data. See Table 5 for descriptive data information by mental health group.

Table 5. Means of psychopathology and indicators of wellness by group

Group Criteria	Scale	Complete Mental Health		Vulnerable		Symptomatic but Content		Troubled	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Depression	DASS-D	3.88	4.09	9.47	6.87	11.05	7.97	23.08	9.00
Anxiety	DASS-A	5.38	4.70	8.95	5.24	12.42	7.52	19.40	7.94
Stress	DASS-S	9.62	6.57	14.13	6.14	19.62	8.99	28.03	7.44
Inattention	ASRS	14.58	5.01	17.52	5.35	22.89	5.21	23.30	5.85
Hyperactivity	ASRS	12.08	5.06	12.89	5.20	20.64	5.72	19.59	6.34
Life Satisfaction	SLS	23.62	5.57	12.98	3.78	21.79	5.58	12.22	4.74
Positive Affect	PANAS	33.08	7.39	23.21	7.25	32.51	7.02	23.20	7.66
Negative Affect	PANAS	20.11	6.31	28.24	7.08	25.24	7.17	33.75	7.41

Note. DASS = Depression-Anxiety-Stress Scale; ASRS = Adult ADHD Self-Report Scale; SLS = Satisfaction with Life Scale; PANAS = Positive and Negative Affect Schedule

Primary Analyses

Differences in psychopathology by group. In order to address the second research question, five separate independent-samples t-tests were run to determine whether there were significant differences in the levels of different types of psychopathology (e.g., depression, inattention) between the symptomatic but content ($n = 145$) and troubled ($n = 102$) groups. Three of the five Welch's t-tests conducted were significant. Specifically, with respect to depressive symptoms, those in the troubled group had higher depression scores ($M = 23.08$, $SD = 9.00$) compared to those in the symptomatic but content group ($M = 11.05$, $SD = 7.97$), $M_{diff} = -12.03$, 95% CI $[-14.22, -9.84]$, $t(200.300) = -10.838$, $p < .01$, $d = 1.415$. A similar relationship was observed for anxiety- and stress-related symptoms. Specifically, participants in the troubled group had higher mean scores for anxiety ($M = 19.40$, $SD = 7.94$) and stress ($M = 28.03$, $SD = 7.44$) compared to the symptomatic but content group's anxiety ($M = 12.42$, $SD = 7.52$), $M_{diff} = -6.98$, 95% CI $[-8.96, -5.00]$, $t(209.972) = -6.954$, $p < .01$, $d = 0.903$ and stress ($M = 19.62$, $SD = 8.99$), $M_{diff} = -8.41$, 95% CI $[-10.48, -6.35]$, $t(238.453) = -8.022$, $p < .01$, $d = 1.020$ scores, respectively.

The discrepancy observed between the two groups' levels of inattentive and hyperactive/impulsive symptoms was considerably smaller. Regarding inattentive symptoms, the troubled group exhibited slightly higher average symptoms ($M = 23.30$, $SD = 5.85$) compared to the symptomatic but content group ($M = 22.89$, $SD = 5.21$). With respect to symptoms of hyperactivity/impulsivity, the symptomatic but content group demonstrated slightly higher levels of symptoms on average ($M = 20.64$, $SD = 5.72$) compared to participants in the troubled group ($M = 19.59$, $SD = 6.34$). See Table 6.

Table 6. Summary table for independent-samples t-tests investigating psychopathological symptom levels by group

Variable		Group		<i>M diff</i>	<i>SE diff</i>	<i>t</i>	<i>df</i>	<i>d</i>
		Symptomatic but Content (<i>n</i> = 145)	Troubled (<i>n</i> = 102)					
Depression	<i>M</i> (<i>SD</i>)	11.05 (7.97)	23.08 (9.00)	-12.03	1.11	-10.84*	200.30	1.42
Anxiety	<i>M</i> (<i>SD</i>)	12.42 (7.52)	19.40 (7.94)	-6.98	1.00	-6.96*	209.97	0.90
Stress	<i>M</i> (<i>SD</i>)	19.62 (8.99)	28.03 (7.44)	-8.41	1.05	-8.02*	238.45	1.02
Inattention	<i>M</i> (<i>SD</i>)	22.89 (5.21)	23.30 (5.85)	-0.41	0.72	-0.56	201.24	-
Hyperactivity	<i>M</i> (<i>SD</i>)	20.64 (5.72)	19.59 (6.34)	1.05	0.79	1.33	203.03	-

Note. * $p < .01$ level.

In order to address the third research question, regarding whether mental health groups significantly differ with respect to a range of outcomes, twelve univariate, between-subjects ANOVAs were conducted using mental health group status as the independent variable. Results of the one-way ANOVAs were statistically significant for all dependent variables of interest. See Table 7.

Table 7. Welch's ANOVA results

	<i>F</i>	<i>df</i>	η^2
Academic Satisfaction	40.42	3,164.32	0.119
Academic Efficacy	27.74	3,164.75	0.100
School Connectedness	37.77	3,162.94	0.134
College Gratitude	6.66	3,167.73	0.025
Academic Engagement	22.63	3,173.02	0.057
Peer Engagement	9.00	3,169.24	0.028
Student-Staff Engagement	7.08	3,166.52	0.023
Intellectual Engagement	12.69	3,168.12	0.057
Beyond-Class Engagement	15.16	3,166.88	0.028
Social Connectedness	45.15	3,163.27	0.023
Resilience	39.56	3,170.21	0.041
GPA	9.39	3,160.75	0.056

Note. All analyses are significant at $p < .001$.

Academic satisfaction. Specifically, with respect to academic satisfaction (CSSWQ-ASS), the complete mental health group evidenced the largest mean ($M = 20.66$), followed by the symptomatic but content group ($M = 18.88$), the vulnerable group ($M = 16.41$), and finally the troubled group ($M = 14.74$). All other outcomes of interest exhibited the same pattern of means (i.e., $M_{\text{complete mental health}} > M_{\text{symptomatic but content}} > M_{\text{vulnerable}} > M_{\text{troubled}}$), with the exception of four outcome variables (i.e., college gratitude, peer engagement, student-staff engagement, and GPA), in which the symptomatic but content group evidenced greater means than the complete mental health group (discussed in greater detail below). The Welch's ANOVA was statistically significant for different levels of the dual-factor model group classification status variable, Welch's $F(3, 164.320) = 40.417, p < .001, \eta^2 = .119$. Thus, the null hypothesis of no differences between the group means was rejected and 11.9% of the variance in participants' level of academic satisfaction was accounted for by group membership. To further evaluate the nature of the differences between the four means, post hoc Games-Howell tests were run and effects sizes (Hedges' g) were calculated. Results of the Games-Howell tests (see Table 8.1) indicated significant mean differences ($p < .05$) between the complete mental health and vulnerable groups ($g = .82$), the complete mental health and symptomatic but content groups ($g = .34$), the complete mental health and troubled groups ($g = 1.14$), the vulnerable and symptomatic but content groups ($g = .42$), and the symptomatic but content and troubled groups ($g = .73$).

Table 8. Post-hoc comparisons: Academic Satisfaction

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	4.25	0.83	0.000	.82 [2.05, 6.45]
Symptomatic	1.78	0.52	0.004	.34 [.44, 3.11]
Troubled	5.92	0.59	0.000	1.14 [4.38, 7.47]
Vulnerable				
Symptomatic	-2.47	0.94	0.049	.42 [-4.94, -.01]
Troubled	1.68	0.99	0.331	.29 [-.90, 4.25]
Symptomatic				
Troubled	4.15	0.74	0.000	.72 [2.24, 6.06]

Academic efficacy. The academic efficacy (CSSWQ-AES) variable was statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 164.753) = 27.744, p < .001, \eta^2 = .096$. The complete mental health group reported the highest levels of academic efficacy, followed by the symptomatic but content group, vulnerable group, and finally the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the complete mental health and vulnerable groups ($g = .57$), the complete mental health and troubled groups ($g = 1.06$), the vulnerable and the troubled groups ($g = .43$), and the symptomatic but content and troubled groups ($g = .74$; see Table 8.2).

Table 9. Post-hoc comparisons: Academic Efficacy

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	2.55	0.66	0.001	.57 [2.24, 6.06]
Symptomatic	1.04	0.44	0.085	.23 [-.09, 2.18]
Troubled	4.83	0.57	0.000	1.06 [3.35, 6.32]
Vulnerable				
Symptomatic	-1.51	0.75	0.194	.31 [-3.48, .46]
Troubled	2.28	0.84	0.037	.43 [0.10, 4.46]
Symptomatic				
Troubled	3.79	0.68	0.000	.74 [2.03, 5.55]

School connectedness. The school connectedness (CSSWQ-SCS) variable was statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 162.937) = 37.771, p < .001, \eta^2 = .134$. The complete mental health group reported the highest levels of school connectedness, followed by the symptomatic but content group, vulnerable group, and finally the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the complete mental health and vulnerable groups ($g = .92$), the complete mental health and troubled groups ($g = 1.20$), the vulnerable and symptomatic but content groups ($g = .73$), and the symptomatic but content and troubled groups ($g = .98$; see Table 8.3).

College gratitude. With respect to college gratitude (CSSWQ-CGS), results were statistically significant for different levels of the dual-factor model group variable, Welch's $F(3,$

Table 10. Post-hoc comparisons: School Connectedness

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	3.60	0.66	0.000	.92 [1.85, 5.35]
Symptomatic	0.53	0.36	0.448	.14 [-.39, 1.46]
Troubled	4.77	0.5	0.000	1.20 [3.47, 6.08]
Vulnerable				
Symptomatic	-3.07	0.72	0.000	.73 [-4.97, -1.17]
Troubled	1.17	0.81	0.469	.24 [-.93, 3.27]
Symptomatic				
Troubled	4.24	0.58	0.000	.98 [2.73, 5.75]

167.728) = 6.665, $p < .001$, $\eta^2 = .025$. Surprisingly, the symptomatic but content group reported the highest levels of college gratitude, followed by the complete mental health group, vulnerable group, and troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the complete mental health and troubled groups ($g = .47$) and the symptomatic but content and troubled groups ($g = .52$; see Table 8.4).

Table 11. Post-hoc comparisons: College Gratitude

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	0.82	0.37	0.127	.31 [-.15, 1.79]
Symptomatic	-0.08	0.21	0.980	.03 [-.62, .45]
Troubled	1.27	0.33	0.001	.47 [.42, 2.12]
Vulnerable				
Symptomatic	-0.9	0.40	0.114	.39 [-1.94, .14]
Troubled	0.45	0.47	0.778	.15 [-.78, 1.68]
Symptomatic				
Troubled	1.35	0.36	0.001	.52 [.42, 2.29]

Academic engagement. Results for academic engagement (FYEQ-AES) were statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 173.020) = 22.625$, $p < .001$, $\eta^2 = .057$. The complete mental health group reported the highest levels of academic engagement, followed by the symptomatic but content group, vulnerable group, and finally the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the complete mental health and vulnerable groups ($g = .50$), the complete mental health and troubled groups ($g = .76$), the vulnerable and symptomatic but content groups ($g = .48$), and the symptomatic but content and troubled groups ($g = .74$; see Table 8.5).

Table 12. Post-hoc comparisons: Academic Engagement

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	3.07	0.77	0.001	.50 [1.05, 5.08]
Symptomatic	0.25	0.55	0.970	.04 [-1.18, 1.68]
Troubled	4.64	0.61	0.000	.76 [3.04, 6.24]
Vulnerable				
Symptomatic	-2.82	0.88	0.010	.48 [-5.13, -.51]
Troubled	1.58	0.92	0.326	.28 [-.83, 3.99]
Symptomatic				
Troubled	4.39	0.75	0.000	.74 [2.43, 6.36]

Peer engagement. The peer engagement (FYEQ-PES) variable was statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 169.245) = 9.002, p < .001, \eta^2 = .028$. As was the case with college gratitude, the symptomatic but content group reported the greatest levels of peer engagement, followed by the complete mental health group, the vulnerable group, and the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the troubled group and all other groups (i.e., complete mental health, $g = .52$; vulnerable, $g = .45$; symptomatic but content groups, $g = .64$; see Table 8.6).

Table 13. Post-hoc comparisons: Peer Engagement

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	0.64	1.05	0.930	.24 [-2.13, 3.41]
Symptomatic	-0.95	0.73	0.558	.44 [-2.84, .93]
Troubled	4.23	0.88	0.000	.51 [1.93, 6.52]
Vulnerable				
Symptomatic	-1.59	1.20	0.552	.20 [-4.74, 1.55]
Troubled	3.59	1.30	0.034	.45 [.20, 6.98]
Symptomatic				
Troubled	5.18	1.06	0.000	.64 [2.44, 7.92]

Student-staff engagement. With respect to student-staff engagement (FYEQ-SSE), results were statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 166.518) = 7.007, p < .001, \eta^2 = .023$. Mean levels of student-staff engagement mimicked those observed for peer engagement, with the symptomatic but content group reporting the highest levels of student-staff engagement, followed by the complete mental health group, the vulnerable group, and the troubled group. Post hoc comparisons revealed significant

differences ($p < .05$) between the complete mental health and troubled groups ($g = .50$) and the symptomatic but content and troubled groups ($g = .52$; see Table 8.7).

Table 14. Post-hoc comparisons: Student-Staff Engagement

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	1.40	1.18	0.640	.18 [-1.72, 4.52]
Symptomatic	-0.06	0.67	1.000	.01 [-1.79, 1.67]
Troubled	3.92	0.88	0.000	.50 [1.64, 6.21]
Vulnerable				
Symptomatic	-1.46	1.29	0.672	.19 [-4.85, 1.93]
Troubled	2.53	1.41	0.284	.30 [-1.16, 6.21]
Symptomatic				
Troubled	3.98	1.02	0.001	.52 [1.34, 6.63]

Intellectual engagement. The intellectual engagement (FYEQ-IES) variable was statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 16.124) = 12.694, p < .001, \eta^2 = .041$. The complete mental health group reported the highest levels of intellectual engagement followed by the symptomatic but content group, vulnerable group, and finally the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the complete mental health and vulnerable groups ($g = .43$), the complete mental health and troubled groups ($g = .64$), and the symptomatic but content and troubled groups ($g = .50$; see Table 8.8).

Table 15. Post-hoc comparisons: Intellectual Engagement

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	1.74	0.55	0.012	.43 [.30, 3.18]
Symptomatic	0.46	0.38	0.634	.11 [-.54, 1.45]
Troubled	2.61	0.47	0.000	.64 [1.39, 3.83]
Vulnerable				
Symptomatic	-1.28	0.63	0.185	.31 [-2.94, .37]
Troubled	0.87	0.69	0.587	.20 [-.92, 2.66]
Symptomatic				
Troubled	2.15	0.57	0.001	.50 [.69, 3.62]

Beyond-class engagement. Findings for beyond-class engagement (FYEQ-BES) were statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 164.320) = 40.417, p < .001, \eta^2 = .056$. The complete mental health group reported the highest

levels of beyond-class engagement, followed by the symptomatic but content group, vulnerable group, and finally the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the complete mental health and vulnerable groups ($g = .47$), the complete mental health and troubled groups ($g = .77$), and the symptomatic but content and troubled groups ($g = .64$; see Table 8.9).

Table 16. Post-hoc comparisons: Beyond-Class Engagement

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	2.25	0.66	0.007	.47 [.50, 4.00]
Symptomatic	0.38	0.44	0.825	.08 [-.77, 1.53]
Troubled	3.81	0.62	0.000	.77 [2.18, 5.43]
Vulnerable				
Symptomatic	-1.87	0.76	0.071	.39 [-3.84, .11]
Troubled	1.56	0.87	0.284	.28 [-1.53, .77]
Symptomatic				
Troubled	3.43	0.72	0.000	.64 [1.56, 5.30]

Social connectedness. For social connectedness (LS-R), results were statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 163.272) = 45.146, p < .001, \eta^2 = .147$. The complete mental health group reported the highest levels of social connectedness, followed by the symptomatic but content group, vulnerable group, and finally the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the complete mental health and vulnerable groups ($g = .76$), the complete mental health and symptomatic but content groups ($g = .49$), the complete mental health and troubled groups ($g = 1.32$), the vulnerable and troubled groups ($g = .49$), and the symptomatic but content and troubled groups ($g = .71$; see Table 8.10).

Resilience. Regarding participants' levels of reported resilience (BRS), results were statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 170.205) = 39.558, p < .001, \eta^2 = .115$. The complete mental health group reported the greatest mean levels of resilience, followed by the symptomatic but content group, vulnerable group, and

Table 17. Post-hoc comparisons: Social Connectedness

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	6.84	1.38	0.000	.76 [3.19, 10.49]
Symptomatic	4.48	0.93	0.000	.49 [2.07, 6.89]
Troubled	12.15	1.18	0.000	1.32 [9.08, 15.21]
Vulnerable				
Symptomatic	-2.36	1.60	0.456	.23 [-6.53, 1.81]
Troubled	5.31	1.75	0.016	.49 [.74, 9.87]
Symptomatic				
Troubled	7.66	1.42	0.000	.71 [3.97, 11.35]

finally the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the complete mental health and vulnerable groups ($g = .64$), the complete mental health and symptomatic but content groups ($g = .35$), the complete mental health and troubled groups ($g = 1.13$), the vulnerable and troubled groups ($g = .49$), and the symptomatic but content and troubled groups ($g = .77$; see Table 8.11).

Table 18. Post-hoc comparisons: Resilience

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	2.80	0.57	0.000	.64 [1.30, 4.30]
Symptomatic	1.52	0.40	0.001	.35 [.49, 2.56]
Troubled	5.00	0.50	0.000	1.13 [3.70, 6.31]
Vulnerable				
Symptomatic	-1.27	0.65	0.215	.30 [-3.00, .43]
Troubled	2.21	0.72	0.014	.49 [.33, 4.08]
Symptomatic				
Troubled	3.48	0.60	0.000	.77 [1.93, 5.02]

Academic achievement. Finally, GPA (self-reported) was statistically significant for different levels of the dual-factor model group variable, Welch's $F(3, 160.753) = 9.391$, $p < .001$, $\eta^2 = .035$. Surprisingly, the symptomatic but content group reported the highest average GPAs compared to all other groups; however, differences between the symptomatic but content group and complete mental health group (evidencing the second highest average GPAs) were not statistically significant. Finally, the vulnerable group reported a higher mean GPA compared to the troubled group. Post hoc comparisons revealed significant differences ($p < .05$) between the

complete mental health and troubled groups ($g = .60$) and the symptomatic but content and troubled groups ($g = .60$; see Table 8.12).

Table 19. Post-hoc comparisons: GPA

	<i>Mean Diff.</i>	<i>SE</i>	<i>p</i>	<i>g</i> [95% CI]
Mentally Healthy				
Vulnerable	0.17	0.08	0.128	.34 [-.03, .37]
Symptomatic	-0.01	0.04	0.991	.03 [-.12, .10]
Troubled	0.3	0.06	0.00	.60 [.14, .46]
Vulnerable				
Symptomatic	-0.18	0.08	0.137	.37 [-.40, .04]
Troubled	0.13	0.09	0.516	.23 [-.11, .37]
Symptomatic				
Troubled	0.31	0.07	0.000	.60 [.13, .49]

For an overall view of differences in functioning across mental health groups, see Table 9.

Table 20. Functioning related to dual-factor model mental health status

	Complete Mental Health		Vulnerable		Symptomatic but Content		Troubled	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Academic Satisfaction	20.66 ^a	5.11	16.41 ^b	6.08	18.88 ^c	5.74	14.74 ^{bd}	5.68
Academic Efficacy	22.25 ^a	4.43	19.70 ^b	4.76	21.21 ^{abc}	4.87	17.42 ^d	5.51
School Connectedness	22.07 ^a	3.82	18.46 ^b	4.84	21.53 ^{ac}	3.93	17.29 ^{bd}	4.85
College Gratitude	25.73 ^a	2.64	24.91 ^{ab}	2.63	25.81 ^{ab}	2.16	24.46 ^{bc}	3.15
Academic Engagement	33.20 ^a	6.17	30.13 ^b	5.46	32.95 ^{ac}	6.03	28.55 ^{bd}	5.71
Peer Engagement	31.13 ^a	8.14	30.49 ^{ab}	7.47	32.09 ^{abc}	7.94	26.90 ^d	8.35
Student-Staff Engagement	43.18 ^a	7.84	41.78 ^{ab}	8.49	43.24 ^{abc}	7.2	39.26 ^{bd}	8.34
Intellectual Engagement	18.92 ^a	4.02	17.18 ^b	3.94	18.46 ^{abc}	4.24	16.31 ^{bd}	4.48
Beyond-Class Engagement	24.25 ^a	4.78	22.00 ^b	4.78	23.87 ^{abc}	4.87	20.44 ^{bd}	6.03
Social Connectedness	64.96 ^a	8.87	58.12 ^b	10.03	60.48 ^{bc}	10.45	52.81 ^d	11.4
Resilience	20.60 ^a	4.39	17.80 ^b	4.07	19.08 ^{bc}	4.36	15.60 ^d	4.79
Self-Reported GPA	3.40 ^a	0.49	3.23 ^{ab}	0.54	3.41 ^{abc}	0.47	3.10 ^{bd}	0.57

Note. Significant mean differences ($p < .05$) yielded from Games-Howell comparisons are denoted by differing superscripts across means. Therefore, common superscripts across group means are indicative of non-significant mean differences.

Moderation analyses. With respect to the exploratory multiple regressions, each of the overall regression models yielded as a result of the moderation analyses were statistically significant, with SWB and psychopathology accounting for up to 24% of the unique variance in both academic satisfaction ($F(3,1007) = 109.28, p < .01$) and school connectedness ($F(3,1007) =$

107.03 $p < .01$). More specifically, results indicated that SWB was a significant predictor of all outcome variables and explained the greatest amount of unique variance within each of the models analyzed (see Table 10). Of the twelve outcome variables assessed, significant main effects of psychopathology were only observed for the following four variables: college gratitude, peer engagement, social connectedness, and resilience, such that greater levels of psychopathology were related to increased college gratitude ($\beta = .13, p < .01$) and peer engagement ($\beta = .10, p < .05$) and negatively related to social connectedness ($\beta = -.16, p < .01$) and resilience ($\beta = -.21, p < .01$). The main effect of psychopathology was trending towards significance with respect to beyond-class engagement, such that greater psychopathology was positively related to greater levels of reported beyond-class engagement ($\beta = .08, p = .06$). There were no significant interaction effects observed for the SWBxPTH term, suggesting that SWB does not significantly moderate the effects of psychopathology; however, the interaction effect predicting GPA was trending towards significance ($\beta = .07, p = .052$). All other results of the moderation analysis can be found in Table 10.

Table 21. Summary table of regressions measuring SWB as a moderator

Main Effects	Adj. R^2	$F(df)$	β	T	p	LLCI	ULCI
Academic Satisfaction	0.24	109.28 (3,1007)					
SWB			0.46	12.81	0.00	2.20	3.00
Psychopathology			-0.06	-1.48	0.14	-0.73	0.10
Interaction			0.00	-0.12	0.90	-0.27	0.24
Academic Efficacy	0.17	71.34 (3,1007)					
SWB			0.40	10.67	0.00	1.59	2.30
Psychopathology			-0.03	-0.70	0.49	-0.50	0.24
Interaction			0.00	0.07	0.94	-0.22	0.24
School Connectedness	0.24	107.03 (3,1007)					
SWB			0.50	13.83	0.00	1.84	2.44
Psychopathology			0.03	0.77	0.44	-0.19	0.44
Interaction			0.04	1.43	0.15	-0.05	0.34

(table cont'd.)

Main Effects	Adj. R ²	<i>F(df)</i>	β	<i>T</i>	<i>p</i>	LLCI	ULCI
College Gratitude	0.11	40.18 (3,1004)					
SWB			0.40	10.18	0.00	0.86	1.27
Psychopathology			0.13	3.14	0.00	0.13	0.55
Interaction			-0.02	-0.62	0.54	-0.17	0.09
Academic Engagement	0.10	36.65 (3,1007)					
SWB			0.34	8.60	0.00	1.62	2.58
Psychopathology			0.03	0.69	0.49	-0.33	0.67
Interaction			-0.02	-0.75	0.46	-0.43	0.19
Peer Engagement	0.06	22.93 (3,1005)					
SWB			0.30	7.57	0.00	1.84	3.12
Psychopathology			0.10	2.47	0.01	0.17	1.51
Interaction			0.02	0.62	0.53	-0.28	0.55
Student-Staff Engagement	0.07	24.34 (3,1003)					
SWB			0.29	7.19	0.00	1.65	2.89
Psychopathology			0.03	0.73	0.47	-0.41	0.88
Interaction			-0.05	-1.41	0.16	-0.69	0.11
Intellectual Engagement	0.10	36.36 (3,1003)					
SWB			0.33	8.52	0.00	1.07	1.72
Psychopathology			0.04	0.97	0.33	-0.17	0.50
Interaction			0.01	0.34	0.74	-0.17	0.24
Beyond-Class Engagement	0.11	43.75 (3,1008)					
SWB			0.38	9.90	0.00	1.56	2.33
Psychopathology			0.08	1.88	0.06	-0.02	0.79
Interaction			0.00	-0.07	0.95	-0.26	0.24
Social Connectedness	0.23	102.71 (3,1006)					
SWB			0.36	10.04	0.00	2.98	4.43
Psychopathology			-0.16	-4.21	0.00	-2.37	-0.86
Interaction			0.01	0.42	0.68	-0.37	0.57
Resilience	0.21	90.87 (3,1006)					
SWB			0.31	8.44	0.00	1.11	1.78
Psychopathology			-0.21	-5.41	0.00	-1.31	-0.62
Interaction			-0.02	-0.79	0.43	-0.30	0.13
GPA	0.04	13.99(3,967)					
SWB			0.17	4.21	0.00	0.05	0.13
Psychopathology			-0.01	-0.11	0.92	-0.04	0.04
Interaction			0.07	1.94	0.05	0.00	0.05

Note. SWB = subjective well-being; B = standardized beta

CHAPTER 5. DISCUSSION

Recent research has increasingly demonstrated that maintaining a singular focus on the assessment of psychopathology may be inhibiting a deeper understanding of mental health (e.g., Greenspoon & Saklofske, 2001; Keyes, 2009). Thus, research has increasingly begun to examine the dual-factor model of mental health, which proposes that symptoms of mental illness and markers of mental wellness can occur simultaneously, while functioning as discrete factors that contribute to mental health and adaptive functioning (Keyes, 2005). The current study investigated the utility of the dual-factor model of mental health (cf. Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008; Suldo, Thalji, & Ferron, 2011) in college students. The utility of the dual-factor model of mental health was further explored through the examination of between-group differences in student functioning. Specifically, the present study aimed to investigate the following: (1) What proportion of college students make up each mental health group (i.e., complete mental health, vulnerable, symptomatic but content, troubled) yielded from the dual-factor model classification system? (2) Do the two mental health groups characterized by elevated levels of psychopathology (i.e., symptomatic but content vs. troubled) exhibit significantly different types of symptoms (e.g., higher anxiety, depression, inattention)? And (3) Do mental health groups differ significantly with respect to their levels of school-based performance (i.e., GPA), adjustment (e.g., academic efficacy, academic satisfaction), engagement (e.g., academic engagement, student-staff engagement, beyond-class engagement), social connectedness, and resilience? Results of the current study supported the existence of the dual-factor model of mental health in college students, as each of the four possible mental health groups were observable parts of the total sample, with each group encompassing a sizable number of students. In addition, results demonstrated that of the two groups characterized by

elevated levels of psychopathology, the troubled group evidenced significantly higher levels of depression, anxiety, and stress, compared to participants classified as part of the symptomatic but content group. Finally, results further established the utility of this model by detecting differences in functioning between mental health groups. Moderation analyses yielded no evidence of interaction effects; however, SWB consistently emerged as the most robust predictor of each of the dependent variables, further validating the significance of SWB as it relates to important college student outcomes. The following discussion further elaborates on the findings of the present study, as well as integrates findings into the extant literature. Limitations of the present study and future directions for research are detailed. Finally, implications for screening and treatment practices are discussed.

Dual-Factor Model Groups

The first research question of interest aimed to assess what proportion of college students made up each of the mental health groups as determined by the dual-factor model of mental health. Four distinct mental health groups were identified according to participants' levels of psychopathology, which was considered in conjunction with reported levels of SWB. The four dual-factor model mental health groups identified were the following: (1) complete mental health group, which was characterized by a moderate-to-high level of SWB and low levels of psychopathology and was composed of 710 participants, (2) the vulnerable group, which was characterized by a low level of SWB, as well as low levels of psychopathology and was composed of 56 participants, (3) the symptomatic but content group, which was characterized by moderate-to-high SWB and higher levels of psychopathology and was composed of 145 participants, and finally (4) the troubled group, which was characterized by low SWB and high levels of psychopathology and consisted of a total of 102 participants. These findings support the

existence of the dual-factor model of mental health in college students, while only offering partial support for traditional assessment approaches (i.e., assessment for psychopathological symptoms in isolation) given that the majority of individuals who reported moderate-to-high levels of SWB also reported low levels of psychopathological symptoms (i.e., complete mental health group). Additionally, a sizeable number of individuals who reported high levels of psychopathology also reported corresponding low levels of SWB. Nevertheless, nearly 15% of students reported intact levels of SWB, despite reporting elevated levels of psychopathology, while an additional 5.5% of individuals reported low levels of both. Thus, use of traditional screening approaches may have mislabeled nearly 20% of the present sample by exclusively assessing for psychopathological symptoms.

A summary of the proportion of participants identified within each mental health group in other research studies conducted with college students is presented in Table 11. Across studies, the complete mental health group is consistently identified as the largest group, ranging from 47.4% to 78.0%. With respect to the troubled group, the proportion of students observed within the present study sample (i.e., 10.1%) approximated proportions reported by other studies, ranging from 9.0% to 21.0%. More significant departures from the existing research were observed with respect to the proportion of participants in each of the two remaining mental health groups (i.e., symptomatic but content and vulnerable groups). Specifically, results of the present study determined that 5.5% of participants met criteria consistent with that of the vulnerable group, whereas other studies report larger vulnerable groups, with figures ranging from 9.0% to 26.0% of participants. A similarly large discrepancy was observed with respect to the symptomatic but content group, which accounted for 14.3% of the current study sample; however, accounted for a much smaller proportion within existing research studies (i.e., ranged

from 4.0% to 5.5%). The differences observed in group proportions are likely to be attributable to (1) between-study variation in methods used to categorize participants into groups and (2) between-study differences in measurement tools employed to assess levels of psychopathology.

Table 22. Proportion of participants yielded via a dual-factor model classification system by the current study compared to previous research

Group	Research Study				
	Present Study (<i>N</i> = 1023)	Eklund et al. (2011) (<i>N</i> = 240)	Renshaw & Cohen (2014) (<i>N</i> = 1356)	Antaramian (2015) (<i>N</i> = 561)	Renshaw et al. (2016) (<i>n</i> = 461)
Complete Mental Health	70.1%	78.0%	61.4%	47.4%	74.0%
Vulnerable	5.5%	9.0%	18.7%	26.0%	9.3%
Symptomatic but Content	14.3%	4.0%	4.8%	5.5%	5.6%
Troubled	10.1%	9.0%	15.1%	21.0%	5.6%

Note. Only life satisfaction, rather than an SWB composite score was assessed in the Eklund et al. study. Group nomenclature for each study has been altered to match labels used in the present study for ease of comparison.

Specifically, Eklund et al., (2011) only assessed life satisfaction as a determinant of participants' wellness, as opposed to also including participants' experiences of positive and negative affect to compute a final SWB score. The measure used to assess for life satisfaction was the Brief Multidimensional Students' Life Satisfaction Scale (Seligson, Huebner, & Valois, 2003). Furthermore, Eklund and colleagues (2011) used a cut-score approach (i.e., participants with scores greater than 4 out of a possible 7 points on the measure of life satisfaction), in contrast to the development of a cut-score based on their existing sample. Finally, participants considered to have moderate-to-high levels of psychopathology were conceptualized to include those with elevated symptoms in addition to low levels of positive personal adjustment, which corresponded to a set *T*-score as determined by norms for the BASC-2 (Reynolds & Kamphaus, 2004).

With respect to the grouping procedure of Antaramian (2015), participants' SWB scores were calculated using the same procedure as that of the present study. Specifically, SWB was calculated by adding standardized life satisfaction and positive affect scores and subtracting

participants' standardized negative affect scores. A major difference from the present study; however, was that Antaramian dichotomized SWB scores and classified all participants as having high SWB if they scored at or above the mean and classified those who scored below the mean as having low SWB. With respect to participants' levels of psychopathology, a sample-specific cut-point corresponding to a *T*-score of 60 was used to differentiate those with high versus low levels of psychopathology.

Renshaw and Cohen (2014) utilized the Brief Symptom Inventory-18 (BSI-18; Derogatis, 2001), to measure psychological distress across three symptom domains (i.e., somatization, depression, anxiety). Composite scores for each of the three subscales were examined and community norms (*T*-scores) provided for the BSI were utilized to divide the sample based on their psychopathological symptoms. To assess participants' levels of well-being, six face-valid items were selected from the Quality of Life Interview, Brief Version (QOL-BV; Lehman, 1995) and combined to form what was termed the General Life Satisfaction Scale (QOL-BV-GLS). Given that the QOL-BV-GLS was created for the purpose of their study, there was no normative data available by which to interpret resulting composite scores. Thus, interpretation of scores was grounded in the qualitative labels that represented the average-item response scores (e.g., a raw composite score that was ≥ 30 was representative of an average-item response ranging anywhere from 5 (*mostly satisfied*) to 7 (*delighted*) and was categorized as demonstrating moderate-to-high levels of life satisfaction).

The grouping procedures employed in the current study most closely approximated those used by Renshaw and colleagues, (2016), with a few key differences. Specifically, Renshaw and colleagues only utilized the anxiety and depression subscales of the DASS, whereas the present study also considered the stress subscale in determining participants' level of psychopathology.

Additionally, Renshaw and colleagues used three different measures to assess for SWB level, whereas the determination regarding participants' level of SWB in the present study was restricted to the combination of life satisfaction, positive affect, and negative affect scores.

One of the most notable differences between the present study and previous research is the type of psychopathology measured. Specifically, the present study assessed for and equally weighted participants' reported levels of ADHD symptoms in classifying their level of psychopathology. Previous studies conducted investigating the dual-factor model with college-age participants have not utilized ADHD symptoms as a determinant of group membership, whereas internalizing symptoms (e.g., anxiety, depression) are most commonly considered. As such, although previous findings may be suggestive of general trends in proportions between mental health groups (e.g., the majority of the participants across studies conducted with college students are classified as completely mentally healthy), research conducted on the dual-factor model is likely to result in group proportions that fluctuate between studies, depending on (1) characteristics of the specific sample being assessed, (2) the decision rules used to classify participants into groups, and (3) the measurement tools selected to measure symptoms of mental illness and markers of wellness.

With respect to demographic information collected as part of the present study, an initial inspection of reported racial/ethnic information revealed that African Americans were overrepresented within the vulnerable group, that is, the proportion of African American participants in the vulnerable group was approximately double that found in the other three mental health groups (see Table 1). Results from the existing literature have similarly demonstrated that certain racial/ethnic and/or demographic characteristics are overrepresented in specific mental health groups. For example, Suldo (2008) found that low-SES students were

particularly likely to be in the troubled group. Results published by Suldo and colleagues (2016) demonstrated that, compared with the total sample, students in the complete mental health group were more likely to have married parents and higher SES, vulnerable students had lower family SES, more students categorized as symptomatic but content had unmarried parents, and that female students with unmarried parents and lower SES were overrepresented within the troubled group. Alternatively, Antaramian (2015) found that group membership was not significantly related to either ethnicity or class year; however, found significant relationships between gender and group membership, such that male participants were overrepresented within the highly symptomatic groups, whereas female participants were overrepresented in the low symptom groups.

Differences in Psychopathology by Group

The second research question aimed to assess whether the two mental health groups characterized by elevated levels of psychopathology (i.e., symptomatic but content versus troubled groups) exhibited significantly different types of symptoms of psychopathology. The symptom clusters assessed in order to classify participants into groups were depression, anxiety, and stress (as measured by the DASS) and inattention and hyperactivity/impulsivity (as measured by the ASRS). Results demonstrated that the troubled group evidenced significantly higher levels of depression ($M = 23.08$ vs. 11.05), anxiety ($M = 19.40$ vs. 12.42), and stress ($M = 28.03$ vs. 19.62), compared to participants classified as part of the symptomatic but content group. These differences were statistically significant ($p < .01$) and were characterized by large effect sizes (i.e., Cohen's d ranged from .90 to 1.42). There were no significant differences found between these groups with respect to levels of inattention or hyperactivity/impulsivity.

An interesting observation was noted with regards to mean levels of ADHD-related symptoms. Specifically, the troubled group only had slightly higher levels of mean inattentive symptoms (i.e., $M = 23.30$ versus 22.89), whereas the symptomatic but content group evidenced higher mean levels of hyperactivity/impulsivity compared to the troubled group (i.e., $M = 20.64$ versus 19.59). Although mean differences related to ADHD symptoms were not statistically significantly different, this remains a noteworthy finding.

One possible explanation for the pattern of means observed was previously theorized by Greenspoon and Saklofske (2001). In previous studies conducted with school-age children, in which both youth- and teacher-report data were collected (e.g., Suldo et al., 2011; Suldo et al., 2016), the symptomatic but content group often appear to be able to maintain average to high levels of SWB, despite exhibiting high levels of psychopathology, because their rated symptoms of psychopathology were primarily evaluated by an observer other than themselves (e.g., teacher). For instance, although a teacher may rate a student as exhibiting moderate-to-high levels of externalizing symptoms (e.g., attention problems, aggression, conduct problems), the student themselves may still perceive and report that his/her life is going well. This phenomenon, termed the “positive illusory bias” (PIB; discussed in greater detail below), occurs when individuals have inflated perceptions of their competencies and has been well-documented in previous studies (e.g., Evangelista, Owens, Golden, & Pelham, 2008) and is commonly observed among youth diagnosed with ADHD. In the present study, over two-thirds (i.e., 66.9%) of the symptomatic but content group demonstrated elevations on the ASRS (i.e., elevated inattention and/or hyperactivity/impulsivity), whereas 56.9% of the troubled group reported such elevations. Given that only self-report data was collected as part of the present study, it is possible that greater age, possible advancements in maturity level, and the presence of college-related

demands that require students to engage in some level of self-advocacy, undergraduates may be more accurate reporters of their ADHD-related symptoms (compared to their school-age counterparts), while still remaining susceptible to the PIB phenomenon. This idea is supported in previous research demonstrating that although both children and adolescents tend to be poor reporters of their ADHD symptoms (e.g., Kamphaus & Frick, 2005; Sibley, Campey, & Raiker, 2019) some research has demonstrated that both an individual's self-awareness of their symptoms and level of impairment associated with such symptoms improves with age, with ADHD adults appearing to be more forthcoming about and accurate when reporting their difficulties (Barkley, Murphy, & Fischer, 2010).

An alternative explanation was proposed by Eklund and colleagues, as a result of their study investigating the utility of the dual-factor model in college students (2011). Although symptoms of ADHD were not utilized as a determinant of mental health groups, "attention problems" were measured as an outcome of interest. Similar to the results yielded by the present study, Eklund et al.'s symptomatic but content group (termed the "ambivalent" group) reported higher mean attentional problems scores, compared to the troubled group (termed the "distressed" group), despite their higher levels of self-reported life satisfaction. Eklund and colleagues speculated that attentional problems may not necessarily lead to functional impairments, nor impact individuals' overall assessments of life satisfaction.

In terms of group characteristics, results further revealed that a significantly greater proportion of participants in the troubled group evidenced elevations on the DASS (i.e., elevated depression, anxiety, and/or stress; 89.2%) compared to the symptomatic but content group (48.3%). The low levels of SWB reported by the troubled group may reflect a greater awareness of their own distress. Additionally, given that an overall standardized meta-composite score was

created to denote participants' respective levels of psychopathology, participants could also demonstrate elevations across measures of psychopathology (i.e., elevations on both the DASS and ASRS). The troubled group evidenced a significantly greater proportion of individuals who elevated across measures (46.1%) compared to the symptomatic but content group (15.2%). Therefore, participants' reported levels of SWB may also be influenced by their comorbidity status. Research has demonstrated that college students with ADHD and comorbid conditions are at an increased risk for experiencing psychosocial difficulties (Eisenberg, Gollust, Golberstein, & Hefner, 2007), which may provide additional insight regarding the academic and social impairments observed within this population (Barkley, Murphy, & Fischer, 2010).

With respect to participants' self-appraisals of SWB as it relates to the PIB, specifically, previous research has demonstrated that it may be complicated when considering ADHD in conjunction with commonly co-occurring mental health disorders. Specifically, the presence of comorbid internalizing symptoms in youth with ADHD has been found to weaken the PIB, whereas, the presence of externalizing symptoms (e.g., disruptive behaviors) has been shown to intensify the PIB (e.g., Hoza et al., 2004), which offers some support for the discrepant levels of SWB reported between the two mental health groups characterized by elevated psychopathological symptoms. Furthermore, the proportion of individuals within the present sample that were observed to have comorbid symptom presentations is consistent with reported rates in the existing literature (e.g., 55%; Heiligenstein & Keeling, 1995).

Dual-Factor Model Mental Health Group Outcomes

The third research question of interest aimed to investigate whether mental health groups differed significantly with respect to their levels of school-based performance (i.e., GPA), adjustment (e.g., academic efficacy, academic satisfaction), engagement (e.g., academic

engagement, student-staff engagement, beyond-class engagement), social connectedness, and resilience. Results of the current study provided additional evidence for use of the dual-factor model of mental health with college students as differences in functioning were detected between mental health groups.

As previously described, the College Student Subjective Wellbeing Questionnaire (CSSWQ; Renshaw & Bolognino, 2016) was designed as a domain-specific measure to assess college student covitality. As such, it was anticipated that participants' levels of SWB would most strongly predict participants' levels of academic satisfaction, academic efficacy, school connectedness, and college gratitude, as measured by the CSSWQ. Given that Renshaw and Bolognino (2016) found that domain-specific well-being measures had incremental validity for predicting domain-specific outcomes, inclusion of the CSSWQ provides a promising area for future research as the field continues to refine instruments used to assess indicators of wellness.

Academic satisfaction. Examination of the academic satisfaction scale revealed that the complete mental health group reported the greatest degree of satisfaction and differed significantly from all other mental health groups, with the largest effect sizes observed for comparisons with the troubled group ($g = 1.14$) and the vulnerable group ($g = .82$). These findings suggest that both the presence of SWB and absence of psychopathology are important for facilitating academic satisfaction. Additionally, the symptomatic but content group reported significantly greater levels of academic satisfaction compared to both the vulnerable and troubled groups, which did not significantly differ from one another. Careful examination of group relationships was suggestive that SWB may be playing a protective role against participants' levels of psychopathology in the symptomatic but content group; however, the absence of psychopathology alone was insufficient for producing significant differences between the

vulnerable and troubled groups, providing further support for the dual-factor model, which posits that these domains are related, yet distinct.

Academic efficacy. With regards to academic efficacy, participants in the complete mental health group rated themselves as most efficacious, followed by the symptomatic but content group, the vulnerable group, and the troubled group. The complete mental health group differed significantly from both the vulnerable and the troubled groups, whereas the symptomatic but content group only differed significantly from the troubled group. Interestingly, the vulnerable group also differed significantly from the troubled group, which may indicate that regardless of low levels of SWB reported by the vulnerable group, the absence of psychopathology is sufficient to distinguish it significantly from the troubled group. Additionally, in the case of the symptomatic but content group, the presence of moderate-to-high levels of SWB may serve as a protective factor against the negative impact of psychopathological symptoms. Indeed, previous research has shown that self-efficacy is not only an important predictor of academic achievement, but also serves as a protective factor against mood and anxiety disorders (Maddux & Meier, 1995; Putwain, Sander, & Larkin, 2013).

School connectedness. The school connectedness subscale was administered to participants to assess participants' feelings of belongingness to their university and feelings of connectedness to fellow peers. Participants in the complete mental health group reported the greatest levels of school connectedness, followed by the symptomatic but content group, the vulnerable group, and lastly the troubled group. The complete mental health group did not differ significantly from the symptomatic but content group; however, both of these groups significantly differed from the vulnerable and troubled groups, independently. These results suggest that higher reported levels of SWB may be more influential compared to the impacts

associated with symptoms of psychopathology, with respect to school connectedness. This is further supported by the fact that the vulnerable group did not significantly differ from the troubled group despite the absence of psychopathological symptoms characteristic of students in the vulnerable group. Furthermore, all effect sizes observed as a result of pairwise comparisons were rather large, with Hedges' g ranging from .73 to 1.20. Although this subscale measured domain-specific connectedness in college students, the large effect sizes observed, in combination with previous research suggesting the importance of connectedness for college student success, distinguishes it as a promising target of intervention. More specifically, a sense of connectedness has been shown to promote classroom participation, enhance overall learning, and improve both physical and mental health (Hawkey & Cacioppo, 2010; Frisby & Martin, 2010).

College gratitude. The college gratitude scale assesses participants' feelings of gratitude as it specifically pertains to the university setting (e.g., "I am so thankful I am getting a college education", "I am grateful to the professors and other students who have helped me in this class"). Interestingly, participants in the symptomatic but content group reported the highest levels of college gratitude (only slightly higher than participants in the complete mental health group), followed by the vulnerable group, and lastly the troubled group. Possible explanations for this finding are further explored below. The complete mental health group and the symptomatic but content group had significantly higher levels of college gratitude compared to the troubled group. No other significant differences were observed between mental health groups, suggesting that the presence of SWB, as opposed to the absence of psychopathological symptoms, may be more important for one's experience of domain-specific gratitude.

Engagement. With respect to students' overall engagement levels, the two groups characterized by moderate-to-high levels of SWB (i.e., complete mental health and symptomatic but content groups) consistently exhibited the highest levels of engagement across all domains assessed. Moreover, these two groups were not significantly different from one another with respect to levels of engagement, suggesting that SWB may play a particularly important role in facilitating student engagement as a whole. Additionally, across all five areas of engagement, the complete mental health group evidenced significantly higher levels of self-reported engagement compared to the troubled group. Findings may further suggest that for the symptomatic but content group, SWB may be a protective factor that helps to promote a sense of engagement, despite the presence of psychopathological symptoms. Despite variations in methodology, the above results were consistent with those reported by Antaramian (2015).

Academic engagement. Specifically, participants' levels of academic engagement did not significantly differ between the complete mental health and the symptomatic but content groups. However, both of these groups had levels of academic engagement that were statistically different from both the vulnerable and trouble groups, while the vulnerable and troubled groups did not statistically differ from one another. These findings further support that SWB may be particularly important with respect to students' course-related behaviors (e.g., attendance, studying, workload management), while psychopathology also plays an important role, given that the largest effect sizes were seen for comparisons between the troubled group and the complete mental health ($g = .76$) and symptomatic but content ($g = .74$) groups.

Peer engagement. Examination of the peer engagement subscale across mental health groups demonstrated that the troubled group engaged with peers in course-related activities significantly less compared to all other mental health groups, (characterized by moderate effect

sizes with Hedges' g ranging from .45 to .64) suggesting that both an individual's level of psychopathology and SWB play an important role regarding peer engagement levels.

Interestingly, the symptomatic but content students reported slightly greater mean levels of peer engagement compared to the completely mentally healthy students, followed by the vulnerable, and finally the troubled groups.

Student-staff engagement. Examination of the student-staff engagement subscale revealed significant differences between both the complete mental health and symptomatic but content groups when compared to the troubled group (characterized by moderate effect sizes), once again, supporting the notion that an individual's level of SWB may be particularly influential with respect to the degree to which students interact with faculty members. As was observed with the peer engagement scale, the symptomatic but content group reported slightly higher levels of student-staff engagement compared to the complete mental health group.

Intellectual engagement. The intellectual engagement subscale was administered to participants to assess their levels of general satisfaction with academic material, as well as participants' intrinsic motivation to complete academic activities. Regarding intellectual engagement, the complete mental health group reported the greatest mean levels of intellectual engagement and differed significantly from both the vulnerable and the troubled groups. In addition, the symptomatic but content group significantly different from the troubled group, supporting the idea that SWB may be a stronger predictor of intellectual engagement, as opposed to a participant's level of psychopathology. It is similarly possible that higher levels of SWB reported by the symptomatic but content group have a protective effect against the negative impacts of psychopathology.

Beyond-class engagement. Finally, participants' levels of beyond-class engagement, which assessed students' perceived level of belongingness in the university community and overall student connectedness, yielded similar relationships between groups as were observed for intellectual engagement, with the largest effect size observed for the comparison between the complete mental health and the troubled groups ($g = .77$).

Overall, results supported the idea that participants who reported higher levels of SWB, regardless of their level of psychopathology, had better study habits, were more engaged with faculty and peers, had higher intrinsic motivation, and felt a greater degree of belonging within the university community, compared to individuals with lower levels of SWB. These results are consistent with the results reported by Antaramian (2015), who was the first to investigate the utility of the dual-factor model for predicting engagement levels in college students.

Social connectedness. Existing research investigating students' adjustment to and success in college has often focused on academic ability and competence. Other research has focused on social adjustment as a key factor that influences and predicts success in the college setting, with some studies demonstrating that social factors are just as important as academic factors and have a greater overall impact on emotional health and well-being (Gerdes & Mallinckrodt, 1994; Ross, Neibling, & Heckert, 1999; Sharma, 2012). More specifically, loneliness has emerged as a strong correlate of college adjustment (Russell, Peplau, & Cutrona, 1980; Nicpon, Huser, Blanks, Sollenberger, Befort & Robinson Kurpius, 2007). Loneliness is conceptualized as being a result of deficits in an individual's social relationships and is described as an internal and subjective psychological experience that transcends solitude and physical isolation (Peplau & Perlman, 1982). There is evidence suggesting that loneliness is both a painful and widespread problem among college students, with one early study finding that 75% of

college freshman reported feeling lonely during the first 2 weeks of college (Cutrona, 1982). Loneliness has also been found to be associated with several other serious concerns, including physical illness and an overutilization of healthcare services (Lynch, 1976), alcoholism (Nerviano & Gross, 1976), and suicide (Wenz, 1977).

Loneliness was assessed as part of the present study, through the use of the Revised UCLA Loneliness scale (LS-R); however, in accordance with the practice of Renshaw and colleagues (2016), the negative items were reverse coded in order to generate a score that reflected social connectedness as opposed to loneliness. Results demonstrated significant differences in the reported levels of social connectedness between all of the mental health groups, with the exception of the levels reported by the vulnerable group and the symptomatic but content group. Participants in the complete mental health group reported the highest levels of social connectedness, followed by the symptomatic but content group, the vulnerable group, and finally the troubled group, reporting the lowest levels of social connectedness. Given the pattern of significant differences between mental health groups, results suggest that both SWB and psychopathology are important factors influencing one's perceived level of social connectedness. The largest effect size observed (i.e., $g = 1.32$) was produced as a result of the comparison between the complete mental health and troubled groups, which may be expected, as these groups represent the extreme ends of both the wellbeing and psychopathological continua. It should be noted; however, that the second largest effect size (i.e., $g = .76$) was observed as a result of the comparison between the complete mental health and the vulnerable groups, suggesting that a reliance on traditional screening practices (i.e., exclusive assessment of psychopathological symptoms) would have failed to identify students contained within the vulnerable group as needing intervention. Similarly, the large effect size observed (i.e., $g = .71$)

when comparing the symptomatic but content group and troubled group suggests that an exclusive focus on psychopathology may falsely identify symptomatic but content students as in need of potentially unnecessary intervention. As was discussed in relation to school connectedness (domain-specific), a similar pattern was observed within the present measure, suggesting that social connectedness may be a promising target of intervention.

Resilience. The present study is the first to examine resilience as a novel variable of concurrent functioning. The Brief Resilience Scale (BRS; Smith, et al., 2008) was used to measure individuals' ability to "bounce back" after the experience of stressful life events. Results revealed that students within the complete mental health group reported the greatest levels of resilience, followed by the symptomatic but content group, the vulnerable group, and finally the troubled group. The complete mental health group reported significantly higher levels of resilience compared to all other mental health groups. As was the case with social connectedness, the largest effect size (i.e., $g = 1.13$) was observed as a result of the comparison between the complete mental health and troubled groups, which was expected. Additionally, participants in the troubled group reported significantly less resilience compared to both the symptomatic but content and the vulnerable groups. These results underscore the importance of SWB in influencing levels of resilience, as well as suggest that the presence versus absence of psychopathological symptoms is also an important indicator.

Resilience was determined to be an important variable of concurrent functioning due to the existing research demonstrating its significance as a mediator of positive outcomes in college students. Specifically, resilience has been shown to play a mediational role in overall academic success (Johnson, Taasobshirazi, Kestler, & Cordova, 2015), time-to-credit completion (Hartley, 2013), as well as increased functioning and overall well-being (Tugade, Fredrickson, &

Feldman Barrett, 2004; Hartley, 2012). Resilience, as it is measured within the present study, has been shown to reduce negative outcomes, such as anxiety, depression, negative affect, and physical symptoms (Smith et al., 2008). There are interventions designed to influence and improve individuals' levels of resilience (see Reavley, Bassilios, Ryan, Schlichthorst, & Nicholas, 2015 for review) that have demonstrated significant effects. These present results suggest that it may be a strategic target for intervention within the college student population.

Academic achievement. In an effort to obtain a more objective measure of academic achievement, students were asked to report their current GPAs (in the event that they were a second-year student or beyond) and estimate their GPAs (if they were a first-year student). Many of the previous studies conducted on the dual-factor model across the lifespan have assessed academic achievement through the examination of students' GPAs (e.g., Antaramian, 2010; Suldo et al., 2016; Renshaw & Cohen 2013; Antaramian, 2015; Renshaw et al., 2016). Therefore, it was decided that GPA would be measured to assess whether findings from previous studies would be replicated.

Interestingly, results of the present study revealed that students in the symptomatic but content group reported the highest GPAs among mental health groups, followed by the complete mental health group (represented by a difference of .01 GPA points), the vulnerable group, and finally the troubled group. Significant differences between groups were restricted to differences between the complete mental health and troubled groups, as well as the symptomatic but content and troubled groups.

The results observed in the present study did not replicate previous findings, which have yet to be replicated within undergraduate samples. It is important to note; however, that it cannot be verified whether students reported their current or cumulative GPAs, the latter of which

would reflect academic performance across semesters (if the student were in their second semester of school or greater). As such, it is possible that students' mental health statuses at the time of data collection would not be as impactful on cumulative scores compared to the impact that may have been observed if students had been asked to report their current grades.

Additionally, for first year students without a full semester of school completed, their GPAs were purely based on self-reported estimates, which may or may not have reflected their current academic standing (e.g., failure to reference current grades, not all professors upload grades in a timely manner). Other possible explanations for the pattern of results observed for academic achievement, among other outcomes of interest are further explored in a later section.

Moderation Analyses

The secondary aim of the present study was predominantly exploratory in nature. Specifically, the current study aimed to investigate whether the relationship between psychopathology and the outcomes of interest were moderated by participants' self-reported levels of SWB. Overall, results of the moderation analyses revealed that SWB and psychopathology did not significantly interact, that is, SWB did not buffer the effects of psychopathology for any of the outcomes assessed. Notably, there was a significant main effect of SWB for all of the outcomes of interest, with SWB explaining the greatest amount of unique variance for each of the models. Furthermore, the main effect of SWB was observed to be in the expected direction, such that greater levels of SWB significantly predicted greater levels of each of the outcome variables, independently. Four of the twelve outcome variables assessed revealed a significant main effect of psychopathology. Of these effects, only two were observed to be in the expected direction, such that greater levels of psychopathology were associated with decreased levels of reported social connectedness and resilience. For the remaining two outcome

variables the main effect of psychopathology was in the opposite direction, such that greater levels of psychopathology were associated with greater reported levels of college gratitude and peer engagement, independently. The interaction effect related to GPA approached significance, suggesting that SWB may moderate the negative effects of psychopathology with respect to academic achievement. Although SWB was not shown to significantly moderate the relationship between psychopathology and GPA, this relationship may be more pronounced when examining data from other samples (e.g., clinical samples).

Overall findings of the regression analyses consistently indicated SWB to be a more robust predictor of all of the dependent variables of interest. Findings from these analyses contribute to theory by further validating the significance of SWB as it relates to important outcomes within college student samples. Despite divergent methodologies, conclusions that can be drawn based on the results of these analyses are somewhat parallel to those drawn as a result of Renshaw et al.'s (2016) study, which compared categorical and continuous analytic approaches for investigating the dual-factor model of mental health. Based on study findings Renshaw and colleagues demonstrated that when employing a categorical approach (which is currently what is most commonly used to conduct research within this domain), use of the dual-factor model approach demonstrated incremental validity in relation to specified outcomes of interest. Alternatively, however, results of the continuous analytic approaches suggested that the model that exclusively utilized indicators of well-being, was a stronger predictor of outcomes when compared to the other two models being assessed (i.e., psychopathological symptoms exclusively, versus a continuous approach that utilized both wellness and distress predictors in combination).

Examination of Group Characteristics as they Relate to Outcomes

In some cases, results of the moderation analyses produced findings in the unexpected direction. Specifically, when examining the relationships between psychopathology and the outcome variables, college gratitude and peer engagement, the main effect of psychopathology was observed to be opposite of what would be expected. Similarly, as was the case for four of the univariate ANOVAs, the levels of reported outcomes by the symptomatic but content group unexpectedly exceeded those reported by the complete mental health group (e.g., symptomatic but content students reported slightly higher levels of college gratitude, peer engagement, student-staff engagement, and GPA) compared to students in the complete mental health group. Nevertheless, in these instances, no significant differences between these groups were observed. One possible explanation for this pattern of observations may be related to what has been termed the “positive illusory bias” phenomenon (PIB; Pelham, et al., 1992). As was previously discussed, the symptomatic but content group compared to the troubled group, evidenced a greater proportion of students who reported significant ADHD symptoms. Although, it may be expected that the self-perceptions of youth with ADHD may be negatively impacted, research has shown evidence for the PIB, which is defined as the discrepancy that is observable between an individual’s self-report of competence and their actual level of competence, such that self-reported competence exceeds actual competence (Hoza, Pehlham, Milich, Pillow, & McBride, 1993; Taylor, 1983). Youth with ADHD have been found to overestimate their levels of competence within a given domain significantly more than their non-ADHD peers (e.g., Hoza et al. 2004; Owens & Hoza, 2003; Hoza, Pelham, Dobbs, Owens, & Pillow, 2002; Hoza, Waschbusch, Owens, Pelham, & Kipp, 2001; Hoza, Waschbusch, Pelham, Molina, & Milich, 2000), who may actually underestimate their levels of competence. The PIB has also been

consistently observed in ADHD youth, regardless of the rater report that has been used as a comparison (e.g., mother-report, father-report, teacher-report; Hoza et al., 2004), demonstrating that rater bias cannot independently fully explain this phenomenon. In addition, the PIB has been detected in studies where youths' actual achievement scores have been used as the criteria (Owens & Hoza, 2003). While the PIB phenomenon has been most consistently observed among ADHD youth, findings from other studies have demonstrated that youth who are free of clinical symptoms, yet experience social and behavioral impairments also report overly-positive self-evaluations (e.g., Hymel, Bowker, & Woody, 1993). As such, these findings have important implications for both clinical and non-clinical populations.

Follow-up studies have not only provided evidence for the PIB but have further shown that youth with ADHD have the tendency to overestimate their competence in the domain in which they evidence the greatest deficit (Hoza et al., 2004; Hoza et al., 2002). For instance, youth with both ADHD and significantly elevated levels of aggression reported the largest discrepancies between their actual and perceived levels of competence within the behavioral conduct and social acceptance domains. In contrast, ADHD youth who displayed lower levels of achievement were most likely to overestimate their competence in relation to the domain of scholastic competence (Hoza et al., 2004; Hoza et al., 2002). It has been previously theorized that the self-reporting issues observed in ADHD youth would be likely to remit as youth matured into adolescence, which is a developmental period that is largely characterized by increases in self-awareness (Blakemore & Choudhury, 2006). However, these ADHD-related self-reporting issues have been shown to have longitudinal stability throughout adolescence (Murray-Close et al., 2010), with ADHD adolescents reporting their competence and functioning to be equal to that of their objectively, more successful peers (Hoza et al., 2000; Sibley et al., 2012). Not only

do ADHD adolescents appear to display the PIB, research has shown that they also tend to be poor reporters of their actual symptoms, as well. For instance, one study conducted by Sibley, Campey, and Raiker (2017), using a sample of 107 adolescents demonstrated that 66% of adolescents with ADHD underreported their symptom severity when compared to parent reports, while a subset of 23.6% of the sample completely denied having any symptoms whatsoever. Although there is evidence that these issues with self-reporting persist throughout adolescence, some research has demonstrated that issues with self-reporting may improve in adulthood (Barkley, Murphy, & Fischer, 2010), although evidence remains mixed.

In relationship to the present study, unexpected results obtained with respect to certain outcomes (i.e., college gratitude, peer engagement, student-staff engagement, GPA) may possibly be explained by the PIB phenomenon. In addition, given that self-report data was exclusively used within the present study, there is no way to verify participants' actual levels of functioning (compared to their reported levels of functioning) across the different domains assessed (e.g., academic domain, social domain). A closer examination of the outcomes in question reveal plausible relationships between the domains assessed by each of these outcomes and those that have been posited to be most susceptible to the PIB. Specifically, given that youth with ADHD are more likely to exhibit academic difficulties and social deficits (Advokat, Lane, & Luo, 2011; Pinho, Manz, DuPaul, Anastopoulos & Weyandt, 2017) in combination with existing research demonstrating that these youth also have the tendency to overestimate their competence in their domain of greatest deficit (Hoza et al., 2004; Hoza et al., 2002), it becomes clearer as to why the results in question may be occurring within the context of these related domains (e.g., peer engagement, GPA).

Strengths, Limitations, and Future Directions

Both the strengths and limitations of the present study should be thoroughly considered in the planning of future studies. It is important to note that classifying people into one of four mental health groups may offer an oversimplified and imprecise representation of reality (Greenspoon & Saklofske, 2001). The use of cut points in order to establish group membership may impose even greater constraints, as human functioning is best described as existing on a continuum. Much of the extant research uses similar cut-point decision rules in order to determine groups; however, it is important to recognize that these decision rules are somewhat arbitrary. It is possible that altering these decision rules by 1.5 to 2 standard deviations has the potential to substantially change the results produced by the dual-factor model. Although methods employed in the present study approximated those conducted within the existing literature (e.g., use of LS, PA, and NA in the calculation of SWB), there were some key differences. For instance, the present study is the first to both assess for and utilize ADHD symptoms as a determinant of group membership within a college student sample. Nonetheless, some of the results within the extant literature were replicated. Future research should aim to more closely investigate incorporating a greater breadth of psychopathology, as well as the use of alternative decision rules to determine the four mental health groups in the continued investigation of the utility of the dual-factor model.

Most studies investigating the dual-factor model have used a single indicator (e.g., life satisfaction) in order to represent the entire well-being continuum. Additionally, this is often done while using multiple indicators of psychopathology (e.g., anxiety, depression) to represent the negative mental health continuum. In order to rectify this discrepancy, Eklund et al.'s (2011) recommendation is reiterated here, which suggests an expansion of future research to include

additional, empirically-validated indicators of well-being (e.g., hope, gratitude, grit, engagement). Although SWB was used in isolation as an indicator of wellness within the present study, the College Student Subjective Wellbeing Questionnaire (CSSWQ; Renshaw, 2016), which measures college student covitality, was included with the intent to continue the investigation of both global and domain-specific indicators of well-being for use in future research. Future research should also consider the use of cumulative conceptualizations of well-being (e.g., covitality; Furlong et al., 2014; Furlong et al., 2013; Renshaw & Bolognino, 2016), in addition to further expanding the range of outcomes of interest assessed (e.g., attendance rates).

The present study adds to the existing literature given that it is the first to utilize ADHD symptoms as a determinant of group membership within a college student sample. To this end, another novel aim was to explore differences in the two groups characterized by elevated levels of psychopathology (i.e., symptomatic but content and troubled groups). Researchers conducting studies within this area may wish to execute a more thorough investigation of individuals who fall in one of the two middle groups (i.e., vulnerable and symptomatic but content). Further investigation may help to identify key factors influencing their group membership, as well as determine interventions better-suited to meet their unique needs. Additionally, future research should also be conducted in order to reveal whether groups are more likely to evidence certain markers of positive mental health functioning over others.

The present study relied exclusively on self-reported data. Therefore, it is possible that the data may be confounded by social-desirability effects. Additionally, data may be further biased by common-method variance. It is recommended that future research aim to gather information from additional informants (e.g., parents, teachers, peers) as well as incorporate

more objective measures (e.g., university-reported GPA) of functioning and achievement, to better assess observed relationships.

The present study adds to the existing research by conducting exploratory moderation analyses. Nevertheless, a cross-sectional study design was utilized. As such, outcomes of interest may actually precede or result from an individual's mental health status. Further studies employing a longitudinal design would help to elucidate causal relationships. Additionally, longitudinal designs would assist in determining the stability of dual-factor model classifications.

The study sample comprised a convenience sample, as participants were self-selected college students all attending the same university. As such, these results may not be generalizable to other college student populations. Overall, there is more research needed within this domain so that results may be generalized to other populations, particularly given the positive impact these results may have. Increasing generalizability would aid in the design of more effective methods of supporting and developing healthy youth functioning and an increased likelihood of achieving positive outcomes. Thus, it is recommended that replication studies with larger and more diverse samples be conducted to support these efforts.

Implications for Screening and Treatment

Use of the dual-factor model has far-reaching implications regarding screening and treatment practices. As first indicated by Greenspoon and Saklofske (2001), by solely focusing on the measurement of psychopathology, key group differences are easily diminished or entirely eliminated. Early detection of youth's difficulties is undoubtedly an important initial step in ensuring their healthy adjustment and success. Compared to the unidimensional model, findings from the present study indicate that the dual-factor model provides a more nuanced depiction of youth functioning. Measurement of both SWB and psychopathology are crucial in obtaining a

comprehensive understanding of mental health.

This notion has significant implications for how educators screen and identify students in need of support, how government agencies select funds to be allocated for intervention-based research, and how mental health professionals approach and perform psychotherapeutic treatment with clients.

Screening practices. Results from studies conducted using the dual-factor framework underscore the importance of continuing to monitor students' psychopathology; however, continuing to do so in isolation has been shown to lead to an over- or underestimation of student functioning. Optimal student functioning is less likely to be achieved through continuing to exclusively focus on the identification and treatment of mental illness, as opposed to targeted efforts aimed at increasing SWB. The assessment of SWB provides a wealth of additive information, resulting in a more comprehensive view of youth functioning. Assessments of positive indicators should, therefore, serve to enhance, as opposed to replace, our established screening practices. Using assessment strategies that pair strength-based measures with assessments of psychopathology would greatly assist in the development of a vast range of intervention strategies. For instance, using both SWB and psychopathology assessments may aid in the identification of students best suited for specific tiers within a school's multitier intervention model. Most students are likely to benefit from Tier 1 programming (Sprague & Horner, 2006). By adding a screener of SWB, students in the vulnerable group would be more easily identified and would be likely to benefit from Tier 2 intervention. As would be expected, interventions of the greatest intensity would then be reserved for students that constitute the troubled group, with interventions designed to target both reductions in symptoms of psychopathology in addition to increases in SWB.

Treatment practices. The emergence of psychotherapeutic interventions such as Positive Clinical Psychology (Wood & Tarrier, 2010), Well-being Therapy (Fava & Ruini, 2003), and Positive Psychotherapy (Seligman, Rashid, & Parks, 2006) serve as evidence of an increasing emphasis on interventions that are specifically aimed at increasing individuals' well-being. These forms of intervention are designed to supplement traditional forms of psychotherapy, which often primarily aim to decrease psychopathology, and only secondarily increase SWB (e.g., CBT; Westen & Morrison, 2001; Hofmann & Smits, 2008). Alternatively, these traditional forms of therapy may rely on the assumption that gains in well-being result from reductions in psychopathology.

A study conducted by Trompetter and colleagues (2017) aimed to investigate the applicability of the dual-factor model in an intervention study using Acceptance and Commitment Therapy (ACT). Study findings demonstrated support for the dual factor model. Specifically, of the people that improved during the ACT-based intervention on one of the outcomes (i.e., either positive mental health or depression and anxiety symptoms), 66 to 75% of participants improved on either one indicator or the other, while 25 to 33% improved on both positive and negative indicators of mental health. This outcome would not have been observable when examining results from the perspective of the traditional mental health model, which defines positive indicators and psychopathological symptoms as opposite ends of a single continuum. Study findings suggest that the predominant view regarding the effectiveness of current psychotherapeutic interventions, which, to date, have been most commonly evaluated for their effectiveness in reducing psychopathology, is quite limited. Support for the dual-factor model demonstrates that interventions that have proven effective in reducing psychopathology

cannot be assumed effective at increasing and promoting positive mental health, and vice versa (Trompetter, Lamers, Westerhof, Fledderus, & Bohlmeijer, 2017).

Conclusion

Despite the limitations presented above, initial study findings have several important implications for both the theory and practice of mental health. Although there is still significant work to be done within this area of research, preliminary findings are consistent in suggesting that traditional models focusing almost exclusively on the assessment and treatment of psychopathology are limited in their ability to convey the complexities of the human experience.

In their foundational study, Greenspoon and Saklofske (2001) stated that the dual-factor model is, “surely a crude representation of reality”, however, further noted that it serves as a “doubling of the current taxonomy”, and thus, “a step forward”. Indeed, findings from the present study support this notion by underscoring the value associated with discriminating between two separate, yet related, dimensions of mental health functioning. These findings serve to emphasize the importance of SWB in influencing and facilitating a host of important quality-of-life outcomes and point to the importance of promoting SWB in youth. This model further suggests that the overarching goal should not merely consist of moving away from mental illness, but also towards well-being, life-satisfaction, and overall fulfillment and healthy functioning.

APPENDIX A. CONSENT FORM

Consent Form

1. **Study Title:** Validation of the Dual-Factor Model of Mental Health in College Students: An Investigation of Group Characteristics.
2. **Performance Sites:** Louisiana State University
3. **Name and Telephone Numbers of Investigators:** The following investigators are available for questions about the study:

Mary Lou Kelley, Ph.D. (225) 578-8745 Ashley Galsky, M.A. (305) 467-7095
4. **Purpose of the Study:** This study will examine the role psychological and emotional functioning on various important outcomes (e.g., social support, feelings of connectedness, academic performance, perceptions of physical health) in college students.
5. **Participant Inclusion:** Louisiana State University undergraduate students.
6. **Number of Participants:** 1,500
7. **Study Procedures:** Participants will spend approximately 20-30 minutes answering questions about themselves. Questions asked will be in regards to your perception of social support and connectedness, perceptions of physical health, estimated grade point average, emotional state (e.g., questions about anxiety and depression), and symptoms of inattention/hyperactivity. At the end of the data collection period, a raffle drawing will occur and two participants will win gift cards in the amount of \$25 each.
8. **Benefits:** The outcome of this research study will provide practitioners, school officials, and families with information that will help them better understand the effects important outcomes associated with mental health functioning. The data from this research will be utilized to inform future school-based interventions and screening practices.
9. **Risks:** Should you choose to complete this survey in a public place, there is some risk of an outside individual being able to view your responses. As such, it is recommended that the following questionnaire be completed privately. Additionally, you may become upset after reporting information about your current emotional state (e.g., worry, sadness). Should you feel any discomfort at any point, study investigators will provide community health care resources that may be locally accessed. These include the Psychological Services Center of Louisiana State University at 225-578-1494 and Capitol Area Human Services at 225- 925-1906.

10. **Right to Refuse:** Participation in this study is not required. You have the right to refuse to participate in the study or discontinue participation at any point. Refusing to participate will in no way affect your standing at LSU or your performance site (i.e. school or community center). There are no penalties for discontinuing participation.
11. **Right to Privacy:** All of the information collected is exclusively for the purpose of research and will be kept private and anonymous. Your name will not appear on any research data and a limited number of trained research staff will be the only individuals handling data. Initially, your name will only be on the consent form, which will be stored separately from additional information provided. The data will be stored in a private and locked facility. When the study has been completed, a paper will be written containing the results of the study. However, your name will not be used in any way in publications that result from the data.
12. **Cost:** There is no cost to participate in the study.

13. **Signatures:**

This study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigators. If I have questions about participants' rights or other concerns, I can contact Dennis Landin, Chairman of the LSU Institutional Review Board, at (225) 578-8692, irb@lsu.edu, www.lsu.edu/irb.

I agree to participate in the study described above and acknowledge the researchers' obligation to provide me with a copy of this consent form if signed by me.

I have been informed of the study procedures.

Signature of the Participant

Date

The Study subject has indicated to me that he/she is unable to read. I certify that I have read this consent form to the subject and explained that by completing the signature above, the subject has agreed to participate

Signature of the Reader

Date

APPENDIX B. DEMOGRAPHIC INFORMATION FORM

Demographic Information Form

Date: _____

Name: _____

Gender: Male/Female/Transgender

Date of Birth: _____

Age (in years): _____

Home Phone #: _____

Cell Phone #: _____

Email Address: _____

Year in College: ☐ 1st year ☐ 2nd year
 ☐ 3rd year ☐ 4th year +

Current GPA: _____

Major (if decided):

☐ Major Undecided

☐ Major: _____

What is your race?

_____ American Indian/ Alaskan Native

_____ Asian

_____ Black / African American

_____ Native Hawaiian / Other Pacific Islander

_____ Caucasian / White

_____ Biracial / Multiracial

_____ Decline to answer

What is your ethnicity?

_____ Hispanic/Latino

_____ Not Hispanic/Latino

What is your current job status?

☐ Unemployed

☐ Employed part-time <20 hours/week

☐ Employed part-time 20-39 hours/week

☐ Employed full-time

How many extracurriculars/clubs do you participate in currently?

☐ None ☐ 1

☐ 2-3 ☐ More than 4

What is the current marital status of your parents?

☐ Married

☐ Living with partner

☐ Divorced

☐ Separated

☐ Widowed

☐ Never Married

APPENDIX C. DEPRESSION-ANXIETY-STRESS SCALE

<h1 style="margin: 0;">DASS</h1>		<i>Name:</i>	<i>Date:</i>
<p>Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you <i>over the past week</i>. There are no right or wrong answers. Do not spend too much time on any statement.</p>			
<p><i>The rating scale is as follows:</i></p> <p>0 Did not apply to me at all 1 Applied to me to some degree, or some of the time 2 Applied to me to a considerable degree, or a good part of time 3 Applied to me very much, or most of the time</p>			
1	I found myself getting upset by quite trivial things	0	1
2	I was aware of dryness of my mouth	0	1
3	I couldn't seem to experience any positive feeling at all	0	1
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1
5	I just couldn't seem to get going	0	1
6	I tended to over-react to situations	0	1
7	I had a feeling of shakiness (eg, legs going to give way)	0	1
8	I found it difficult to relax	0	1
9	I found myself in situations that made me so anxious I was most relieved when they ended	0	1
10	I felt that I had nothing to look forward to	0	1
11	I found myself getting upset rather easily	0	1
12	I felt that I was using a lot of nervous energy	0	1
13	I felt sad and depressed	0	1
14	I found myself getting impatient when I was delayed in any way (eg, lifts, traffic lights, being kept waiting)	0	1
15	I had a feeling of faintness	0	1
16	I felt that I had lost interest in just about everything	0	1
17	I felt I wasn't worth much as a person	0	1
18	I felt that I was rather touchy	0	1
19	I perspired noticeably (eg, hands sweaty) in the absence of high temperatures or physical exertion	0	1
20	I felt scared without any good reason	0	1
21	I felt that life wasn't worthwhile	0	1

Reminder of rating scale:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

22	I found it hard to wind down	0	1	2	3
23	I had difficulty in swallowing	0	1	2	3
24	I couldn't seem to get any enjoyment out of the things I did	0	1	2	3
25	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
26	I felt down-hearted and blue	0	1	2	3
27	I found that I was very irritable	0	1	2	3
28	I felt I was close to panic	0	1	2	3
29	I found it hard to calm down after something upset me	0	1	2	3
30	I feared that I would be "thrown" by some trivial but unfamiliar task	0	1	2	3
31	I was unable to become enthusiastic about anything	0	1	2	3
32	I found it difficult to tolerate interruptions to what I was doing	0	1	2	3
33	I was in a state of nervous tension	0	1	2	3
34	I felt I was pretty worthless	0	1	2	3
35	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
36	I felt terrified	0	1	2	3
37	I could see nothing in the future to be hopeful about	0	1	2	3
38	I felt that life was meaningless	0	1	2	3
39	I found myself getting agitated	0	1	2	3
40	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
41	I experienced trembling (eg, in the hands)	0	1	2	3
42	I found it difficult to work up the initiative to do things	0	1	2	3

APPENDIX D. ADULT ADHD SELF-REPORT SCALE

Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist

Patient Name			Today's Date						
Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.			Never	Rarely	Sometimes	Often	Very Often		
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?									
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?									
3. How often do you have problems remembering appointments or obligations?									
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?									
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?									
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?									
Part A									
7. How often do you make careless mistakes when you have to work on a boring or difficult project?									
8. How often do you have difficulty keeping your attention when you are doing boring or repetitive work?									
9. How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?									
10. How often do you misplace or have difficulty finding things at home or at work?									
11. How often are you distracted by activity or noise around you?									
12. How often do you leave your seat in meetings or other situations in which you are expected to remain seated?									
13. How often do you feel restless or fidgety?									
14. How often do you have difficulty unwinding and relaxing when you have time to yourself?									
15. How often do you find yourself talking too much when you are in social situations?									
16. When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?									
17. How often do you have difficulty waiting your turn in situations when turn taking is required?									
18. How often do you interrupt others when they are busy?									
Part B									

APPENDIX E. SATISFACTION WITH LIFE SCALE

The Satisfaction with Life Scale

Below are five statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item.

- 7 = Strongly agree
- 6 = Agree
- 5 = Slightly agree
- 4 = Neither agree nor disagree
- 3 = Slightly disagree
- 2 = Disagree
- 1 = Strongly disagree

_____ In most ways, my life is close to my ideal.

_____ The conditions of my life are excellent.

_____ I am completely satisfied with my life.

_____ So far, I have gotten the most important things I want in life.

_____ If I could live my life over, I would change nothing.

_____ **TOTAL**

APPENDIX F. COLLEGE STUDENT SUBJECTIVE WELLBEING QUESTIONNAIRE

College Student Subjective Wellbeing Questionnaire

Name:	Age:	Gender:
Date:	Grade:	Race/ethnicity:

Here are some questions about your college experience. Read each item and circle the best answer.

		1 =	2 =	3 =	4 =	5 =	6 =	7 =
		Strongly Disagree	Disagree	Slightly Agree	Neutral	Slightly Agree	Agree	Strongly Agree
1.	I have had a great academic experience at this college.							
2.	I am a hard worker in my classes.							
3.	I feel like a real part of this school.							
4.	I am so thankful that I'm getting a college education.							
5.	I am happy with how I've done in my classes.							
6.	I am a diligent student.							
7.	People at this school are friendly to me.							
8.	I am grateful to the professors and other students who have helped me in class.							
9.	I am satisfied with my academic achievements since coming to this college.							
10.	I am an organized and effective student.							
11.	I can really be myself at this school.							
12.	I feel thankful for the opportunity to learn so many new things.							
13.	I am pleased with how my college education is going so far.							
14.	I study well for my classes.							
15.	Other students here like me the way I am.							
16.	I am grateful for the people who have helped me succeed in college.							

APPENDIX G. REVISED UCLA LONELINESS SCALE

Scale:

INSTRUCTIONS: Indicate how often each of the statements below is descriptive of you.

Statement	Never	Rarely	Sometimes	Often
1. I feel in tune with the people around me	1	2	3	4
2. I lack companionship	1	2	3	4
3. There is no one I can turn to	1	2	3	4
4. I do not feel alone	1	2	3	4
5. I feel part of a group of friends	1	2	3	4
6. I have a lot in common with the people around me	1	2	3	4
7. I am no longer close to anyone	1	2	3	4
8. My interests and ideas are not shared by those around me	1	2	3	4
9. I am an outgoing person	1	2	3	4
10. There are people I feel close to	1	2	3	4
11. I feel left out	1	2	3	4
12. My social relationships are superficial	1	2	3	4
13. No one really knows me well	1	2	3	4
14. I feel isolated from others	1	2	3	4
15. I can find companionship when I want it	1	2	3	4
16. There are people who really understand me	1	2	3	4
17. I am unhappy being so withdrawn	1	2	3	4
18. People are around me but not with me	1	2	3	4
19. There are people I can talk to	1	2	3	4
20. There are people I can turn to	1	2	3	4

APPENDIX H. THE BRIEF RESILIENCE SCALE

Brief Resilience Scale

Please indicate the extent to which you agree with each of the following statements.

1 = strongly disagree

2 = disagree

3 = neutral

4 = agree

5 = strongly agree

1. I tend to bounce back quickly after hard times _____

2. I have a hard time making it through stressful events * _____

3. It does not take me long to recover from a stressful event _____

4. It is hard for me to snap back when something bad happens * _____

5. I usually come through difficult times with little trouble _____

6. I tend to take a long time to get over set-backs in my life * _____

Total _____

APPENDIX I. IRB FORM

ACTION ON PROTOCOL APPROVAL REQUEST



Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8892
F: 225.578.5883
irb@lsu.edu
lsu.edu/research

TO: Mary Lou Kelley
Psychology

FROM: Dennis Landin
Chair, Institutional Review Board

DATE: April 17, 2018

RE: IRB# 4037

TITLE: Validation of the Dual-Factor Model of Mental Health in College Students: An Investigation of Group Characteristics

New Protocol/Modification/Continuation: New Protocol

Review type: Full ☐ Expedited ☒ Review date: 4/12/2018

Risk Factor: Minimal ☒ Uncertain ☐ Greater Than Minimal ☐

Approved ☒ Disapproved ☐

Approval Date: 4/17/2018 Approval Expiration Date: 4/16/2019

Re-review frequency: (annual unless otherwise stated)

Number of subjects approved: 500

LSU Proposal Number (if applicable):

Protocol Matches Scope of Work in Grant proposal: (if applicable)

By: Dennis Landin, Chairman 

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –

Continuing approval is **CONDITIONAL** on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. **SPECIAL NOTE: When emailing more than one recipient, make sure you use bcc.**

**All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>*

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