Focusing on the Positive: An Examination of the Relationships between Flourishing Mental Health, Self-Reported Academic Performance, and Psychological Distress in a National Sample of College Students

By

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ABSTRACT

Mental illness and psychological distress have increased greatly among college students such that college counseling centers are unable to keep up with the swelling demand. To stem this tide, upstream prevention strategies will be necessary, but any potential strategy will likely need a connection to academic success to achieve full buy-in for a comprehensive, institution-wide implementation. Using a retrospective, cross-sectional research design, this study, grounded in a dual continua model of mental health, examines how positive mental health may impact student academic performance and be related to psychological distress. Prior research in this area has been limited to inquiries focused on students at a single institution and thus has limited generalizability. To address that gap, this research study uses aggregate data from a national sample of college students who completed the American College Health Association's National College Health Assessment III (ACHA-NCHA III) in the Spring 2022 semester.

Hierarchical multiple regression analysis was performed to determine the impact of flourishing mental health as measured by the Flourishing Scale on students' self-reported overall GPA. Additionally, correlation analysis was completed to determine the direction and degree of relationship between flourishing mental health and psychological distress. Results indicate that flourishing mental health has a direct and highly significant relationship to academic performance and that flourishing mental health has a strong inverse

relationship to psychological distress. The implications of these findings to student success research, policy, and practice are addressed.

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LIST OF ABBREVIATIONS

ACHA……. American College Health Association

ADHD……Attention Deficit Hyperactivity Disorder

AIR……Assessment of Interpersonal Relations

ANOVA…….Analysis of Variance

AUCCCD…….Association of University and College Counseling Center Directors

BASC……Behavior Assessment System for Children

BOOM……...Bochum Optimism and Mental Health Project

CBT……...Cognitive Behavioral Therapy

CDS-II……...Child Development Supplement

CFA……Confirmatory Factor Analysis

DSM……Diagnostic and Statistical Manual of Mental Disorders

FS……Flourishing Scale

GPA……Grade Point Average

HMN……Healthy Minds Network

HMS……..Healthy Minds Study

IACS……..International Accreditation of Counseling Services

JEPQR-A……..Abbreviated Form of the Revised Junior Eysenck Personality Questionnaire

K6……Kessler Psychological Distress Scale

MHC-SF……Mental Health Continuum- Short Form

MIDUS……..Midlife in the United States

MSLSS……..Multidimensional Students' Life Satisfaction Scale

NCHA……..……National College Health Assessment

OCD……Obsessive Compulsive Disorder

PANAS-C……Positive and Negative Affect Schedule for Children

PERMA……Theory of well-being composed of Positive emotion, Engagement, positive Relationships, Meaning, and Accomplishment

PHQ-9……...Patient Health Questionnaire- 9

PILL……...Pennebaker Inventory of Limbic Languidness

PPI……...Positive Psychology Intervention

PSID……...Panel Study of Income Dynamics

PWB……Psychological Well-Being

QOL-BV……Quality of Life Brief Version

RQ……...Research Question

SPANE……Scale of Positive and Negative Experiences

SPPC..……Self-Perception Profile for Children

SWB……...Subjective Well-Being

VIF……..Variance Inflation Factor

WHO……..World Health Organization

CHAPTER I

INTRODUCTION

It is well documented in the literature that college students are experiencing mental illness and other psychological challenges in ever-increasing numbers (American College Health Association [ACHA], 2021b; Association for University and College Counseling Center Directors [AUCCCD], 2021; Bellows, 2021, July 15; Healthy Minds Network [HMN], 2021; Pedrelli et al., 2015; Thielking, 2017, February 8). Most recently, Lipson et al. (2022) found that more than 60% of college students surveyed through the Healthy Minds Study (HMS) in 2020-2021 met screening criteria for one or more mental illnesses. This percentage was nearly double the percentage of students who met the same criteria in 2013 (Lipson et al., 2022). Looking at specific diagnoses, the percentages of college students in national samples reporting anxiety, attention deficit hyperactivity disorder (ADHD), depression, insomnia, obsessive compulsive disorder (OCD) and panic attacks all increased significantly between 2009 and 2015, with anxiety and depression being the most frequently reported diagnoses (Oswalt et al., 2020). Lipson et al. (2022) also found that symptoms of depression increased 134.6%, symptoms of anxiety increased 109.5%, symptoms of eating disorders increased 95.6%, reports of non-suicidal self-injury increased 45.5%, and suicidal ideation increased 64% between 2013 and 2021. Lest one jump to premature conclusions and blame the COVID-19 pandemic for these increases, Duffy et al. (2019) documented a 92%

increase in anxiety and an 81% increase in suicidal ideation among college students between 2007 and 2018, noting that the sharp increases began in 2013, seven years before COVID-19 appeared in the United States.

It is also well documented that mental illness is associated with substandard academic outcomes such as lower grade point averages (GPAs), school conduct problems, and decreased likelihoods of persistence, retention, and degree completion (Eisenberg et al., 2016; Eisenberg et al., 2009; Keyes, 2006; Koch et al., 2014). Consequently, students and their families and state and federal governments are demanding more services to support the students' needs. Some of the most requested resources include additional mental health counseling and psychiatric services (Basulto, 2016; Bellows, 2021, July 15; Brown, 2021, May 27; The Dartmouth Editorial Board, 2021, May 28; Riffey, 2021, April 28; United States Department of Education, 2021, October 13). Such services are not low cost and require very specialized professional training, skill sets, and licensure to provide, such that university administrators struggle to reach the benchmark recommended by the International Accreditation of Counseling Services (IACS) of one mental health provider for every 1500 students (IACS, 2019). Even the schools that are close to that benchmark experience capacity challenges where students seeking care are placed on wait lists or face delayed initial appointments (AUCCCD, 2019). As colleges and universities struggle with this mental health tsunami, it has become apparent that upstream measures to address the mental health needs of students before they become distressed will be necessary to stem the tide.

While the term “mental health” typically evokes thoughts of the presence or absence of mental illness, the dual continua model of mental health popularized by Keyes (2002) posits that mental health and mental illness more accurately exist as separate and distinct phenomena in the lives of individuals. In this way, the model serves as a bridge between the traditional deficit-based clinical psychology framework and a modern strengths-based positive psychology framework. Individuals fall along one continuum between the presence or absence of mental illness and simultaneously fall along a second continuum between low or high levels of mental health (Keyes, 2002). The most negative physical, psychological, and social outcomes are associated with individuals who are experiencing mental illness along with low mental health. Likewise, the most positive outcomes are associated with individuals who are not experiencing mental illness and are experiencing high mental health. For the groups in between, individuals with mental illness and high levels of mental health may have positive outcomes in spite of the challenges of their disorders, and individuals without mental illness but with low levels of mental health may struggle even though they are disease-free (Keyes, 2002).

Iasiello et al. (2020) concluded this dual model was superior to the traditional single continuum model in their scoping review of 83 peer-reviewed publications on the topic. Therefore, including the assessment of mental health and its impacts rather than assessing mental illness alone may provide a more comprehensive understanding of the true psychological states of students. It may also provide insight for future interventions to address the challenges of

widespread student needs that are compounded by insufficient counseling resources. Additionally, of the 83 peer-reviewed publications studied by Iasiello et al. (2020), only five involved adult student populations, and most of the five were restricted to students attending a single institution. These limitations indicate a dearth of generalizable research on this topic specifically involving college students, and none of the five cited studies were conducted since the COVID-19 global pandemic abruptly changed the landscape of higher education and precipitated even more declines in mental health (Ewing et al., 2022; Patterson et al., 2021).

The field of positive psychology may provide some guideposts for the process of assessing the distinct mental health of college students and understanding its impacts. According to Seligman (2011), the "topic of positive psychology is well-being, … the gold standard for measuring well-being is flourishing, … and the goal of positive psychology is to increase flourishing" (p. 13). While "flourishing" may be a trendy, commonly used term seen in the self-help section of many bookstores, Seligman and other positive psychologists contend it is an academic construct that is capable of being empirically measured. To that end, Seligman (2002) originally developed a theory that positive emotion, engagement, and meaning were the three key elements necessary to produce a fulfilling and flourishing life. Nearly a decade later, he expanded that theory to include positive relationships and accomplishment, producing the acronym PERMA to describe his new theory of well-being: **P**ositive emotion, **E**ngagement, positive **R**elationships, **M**eaning, **A**ccomplishment

(Seligman, 2011). Individuals who are in the upper ranges of these five elements, according to Seligman, can objectively be described as flourishing.

Promisingly, these elements of flourishing can be taught and facilitated by a wide range of practitioners across multiple fields, including teachers, coaches, health care providers, etc. (Seligman, 2011), so the promotion and development of mental health does not have the innate capacity challenges faced by traditional psychological approaches involving specialty trained providers and individual therapies. This interdisciplinary potential means that college and university employees from multiple sectors could play a role in influencing the level of flourishing among their students in ways that are both preventative and supportive.

Gathering buy-in from such a diverse representation of fields, however, is likely to require the demonstration of the connections of well-being to the shared interest among all college and university parties of student academic success. Consequently, assessing flourishing among college students should include measuring its association with academic performance indicators such as GPA, persistence, retention, and/or perceived student challenges and competence. If a positive relationship exists, then a case can be made that the promotion of flourishing among students should be a part of a university's student success efforts.

Since research began in the field of positive psychology, multiple instruments have been developed to address mental health and the specific constructs of well-being and flourishing. Validated scales exist to assess

gratitude, mindfulness, hope and optimism, happiness, self-determination, resilience, positive and negative affect, life satisfaction, autonomy, and others (Brown & Ryan, 2003; Deci & Ryan, 2000; Froh et al., 2008; Lyubomirsky & Lepper, 1999; McCullough et al., 2002; Rand, 2009; Ryff, 2008; Seligman, 2002; Watson et al., 1988). Diener et al. (2010), however, combined items measuring the fundamental components of multiple well-being theories to create a brief measure of general psychological well-being known as the Flourishing Scale. Originally validated with college student populations, the Flourishing Scale is now embedded in the ACHA's National Health College Assessment (NCHA) III and the HMS, the two most frequently used assessment tools among colleges and universities for population-level measures of their students' overall physical and mental health (ACHA, 2021b; HMN, 2021). As such, the Flourishing Scale represents an accessible way to assess the impact of flourishing on multiple aspects of the college student experience, including mental illness and academic success.

Much of the literature on flourishing and positive psychology as it relates to well-being can be separated into themes. One common theme is the inverse relationship that exists between high or complete mental health and current or risk of future mental illness (Grant et al., 2013; Iasiello et al., 2020; Iasiello et al., 2019; Keyes et al. 2010; Lamers et al., 2015; Wood & Joseph, 2010). This association is noteworthy because it begins establishing a base for the idea that flourishing could be a protective factor for mental illness and/or a moderating factor among individuals with mental illness.

Another common theme in existing research is the simultaneous increases in happiness, life satisfaction, and other characteristics of flourishing and decreases in depressive episodes, anxiety, and other indicators of mental illness that can be brought about through positive psychology interventions (PPIs) (Gander et al., 2016a; Heintzelman et al., 2020; Iasiello et al., 2020; Kinderman et al., 2015; Laakso et al., 2021). These PPIs add to the conceptual base that programs which build flourishing could be used as proactive measures to prevent mental illness in their target populations, providing a look into options beyond counseling that may help colleges and universities address the mental health needs of their students.

Within these first two themes, measures of mental illness have focused on suicidal ideation or specific disorders like depression, anxiety, and eating disorders, but these measures consequently may be missing other psychopathologies like bipolar disorder or post-traumatic stress disorder and more general psychological distress (Keyes et al., 2012; Renshaw & Cohen, 2014; Ross, 2015; Westerhof & Keyes, 2010). Yet another theme in the literature is that positive mental health is often not randomly distributed in the population. Lower levels of flourishing have been documented among females, single adults, younger adults, lower-income individuals, and those with less completed education (Keyes, 2002; Ross, 2015).

A smaller body of evidence addresses the academic impacts associated with high levels of flourishing among college students, and those studies most frequently measure academic impact through the self-reported grade point

averages of study participants (Brockelman, 2009; Keyes et al., 2012; Suldo & Shaffer, 2008; Suldo et al., 2011). However, those studies were usually conducted among individual college or university samples, and thus, their generalizability is limited. Knowing more precisely how these variables interact among a broader sample could be key to engaging non-counseling school personnel in a university-wide response to the mental health needs of its students.

Problem Statement

If the larger trends around mental illness among college students are to be reversed, an examination of the modifiable facilitators of and barriers to mental health that precede and/or impact psychological distress is necessary to allow for a sufficient, global, and coordinated campus response. Such a response will likely also require clear linkages to academic measures of student success to generate sustainable support from a college or university community and its stakeholders.

Statement of Purpose

Based on the assessment gaps indicated in the literature, the purpose of this study is to extend the generalizability of previous research with college students. Using a nationally drawn sample, it will investigate if level of flourishing has an impact on college students' self-reported academic performance and determine the direction and degree of relationship that might exist between 1qaflourishing and psychological distress.

The study will build upon the existing works grounded in Keyes's dual continua model and Seligman's PERMA Theory of Well-Being and will use data from the ACHA-NCHA III (ACHA, 2021b). By examining how flourishing is associated with psychological distress and how it relates to academic performance, a foundation can be laid to potentially justify positive psychology interventions as university-wide student success strategies.

The collegiate experience embodies a unique time in an individual's personal development. As Eisenberg et al. (2009) wrote, "College represents the only time in many people's lives when a single setting encompasses their main activities, social networks, and a range of supportive services and organizations" (p. 1). If enhancing flourishing can lead to better academic outcomes and protect against psychological distress, then colleges and universities are the perfect contexts for leveraging their environmental and social resources for both short-term and long-term benefits of all their students.

Research Questions (RQs)

1. What effect does level of flourishing have on students' self-reported academic performance?
2. Is there a relationship between flourishing and psychological distress?

Research Hypotheses

H_1: When controlling for age, sex, financial status, and relationship status, high levels of flourishing among students will be positively related to academic performance as measured by self-reported GPA.

H_2: There will be an inverse relationship between flourishing and psychological distress.

Assumptions

1. Each subject in the sample submitted survey responses only once.
2. Subjects provided honest responses to survey items.
3. The academe desires improvement in the mental health status of college students.

Definition of Terms

1. Dual continua model of mental health- a model that contradicts the mindset that mental health and mental illness are opposite ends of a bipolar continuum and instead illustrates an individual's psychological state as encompassing two continua in which individuals fall along one spectrum between presence or absence of mental illness and a second spectrum between incomplete and complete mental health (Keyes, 2002); used synonymously in the literature with *two-continua model, dual-factor model*, or *dual-continua model* of mental health
2. Mental health- as defined by the World Health Organization (WHO) (2005), "a state of well-being in which the individual realizes his or her own abilities, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (p. 2)
3. Mental illness- as defined by the National Institute of Mental Health (2022, January), this term encompasses multiple mental, behavioral, and

emotional disorders that can vary in severity and in impact from mild to severe

4. Flourishing- possessing complete mental health, defined by Keyes (2002) as “to be filled with positive emotion and to be functioning well psychologically and socially” (Keyes, 2002, p. 210); optimal well-being (Seligman, 2011)
5. Languishing- possessing incomplete mental health, defined by Keyes (2002) as “emptiness and stagnation, constituting a life of quiet despair” (p. 210)
6. Psychological distress- a descriptor of non-specific mental illness; measuring for psychological distress broadly may identify individuals experiencing severe mental illness more efficiently than measuring for specific mental illness symptoms in general populations (Kessler et al., 2002)
7. Well-being- a multidimensional construct concerning the optimization of feeling good and functioning well (Ryan & Deci, 2001)
    a. Eudaimonic well-being- philosophical stream equating well-being with positive functioning; it encourages “developing nascent abilities and capacities toward becoming a more fully functioning person and citizen” (Keyes, 2006, p. 396)
    b. Hedonic well-being- philosophical stream equating well-being with happiness and positive emotions, espousing efforts to “maximiz[e] the amount or duration of positive, pleasant feelings while

minimizing the amount or duration of negative, unpleasant feelings" (Keyes, 2006, p. 396)

8. PERMA Theory of Well-being- proposed by Martin E.P. Seligman at the turn of the 21st century, this theory describes well-being as a multidimensional construct composed of the individual elements of positive emotion, engagement, positive relationships, meaning, and accomplishment (Seligman, 2011)
9. Positive psychology- a subset of the field of psychology, initiated by Seligman, that avows a strengths-based approach to enable happiness and life satisfaction, the ultimate goal of which is to increase flourishing (Seligman, 2011)
10. Academic performance- a self-reported measure of the participant's approximate cumulative grade average (ACHA, 2021b)

Limitations

The present study does have some limitations that should be acknowledged. It is limited by its cross-sectional research design, which will not allow for confident claims of causality. Additionally, while subjects at their individual institutions were randomly selected for inclusion in the sample, participation at both the individual and institutional level was voluntary, and thus results may be subject to selection bias. All data were self-reported and subjects from some participating schools may have been incentivized to participate, each of which may have resulted in response bias. Finally, this study is examining academic performance only from the perspective of positive mental health.

There are undoubtedly other factors which influence student success, including awareness and utilization of student support services, IQ, internal and external motivators, teaching quality, and general life events that are not being investigated in this present inquiry.

Delimitations

To increase generalizability, the researcher utilized the largest dataset of college students commercially available. While the sample may not be representative of all college students, it is the most generalizable, as it utilized a cross-sectional design spanning multiple schools across the United States. Additionally, only schools that administered the survey using random sampling techniques were included in the aggregate data.

CHAPTER II

LITERATURE REVIEW

This study is guided by a dual continua model of mental health that advocates for the recognition of mental health as separate from mental illness and a subsequent theory for how mental health can be independently advanced. In this chapter, the model and theory will be described, and a summation of the studies that have tested them will be provided. Additionally, the latter sections of the chapter will address various methods of measuring mental health and review the noted impacts of flourishing and positive psychology interventions on physical health, mental illness, and academic performance in various populations of study.

Beyond Mental Illness: A Dual Continua Model of Mental Health

The traditional framework of psychology has focused on the study of mental illness and the amelioration of associated symptoms of those illnesses. Embedded in that framework is an assumption of a single continuum of psychological state in which all individuals could be assessed somewhere between a state of complete mental illness and complete mental health (Suldo & Shaffer, 2008). This assumption further implies that the absence of mental illness would indicate the presence of mental health (Suldo & Shaffer, 2008). However, beginning in the mid-1990s, multiple researchers began challenging that assumption and its implications by suggesting that psychological state was best viewed along two continua, one which assesses the presence or absence of

mental illness and a second which assesses the presence or absence of mental health (Cowen, 1994; Greenspoon & Saklofske, 2001; Keyes, 2002; Park, 2004; Ryff & Keyes, 1995; Ryff & Singer, 1998; Snyder et al., 2003; Wilkinson & Walford, 1998). The dual continua model of mental health complements the definition of health put forth by the World Health Organization in its constitution that "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization, 1946, *"Constitution*").

The seminal researcher and proponent of this dual continua model became Corey Keyes. Figure 1 illustrates the dual continua model of mental health that Keyes aimed to verify. As a first step, Keyes (2002) examined whether individuals who were free from mental illness were simultaneously mentally healthy and productive. To do so, he devised diagnostic criteria for mental health modeled after the symptomatic checklists of the Diagnostic and Statistics Manual (DSM) of Mental Disorders. He then applied that criteria to responses gathered in the MacArthur Foundation's Midlife in the United States (MIDUS) 1995 survey so that participants who reported high levels on more than half of the emotional, psychological, and social well-being scales within the survey (7 of 13) were considered *flourishing*, and respondents with low levels on more than half of the well-being scales were considered *languishing*. Respondents whose scores were in between were considered *moderately mentally healthy* (Keyes, 2002).

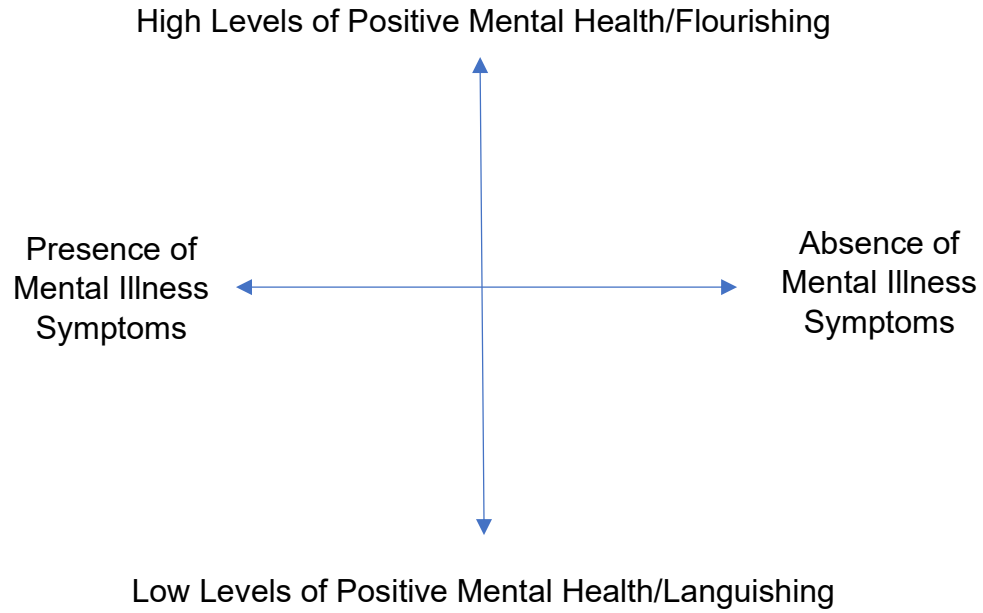

Figure 1.

The Dual Continua Model of Mental Health, as Conceptualized by Keyes (2002).

With mental health thus operationalized, Keyes (2002) found that 18.1% of adults were flourishing, 65.1% were moderately mentally healthy, and 16.8% were languishing. Additionally, he found that responses to other items of the survey differed based on mental health status. His results indicated that mental health classification was associated with experiences of depression such that moderately healthy adults were twice as likely to experience depression compared to flourishing adults, and languishing adults were nearly six times as likely. Languishing adults were also more likely than flourishing adults to miss work when experiencing depressive episodes and to report health problems that

limited at least one of nine activities of daily living (ex., bathing, climbing stairs, carrying groceries, etc.). Lastly, his findings indicated that mental health was not evenly distributed in society. Lower levels of flourishing were found among females, single adults, younger adults, and those with less completed education. These findings led Keyes (2002) to conclude that, “Mental illness and mental health are highly correlated but belong to separate continua, and therefore the prevention and treatment of mental illnesses will not necessarily result in more mentally healthy adults” (p. 220).

After documenting evidence of this dual continua model of mental health in a general adult population, Keyes later applied his theory to American youth ages 12-18 who had participated in the Child Development Supplement (CDS-II) of the Panel Study of Income Dynamics (PSID) (Keyes, 2006). Like his previous study with adults, Keyes again used data from the survey that measured emotional, psychological, and social well-being, as well as experiences of depression and psychosocial functioning. This time, however, he also looked at measures of conduct problems, including arrests, substance use, and skipping school. Upon analysis, Keyes (2006) found that 38.3% of youth were flourishing, 55.4% were moderately mentally healthy, and 6.3% were languishing. Mental health was negatively correlated with age, and there was a linear relationship between declining mental health and conduct problems such that flourishing youth reported the fewest conduct problems and languishing youth reported the most. In arguably the simplest justification for a dual continua model of mental health, Keyes (2006) noted, "Findings suggest that fewer adolescents are

mentally healthy- nearly 40%- than would be implied by taking the obverse of the best estimate of any mental disorder in youth, which would imply that about 80% of youth are free of a mental illness and therefore mentally healthy" (p. 400).

The dual continua model has successfully been demonstrated with adolescents and college students by a handful of studies that document the presence of students with low mental health but no mental illness and students with high mental health and mental illness (Antaramian, 2015; Eklund et al, 2011; Greenspoon & Saklofske, 2001; Renshaw & Cohen, 2014; Suldo & Shaffer, 2008; Suldo et al., 2011). In each of these studies, the researchers were able to establish mental health groupings that overlapped the quadrants of Keyes's (2002) dual continua conceptualization. Figure 2 displays the labels used in each study to describe the groups as well as their placement on Keyes's (2002) model.

Greenspoon and Saklofske (2001) first introduced a mental health grouping matrix based on findings among elementary school students in Canada. Those participants completed a 341-item survey composed of items from the Assessment of Interpersonal Relations (AIR), Behavior Assessment System for Children (BASC), Abbreviated Form of the Revised Junior Eysenck Personality Questionnaire (JEPQR-A), Multidimensional Students' Life Satisfaction Scale (MSLSS), and the Self-Perception Profile for Children (SPPC). Through a series of discriminant function analyses, participants were classified according to their levels of well-being and mental illness symptomology. Greenspoon and

Saklofske (2001) suggested that individuals with psychological profiles that placed them into the high well-being/high mental illness or low well-being/low mental illness groups would be missed with a single continuum understanding of mental health. Their work was extended to middle school students in Florida by Suldo and Shaffer (2008) and Suldo et al. (2011) and to undergraduate college students by Eklund et al. (2011), Renshaw and Cohen (2014), and Antaramian (2015).

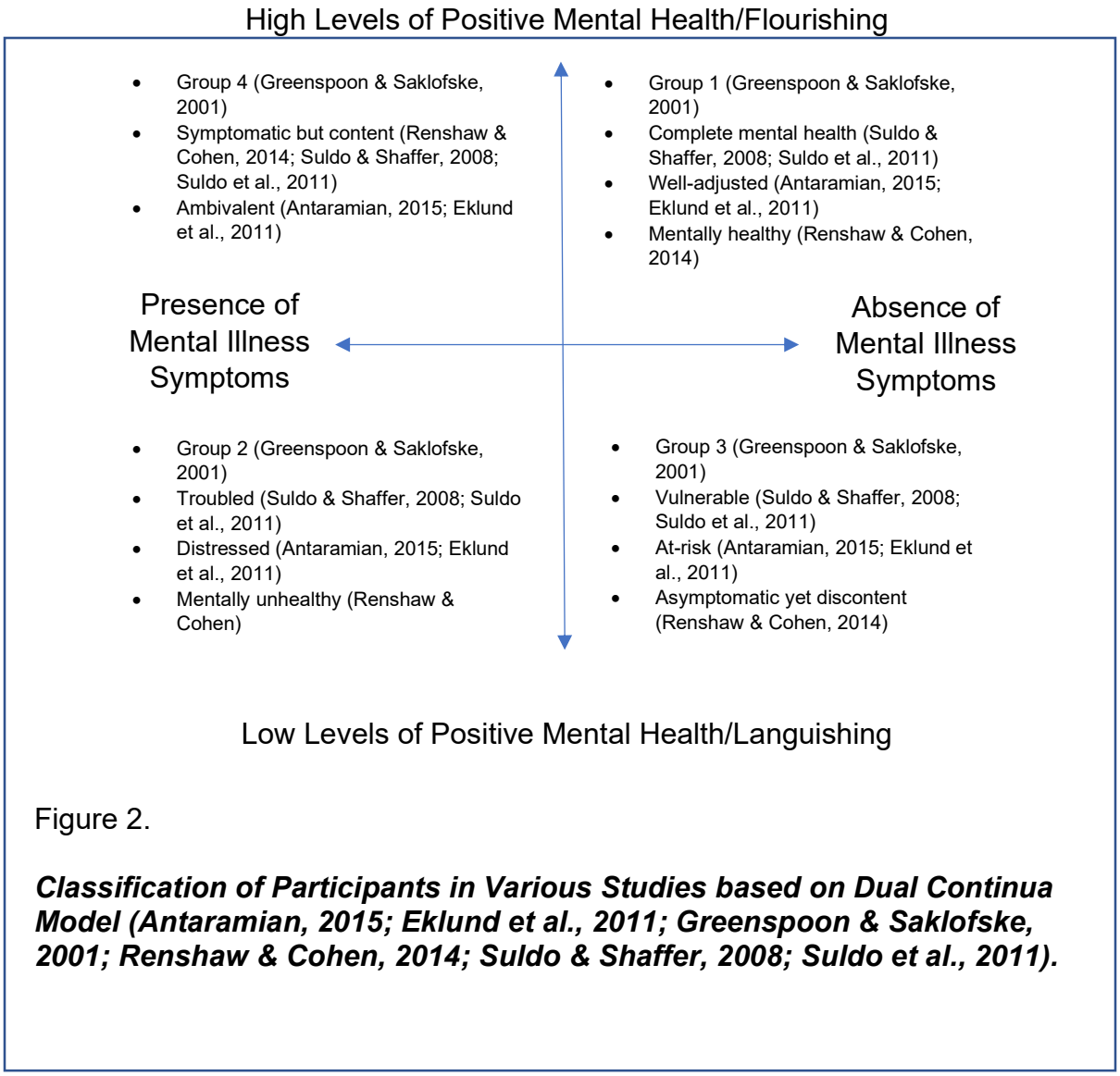

Figure 2.

Classification of Participants in Various Studies based on Dual Continua Model (Antaramian, 2015; Eklund et al., 2011; Greenspoon & Saklofske, 2001; Renshaw & Cohen, 2014; Suldo & Shaffer, 2008; Suldo et al., 2011).

While the percentages of students who composed each group varied between the studies, Antaramian (2015) noted that the identification of students in the at-risk and ambivalent groups (see Figure 2) would not have been possible with a single continuum model of mental health. She summarized the importance of the presence of these groups in her work and in previous studies when she stated:

> Four distinct groups were identified based on varying levels of subjective well-being and psychological symptoms…. [The well-adjusted and distressed] groups are consistent with the classifications that would be made using a traditional one-factor mental health model. However, two additional groups were identified also, which provided support for the dual-factor model by demonstrating that positive well-being and psychological symptoms are not opposite ends of a single continuum. The third group of participants, classified as at-risk, did not have significant symptoms, but their level of subjective wellbeing was low. Thus, the absence of symptoms was not sufficient for optimal mental health. Using a traditional approach, these individuals would be considered mentally healthy, but their low subjective well-being distinguished them from their well-adjusted peers…. Finally, a small group was identified as ambivalent, with elevated symptoms but also high levels of subjective well-being, which demonstrated that the presence of significant psychological symptoms did not preclude the experience of life satisfaction and positive emotions. (Antaramian, 2015, p. 426)

Antaramian (2015) also noted that the percentage of undergraduate students who fell into the at-risk category (26%) was higher than in previous studies conducted with children and adolescents. She suggested that such findings indicated that “college students may be especially likely to lack positive well-being, even if they do not have psychological symptoms” (Antaramian, 2015, p. 426).

In their study, Renshaw and Cohen (2014) compared the mental health categorizations of their college student participants by measures of academic achievement (self-reported GPA), interpersonal connectedness (amount of time spent with friends as measured by the Quality of Life Brief Version (QOL-BV)), and physical health (perceived health quality as measured by QOL-BV). The majority of participants in their study fell into the mentally healthy category (61.4%), followed by asymptomatic yet discontent (18.7%), mentally unhealthy (15.1%), and symptomatic yet content (4.8%). Post hoc analyses of variance (ANOVAs) found significant differences for interpersonal connectedness between mentally healthy participants and all other categories and between symptomatic yet content and asymptomatic yet discontent groups. Mentally healthy participants had the highest measures of connectedness, and symptomatic yet content participants had higher connectedness than asymptomatic yet discontent participants (Renshaw & Cohen, 2014). Significant differences were also found between all groups on perceptions of physical health and between mentally healthy and asymptomatic yet discontent groups for academic achievement. Not surprisingly, the mentally healthy group reported the highest academic

achievement and the highest perceptions of overall physical health. Renshaw and Cohen (2014) reported, “When looking at the life functioning indicators on the whole, academic achievement seems to be the least affected by mental health status…, while physical health seems to be the most affected by mental health status” (p. 329).

The implications of a dual continua model of mental health in college students are significant for university personnel behavioral health providers. As Renshaw and Cohen (2014) stated, “Taken together, all of these terms suggest that the presence or absence of psychological distress alone is insufficient for determining one's mental health status, and, thus, in research and in practice, the absence or presence of psychological well-being should be a coequal consideration" (p. 320). They called for additional research into the presentation of the dual continua model among college students, specifically advocating for studies that utilize random sampling and objective measures over self-reported measures. They also recommended future research utilize continuous mental health data rather than categorical data to allow for the use of multiple regression and other predictive analyses (Renshaw & Cohen, 2014).

Ross (2015) took up the call for additional research with college students and sought to replicate Keyes’s dual continua findings with a random sample of undergraduate students ages 25 and younger enrolled at Boston University in 2012 who participated in the HMS. With a resulting sample of 874 students, she used multiple hierarchical linear regression to examine relationships between

flourishing (as measured by the Flourishing Scale) and depression (as measured by the PHQ-9), and between flourishing and suicidal ideation (as measured by three items within the HMS). In contrast to Keyes's (2002) earlier findings, Ross (2015) did not find significant differences in flourishing between genders or ages, nor between race, sexual orientation, or year in school. However, there were significant differences based on financial status. Participants who were struggling financially were less likely to report flourishing than their peers. Additionally, her regression analyses showed significant relationships between flourishing and depression and between flourishing and suicide ideation (Ross, 2015).

Knoesen and Naude (2018) followed these studies with a qualitative research study of students at a university in South Africa to explore how first year students specifically experienced and described flourishing and languishing. Using nominal group technique, Knoesen and Naude (2018) interviewed 22 first-year humanities students at University of the Free State and then organized their findings using thematic analysis. Students commonly described facing "the big unknown," being confronted with practical difficulties, finding academics overwhelming, experiencing social isolation, and being a victim of a crime as experiences of languishing. In contrast, they described achieving academic mastery, experiencing personal growth and independence, having a social support system, and making it day by day as experiences of flourishing (Knoesen & Naude, 2018). Altogether, Knoesen and Naude (2018) concluded that first-

year students may be especially at risk for languishing, and therefore, promoting mental health among those students is particularly important.

Most recently, a scoping review was conducted by Iasiello et al. (2020) to determine whether the dual continua model had greater explanatory power than a single, bipolar continuum model when assessing for mental health status across conditions and contexts. They began their review by searching for peer reviewed articles using "dual continua" or "dual factor model of mental health" and then screening the references of each to identify other articles. In total, 477 articles were identified in an original abstract screening leading to 395 after duplicates were removed. After reviewing full articles, a final 83 were included in their review (Iasiello et al., 2020). Among those studies, Confirmatory Factor Analysis (CFA) was the most commonly used analysis technique, and the dual continua model was found to best represent the data (Iasiello et al., 2020).

Only one of the studies reviewed by Iasiello et al. (2020) contradicted the dual continua model. In that study, Van Erp Tallman Kim and Hutschemaekers (2018) tested the correlation between well-being and mental illness among a clinical population. Their findings indicated that while positive mental health can be attained in individuals with mild forms of mental illness, flourishing becomes harder for individuals with severe forms of mental illness. Iasiello et al. (2020), therefore, called for additional lines of inquiry into the fit of the dual continua model in instances of severe psychological distress. In the meantime, since the aggregate college student population would likely not display severe mental

illnesses, use of the dual continua model seems appropriate for further studies with typical college and university student samples.

The PERMA Theory of Well-Being

Once a dual continua model of mental health is accepted, many questions follow concerning what can move individuals in a positive direction along each of the two continua. Multiple theories have emerged, including Subjective Well-being Theory (Diener, 2009; Diener, Scollon, & Lucas, 2009), Psychological Well-being Theory (Ryff, 2014, 1989), Self-Determination Theory (Ryan & Deci, 2000), Social Well-being Theory (Keyes, 1998), Sen's Capabilities Approach (Sen, 1999, 2009), and Nussbaum's Capabilities Approach (Nussbaum, 2011, 2003). Many of these theories place greater emphasis on either the hedonic or the eudaimonic philosophies of well-being. The hedonic view dates back at least to the 4th century B.C. when the Greek philosopher Aristippus taught that maximizing pleasure was the goal of life (Ryan & Deci, 2001). Most of the research within this ideology uses measures of subjective well-being like positive mood, life satisfaction, and happiness to evaluate degrees of pleasure (Ryan & Deci, 2001). On the other hand, the eudaimonic view, championed long ago by Aristotle, argues that not all activities that bring pleasure would also yield well-being (Ryan & Deci, 2001). Rather, researchers holding eudaimonic views describe well-being as "the striving for perfection that represents the realization of one's true potential" (Ryff, 1995, p. 100). As such, measurements of

constructs like self-determination, autonomy, or vitality are frequently found in eudaimonic well-being research (Ryan & Deci, 2001).

The present study, however, is guided by a theory of well-being conceptualized by Martin E.P. Seligman (2011) which incorporates both the hedonic and eudaimonic philosophies. After originally publishing a book advocating for happiness as the key to a fulfilling life, Seligman (2011) expanded his idea of well-being to include a total of five elements: positive emotion, engagement, positive relationships, meaning, and accomplishment (PERMA). For inclusion in his new theory, each element had to meet three criteria:

1. It contributes to well-being.
2. Many people pursue it for its own sake, not merely to get any of the other elements.
3. It is defined and measured independently of the other elements (exclusivity). (Seligman, 2011, p. 16)

Each of these elements can be chosen by people with free will and when collectively obtained in sufficiently high amounts, lead to the construct of flourishing (Seligman, 2011). No single element is enough to produce flourishing on its own, but each makes contributions to it. The elements are described in greater detail in the paragraphs that follow.

Positive emotion

According to Seligman (2011, 2002), positive emotion represents the presence of positive feelings and thoughts. Happiness and life satisfaction are two primary factors within this element. Primarily measured subjectively, some researchers have experimented with more objective measures of positive emotion such as the ratio of positive memories to negative ones (e.g., Heintzelman et al., 2020; Laasko et al., 2020). Positive emotion includes all the variables typically grouped into subjective well-being or the emotional well-being dimension, including pleasure, comfort, and ecstasy (Seligman, 2011). It encompasses the hedonic view of well-being which promotes maximizing pleasure and happiness (Ryan & Deci, 2001; Ross, 2015).

Engagement

Engagement represents one's dedication and attention to and immersion in a task or activity (Alibak & Alibak, 2021; Kovich, 2020). It refers to flow, which Seligman (2011) explains as "being one with the music, time stopping, and the loss of self-consciousness during an absorbing activity" (p. 11). It differs from positive emotion in many ways, including that there are no shortcuts to experiencing it, and that thoughts and feelings are often temporarily absent among people who are fully engaged in an activity. Like positive emotion, engagement is typically measured subjectively from self-reports (Seligman, 2011).

Positive relationships

Alibak and Alibak (2021), stated that the element of positive relationships "refers to feeling loved and valued by others" (p. 7). It recognizes that most of the good experienced in life happens in the presence of other people. Seligman (2011) wrote, "Other people are the best antidote to the downs of life and the single most reliable up" (p. 20). It encompasses the variables often grouped into the social well-being dimension, including social integration, satisfaction with social connections, and feeling cared about and supported by others; it can be measured both subjectively and objectively (Kern et al., 2015; Seligman, 2011).

Meaning

Seligman (2011) described meaning as "belonging to and serving something that [one] believe[s] is bigger than the self" (p.12). It is the purpose people find in their lives, and it, too, can be measured subjectively and objectively. Seligman (2011) contended that institutions like family, religion, advocacy movements, and even political parties can provide avenues for individuals to discover and foster meaning in their lives.

Accomplishment

Accomplishment refers to achievement and mastery in one's life and can again be measured subjectively or objectively. It can include variables like grit, perseverance, self-control, effort, competence, skill, and progress towards goals (Coffey et al., 2016; Kern et al., 2015; Seligman, 2011). Accomplishment can

also exist in a momentary form (learning a new skill) and in an extended form (a life of achievement) (Seligman, 2011).

Seligman's theory has been tested as a framework for well-being measurements and interventions in a variety of populations. Kern et al. (2015) used Seligman's PERMA theory as a framework to measure well-being among a sample of boys between the ages of 13 and 18 attending a private all-male school in Australia. Using items from a larger well-being assessment already in use at the school, the researchers identified factors they found relevant to the theory and tested cross-sectional associations between them. The final group of analyzed items included 12 items assessing engagement, perseverance, and connectedness from the EPOCH Measure of Adolescent Well-being assessment, the 30 items contained in the Positive and Negative Affect Schedule for Children (PANAS-C), and seven items assessing social support, daily accomplishment, and meaning/purpose (Kern et al., 2015). Cross-sectional associations were examined with other embedded scales, including the Satisfaction with Life Scale, the Children's Hope Scale, the Gratitude Questionnaire, the Growth Mindset Scale, the Healthy Pathways Child Report Scales, the Life Events Checklist, and eight items developed by the school to measure spirituality.

Principle components analyses by Kern et al. (2015) identified four of the five PERMA factors (all except meaning) within the existing assessment tool, and these four factors demonstrated positive partial correlations with the various subscales and measures in the survey. Additionally, Kern et al. (2015) found that

factors reflecting sadness, depression, and anxiety had weak to moderate correlations with the well-being factors, “further supporting the claim that well-being is not simply the lack of ill-being” (p. 265). The researchers noted multiple implications of their work, including the importance of providing teachers with information about the specific well-being domains in which their students may be lacking. Kern et al. (2015) also noted that the specificity allowed by knowledge of the PERMA domains could lead to school-wide interventions, stating, “A multidimensional approach to well-being allows schools to tailor systematic well-being approaches to the developmental needs of students” (p. 268).

Coffey et al. (2016) also sought to measure items in an existing survey as proxy measures of the PERMA elements of Seligman’s well-being theory. However, they conducted two different studies, one a longitudinal study of college students and the other a cross-sectional study of a broader adult population. The two studies were designed to test the convergent validity of their proxy items, to see if the PERMA model was generalizable to other populations, to examine its stability over time, and to test its utility in predicting concurrent and prospective flourishing.

The longitudinal study (Study 1) by Coffey et al. (2016) involved six waves of participants over a four-year period at a small, private engineering, science, and mathematics college. Existing survey data were used with 40 theoretically relevant items included in the study, and four of the five PERMA factors were tested (meaning was excluded due to inadequate measures). Additionally, the

Subjective Vitality Scale, the Center for Epidemiological Studies Depression Scale, Satisfaction with Life Scale, and an item measuring participants' satisfaction with their decision to attend that college were used to assess construct validity. The Pennebaker Inventory of Limbic Languidness (PILL) was used to assess physical health of participants, and GPA and a summed total of post-graduate job interviews were used to measure academic success (Coffey et al., 2016). Results of factor analyses indicated support for the four PERMA dimensions tested in the study. Additionally, the researchers found that PERMA results from a given wave of the study were predictive of results in future waves, demonstrating that the structure was stable over a time period of at least three academic years. PERMA demonstrated both concurrent and prospective construct validity for vitality, satisfaction with life, and satisfaction with college measures, but only had concurrent validity with measures of psychological distress. PERMA also predicted current and prospective physical health, concurrent GPA, and the number of prospective post-graduate job interviews that participants received (Coffey et al., 2016).

The cross-sectional study (Study 2) by Coffey et al. (2016) involved 831 Americans recruited through Amazon's Mechanical Turk (Mturk). Each of them was invited to participate in an online study on emotions and well-being. This recruitment method resulted in an older, more diverse sample than the sample of students in the related longitudinal study. The survey included the same items used in Study 1 to measure positive emotion, engagement, positive relationships (modified slightly to better fit the more general population in Study 2), and

accomplishment, as well as four scales for these PERMA measures that had previously been validated (Affect Adjective Checklist, an established 5-item scale measuring engagement, the Relatedness subscale of the Basic Need Satisfaction Scale, and the Short Grit Scale, respectively). Having both sets of items allowed for Study 2 to measure the construct validity of the proxy items used in Study 1. Meaning items were also included from the established Meaning in Life Questionnaire. They found that all PERMA measures from Study 1 demonstrated acceptable convergent validity with the standard measures of PERMA. The PERMA model held with the broader population, and concurrent associations were found between each of the PERMA indicators and physical health. Academic success was not measured in Study 2 due to the broad nature of its sample (Coffey et al., 2016).

Taken together, these two studies by Coffey et al. (2016) demonstrated empirical support for the PERMA model and its links to flourishing. Coffey et al. (2016) noted, "[Seligman's Theory of Well-being] is unique in relation to other well-being theories because it combines intrinsically motivated indicators of eudaimonic and hedonic well-being and includes aspects of well-being that individuals can actively and agentically pursue" (p. 206). They suggested their findings support

> …that well-being can be validly measured with the five dimensions of positive affect, engagement, relationships, meaning, and achievement.... Collectively, these findings contribute to understanding the theoretical and

> practical value of [Seligman's theory] at the organization level (e.g., a college) and in a more diverse, community sample. (Coffey et al., 2016, p. 205).

They also noted the practical applications of these findings, including that the flourishing indicators of PERMA are “tangible enough to be potentially amenable to focused intervention efforts” (Coffey et al., 2016, p. 206).

Measures of Flourishing

As is obvious through the review of literature thus far, myriad measures and scales exist to quantify components of flourishing. Appendix A provides an exhaustive listing of the various measurement tools that were reviewed or directly referenced in this work. Consequently, efforts to employ them all for general screening purposes would quickly become too cumbersome to be productive, and briefer measures became necessary.

Efforts to create a briefer measure were again led by Keyes (2002) who drew on Ryff’s (1989) 18-item scale addressing subjective and psychological well-being indicators and added in items to address the component of social well-being, ultimately condensing his original draft to an instrument of 14 items known as the Mental Health Continuum-Short Form (MHC-SF). Initially used with adults and then youth as described in the dual continua model section of this literature review, the MHC-SF has since been validated and found reliable with youth between the ages of 12-18 and adults in various populations in the United States, the Netherlands, South Africa, and Iran (Keyes, 2005, 2006; Keyes et al., 2008;

Gallagher et al., 2009; Khazaei et al., 2022; Lamers et al., 2011, 2012; Westerhof & Keyes, 2010). One study by Robitschek and Keyes (2009) validated the MHC-SF in a sample of college students.

Alternatively, Diener et al. (2010), took the essential components of multiple well-being theories to create an 8-item measurement tool known as the Flourishing Scale (FS). The Flourishing Scale incorporates measures from humanistic theories like those of Ryff (1989), Ryff and Singer (1998), and Ryan and Deci (2000) which posit that meeting certain psychological needs like competence and self-acceptance are necessary for flourishing, theories that propose that optimism, engagement or interest, and meaning and purpose are necessary for well-being (Csikszentmihalyi, 1990; Peterson et al., 1988; Scheier & Carver, 2003; Seligman, 2002; Steger et al., 2008), and theories that espouse the necessity of social capital, i.e., giving and receiving support to and from others, towards well-being (Brown et al., 2003; Dunn et al., 2008; Helliwell et al., 2009; Putnam, 2000).

The Flourishing Scale is the only current scale that was initially developed specifically for a college student population rather than a general adult population. Diener et al. (2010) originally tested the Flourishing Scale with six student samples in the fall of 2008. The samples included 689 college students enrolled at the University of Illinois, the College of New Jersey, California State University East Bay, East Carolina University, the University of Virginia, and Singapore Management University. The samples drawn from the University of

Illinois and from East Carolina University each took the scale twice to better assess for reliability, and the sample drawn from the University of Illinois also completed additional measurement instruments to allow for examination of construct validity (Diener et al., 2010). Evaluation of Cronbach's alpha, Principal Factor Analysis, and correlation analyses yielded promising results with high reliability and high convergence with the comparison scales. The eight items that compose the Flourishing Scale are each rated on a Likert-type scale and then summed such that lower scores represent lower levels of flourishing and higher scores represent higher levels of flourishing. Scores can range from a low of eight to a high of 56, and a total score of 48 or higher represented the top 30% of the sample (Diener et al., 2010). Additionally, the factor analysis indicated the Flourishing Scale was a unidimensional tool and that the sum total was more useful than the individual item scores. Diener et al. (2010) summarized those findings by saying, "Although the scale does not separately provide measures of facets of well-being, it does yield an overview of positive functioning across diverse domains that are widely believed to be important" (p. 146).

Simultaneously in Diener et al.'s (2010) study, participants also completed the Scale of Positive and Negatives Experiences (SPANE), a 12-item scale designed to assess the frequency of positive and negative emotional experiences. Through the combination of survey measures, Diener et al. (2010) documented that level of flourishing was more stable over time than feelings. This finding provided some justification for removing multiple emotional health items from a brief survey.

Howell and Buro (2015) later tested the Flourishing Scale with 478 undergraduates at a university in Canada, citing a need for additional testing with English-speaking populations. In their analysis, reliability coefficients were excellent, and means, standard deviations, ranges, and criterion validity were similar to Diener et al.'s (2010) findings. Women had slightly higher Flourishing Scale scores compared to men. They noted that most respondents coming from what they described as "economically advantaged societies" will score above the midpoint of the Flourishing Scale (Howell & Buro, 2015, p. 908) and stated this distribution was typical among measures of well-being.

However, the Flourishing Scale is not without its critics. Mesurado et al. (2021) stated the Flourishing Scale was misnamed, because, from their perspective, "it dealt mainly with psychological well-being" (p. 455). They favored the multi-dimensional status of Keyes's MHC-SF as a measure of flourishing, although they believed it was still lacking because of its use of a dichotomous scale rather than allowing participants to indicate gradations of well-being experiences (Mesurado, et al., 2021). In fact, Diener et al. (2010) acknowledged that the Flourishing Scale was initially called "Psychological Well-being" in an early draft. They explained that "the name was changed to more accurately reflect the content because the scale includes content that goes beyond psychological well-being narrowly defined" (Diener et al., 2010, p. 146). The Flourishing Scale also utilizes the continuous scoring that Mesurado et al. (2021) found lacking in the MHC-SF (Diener et al., 2010). While perhaps not practically

significant, Mesurado et al. (2021) also found that the Flourishing Scale had a slightly higher internal reliability (.87) than the MHC-SF (.82).

When comparing the MHC-SF and the Flourishing Scale, the Flourishing Scale most closely aligns with Seligman's PERMA Theory of Well-being, perhaps in part because Diener and Seligman have partnered on multiple publications and draw from each other's works. Each of the PERMA elements has been linked to at least one item on the Flourishing Scale (Ross, 2015). *Positive emotion* is measured in the Flourishing Scale by the items "I am a good person and live a good life" and "I am optimistic about my future." *Engagement* is measured by the statement "I am engaged and interested in my daily activities." The element of *Positive relationships* is measured through three items: "My social relationships are supportive and rewarding," "I actively contribute to the happiness of others," and "People respect me." *Meaning* is assessed through the item "I lead a purposeful and meaningful life." Finally, *Accomplishment* is measured through the item "I am competent and capable in the activities that are important to me" (Ross, 2015).

From a practical standpoint, the Flourishing Scale is widely available to colleges and universities through other assessment tools they may already be using. The HMS, which is described by its authors as "…a population-level survey of post-secondary student mental health," has accumulated data from over 550,000 participants at more than 400 colleges and universities and incorporated the Flourishing Scale into its standard survey in 2012 (HMN, 2021).

The NCHA, which is described by the organization as “a nationally recognized research survey that can assist [colleges and universities] in collecting precise data about [their] students’ health habits, behaviors, and perceptions,” has accumulated data from more than two million participants at more than 700 colleges and universities and incorporated the Flourishing Scale into its third survey iteration (ACHA-NCHA III) in 2019 (ACHA, 2021b). Consequently, while the Flourishing Scale is freely available for use as long as its source is cited, university administrators may already have access to the results it yields without having to conduct a separate study.

Noted Impacts of Flourishing and Positive Psychology Interventions on Physical Health, Mental Health, and Mental Illness

Physical Health

Regardless of the specific measuring scale employed in a study, a growing collection of research is documenting the many impacts of high levels of well-being and flourishing on both physical and mental health. One of the earliest studies linking flourishing to improved physical health was conducted by Keyes and Simoes (2012) in their study to determine whether flourishing could predict 10-year mortality. In a retrospective study, they used data from the Analysis of Midlife in the United States (MIDUS) 1995 cohort study and compared it with mortality information from the National Death Index over the subsequent ten years. MIDUS collected mental illness information using criteria from DSM-IV around depression, anxiety, and panic attacks. Mental health was

assessed using six items of positive affect and one item of life satisfaction from the MIDUS, six items of psychological functioning from Ryff (2008), and five items of social well-being from Keyes (1998). Keyes and Simoes (2012) also collected demographic measures, levels of physical inactivity, physical illness conditions (e.g., cardiovascular disease, HIV/AIDS, cancer), and risk conditions associated with mortality (e.g., Body Mass Index, waist to hip ratio, tobacco use) from the MIDUS in their study.

Upon bivariate frequency and chi-square analysis, Keyes and Simoes (2012) found that all-cause mortality was not associated with mental illness at baseline, but it was associated with flourishing. Less than 1% of participants who met their criteria for flourishing died over the 10-year period compared to 5.5% of participants who were not flourishing. Interestingly, flourishing was inversely associated with mortality even in the presence of other known physical health risk factors. Keyes and Simoes (2012) reported:

> The absence of positive (flourishing) mental health increased the probability of all-cause mortality for men and women at all ages after adjustment for known causes of death.... The effect of the absence of positive mental health on mortality was independent of the individual and joint effects of factors known to be causally related to death, such as age, gender, race, physical inactivity, smoking, and physical disease (CVD, cancer, stroke, etc.). (p. 2170).

Additionally, Keyes and Simoes (2012) found that overall well-being was more important to mortality than any individual component of well-being (hedamonic/emotional, eudaimonic/psychological). While previous studies of impacts of mental health often focused on emotional health, Keyes and Simoes (2012) suggested that this focus may have been wrongly placed as their regression analyses showed “all of the effect of emotional well-being on mortality was explained by its modest correlation with psychological well-being" (p. 2170).

Diener et al. (2017) examined existing meta-analyses, literature reviews, and studies of subjective well-being (SWB) and its benefits and associations with physical health and longevity. They noted 11 meta-analyses that found support for high levels of SWB being associated with longer life and better physical health outcomes while low levels of SWB were simultaneously associated with increased risks for negative physical health outcomes such as heart disease. Additionally, they found eight shorter literature reviews documenting positive effects of SWB and flourishing on physical health outcomes like quicker wound healing, increased immunity, decreased pain, and lowered incidence of heart disease (Broadbent & Koschwanez, 2012; Marsland et al., 2006; Pressman & Cohen, 2005; Sin, 2016). Individual cross-sectional and longitudinal studies examined by Diener et al. (2017) generally documented associations between SWB and measures of immune functioning, endocrine functioning, and cardiovascular health, as well as greater longevity. The longitudinal studies showed that SWB could still predict future health even when research teams

controlled for possible confounding variables like genetics and income (Diener et al., 2017).

Beyond these general associations, the meta-analysis by Diener et al. (2017) also found that SWB could serve as a mediator or a moderator for various physical health outcomes. For example, as a mediator, they noted that "…positive emotions make people more resilient to stress, with the ability to bounce back in mood and physiology more quickly after a stressor affects their cardiovascular system" (Diener et al., 2017, p. 143). Their observation that individuals with high levels of SWB often engage more frequently in healthier behaviors represented another mediational pathway to better physical health outcomes. Diener et al. (2017) noted that the relationship of SWB as a moderating variable is less conclusive, as results varied depending on the culture under study, the specific type of SWB examined, the specific health outcome being measured, and the type of study conducted (ex., short-term versus long-term).

Mental Health and Mental Illness

In addition to the body of evidence supporting the impacts of well-being on physical health, multiple longitudinal studies document an inverse relationship between flourishing mental health and current or risk of future mental illness. Iasiello et al. (2019) found that flourishing individuals who also had depression, generalized anxiety, or panic disorder at baseline were more likely to recover from their mental illness over a 10-year period than individuals with mental illness

who were not flourishing at baseline. Wood and Joseph (2010) found that individuals with low levels of positive mental health at baseline were more than seven times more likely to develop depression over a 10-year period than their flourishing counterparts. Similarly, Keyes et al. (2010), found that increasing levels of mental health strongly predicted declines in incidence of mental illness, specifically major depression, generalized anxiety, and panic disorder, over a 10-year period. Grant et al. (2013) studied the impacts of well-being on depression risk in medical students participating in internship experiences and found that low levels of SWB predicted greater experiences of depressive symptoms during the internship period. Each of these studies documents the potential for upstream prevention of mental illnesses through the promotion of flourishing mental health, and they also highlight the lack of attention paid thus far to psychological distress outside of depression and anxiety-related disorders.

Cross-sectional studies also illustrate inverse relationships between elements of flourishing with indicators of mental illness. Brockelman (2009) examined the relationships between various elements of self-determination and mental illness among 375 undergraduate students enrolled in general education classes and/or registered with the disability services center at a large university in the Midwest. Negative correlations were found between indicators of autonomy, competence, relatedness, and perceived self-determination with self-reports of diagnosed psychological disorders. Regression analyses were conducted to determine if the presence of mental illness would predict low levels of self-determination, and results indicated that having a mental illness explained

4.2% of the variance in autonomy, 2% of the variance in competence, and 2% of the variance in relatedness. It also explained almost 6% of the variance in the participants' perception of their own self-determination (Brockelman, 2009). Although the survey was cross-sectional and therefore cannot make confident claims of causality, Brockelman (2009) postulated that, "Self-determined students with mental health problems may well be managing their mental health, using services they need when they need them, whereas less self-determined students use mental health services less effectively" (p. 284). She also recommended that colleges and universities consider incorporating workshops to boost self-determination measures, as self-determination is more readily changed than the presence of mental illness.

Much like Diener et al. (2017) documented the role of positive mental health as a mediating and moderating variable for physical health, Teismann et al. (2018) found that positive emotions were a moderating factor in the relationship between depression and suicide ideation among German college students. Through dependent sample t-tests and hierarchical linear regression of data collected from first year students at Ruhr-Universität Bochum participating in the longitudinal Bochum Optimism and Mental Health Project (BOOM), Teismann et al. (2018) noted, "For those individuals who reported high levels of positive mental health, their levels of suicide ideation did not increase significantly even when they experienced a heightened level of depressive symptoms" (p. 4). These results can provide hope to the many college administrators struggling to find strategies to curb the risk of student suicides on their campuses.

Beyond documentation of the relationships between elements of positive mental health and symptoms of mental illnesses, other researchers have demonstrated that positive psychology interventions (PPIs) can increase positive mental health and decrease symptoms of mental illnesses and psychological distress. In an experimental study based on Seligman's PERMA Theory of Well-being, Gander et al. (2016a) measured the impacts of a one-week, self-administered online intervention on happiness and depressive symptoms. The study involved 1,359 participants in Switzerland who were randomly assigned to one of six intervention conditions (focusing on a single PERMA element or on all five PERMA elements) or a placebo-controlled condition. Participants completed the Authentic Happiness Inventory, the Center for Epidemiologic Studies Depression Scale, the Orientations to Happiness Questionnaire, the Positive Relationships Scale and the Accomplishment Scale at baseline, post-intervention, and 1-, 3-, and 6-month follow ups (Gander et al., 2016a). After controlling for pretest scores, results indicated that participants in all intervention conditions had higher happiness scores than placebo participants at post-intervention and 3-month follow-up. Participants in the pleasure and accomplishment conditions also had higher happiness scores at six months than those in the placebo group (Gander et al., 2016a). All treatment conditions also had significantly fewer depressive symptoms than the placebo group. Additionally, results indicated that the interventions had the greatest impact on participants with baseline happiness and depressive scores near the mean and were less effective with participants who had high or low scores at baseline. In

explanation, Gander et al. (2016a) theorized that participants with low happiness or high depression scores at baseline might need more intervention than a self-administered version could provide, and that participants with existing high happiness or low depression scores would have little room to improve in a statistically significant way. Results were strongest among participants in the positive relationships intervention group, which had the greatest decrease in depressive symptoms at every time point.

Laasko et al. (2020) examined the impact of a year-long school-based PPI on positive and negative emotions of adolescents in Finland. Classes were randomly assigned to receive the intervention curriculum, and the PANAS-C was used to measure pre- and post-study positive and negative emotions. Additionally, focus groups and key informant interviews with teachers and assistants supplemented the self-reported findings (Laasko et al., 2020). Results indicated that positive emotions were more impacted by the intervention than negative ones. Positive affect was increased in the intervention group at the conclusion of the program while it decreased in the control group, and the positivity ratio (more reported positive experiences than negatives ones) increased in the intervention group but not control. These differences were also significant at a 5-month follow-up. However, no significant differences were found for negative affect at post-intervention or follow up (Laasko et al., 2020). Fredrickson's broaden-and-build theory would suggest this increase in positivity would be worthwhile in spite of the lack of change in negative affect, as it purports that "positive emotions momentarily broaden individuals' scope of

attention and cognition, which leads to altered patterns of decision-making and action. Over time, these consequential patterns of broadened thoughts and action accumulate to build long-term social, psychological, intellectual and physical resources" (Laasko et al., 2020, p. 254).

Other PPIs have focused on symptoms of psychological distress with direct academic implications. Alibak and Alibak (2021) conducted an internet-based intervention with online graduate students in Iran to compare the effectiveness of cognitive behavioral therapy (CBT) with therapy based in positive psychology at reducing test anxiety. Using repeated measures ANOVA, they compared the two intervention groups and a waitlisted control group on scores on the Online Test Anxiety Inventory at baseline, post eight-week treatment period, and at 3-month follow up. The groups were not significantly different at baseline, but both intervention groups were significantly different from the control group at post-test and follow up periods. However, the intervention groups were not significantly different from each other, indicating that PPIs are equally effective at reducing test anxiety in online graduate students as the traditional CBT model (Alibak & Alibak, 2021).

Because so much of the research into well-being requires self-reported data, Heintzelman et al. (2020) sought to assess whether changes in reported happiness following an intervention were driven by reporting biases rather than true change. They also examined the efficacy of in-person versus online interventions. Through peer reports and memory-based measures SWB in

addition to traditional self-report measures, they measured the effectiveness of a 12-week intervention on life satisfaction, positive affect, and negative affect. Participants had greater life satisfaction and positive affect and less negative affect than controls at the end of the 12-week program, and gains were maintained at a three-month follow up (Heintzelman et al., 2020). The program also lowered perceived stress and incidence of depressive symptoms in the intervention group. The non-self-report measurement techniques supported these findings. Program participants had more positive memories than negative memories when completing their memory task at conclusion compared to controls. Informant reports supported gains in life satisfaction but did not support increased positive affect (Heintzelman et al., 2020). Results were similar with online and in-person formats, providing evidence that online delivery could be a way to increase the scale of interventions (Heintzelman et al., 2020).

Each of these PPIs could serve as blueprints for colleges and universities looking for strategies beyond counseling and psychotherapy to help their distressed students. None of them required the use of trained therapists in their implementation, and most of them translated successfully to an online environment which would allow greater numbers of students to participate than a single counseling center could impact.

Noted Impacts of Flourishing on Academic Success

As mentioned previously, while much evidence exists to demonstrate that flourishing mental health is protective against the impacts of current and future

mental illness, gathering campus buy-in at the level necessary for a more systemic, coordinated response will likely require demonstration of impacts on academic success. Studies that have looked at the impacts of flourishing and elements of positive mental health on academic success have most frequently used GPA as their defining measure of academic performance. Brockelman (2009) found that high levels of self-determination were strongly correlated with GPA. She also found that, when controlling for level of self-determination, there was no significant difference in GPA between students with mental illnesses and those without mental illnesses (Brockelman, 2009). Interactions with GPA are noteworthy since a combined effect of low GPA and poor mental health is associated with increased likelihood of dropping out (Eisenburg et al., 2009). In fact, Eisenberg et al. (2009) found in a longitudinal study of 2,800 college students that students with low GPA and poor mental health dropped out at a rate of 25% compared to a 9% drop out rate among students with a low GPA only.

In addition to impacts on GPA, Suldo et al. (2011) also examined the impacts of SWB on state standardized test scores, school absences, and office disciplinary referrals in a longitudinal study of 300 middle school students in Florida. After classifying participants in one of four mental health groups (complete mental health, vulnerable, troubled, or symptomatic but content), they found that students in the complete mental health group at baseline of the study had the highest GPAs, highest math scores, and best attendance one year later (Suldo et al., 2011). Due to the study's longitudinal design, they were able to

examine influences of potential confounding variables and determined that, even after controlling for socioeconomic status and family marital status, the participants in the high SWB groups (complete mental health and symptomatic but content) were more likely to experience increasing GPAs at the 1-year follow-up than participants with low SWB. Additionally, mean GPAs were very similar between the low SWB groups (vulnerable and troubled) regardless of mental illness status (Suldo et al., 2011). They summarized their findings by saying, "These findings speak to the notion that the absence of psychopathology alone may not be the best predictor of later academic functioning" (Suldo et al., 2011, p. 27).

Use of the dual continua model of mental health with college students has begun allowing researchers to see the impacts of positive mental health on indicators of academic performance. However, the studies to date reflect samples drawn only from individual institutions. Renshaw and Cohen (2014) found significant differences between mentally healthy and asymptomatic yet discontent groups for academic achievement measured by self-reported GPA. Since neither of those groups included students with mental illnesses, the difference in GPA outcome was associated with their differing levels of mental health. Coffey et al. (2016) documented the predictive value of flourishing with GPA and flourishing with prospective post-graduate job interviews.

Antaramian (2015) demonstrated that positive mental health was associated with higher levels of student engagement and GPA. In her study,

participant groups with higher well-being scores did not differ significantly on level of engagement; however, the “well-adjusted” group, which consisted of students with high mental health and low mental illness symptomology, was significantly more engaged in academic experiences than either of the low mental health groups, whether or not they had symptoms of mental illness (Antaramian, 2015). Additionally, the well-adjusted group reported significantly higher GPAs than the “distressed” group, which consisted of students with low mental health and high mental illness symptomology. Antaramian (2015) concluded that "Positive subjective well-being may have a stronger impact on students' engagement than on their course grades" (p. 427). However, she also noted that her study examined impact of well-being on cumulative GPA and that associations may have been stronger if she had examined current semester GPA (Antaramian, 2015).

The research also documents inverse links between positive mental health and academic impairment. In the only known such study using a national sample of college students, Keyes et al. (2012) conducted a secondary analysis of HMS data from 2007 to determine the impact of flourishing on perceived academic impairment. Respondents who indicated that emotional or mental difficulties had hurt their academic performance on six or more days in the previous four weeks were classified as experiencing academic impairment. They found that among students who had a current mental illness, those with flourishing mental health were significantly less likely to report academic impairment (Keyes et al., 2012). Alternatively, among students with no mental illnesses, students with low mental

health were three times more likely to report academic impairment than students with moderate mental health, and students with moderate mental health were twice as likely to report academic impairment than students who were flourishing (Keyes et al., 2012). Languishing students who also had a mental disorder were more than 50 times more likely to report academic impairment than flourishing students with no mental disorder (Keyes et al., 2012).

When viewed in total, the research suggests that flourishing and the individual elements that contribute to it can affect academic performance directly and can influence physical and mental health in ways that affect academic performance indirectly. However, few studies currently exist that document these influences in national samples of college students. The one known national study is also dated, using survey data from 2007. Thus, additional research post-COVID-19 and with this larger population is much needed.

CHAPTER III

METHODOLOGY

As previously discussed, much of the earlier research concerning the impacts of flourishing among college students has utilized categorical data in which students are grouped based on their mental health and mental illness profiles. Additionally, much of the existing research has been limited to studies done at individual institutions and has focused on the impacts of flourishing largely on the symptomology of the specific mental illnesses of depression, anxiety, and panic disorder. Lastly, most of the existing research on the academic impacts of flourishing among college students predates the COVID-19 pandemic, which has altered the context of higher education and the mental health profiles of its students. The present study was designed to address these limitations, including the use of continuous data gathered from a current national sample of students and the framing of mental illness more broadly as psychological distress.

Research Design

The present study adopted a nonexperimental, cross-sectional study design. According to Kerlinger (1986):

> Nonexperimental research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made,

> without direct intervention, from concomitant variation of independent and dependent variables. (p. 348)

This explanation highlights both the strengths and weaknesses of nonexperimental research. Because the independent variables are not manipulated by the researchers, a nonexperimental study cannot provide direct evidence of causation. When compared to experimental designs, Johnson and Christensen (2020) stated, “Evidence for causality in nonexperimental research is more tentative, more exploratory, and less conclusive” (p. 369).

However, it is through nonexperimental inquiry that researchers can study variables that are not capable of being manipulated in natural settings. Price et al. (2017) stated that nonexperimental research is preferred when “. . . the independent variable cannot be manipulated or participants cannot be randomly assigned to conditions or orders of conditions for practical or ethical reasons” (p. 23). In this current study examining relationships between flourishing, academic performance, and psychological distress, an experimental study that randomly assigned flourishing or distress to student participants would be impossible and unethical. Consequently, the research questions of the study drove the choice of a nonexperimental study design.

Johnson and Christensen (2020) define cross-sectional research as inquiry in which “data are collected from the research participants at a single point in time or during a single, relatively brief time period” (p. 383). Crosby and Salazar (2021) described it as the most common study design and stated that these types of observational studies form the “backbone” of public health

research by laying a ". . .foundation for intervention development, policy change, and even legislation" (p. 79). Typically, multiple variables of interest are gathered simultaneously, allowing for the collection of data from many subjects over a short period of time (Johnson & Christensen, 2020).

For the purposes of this study, the most recent data was requested from the ACHA-NCHA III, which contained mental health screening data, demographics, and self-reported GPA from college students enrolled across the United States in the Spring 2022 semester. A strength of cross-sectional design with the specific sample under study is that it allows for a real-time snapshot of the variables of interest that can subsequently allow for timely interventions in an ever-evolving population (Crosby & Salazar, 2021). Additionally, since there was no follow-up with participants, the cross-sectional design and confidential administration enabled students to participate and share their mental health history without having to provide their names.

A primary disadvantage of cross-sectional research is its inadequacy for establishing time order of changes. Crosby and Salazar (2021) noted, "Because of the one-time measurement, the cross-sectional design can measure only differences between or among people rather than any individual changes" (p. 80). Johnson and Christensen (2020) also stated:

> Time order can be partially established in cross-sectional research through theory, through past research findings, and through an understanding of the independent variable…. However, these techniques

> for establishing time order are much weaker than actually observing people over time. (p. 384)

With this limitation in mind, all findings will require future studies, particularly longitudinal or prospective cohort studies, to better determine the exact sequencing of the variables.

This study involved secondary data analysis of the ACHA-NCHA III Spring 2022 dataset. Each fall and spring semester, institutional members of ACHA can choose to purchase and administer the ACHA-NCHA III as a valid, reliable assessment tool to measure a variety of college health concerns (ACHA, 2022a). Since the ACHA-NCHA launched in 2000, more than two million college students from nearly 1,000 unique institutions have participated (ACHA, 2022d). This dataset includes information provided by students attending one of 129 institutions of higher education who participated in the assessment in the Spring 2022 semester. Using this national dataset as opposed to a single institution's data consequently yielded more generalizable results and marked the largest known study related to flourishing and academic performance completed to date.

Because the information contained in the dataset included no identifiers of individual participants or of the individual institutions, the researcher applied for exempt status with the Institutional Review Board, which was granted on November 14, 2022, under protocol ID number 23-2042.

Subjects

According to the United States Census Bureau (2020), there are 17,654,000 college students currently studying in the United States.

Representing that population, the subjects in this study included the 69,131 students who participated in the Spring 2022 cohort of the ACHA-NCHA III through their institutions. While the colleges and universities that choose to administer the ACHA-NCHA III must do so in accordance with their individual institutional policies and procedures for research, only institutions that utilize simple random sampling or random cluster sampling by class sections are included in the national dataset. Participating colleges and universities represent all institutional types, geographic regions, and Carnegie classifications (ACHA, 2022d). As such, individual semester cohorts of participants represent the largest samples and create the largest datasets currently available of college students and their health behaviors, attitudes, and perceptions. All surveys are administered online, and the Spring 2022 response rate was 13%.

The 2022 ACHA-NCHA III cohort includes students from a variety of backgrounds and demographic groups. They range in age from 18 to 91 with nearly four out of five participants (79.2%) falling in the traditional college age range of 18-24. The majority of participants are undergraduates (79.1%) enrolled in full time hours (91.6%). Over two-thirds (69%) describe themselves as Caucasian, followed by Asian or Asian American (14.4%), Hispanic or Latino/a/x (11.9%), and Black or African American (6.3%). Just under forty percent (39.2%) report living in university housing, 14.1% report living with parents or other family, and 43.9% report living in off campus housing. Roughly one third (34.1%) report being first generation college students, and about one fourth (29.4%) report having some kind of disability.

Measurement Instrumentation

The ACHA-NCHA III contains 85 items; however, for the purposes of this study, items of interest included the embedded eight-item Flourishing Scale to measure level of flourishing and the embedded six-item Kessler Psychological Distress Scale (K6) to measure level of psychological distress. These two scales provided insight into the respondents' psychological states along both the mental health and mental illness continua advocated by Keyes (2002).

As aforementioned, the Flourishing Scale is a measure of general psychological well-being that has been validated and found reliable in college students and other populations (Diener, et al., 2010; Howell & Buro, 2015; Ross, 2015). Each of the eight items is rated on a Likert scale from 1 - 7 such that higher numbers indicate a greater level of agreement with the statement. Responses to the eight items of the Flourishing Scale produce a sum total score ranging from eight to 56. The higher the value of the total, the greater level of flourishing experienced by the respondent. A score of 48 or higher represents the upper third of the scale and is often used as a cut point to describe an individual as flourishing (Lipson et al., 2022). A copy of the Flourishing Scale is provided in Appendix B.

Similarly, researchers have used and validated the K6 with multiple populations as a general screening tool and as a measure of severity of distress, especially when more comprehensive diagnostics are impractical (Kessler et al., 2002; Mitchell & Beals, 2011). Responses to the six items composing the scale also produce a sum total score ranging from zero to 24. The higher the value,

the greater level of psychological distress experienced by the respondent. When used diagnostically, scores lower than six are categorized as low to no distress, scores between six and 12 are categorized as moderate distress, and scores greater than or equal to 13 are categorized as severe distress (Prochaska et al., 2012). A copy of the K6 is included in Appendix C.

In addition to the eight Flourishing Scale items and the six K6 items, one item from the ACHA-NCHA III assessing academic performance was used in the current study. The question asked respondents *"What is your approximate cumulative grade average?"* with response options of A+, A, A-, B+, B, B-, C+ C, C-, D+, D, D-, or F.

Finally, demographic variables of interest included age, sex, financial status, and relationship status, as they represent potential confounding variables as referenced in the review of literature. The item assessing age was an open-ended question allowing respondents to type in their specific age in whole numbers. Sex was categorized based on responses to three items, "*What sex were you assigned at birth?*" "*Do you identify as transgender?*" and "*What term do <u>you</u> use to describe your gender identity?*" Respondents whose preferred gender identity was consistent with their sex assigned at birth and who selected "No" to a transgender identity were coded as "Male" or "Female." Respondents who selected "Yes" to a transgender identity or whose preferred gender identity was not consistent with their assigned sex at birth were coded as "Non-Binary." The item assessing financial status asked, "*Within the last 12 months, have you had problems or challenges with finances?*" and response options were "Yes" or

"No." The item assessing relationship status asked, "*What is your relationship status?*" and response options included "Not in a relationship," "In a relationship but not married or partnered," and "Married or partnered." Statistical controls were used to limit the possibility of spurious relationships being observed due to these variables.

Analysis of the Data

All data obtained from the Spring 2022 ACHA-NCHA III were uploaded into IBM SPSS Statistics 28 for analysis. Two different analyses were conducted to test the hypotheses of this study. To test the first hypothesis, that high levels of flourishing will be positively related to academic performance as measured by self-reported GPA, hierarchical multiple regression analysis was conducted. The summed Flourishing Scale score served as the independent variable and self-reported GPA served as the dependent variable. Demographic variables of age, sex, financial status, and relationship status were considered as control variables in the regression models. To test the second hypothesis, that there will be an inverse relationship between flourishing and psychological distress, a correlation analysis using Pearson's correlation coefficient (*r*) was conducted.

Hierarchical Multiple Regression Analysis

Although there are multiple ways to analyze continuous data, for the purposes of this study, hierarchical multiple regression was used. According to Johnson and Christensen (2020), multiple regression is "a set of statistical procedures used to explain or predict the values of a dependent variable based on the values of [two] or more independent variables" (p. 496). Regression

analyses allow researchers to determine if a statistically significant relationship exists between variables and if so, the degree and direction of that relationship. Regression analyses can also allow researchers to predict the value of a dependent variable through the creation of a regression equation (Johnson & Christensen, 2020). For multiple regression, that equation follows the formula of $Y_i = (b_0 + b_1X_{1i} + b_2X_{2i}) + \varepsilon_i$ where Y_i is the predicted value of the dependent variable, the *b* values represent the constant and the coefficients of the predictor variables (the *X*s), and ε_i is the error (Field, 2018). Multiple regression analysis will generate partial regression coefficients that show the amount of change predicted in the dependent variable given a change of one unit in the independent variable when all other independent variables are held constant (Johnson & Christensen, 2020).

Regression was chosen for this study because it lends itself well to predictive studies. Additionally, since this study required controlling for multiple variables that research indicated could confound results, hierarchical multiple regression provides insight into how much influence the independent variable of degree of flourishing has on the dependent variable of academic performance when those extraneous demographic variables are held constant. For the purposes of this study, models were built to include all demographic variables demonstrated in the literature as potential confounding variables. Model 1 included financial status; Model 2 included financial status plus sex; Model 3 included financial status, sex, and age; Model 4 included financial status, sex,

age, and relationship status; and Model 5 included all demographic variables plus degree of flourishing.

Hierarchical Multiple Regression Analysis Assumptions

Because regression analyses are used to fit data to a general linear model, they involve the same assumptions as other analyses that use a linear model (Field, 2018). Those assumptions, according to Field (2018), are:

- the variables in the study have a linear relationship;
- the variables in the study lack autocorrelation;
- the variables in the study exhibit homoscedasticity; and
- the variables in the study display normally distributed errors.

Correlation Analysis

Correlation analysis is a type of non-experimental research that examines the relationship between quantitative variables (Field, 2018). According to Field (2018), calculating the degree to which two variables exhibit covariance is the simplest way to check the association of those variables. The standardized form of covariance is the correlation coefficient, and Pearson's correlation coefficient, *r*, is the test statistic used to measure the association of two interval or ratio level variables (Field, 2018). According to Johnson and Christensen (2020), "A correlation coefficient is a numerical index that provides information about the strength and direction of the relationship between two variables" (p. 42). Correlation coefficients range in value from -1 to 1 where a value of 0 represents the absence of a relationship. Values less than 0 indicate a negative relationship, and values more than 0 indicate a positive relationship. Negative

correlations exist when the values of two variables move in opposite directions. Positive correlations exist when those values move in tandem in the same direction (Johnson & Christensen, 2020).

A correlation analysis using Pearson's correlation coefficient was chosen for this study because it would effectively calculate the relationship between flourishing and psychological distress as measured by the interval level Flourishing Scale score and the interval level K6 scale score. Because correlational analysis is also based on the general linear model, the same assumptions discussed for hierarchical multiple regression will apply: linearity, normality, homoscedasticity, and independence (Field, 2018).

Interpretation of correlation coefficients involves considering the size of the *r* value, its confidence intervals, and its significance value (Field, 2018). Typical benchmarks regarding the size of *r* values include values of +/- .1 representing a small effect, +/- .3 representing a medium effect, and +/- .5 representing a large effect (Field, 2018). Ninety-five percent confidence intervals provide the upper and lower values of the range within which researchers can feel 95% sure the true value of a parameter is contained. When the 95% confidence interval of a correlation coefficient does not contain zero, researchers can feel reasonably assured that an actual effect exists in the population under study (Field, 2020). In this study, significance was predetermined based on a *p* value of .05 or less for all analyses.

Conclusion

In summary, this study aims to explore the relationships between flourishing mental health, academic performance, and psychological distress in a national sample of randomly selected college students. Using continuous data, it examines whether higher levels of flourishing predict better academic performance and whether level of flourishing is inversely correlated with level of psychological distress. Table 1 displays a logic model of the flow from research question through data collection to data analysis.

Table 1.

Logic Model of Proposed Research Design

Research Question	Data Collected	Data Analysis
RQ1: What effect does level of flourishing have on students' self-reported academic performance?	NCHA Items N3Q41a - N3Q41h, N3Q47a3, N3Q67a – N3Q67c, N3Q69, N3Q76, and N3Q80	Hierarchical multiple regression analysis
RQ2: Is there a relationship between flourishing and psychological distress?	NCHA Items N3Q41a – N3Q41h (Flourishing Scale) and N3Q44a – N3Q44f (K6)	Correlation analysis-Pearson's *r*

Although this study represents a nonexperimental, retrospective design, the results of its analyses will be of interest for practical application as well as potentially generalizable findings. The findings from RQ1 could inform college

and university student success strategies by demonstrating whether flourishing mental health impacts student academic performance. Additionally, the findings from RQ2 could increase our knowledge of the relationship between two markers of the dual continua model of mental health, deepen our theoretical understanding of how the dual continua model displays among college students, and lay the groundwork for strategies to promote student flourishing and reduce student distress.

CHAPTER IV

RESULTS

Based on studies documenting the increasingly poor mental health of college students (Duffy et al., 2019; Lipson et al., 2022; Oswalt et al., 2020) and the lack of generalizable research on the academic impacts of flourishing among college students, the purpose of this study was to investigate if level of flourishing has an impact on college students' self-reported academic performance and to determine the direction and degree of relationship that might exist between flourishing and psychological distress. The investigator requested the most recent data from the ACHA-NCHA III, and a dataset of mental health screening data, demographics, and self-reported GPA was created for analysis. This dataset included information provided by all participants in the survey in the Spring 2022 semester.

The ACHA-NCHA III dataset was chosen for analysis because of its size and national representation. As discussed in Chapter 3, any school could choose to administer the survey, but only the data from institutions which used random sampling measures were included in the aggregate dataset made available for secondary analysis. The Spring 2022 cohort was the most current cohort at the onset of this study.

Descriptive Statistics

Table 2 shows the demographic frequencies of the 69,131 students who participated in the Spring 2022 ACHA-NCHA III in order of how the variables were placed in the regression models. Participants self-reported whether they had experienced any problems or challenges with their finances in the last 12 months, their sex, their age in years, their relationship status, and their grades. Regarding sex, participants self-reported their biological sex, whether they identified as transgender, and their gender identity. Consistent with publications from ACHA (ex., ACHA, 2022b; ACHA, 2022c; ACHA, 2021a; ACHA, 2020a; ACHA, 2020b; ACHA, 2020c), these items were recoded into a new variable such that participants with a biological female sex at birth and a gender identity of female who did not identify as transgender were categorized as female, participants with a biological male sex at birth and a gender identity of male who did not identify as transgender were categorized as male, and all other combinations were categorized as non-binary. Regarding relationship status, participants were categorized as not in a relationship, in a relationship but not married/partnered, or married/partnered. Grades were reported using a plus-minus system for letter grades of A through D and a single option of F to represent failing grades.

Table 2.

Demographic Characteristics of ACHA-NCHA III Participants (N = 69,131)

Characteristic	*N*	%
Experienced financial challenges in past year		
No	36,445	53.24
Yes	32,010	46.76
Sex		
Female	44,853	65.54
Male	19,214	28.08
Non-Binary	4,371	6.39
Age (in years)		
18-20	31,321	45.99
21-24	22,607	33.20
25-30	7,899	11.60
31-50	5,492	8.06
50+	781	1.15
Relationship status		
Not in a relationship	35,234	51.39
In a relationship, but not married/partnered	26,782	39.06
Married/partnered	6,543	9.54
Self-reported grades		
A+	8,133	12.08
A	21,583	32.05
A-	13,557	20.13
B+	9.322	13.84
B	7,742	11.50
B-	2,997	4.45
C+	1,773	2.63
C	1,402	2.08
C-	456	0.68
D+	163	0.24
D	118	0.18
D-	43	0.06
F	53	0.08

Most participants in the Spring 2022 ACHA-NCHA III sample were female (65.5%), 28.1% were male, and the remaining 6.4% were coded as non-binary. Most participants (53.4%) did not report financial challenges in the past year. The majority of participants fell in the traditional student age range of 18-24 (79.1%), and just over half the sample (51%) described themselves as single. Almost two-thirds (64%) reported approximate grades of A-, A, or A+, while an additional 30% reported approximate grades of B-, B, or B+. Just over 5% reported approximate grades of C-, C, or C+, and less than 1% reported approximate grades of D+ or lower.

Table 3 displays the descriptive statistics for participants' summed scores on the Flourishing Scale and K6. Flourishing Scale scores can range from eight to 56 with higher scores indicating a greater level of flourishing. The mean score of 44.4 on the Flourishing Scale denotes that most participants scored above the mid-point of 24 on the survey. However, most participants did not reach the cut point score of 48 that Lipson et al. (2022) used to diagnostically define flourishing. Only 43.8% of the sample met that criteria and could consequently be described as flourishing.

Table 3.

Frequencies, Means, and Standard Deviations of Participants' Summed Scores on the Flourishing Scale and the Kessler 6 (K6) Non-Specific Psychological Distress Scale

Scale	N	n	%	Mean	SD
Flourishing Scale Score*	68,272			44.4	8.76
Students meeting criteria for flourishing		29,932	43.84		
Kessler 6 (K6) Non-Specific Psychological Distress Scale Score**	67,761			8.71	5.4
Low to no Distress		26,741	39.46		
Moderate Distress		25,250	37.26		
Severe Distress		15,770	23.27		

*****Flourishing Scale scores can range from 8 – 56; participants scoring 48 or above are considered to be flourishing

**K6 scores can range from 0 – 24; scores of 0 - 6 are considered low to no distress, scores from 6 - 12 are considered moderate distress, and scores greater than or equal to 13 are considered severe distress

Using Cronbach's alpha, the internal consistency of the Flourishing Scale in this sample was .93. Cronbach's alpha is commonly used to assess the reliability of scale measures, and according to Crosby and Salazar (2021), its calculation takes into account "the number of items in the scale, the average

covariance between item pairs, and the average variance" (p. 151). There is some disagreement among researchers about what value of Cronbach's alpha sets the benchmark for reliability. Crosby and Salazar (2021) recommended values of at least .70 for public health research. Price et al. (2017) suggested values greater than or equal to .80 for psychology research. Johnson and Christensen (2020) also stated that values greater than or equal to .70 indicate reliability for general research purposes, but that values greater than or equal to .90 are desirable for clinical assessments. Regardless of the benchmark used, the value of .93 in this study, which incorporates elements of public health, psychology, and clinical assessment, exceeds the threshold necessary for confidence in the scale's reliability.

K6 scores can range from zero to 24 with higher scores indicating a greater level of distress. The mean score of 8.7 calculated from this sample falls below the survey midpoint of 12, but when used diagnostically, still translates to the category of "moderate distress" (Prochaska et al., 2012).

Again, Cronbach's alpha was calculated to check internal consistency of the K6 scale. The value for this sample was .89. Referring to the guidelines mentioned previously, this value is also high enough to indicate strong reliability of the K6 scale measure for this study.

Initial Assumption Analysis

The planned analyses for both research questions, multiple regression and correlation, assume a general linear model. Statistical tests involving a

linear model are only useful if the data have a linear relationship and display normality (Field, 2018). These assumptions, therefore, were initially checked through scatterplots and histograms before further data analysis began.

Figures 3 and 4 display the resulting scatterplots. The variables of flourishing and GPA displayed a linear relationship, as did the variables of flourishing and psychological distress, meeting the assumption of linearity.

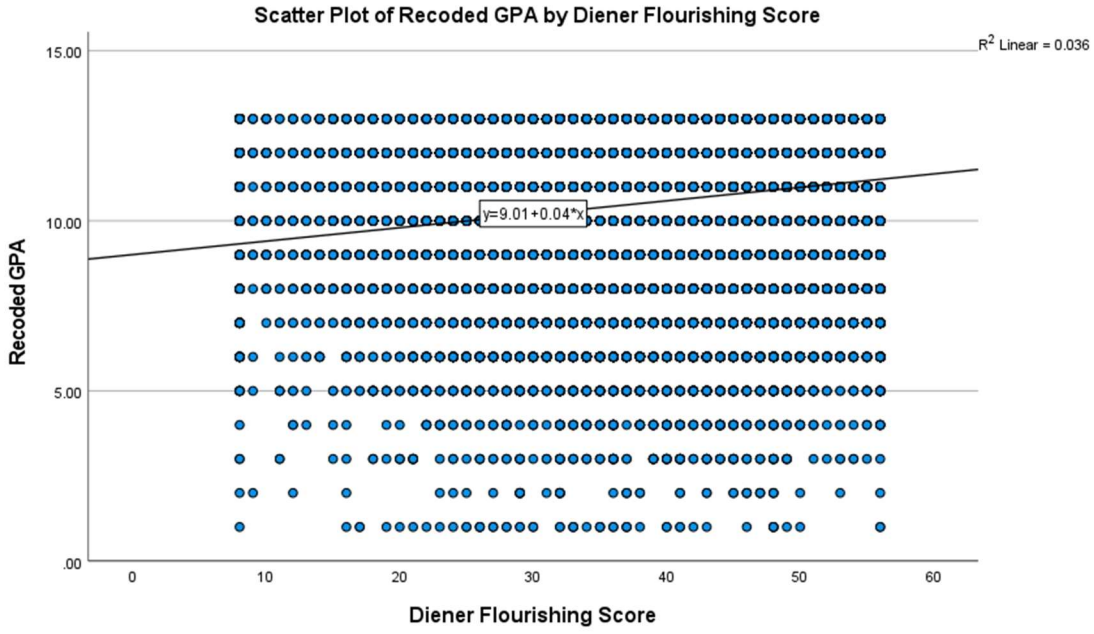

Figure 3.

Scatterplot of Relationship between Flourishing Mental Health and Approximate GPA.

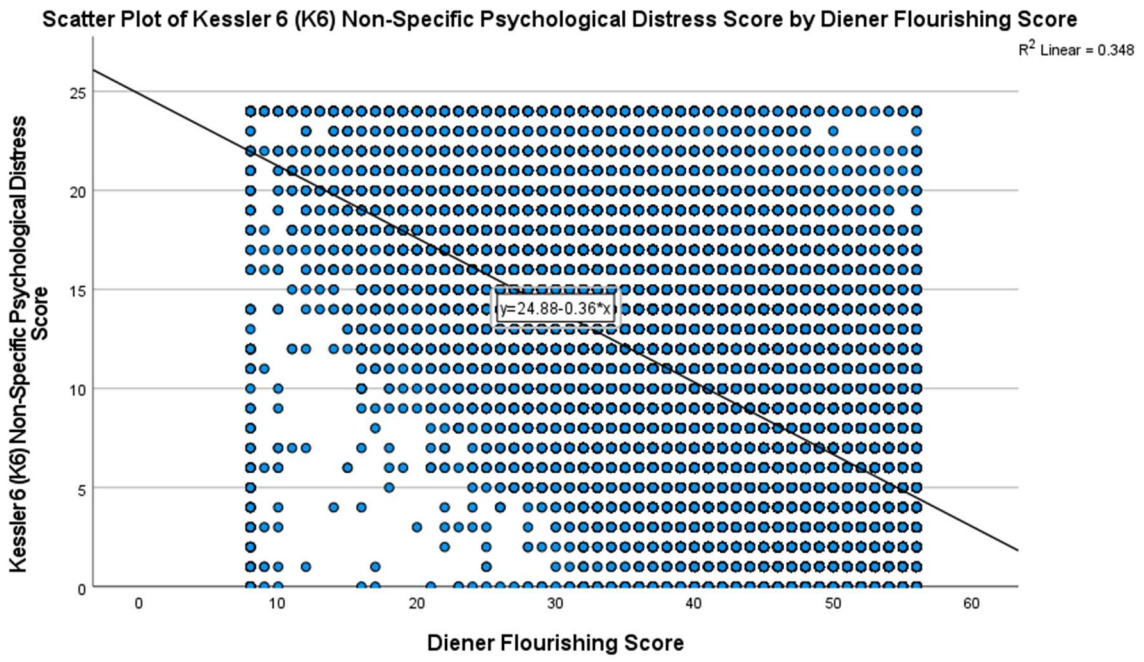

Figure 4.

Scatterplot of Relationship Between Flourishing Mental Health and Psychological Distress.

The resulting histograms displayed in Figures 5, 6, and 7 note the values of flourishing mental health, self-reported approximate GPA, and psychological distress reported by participants in the sample.

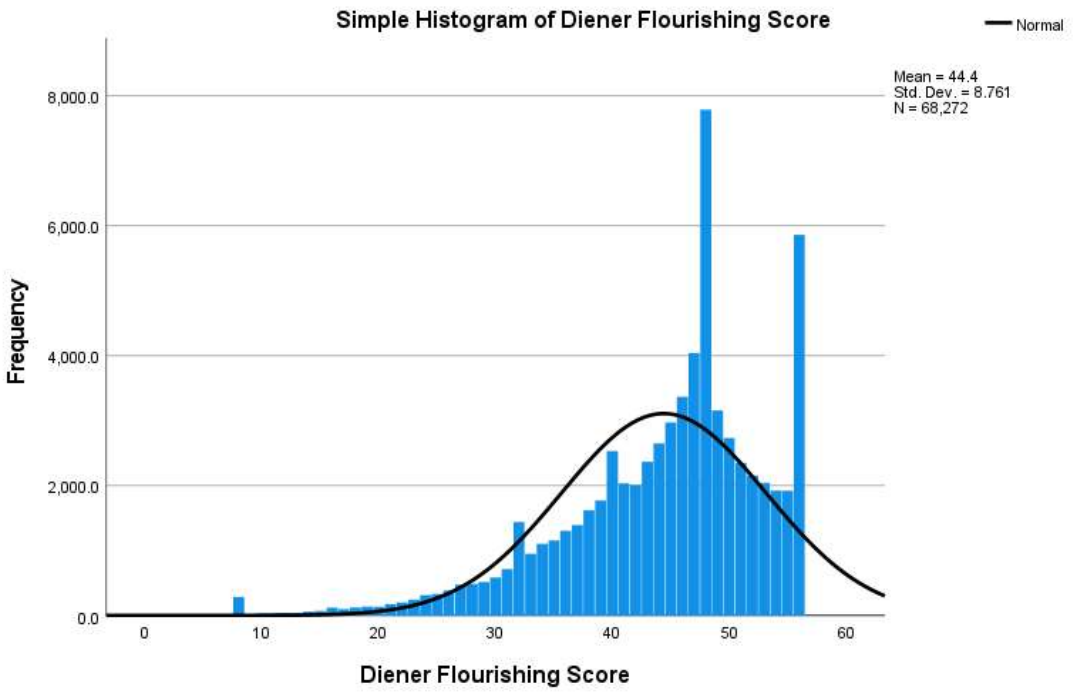

Figure 5.

Histogram of Reported Values of Flourishing Mental Health.

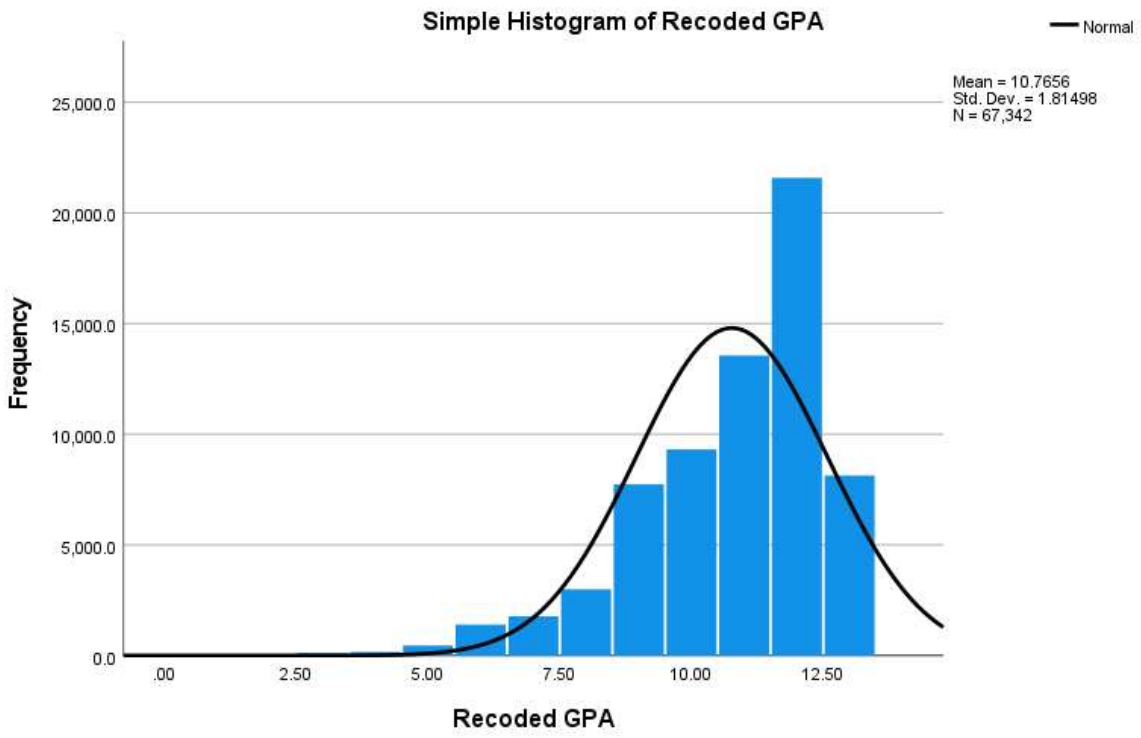

Figure 6.

Histogram of Reported Values of Self-Reported Approximate GPA

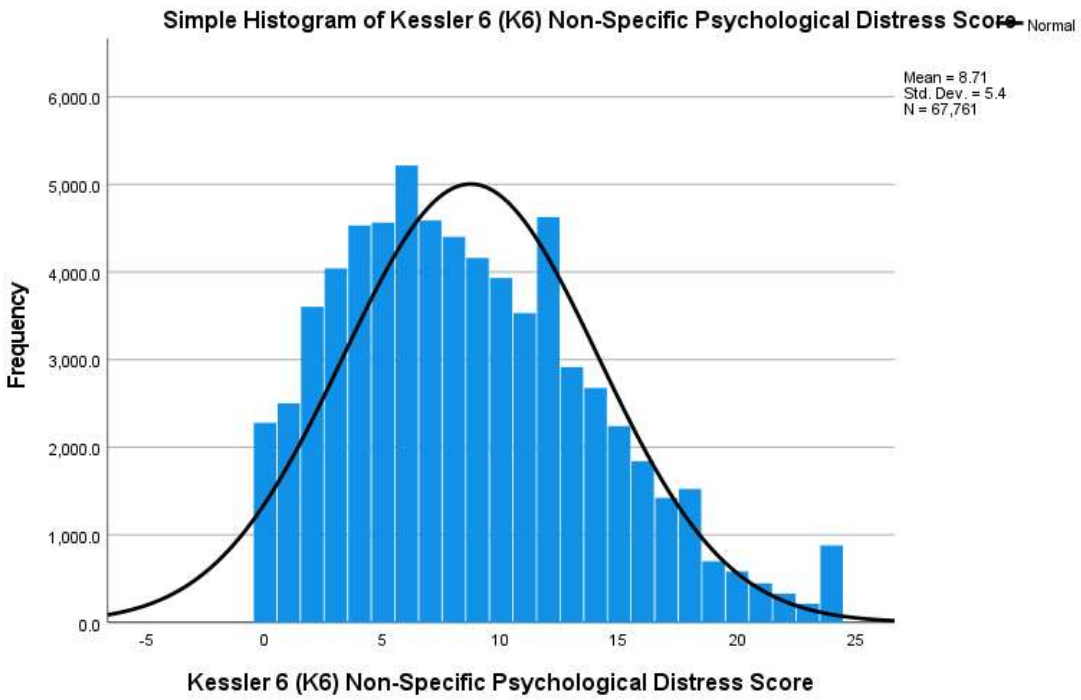

Figure 7.

Histogram of Reported Values of Psychological Distress.

While each histogram displays some potential skew, the large sample size used in this study dictates a significance test of this skew should not be conducted (Field, 2018). Additionally, the large sample size allows the central limit theorem, described by Field (2018) as positing "a variety of situations in which we can assume normality regardless of the shape of … sample data" (p. 235), to apply, providing some protection that significance tests should not be negatively affected by the shape of this data.

Having satisfied the assumptions of linearity and normality, the planned hierarchical multiple regression and correlation analyses were conducted.

Hierarchical Multiple Regression Analysis

Hierarchical multiple regression analysis was utilized to determine the predictive value of the independent variables- Age, Relationship Status, Financial Status, Sex and Gender, and level of Flourishing- on the dependent variable, Self-Reported Approximate GPA. Table 4 displays the results of the regression analysis. The results demonstrated a significant main effects model with an R square value of (.072). All five predictors were associated with self-reported GPA. The first main effect, Financial Status, indicated that financial problems or challenges are negatively related to GPA ($\beta = -.157$, $p < .001$). The second main effect, Sex, indicated that a non-binary identity is also negatively related to GPA ($\beta = -.057$, $p < .001$). More specifically, of the three categories composing the predictor of Sex- female, male, or non-binary- females are likely to have the highest GPAs, followed by males, and then lastly, non-binary participants. The third main effect, Age, indicated that increasing age is positively related to GPA ($\beta = .094$, $p < .001$). The fourth main effect, Relationship Status, indicated that increasing levels of relationship commitment are positively related to GPA ($\beta = .023$, $p < .001$). The final main effect, Flourishing, indicated that increasing levels of flourishing are positively related to GPA ($\beta = .149$, $p < .001$). The combination of the independent variables

Table 4.

Summary of Hierarchical Regression Analysis for Component Variables Predicting GPA (N= 69,131)

Variable		*B*	*SE B*	b	*p*
Step 1 Main Effects:					
	Constant	11.678	0.022		0
	Financial Status	-0.623	0.014	-0.171	0
Step 2 Main Effects					
	Constant	12.016	0.027		0
	Financial Status	-0.629	0.014	-0.173	0
	Sex	-0.234	0.011	-0.078	< .001
Step 3 Main Effects					
	Constant	11.279	0.036		0
	Financial Status	-0.645	0.014	-0.177	0
	Sex	-0.23	0.011	-0.077	< .001
	Age	0.033	0.001	0.019	< .001
Step 4 Main Effects					
	Constant	11.212	0.036		0
	Financial Status	-0.652	0.014	-0.179	0
	Sex	-0.225	0.011	-0.075	< .001
	Age	0.029	0.001	0.103	< .001
	Relationship Status	0.106	0.011	0.038	< .001
Step 5 Main Effects					
	Constant	9.759	0.052		0
	Financial Status	-0.57	0.014	-0.157	0
	Sex	-0.171	0.011	-0.057	< .001
	Age	0.026	0.001	0.094	< .001
	Relationship Status	0.064	0.011	0.023	< .001
	Flourishing	0.031	0.001	0.149	0

R2 = .029 for Step 1; R2 = .035 for Step 2; R2 = .05 for Step 3; R2 = .051 for Step 4; R2 = .072 for Step 5 (all *p*s < .001); adjusted R2 values were all equal to the unadjusted R2

explained 7% of the variance in self-reported GPA. Financial status and level of flourishing have similar significant effects on GPA, while age, sex, and relationship status have a lesser, but still significant, effect. The ANOVA findings indicated that the model with all five predictors was significant and the best fit to the data overall ($F = 1020.695$; $p < .001$).

Having determined that Model 5 was the best fit to the data, casewise diagnostics, scatterplots, and graphs were created to look at residuals and bias while also checking the assumptions of independence, homoscedasticity, and normality of errors. Casewise diagnostics were examined to look for outliers. In normal distributions, 95% of cases would be expected to fall within two standard z-score units (Field, 2018). Within this sample, 3,367 cases could be expected to fall outside of these bounds. Regression analysis identified 3,128 such cases, but upon further investigation, none of them had a Cook's distance greater than 1, so no cases were overly influencing the model as outliers, and the standard residuals are largely consistent with assumptions of normal distributions.

Because the regression analysis in this study involved multiple predictors in the best fit model (Model 5), the correlations displayed in Table 5 were reviewed to allow judgment regarding the potential of multicollinearity between the predictor variables. According to Field (2018), correlations between predictor variables that are larger than 0.8 would indicate multicollinearity. In this analysis, no correlations larger than 0.4 were observed, thus offering evidence that the five predictors operate independently.

Table 5.

Matrix of Correlations between Predictor Variables of Financial Status, Sex, Age, Relationship Status, and Flourishing (N=65,946)

		Financial Status	Sex	Age	Relationship Status	Flourishing Score
Pearson Correlation	Financial Status	1	-.019	.039	.063	-.139
	Sex	-.019	1	-.012	-.051	-.124
	Age	.039	-.012	1	.407	.103
	Relationship Status	.063	-.051	.407	1	.125
	Flourishing Score	-.139	-.124	.103	.125	1

$p < .001$ for all correlations

As another check on multicollinearity, variance inflation factors (VIF) and tolerance statistics were calculated. According to Field (2018), VIF values greater than 10 or tolerance values below 0.2 indicate potential problems with the data's independence. As seen in Table 6, no VIF values are higher than 1.2 and no tolerance values are lower than 0.82. Hence, the assumption of independence is effectively satisfied.

Table 6.

Collinearity Statistics for Predictor Variables across All Regression Models (N=65,940)

Model		Collinearity Statistic	
		Tolerance	VIF
1	(Constant)		
	Financial Status	1	1
2	(Constant)		
	Financial Status	1	1
	Sex	1	1
3	(Constant)		
	Financial Status	0.998	1.002
	Sex	1	1
	Age	0.998	1.002
4	(Constant)		
	Financial Status	0.996	1.005
	Sex	0.997	1.003
	Age	0.834	1.199
	Relationship Status	0.83	1.205
5	(Constant)		
	Financial Status	0.972	1.028
	Sex	0.982	1.018
	Age	0.831	1.203
	Relationship Status	0.823	1.216
	Flourishing Score	0.945	1.059

Moving to the final assumptions, Figure 8 displays the scatterplot of standardized predicted values against standardized residuals created to check for heteroscedasticity. There is no funneling or curvature in the plot; therefore, the assumption of heteroscedasticity is satisfied and the assumption of linearity is further supported.

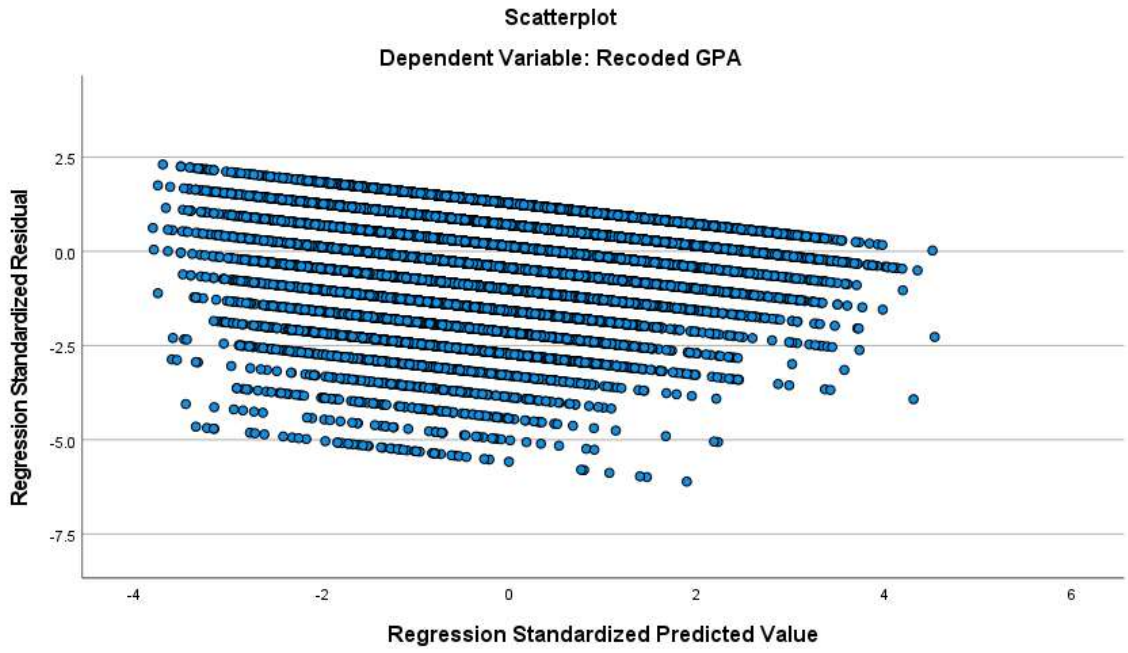

Figure 8.

Standardized Predicted Values and Standardized Residuals for Self-Reported Approximate GPA

The results of this regression analysis and subsequent assumption checks supported the original hypothesis regarding RQ1 that when controlling for age,

sex, financial status, and relationship status, high levels of flourishing among students will be positively related to academic performance as measured by self-reported GPA.

Correlation Analysis

A correlation analysis yielding a Pearson's *r* correlation coefficient was conducted to determine the direction and degree of relationship between flourishing and psychological distress. The results of the correlation analysis are shown in Table 7. Pearson's *r* documents a strong, inverse relationship between participants' Flourishing Scale scores and their K6 scores ($r = -.595$, $p < .01$). The confidence intervals do not contain zero; therefore, it is likely that the actual effect does exist in the study population. These results support the study's second hypothesis, that there would be an inverse relationship between flourishing and psychological distress.

Table 7.

Descriptive Statistics and Correlations with Confidence Intervals for Study Variables (N= 67,353)

Variable	N	M	SD	*R*	95% Confidence Intervals (2-tailed) Lower	Upper
Flourishing Scale Score	68272	44.4	8.761			
K6 Score	67761	8.71	5.4	-0.595*	-0.595	-0.585

*$p < .01$

Conclusion

In summary, hierarchical multiple regression analysis and correlation analysis effectively provided answers to the two research questions of this study. Research Question 1 asked: What effect does level of flourishing have on students' self-reported academic performance? Based on the hierarchical multiple regression analysis conducted in this study, the regression model containing financial status, sex, age, relationship status, and flourishing score explained 7% (R2 = .072, $p < .001$) of the variation in self-reported approximate GPA. Additionally, every unit of increase in an individual's Flourishing Scale score would predict a self-reported GPA increase of .031 units. This relationship

is significant at the highest statistical level ($p < .001$). H_1, that flourishing level would be positively related to self-reported GPA, is supported.

Research Question 2 asked: Is there a relationship between flourishing and psychological distress? Based on the correlation analysis conducted in this study, there is a strong inverse relationship ($r = .595$) between these two constructs. This correlation is also highly significant ($p < .01$). H_2, that flourishing levels would be inversely related to psychological distress, is also supported.

CHAPTER V

Discussion

This study was designed to investigate if level of flourishing has an impact on college students' self-reported academic performance and to determine the direction and degree of relationship that might exist between flourishing and psychological distress. If the study hypotheses were supported, an underlying goal was to lay the groundwork for a university-wide strategy to promote flourishing among its students. Doing so could take pressure off the overburdened counseling centers and boost the overall psychological profile of an institution's students.

Since previous studies had examined the relationship between flourishing mental health, academic performance, and psychological distress using samples from individual institutions, this study aimed to extend the generalizability of that data through use of a large, national sample of randomly selected college students. Results from one school may not transfer to another school, but by looking at findings from the ACHA-NCHA III Spring 2022 cohort of college students, university administrators and researchers may better predict how these variables would interact among their own student populations.

Research Question 1

The findings from this study document that flourishing mental health positively impacts the academic performance of college students, as measured by their self-reported GPAs. As participant scores on the Flourishing Scale increased, there was a significant association with higher self-reported GPA,

which supported the original hypothesis that high levels of flourishing among students would be positively related to academic performance. While the effects were not large, of the variables under consideration in this study, flourishing mental health and financial status were the strongest predictors of self-reported approximate GPA and explained a greater percent of variance than sex, age, or relationship status.

These findings are consistent with previous research on flourishing among college students utilizing regression analyses. For example, Teismann et al. (2018) noted a similar small effect size (R2 = .046, $p < .001$) for the impact of positive mental health on suicide ideation. Hartley (2011) found a small effect for resilience on cumulative GPA (R2 = .037, $p = .001$). Brockelman's (2009) work examining the impact of components of flourishing, self-determination, and autonomous regulation (defined as "a greater sense of internal locus of causality" (p. 272)) on GPA also reported small effect sizes. She found that self-reported self-determination explained slightly more than 1% (R2 = .011, $p < .05$) of the variance in GPA and autonomous regulation explained 2.4% (R2 = .024, $p > .01$). A small effect size also fits with Renshaw and Cohen's (2014) finding that positive mental health had the least impact on academic achievement when compared with other indicators of life functioning. Additionally, the finding of financial status as another significant predictor variable is in keeping with the findings of Ross (2015), which documented significant relationships between financial status, flourishing, and suicidal ideation.

Several factors may have influenced the low R squared value in this study. Butin (2010) stated, “Every educational issue is a “wicked problem” impacted by a potentially vast number of variables, and, as such, requires nuanced examination” (p. 114). Consequently, the complex nature of the direct and indirect influences on a student’s GPA may help explain why the R squared values in this study were low, yet highly significant. Utilization of student support services, IQ, internal and external motivators, teaching quality, and general life events can all influence a student’s GPA, but none of them were investigated in this study. Additionally, the mean self-reported GPA for students in this sample was high on a traditional four-point scale. With a sample composed of high achieving students, there may not be much room to see improvements, since Knoesen and Naude (2018) documented that students consider academic mastery to be a hallmark of flourishing. Likewise, while most students in the sample did not meet the minimum score on the Flourishing Scale typically used to define flourishing (48), the mean Flourishing Scale score of the sample (M = 44) was greater than the scale’s midpoint (24), once again limiting the amount of variation that might be seen in a dependent variable like self-reported GPA.

The results also support previous findings regarding the impact of mental health on academic performance. Renshaw and Cohen (2014), for example, noted that mental health status had less impact on academic achievement than on other constructs like interpersonal connectedness or physical health. Suldo et al. (2011) noted that while college students with high levels of well-being and low mental illness symptomology were most likely to have higher GPAs, there was

very little difference in the mean GPAs of students with low levels of well-being with or without symptoms of mental illness.

The results are also in line with previous research regarding the distribution of flourishing and how students conceptualize it. For example, the work of Howell and Buro (2015) documented that samples drawn from "economically advantaged societies" (p. 908) tend to produce mean Flourishing Scale scores above the scale's midpoint. Because individuals coming from higher socioeconomic families are more likely to enroll in higher education than their less advantaged peers (National Center for Education Statistics, 2022), American college students represent a financially well-resourced population; thus, one would expect their mean Flourishing Scale score (M = 44) to be above the scale's midpoint of 24. The qualitative research of Knoesen and Naude (2018) linked perceptions of academic mastery to college students' ideas of factors constituting flourishing, and this linkage is demonstrated in the results of the current study in the high mean self-reported GPA of the sample and the mean Flourishing Scale score above the midpoint.

The results are similar in nature to Brockelman's (2009) regression analysis predicting the variance in self-determination explained by mental illness. Although she used mental illness rather than mental health as her independent variable and self-determination rather than approximate GPA as her dependent variable, her similarly low R squared value (R2 = .058, $p < .05$) provides evidence that a person's psychological state still significantly impacts a complex outcome variable.

Research Question 2

The findings from this study also document an inverse association between flourishing mental health and psychological distress. Supporting the study's second hypothesis, as participant scores on the Flourishing Scale increased, their scores on the K6 decreased. The K6 measures non-specific psychological distress and is used in outreach and clinical settings to quickly assess risk of serious mental illness, so it can help flag students experiencing symptoms of one or more illnesses with a single assessment (Kessler et al., 2002). This finding is noteworthy since previous research had specifically linked flourishing levels to symptomology of specific mental illnesses like depression and anxiety disorders but left unknown its relationship to more general distress (Grant et al., 2013; Iasello et al., 2019; Keyes et al., 2010; Wood & Joseph, 2010).

The score distributions of the Flourishing Scale and K6 items provide further evidence of the dual continua model in college student samples. The Pearson's *r* of -.595 represents a strong inverse correlation, but not a perfect one. This study found that 43.84% of students were flourishing while only 39.47% reported low or no distress. These discrepancies would indicate that some students experiencing moderate or severe distress are still experiencing positive mental health, placing them in the dual continua groupings shown in Figure 2 and categorized by previous researchers as "symptomatic but content" (Renshaw & Cohen, 2014; Suldo & Shaffer, 2008; Suldo et al., 2011) or "ambivalent" (Antaramian, 2015; Eklund et al., 2011). In reverse, 23.27% of

respondents screened for severe distress, but 56.16% of students were not flourishing. Viewed from this vantage point, students who may not possess mental illness are not necessarily flourishing, either, and would be placed in the dual continua categories of “vulnerable” (Suldo & Shaffer, 2008; Suldo et al., 2011), “at-risk” (Antaramian, 2015; Eklund et al., 2011), or “asymptomatic yet discontent” (Renshaw & Cohen, 2014).

Although the strong correlation between the two scale scores cannot be viewed as causal, it offers encouragement that targeted efforts to improve student mental health might play a role in an associated decline in student distress and thus be useful in an upstream prevention strategy. It also provides some theoretical support for the observed decreases in depression, anxiety, and other mental illness symptomology that occur simultaneously in PPIs designed to improve and enhance well-being.

Context of Findings

The findings from this study both fit into and extend the previous literature concerning flourishing mental health, academic performance, and psychological distress. Previous studies around these variables typically involved categorical data, using cut points to classify students into one of four groups based on their flourishing status and mental illness symptomology. Consequently, Renshaw and Cohen (2014) recommended future research use continuous data to allow for the use of multiple regression and other predictive models. Ross (2015) used continuous data to conduct regression analyses on Flourishing Scale scores, depression, and suicidal ideation, but her results were confined to a single

institution. The present study fully embraced Renshaw and Cohen's call, using continuous scales for all its variables of interest and did so with a national dataset of randomly selected participants. This design yields regression analyses results that allow university administrators to predict a measurable increase in self-reported GPA based on unit increases in Flourishing Scale scores.

Additionally, this study helps update the existing literature on flourishing mental health and academic impacts using national data. The only known such prior study used data from a 2007 cohort of college students (Keyes et al., 2012). Berlinger (2002, November) noted educational research's "findings by decade" interactions and stated, "Solid scientific findings in one decade end up of little use in another decade because of changes in the social environment that invalidate the research or render it irrelevant" (p. 20). The sharp increase in mental illness and suicidality among this population did not begin until around 2013 (Duffy et al., 2019), and the COVID-19 pandemic that began in 2020 has done nothing to help (Lipson et al., 2022). Since the dual continua model shows that individuals with simultaneously high mental health and low mental illness symptomology experience the best outcomes, the body of literature around how those variables interact and impact academic performance needs updating to reflect the current psychological states of college students.

Implications of Findings

With this new knowledge as to the positive impact of flourishing mental health on self-reported academic performance and its inverse relationship to

psychological distress, this study, which bridges public health, psychology, and education research, has many implications. Crosby and Salazar (2021) stated, "… evidenced-based practice is formed through a somewhat regulated process of turning research… into practice-based programs that function effectively in real-world settings" (p. 8). Subsequently, this study's findings impact practitioners in areas of counseling, health promotion, student affairs, and student success. Its findings also lay the groundwork for additional research into the avenues through which flourishing impacts academics, the sequencing of those impacts, and various cohort effects. On a more limited basis, this study's findings even have importance for university administrators and policy makers as they consider population-level approaches to create healthier campus environments.

Implications for practice

While the effects of the regression analysis in this study were small and should not be overstated, the findings were highly significant and have several practical implications. Counseling center staff should consider incorporating the Flourishing Scale or other positive mental health measurement tool into their intake processes to gather a more comprehensive picture of the psychological states of the students they are seeing and potentially treating. Having this additional information would be beneficial since the most negative outcomes are associated with individuals who manifest low levels of flourishing in addition to mental illness symptomology (Keyes, 2002). It would also help staff identify students who do not screen positive for a mental illness but who may still be

struggling because of low mental health. Additionally, counselors may wish to incorporate PPIs into their treatment plans as recommended by Iasello et al. (2019).

Furthermore, student success offices may wish to include PPIs to promote flourishing alongside tutoring, mentoring, advising, and other academic supports. When combined with the research documenting decreased depression, anxiety, and general distress following participation in PPIs (Gander et al., 2016a; Heintzelman et al., 2020; Iasello et al., 2020; Kinderman et al., 2015; Laakso et al., 2021), this study further supports the use of PPIs with college students to improve mental illness symptomology. Because these PPIs could be administered by coaches, teachers, health care providers, and other university personnel, it widens the net by which universities can support their students and reduces the amount of pressure placed on counseling centers to solve the problem singlehandedly.

Since Brockelman (2009) noted that components of flourishing are easier to change than symptoms of mental illnesses, it makes sense to focus resources on boosting flourishing in the overall strategy to improve the well-being of students. Additionally, even students who do not display mental illness symptomology could benefit from PPIs. Antaramian (2015) noted that college students are more likely than youth and adolescents to display poor mental health in the absence of mental illness, with as many as one in four college students falling into the “at risk” category of the dual continua model. Those

students might be especially good candidates for PPIs and the GPA increases likely to come from them.

Because lower levels of flourishing have been documented among women, younger adults, lower-income individuals, and those with less completed education (Keyes, 2002; Ross, 2015), campus offices that serve those groups of students should also consider addressing flourishing within their scopes of services. For example, women's centers, first-year experience programs, federal TRIO grant programs, and faculty teaching classes that largely enroll freshmen and sophomore students may wish to assess their students for flourishing and build in PPIs to their programming and curricula. Knoesen and Naude (2018) noted that first-year students may be especially vulnerable to languishing, so the provision of workshops, curriculum infusion, and structural resources to support flourishing could be particularly helpful to them. When staffing constraints and limited instructional time prevent the feasibility of in-person programming, the work of Alibak and Alibak (2021) and Heintzelman et al. (2020) indicate that online programming could be equally effective.

Implications for research

The findings of this study create a path that is ripe for future research. Although the R squared values were small, the highly significant relationship between scores on the Flourishing Scale and self-reported cumulative GPA documents a real effect that should be further explored. R squared values and potential predictive values might be higher in a study with current semester GPA as the dependent variable rather than cumulative GPA, and these relationships

should be examined. Since Diener et al. (2010) noted flourishing levels can change, it follows that effects on dependent variables might be more obvious with a more current and time-sensitive measure of academic performance, such as student engagement or current semester GPA, as suggested by Antaramian (2015); therefore, those relationships are also worthy of future research.

Additionally, the impact of flourishing on measures of academic performance other than GPA should be explored. For example, future research using perception of academic performance as a dependent variable could avoid some of the challenges of GPA, including concerns around grade inflation and grading discrepancies across departments and institutions. Studies that link to a student's official academic record would also be beneficial as they could avoid the bias associated with self-report data and would allow for the use of persistence or retention as dependent variables.

Future research should also consider longitudinal, case-control, or other multi-temporal designs that could help establish a time-order sequence to the relationships between flourishing mental health, academic performance, and psychological distress. These designs would allow for more confident claims of causality, and they could also be used to study the impact of flourishing on graduation.

Another area of future research is how flourishing may serve as a mediating or moderating variable on academic performance. As a mediating variable, it is possible that flourishing is a pathway through which students are set up for academic success in line with the broaden-and-build theory of

Frederickson that positive emotions broaden one's scope of attention and awareness (Conway et al., 2013; Fredrickson, 2013). Additionally, future research could examine if flourishing mental health moderates the negative impact of mental illness on GPA similarly to Teismann et al.'s (2018) findings that positive mental health moderated the impact of depressive episodes on suicide ideation.

Lastly, as this study looked at an aggregate sample of college students to maximize generalizability, future research could disaggregate the data to explore the distribution of flourishing among marginalized groups and the impact on academic performance within those groups. The strong inverse relationship between flourishing and psychological distress means lower levels of flourishing might be noted in populations disproportionately experiencing mental illnesses, including sexual minority students, veterans, and racial/ethnic minorities, but how exactly flourishing is distributed among those groups in college populations is unknown. Findings from those types of studies could help university administrators know where to best allocate any resources set aside for flourishing interventions.

Implications for policy

University administrators should particularly consider the policy implications of this study. Because of the positive impact of flourishing on self-reported GPA and the strong inverse correlation of flourishing on psychological distress, there could be value in a university policy mandating the completion of one or more PPIs prior to matriculation. Such mandates are common for

educational content around substance misuse prevention and sexual violence prevention, and the work of Gander et al. (2016a) indicated that even a one-week long PPI administered online would be effective.

Limitations

As with all research, there are limitations to the inferences that can be drawn from this work. Specifically, this study is limited by its nonexperimental, cross-sectional design, which represents the respondents' perceptions only at a single point in time (Crosby & Salazar, 2021). Consequently, one cannot establish causation between the variables under study or assess changes over time (Crosby & Salazar, 2021; Johnson & Christensen, 2020).

Additionally, the retrospective nature of secondary data analysis is limited by the possibility of a significant variable unmeasured on the original survey creating a third-variable problem. In that scenario, the variables of interest in this study, flourishing mental health, academic performance, and psychological distress, ". . . might be correlated not because they are causally related but because they are both caused by or related to some third variable" (Johnson & Christensen, 2020, p. 272).

This study is also limited by the self-reported nature of its data. All data were self-reported by participants through a voluntary survey and thus may be subject to response and selection biases (Johnson & Christensen, 2020). However, the large sample size minimizes this limitation and provides ample statistical power to test the study's hypotheses.

Conclusion

This study sought to determine the impact of flourishing mental health on self-reported academic performance in a national sample of randomly selected college students. It also aimed to examine the relationship between flourishing mental health and general psychological distress in a way that would maximize the generalizability of the findings. This study builds on the foundation of Keyes's dual continua model that positive mental health should be considered independently of mental illness symptomology.

The findings of this study document the positive impact of flourishing on the self-reported academic performance of college students, as well as its strong, inverse relationship with their psychological distress. Flourishing was associated with significantly higher self-reported GPAs, having the second largest impact behind financial challenges among the variables examined in this study, and negatively correlated with total K6 scores. If Renshaw and Cohen (2014) were right that academic achievement is the life functioning indicator least affected by flourishing, it is interesting to ponder the other positive effects that could come to students if individual flourishing levels increased, including better physical health, greater longevity, less depression and anxiety, decreased risk of suicide, greater happiness, and increased life satisfaction. Boosting flourishing seems like a low-risk, high-yield opportunity in a university's overall strategy to improve the well-being of its students.

If colleges and universities wish to produce more mentally healthy adults, they must utilize their resources both to support flourishing among all their

students and to provide treatment for mental illnesses among students who need it. In the grand scheme of a higher education institution, only a handful of individuals would possess the necessary training and expertise to treat the mentally ill. However, a great many faculty, staff, and students could be trained to promote flourishing through evidenced-informed interventions, serving on the front lines both to support the mentally well and to boost the ones who may be languishing. Because their structures encompass living, learning, and social opportunities, "… higher education represents an ideal setting to address mental health during a psychosocially significant life period" (Lipson et al., 2022, p. 139). It is in the institutions' best interests to prioritize flourishing efforts, as doing so could lead to better academic performance among their students and an associated decline in general distress, a distress that has become all too common on today's campuses.

References

Alibak, F., & Alibak, M. (2021). Comparing online cognitive behavioural therapy versus online positive psychotherapy, well-being theory (PERMA) on test anxiety of online learning students: A randomized control study. *Journal of the Australian and New Zealand Student Services Association, 29*(1), 6-17. https://doi.org.10.30688/janzssa.2021.1.08

American College Health Association. (2020a). *American College Health Association-National College Health Assessment-III: Reference group executive summary Fall 2019.* Silver Spring, MD: American College Health Association. https://www.acha.org/documents/ncha/NCHA-III_Fall_2019_Reference_Group_Executive_Summary_updated.pdf

American College Health Association. (2020b). *American College Health Association-National College Health Assessment-III: Reference group executive summary Spring 2020.* Silver Spring, MD: American College Health Association. https://www.acha.org/documents/ncha/NCHA-III_SPRING-2020_REFERENCE_GROUP_EXECUTIVE_SUMMARY-updated.pdf

American College Health Association. (2020c). *American College Health Association-National College Health Assessment-III: Reference group executive summary Fall 2020.* Silver Spring, MD: American College Health Association. https://www.acha.org/documents/ncha/NCHA-III_Fall_2020_Reference_Group_Executive_Summary_updated.pdf

American College Health Association. (2021a). *American College Health Association-National College Health Assessment-III: Reference group executive summary Spring 2021.* Silver Spring, MD: American College Health Association. https://www.acha.org/documents/ncha/NCHA-III_SPRING-2021_REFERENCE_GROUP_EXECUTIVE_SUMMARY_updated.pdf

American College Health Association. (2021b). *National College Health Assessment publications and reports.* https://www.acha.org/NCHA/ACHA-NCHA_Data/Publications_and_Reports/NCHA/Data/Publications_and_Reports.aspx?hkey=d5fb767c-d15d-4efc-8c41-3546d92032c5

American College Health Association. (2022a). *About ACHA-NCHA.* https://www.acha.org/NCHA/About_ACHA_NCHA/Overview/NCHA/About/About_NCHA.aspx?hkey=75eaa64f-e82c-4cfd-a19c-4e3f9bf126ee

American College Health Association. (2022b). *American College Health Association-National College Health Assessment-III: Reference group executive summary Fall 2021.* Silver Spring, MD: American College Health Association. https://www.acha.org/documents/ncha/NCHA-III_FALL_2021_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf

American College Health Association. (2022c). *American College Health Association-National College Health Assessment-III: Reference group executive summary Spring 2022.* Silver Spring, MD: American College

Health Association. https://www.acha.org/documents/ncha/NCHA-III_SPRING_2022_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf

American College Health Association. (2022d). *Participation history*. https://www.acha.org/NCHA/About_ACHA_NCHA/Participation_History/NCHA/About/Participation_History.aspx?hkey=992b3d9a-9d22-46b8-911c-1f187dd5fb6c

Antaramian, S. (2015). Assessing psychological symptoms and well-being: Application of a dual-factor mental health model to understand college student performance. *Journal of Psychoeducational Assessment, 33*(5), 419-429.

Association for University and College Counseling Center Directors. (2019). *The Association for University and College Counseling Center Directors annual survey: 2019*. https://www.aucccd.org/assets/documents/Survey/2019%20AUCCCD%20Survey-2020-05-31-PUBLIC.pdf

Association for University and College Counseling Center Directors. (2021). *Director surveys (public)*. https://www.aucccd.org/public

Basulto, J. (2016). Improve mental health on our campuses. *Change.* Retrieved October 24, 2021 from https://www.change.org/p/president-lee-bollinger-improve-mental-health-on-our-campuses?redirect=false

Bellows, K.H. (2021, July 15). A breaking point in campus mental health: Colleges struggle to respond to clusters of suicides. *Chronicle of Higher Education*. https://www.chronicle.com/article/we-need-to-address-the-entire-system

Berliner, D.C. (2002, Nov.). Educational research: The hardest science of all. *Educational Researcher, 31*(8), 18-20.

Bevans, K.B., Riley, A.W., & Forrest, C.B. (2010). Development of the healthy pathways child-report scales. *Quality of Life Research, 19*(8),1195-214. doi: 10.1007/s11136-010-9687-4

Bracken, B. A. (1993). *Assessment of Interpersonal Relations*. Austin, TX: PRO-ED.

Broadbent, E., & Koschwanez, H. E. (2012). The psychology of wound healing. *Current Opinion in Psychiatry, 25*, 135-140. doi:10.1097/YCO.0b013e32834e1424.

Brockelman, K.F. (2009). The interrelationship of self-determination, mental illness, and grades among university students. *Journal of College Student Development, 50*(3), 271-286. https://doi.org/10.1353/csd.0.0068

Brown, K.W., & Ryan, R.M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822-848. Doi:10.1037/0022-3514.84.4.822.

Brown, S.L., Nesse, R.M., Vinokur, A.D., & Smith, D.M. (2003). Providing support may be more beneficial than receiving it: Results from a prospective study of mortality. *Psychological Science, 14*, 320-327. Doi:10.1111/1467-9280.14461.

Brown, T. (2021, May 27). Discontent persists on campus as College rejects SA proposal, students grieve. *The Dartmouth*. https://www.thedartmouth.com/article/2021/05/discontent-persists-on-campus-as-college-rejects-sa-proposal-students-grieve

Butin, D. W. (2010). *The education dissertation: A guide for practitioner scholars*. Corwin.

Coffey, J.K., Wray-Lake, L., Mashek, D., & Branand, B. (2016). A multi-study examination of well-being theory in college and community samples. *Journal of Happiness Studies, 17*, 187-211. doi:10.1007/s10902-014-9590-8

Conway, A. M., Tugade, M. M., Catalino, L. I., & Fredrickson, B. L. (2013). The broaden-and-build theory of positive emotions: Form, function, and mechanisms. In S. David, I. Boniwell, & C. Ayers (Eds.), *The Oxford handbook of happiness* (pp. 17–34). Oxford: Oxford University Press. https://doi.org/10.1093/ oxfordhb/9780199557257.013.0003

Cowen, E. L. (1994). The enhancement of psychological wellness: Challenges and opportunities. *American Journal of Community Psychology, 22*, 149-179.

Crosby, R.A., & Salazar, L.F. (2021). *Essentials of public health research methods*. Jones and Bartlett.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience.* New York: Harper & Row.

Deci, E.L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Diener, E. (2009). *The science of well-being: The collected works of Ed Diener*. New York, NY: Springer.

Diener, E., & Emmons, R. A. (1985). The independence of positive and negative affect. *Journal of Personality and Social Psychology, 47*, 1105–1117. doi:10.1037/0022-3514.47.5.1105.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*,71–75. doi:10.1207/s15327752jpa4901_13

Diener, E., Pressman, S.D., Hunter, J., & Delgadillo-Chase, D. (2017). If, why, and when subjective well-being influences health, and future needed research. *Applied Psychology: Health and Well-being, 9*(2), 133-167.

Diener, E.D., Scollon, C.N., & Lucas, R.E. (2009). The evolving concept of subjective well-being: The multifaceted nature of happiness. In E. Diener (Ed.), *Assessing well-being: The collected works of Ed Diener* (Vol. 39, pp. 67–100). London, UK: Springer.

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research, 97*(2), 143-156. https://www.jstor.org/stable/40649361.

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*, 1087–1101.

Duckworth, A., & Quinn, P. D. (2009). Development and validation of the short grit scale (GRIT–S). *Journal of Personality Assessment, 91*(2), 166–174. doi:10.1080/00223890802634290.

Duffy, M.E., Twenge, J.M., & Joiner, T. (2019). Trends in mood and anxiety symptoms and suicide-related outcomes among U.S. undergraduates, 2007-2018: Evidence from two national surveys. *Journal of Adolescent Health, 65*, 590-598. https://pubmed.ncbi.nlm.nih.gov/31279724/.

Dunn, E., Aknin, L.B., & Norton, M.I. (2008). Spending money on others promotes happiness. *Science, 319*, 1687-1688. Doi:10.1207/s15327752jpa4901_13.

Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York: Random House.

Eisenberg, D., Lipson, S.K., & Posselt, J. (2016). Promoting resilience, retention, and mental health. *New Directions for Student Services, 2016*(156), 87-95.

Eisenberg, D., Golberstein, E., & Hunt, J.B. (2009). Mental health and academic success in college. *The B.E. Journal of Economic Analysis and Policy, 9*(1), 1-35.

Eklund, K., Dowdy, E., Jones, C., & Furlong, M.J. (2011). Applicability of the dual-factor model of mental health for college students. *Journal of College Student Psychotherapy, 25*, 79-92. Doi:10.1080/87568225.2011.532677

Ewing, L., Hamza, C.A., Walsh, K., Goldstein, A.L., & Heath, N.L. (2022). A qualitative investigation of the positive and negative impacts of the COVID-19 pandemic on post-secondary students' mental health and well-being. *Emerging Adulthood, 10*(5), 1312-1327. https://doi.org/10.1177/21676968221121590

Field, A. (2018). *Discovering statistics using IBM SPSS Statistics (5th ed.).* Sage Publications, Ltd.

Fordyce, M. W. (1988). A review of research on happiness measures: A sixty-second index of happiness and mental health. *Social Indicators Research, 20*, 355–381. doi:10.1007/BF00302333

Fredrickson, B. L. (2013). Positive emotions broaden and build. *Advances in Experimental Social Psychology, 47*,1–53. https://doi.org/10.1016/b978-0-12-407236-7.00001-2 .

Froh, J.J., Sefick, W.J., & Emmons, R.A. (2008). Counting blessings in early adolescents: An experimental study of gratitude and subjective well-being. *Journal of School Psychology, 46*, 213-233. Doi:10.1016/j.jsp.2007.03.005.

Gallagher, M. W., Lopez, S. J., & Preacher, K. J. (2009). The hierarchical structure of well-being. *Journal of Personality, 77*, 1025-1049.

Gander, F., Proyer, R.T., & Ruch, W. (2016a). Positive psychology interventions addressing pleasure, engagement, meaning, positive relationships, and accomplishment increase well-being and ameliorate depressive symptoms: A randomized, placebo-controlled online study. *Frontiers in Psychology, 7*(686), 1-12. Doi:10.3389/fpsyg.2016.00686.

Gander, F., Proyer, R. T., and Ruch, W. (2016b). The subjective assessment of accomplishment and positive relationships: Initial validation and correlative and experimental evidence for their association with well-being. *Journal of Happiness Studies, 18*(3), 743-764. doi: 10.1007/s10902-016-9751-z

Grant, F., Guille, C., & Sen, S. (2013). Well-being and the risk of depression under stress. *PLoS One 8*(7), e67395.

Greenspoon, P. J., & Saklofske, D. H. (2001). Toward an integration of subjective well-being and psychopathology. *Social Indicators Research, 54*, 81-108.

Harter, S. (1985). *The Self-Perception Profile for Children.* Denver, CO: University of Denver.

Hartley, M.T. (2011). Examining the relationships between resilience, mental health, and academic persistence in undergraduate college students. *Journal of American College Health, 59*(7), 596-604.

Healthy Minds Network. (2021). *Research on adolescent and young adult mental health*. https://healthymindsnetwork.org/

Heintzelman, S.J., Lutes, L.D., Wirtz, D., Kanippayoor, J.M., Leitner, D., Kushlev, K., Oishi, S., & Diener, E. (2020). ENHANCE: Evidence for the efficacy of a comprehensive intervention program to promote subjective well-being. *Journal of Experimental Psychology: Applied, 26*(2), 360-383. http://dx.doi.org/10.1037/xap0000254

Helliwell, J.F., Barrington-Leigh, C., Harris, A., & Huang, H. (2009). International evidence on the social context of well-being. In E. Diener, D. Kahneman, & F.J. Helliwell (Eds.), *International differences in well-being.* Oxford, UK: Oxford University Press.

Howell, A.J. & Buro, K. (2015). Measuring and predicting student well-being: Further evidence in support of the flourishing scale and the scale of positive and negative experiences. *Social Indicators Research, 121*, 903-915.

Huebner, E. S. (1991). Initial development of the Students' Life Satisfaction Scale. *School Psychology International, 12*, 231-240.

Huebner, E. S. (1994) Preliminary development and validation of a multidimensional life satisfaction scale for children. *Psychological Assessment 6*, 149-158.

Iasiello, M., van Agteren, J., & Cochrane, E.M. (2020). Mental health and/or mental illness: A scoping review of the evidence and implications of the dual-continua model of mental health. *Evidence Base, 1,* 1-45. Doi:10.21307/eb-2020-001.

Iasiello, M., van Agteren, J., Keyes, C.L., & Muir-Cochrane, E. (2019). Positive mental health as a predictor of recovery from mental illness. *Journal of Affective Disorders, 251*, 227-230.

International Accreditation of Counseling Services. (2019). *Staff to student ratios.* Retrieved May 22, 2022, from https://iacsinc.org/staff-to-student-ratios/

Johnson, R.B., & Christensen, L. (2020). *Educational research: Quantitative, qualitative, and mixed approaches (7th ed.)*. Sage Publications, Inc.

Kerlinger, F.N. (1986). *Foundations of behavioral research.* Harcourt Brace Jovanovich.

Kern, M. L., Benson, L., Steinberg, E. A., & Steinberg, L. (2016). The EPOCH Measure of Adolescent Well-Being. *Psychological Assessment, 28*(5), 586–597.

Kern, M.L., Waters, L.E., Adler, A., & White, M.A. (2015). A multidimensional approach to measuring well-being in students: Application of the PERMA framework. *Journal of Positive Psychology, 10*(3), 262-271. http://dx.doi.org/10.1080/17439760.2014.936962

Kessler, R.C., Andrews, G., Colpe, L.J., Hiripi, E., Mroczek, D.K., Normand, S.L., Walters, E.E., & Zaslavsky, A.M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*(6), 959–976. doi: 10.1017/s0033291702006074

Keyes, C. L. M. (1998). Social well-being. *Social Psychology Quarterly, 61*(2), 121–140.

Keyes, C.L.M. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior, 43*(2), 207-222. https://www.jstor.org/stable/3090197

Keyes, C.L.M. (2005). The subjective well-being of America's youth: Toward a comprehensive assessment. *Adolescent and Family Health, 4*, 3−11.

Keyes, C.L.M. (2006). Mental health in adolescence: Is America's youth flourishing? *American Journal of Orthopsychiatry, 76*(3), 395-402.

Keyes, C. L. M., Dhingra, S. S. and Simoes, E. J. (2010). Change in level of positive mental health as a predictor of future risk of mental illness. *American Journal of Public Health, 100*(12), 2366–2371.

Keyes, C.L.M., Eisenberg, D., Perry, G.S., Dube, S.R., Kroenke, K., & Dhingra, S.S. (2012). The relationship of positive mental health with current mental disorders in predicting suicidal behavior and academic impairment in college students. *Journal of American College Health, 60*(2), 126-133.

Keyes, C.L.M., & Simoes, E.J (2012). To flourish or not: Positive mental health and all-cause mortality. *American Journal of Public Health, 102*(11), 2164-2172.

Keyes, C.L.M., Wissing, M.P., Potgieter, J.P., Temane, Q.M., Kruger, A., & Van Rooy, S. (2008). Evaluation of the mental health continuum – Short form (MHC-SF) in Setswana-speaking South Africans. *Clinical Psychology and Psychotherapy, 15*, 181-192.

Khazaei, M., Holder, M. D., Sirois, F. M., Oades, L. G., & Gallagher, M. W. (2022). Evaluating the psychometric properties of the Mental Health Continuum Short Form (MHC-SF) in Iranian adolescents. *Current Psychology,* 1-15. https://doi-org.ezproxy.mtsu.edu/10.1007/s12144-022-02970-x

Kinderman, P., Tai, S., Pontin, E., Schwannauer, M., Jarman I., & Lisboa, P. (2015). Causal and mediating factors for anxiety, depression, and well-being. *The British Journal of Psychiatry, 206*, 456-460.

Knoesen, R. & Naude, L. (2018). Experiences of flourishing and languishing during the first year at university. *Journal of Mental Health, 27*(3), 269-278. https://doi.org/10.1080/09638237.2017.1370635

Koch, L.C., Mamiseishvili, K., & Higgins, K. (2014). Persistence to degree completion: A profile of students with psychiatric disabilities in higher education. *Journal of Vocational Rehabilitation, 40*(1), 73-82. https://doi.org/10.3233/JVR-130663

Kovich, M.K. (2020). *Application of the PERMA model of well-being to undergraduate students* [Doctoral dissertation, Purdue University]. https://doi.org/10.25394/PGS.12250376.v1

Laakso, M., Fagerlund, A.; Pesonen, A., Lahti-Nuuttila, P., Figueiredo, R.A.O., Karlsson, C., & Eriksson, J.G. (2021). Flourishing students: The efficacy of an extensive positive education program on adolescents' positive and negative affect. *International Journal of Applied Positive Psychology, 6*, 253-276. https://doi.org/10.1007.s41042-020-00048-2

Lamers, S. M., Glas, C. A., Westerhof, G. J., & Bohlmeijer, E. T. (2012). Longitudinal evaluation of the Mental Health Continuum-Short Form (MHC-SF). *European Journal of Psychological Assessment, 28*(4), 290-296.

Lamers, S.M.A., Westerhof, G.J., Bohlmeijer, E.T., ten Klooster, P.M., & Keyes, C.L.M. (2011). Evaluating the psychometric properties of the Mental Health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology, 67*, 99-110.

Lamers, S.M., Westerhof, G.J., Glas, C.A., & Bohlmeijer, E.T. (2015). The bidirectional relation between positive mental health and psychopathology in a longitudinal representative panel study. *The Journal of Positive Psychology, 10*(6), 553-560.

Laurent, J., Catanzaro, J., Joiner, T. E., Rudolph, K., Potter, K. I., Lambert, S., Osborne, L., & Gathright, T. (1999). A measure of positive and negative affect for children: Scale development and preliminary validation. *Psychological Assessment, 11*, 326-338.

Lehman, A. (1995). *Evaluating quality of life for persons with severe mental illness: Assessment toolkit*. Cambridge, MA: The Evaluation Center at Health Services Research Institute.

Lipson, S.K., Zhou, S., Abelson, S., Heinze, J., Jirsa, M., Morigney, J., Patterson, A., Singh, M., & Eisenberg, D. (2022). Trends in college student mental health and help-seeking by race/ethnicity: Findings from the national Healthy Minds Study, 2013-2021. *Journal of Affective Disorders, 306*, 138-147. https://doi.org/10.1016/j.jad.2022.03.038.

Lyubomirksy, S. & Lepper, H.S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research, 46,* 137-155. Doi:10.1023/A:1006824100041.

Malecki, C. K., & Demaray, M. K. (2002). Measuring perceived social support: Development of the Child and Adolescent Social Support Scale. *Psychology in the Schools, 39*, 1-18.

Marsland, A.L., Cohen, S., Rabin, B.S., & Manuck, S.B. (2006). Trait positive affect and antibody response to hepatitis B vaccine. *Brain, Behavior, & Immunology, 20*, 261-269.

McCullough, M. E., Emmons, R. A., & Tsang, J. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*, 112–127.

Mesurado, B., Crespo, R.F., Rodriguez, O., Debeljuh, P., & Carlier, S.I. (2021). The development and initial validation of a multidimensional flourishing scale. *Current Psychology, 40*, 454-463.

Mitchell, C.M. & Beals, J. (2011). The utility of the Kessler Screening Scale for Psychological Distress (K6) in two American Indian communities. *Psychological Assessment, 23*(3), 752–761. https://doi.org/10.1037/a0023288

National Center for Education Statistics. (2022). Young adult educational and employment outcomes by family socioeconomic status. *Condition of Education.* U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/coe/indicator/tbe

National Institute of Mental Health. (2022, January). *Mental illness.* https://www.nimh.nih.gov/health/statistics/mental-illness

Nussbaum, M. (2003). Capabilities as fundamental entitlements: Sen and social justice. *Feminist Economics, 9*(2-3), 33–59.

Nussbaum, M. (2011). *Creating capabilities*. Cambridge, MA: Harvard University Press.

Oswalt, S.B., Lederer, A.L., Chestnut-Steich, K., Day, C., Halbritter, A., & Ortiz, D. (2020). Trends in college students' mental health diagnoses and utilization of services, 2009-2015. *Journal of American College Health, 68*(1), 41-51. https://doi.org/10.1080/07448481.2018.1515748

Park, N. (2004). The role of subjective well-being in positive youth development. *Annals of the American Academy of Political & Social Science, 591*, 25-39.

Patterson, Z.R., Gabrys, R.L., Prowse, R.K., Abizaid, A.B., Hellemans, K.G., & McQuaid, R.J. The influence of COVID-19 on stress, substance use, and mental health among postsecondary students. *Emerging Adulthood, 9*(5), 516-530. https://doi.org/10.1177/21676968211014080

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2015). College students: Mental health problems and treatment considerations. *Academic Psychiatry: The Journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry, 39*(5), 503–511. https://doi.org/10.1007/s40596-014-0205-9

Peterson, C., Park, N., and Seligman, M. E. P. (2005). Orientations to happiness and life satisfaction: the full life versus the empty life. *Journal of Happiness Studies, 6*, 25–41.doi: 10.1007/s10902-004-1278-z

Peterson, C., Seligman, M.E.P., & Vaillant, G.E. (1998). Pessimistic explanatory style is a risk factor for physical illness: A thirty-five year longitudinal study. *Journal of Personality and Social Psychology, 55*, 23-27. Doi:10.1037/0022-3514.55.1.23.

Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health? *Psychological Bulletin, 131*, 925-971.

Price, P.C., Jhangiani, R.S., Chiang, I.A., Leighton, D.C., & Cuttler, C. (2017). *Research methods in psychology* (3rd ed). Pressbooks. https://opentext.wsu.edu/carriecuttler/

Prochaska, J.J., Sung, H.Y., Max, W., Shi, Y., & Ong, M. (2012). Validity study of the K6 scale as a measure of moderate mental distress based on mental health treatment need and utilization. *International Journal of Methods in Psychiatric Research, 21*(2), 88–97. https://doi.org/10.1002/mpr.1349

Putnam, R.D. (2000). *Bowling alone*. New York: Simon & Shuster.

Rand, K. (2009). Hope and optimism: Latent structures and influences on grade expectancy and academic performance. *Journal of Personality, 44*, 393-406. Doi:10.1111/j.1467-6494.2008.00544.x.

Renshaw, T.L. & Cohen, A.S. (2014). Life satisfaction as a distinguishing indicator of college student functioning: Further validation of the two-continua model of mental health. *Social Indicators Research, 117*(1), 319-335. https://www.jstor.org/stable/24720918.

Riffey, L. (2021, April 28). Stand up for mental health on campus. The DA. https://www.thedaonline.com/opinion/letter-to-the-editor-stand-up-for-mental-health-on-campus/article_942612b4-a85c-11eb-a7e9-8b88ef3ba029.html

Robitschek, C., & Keyes, C. L. M. (2009). The structure of Keyes' model of mental health and the role of personal growth initiative as a parsimonious predictor. *Journal of Counseling Psychology, 56*, 321−329.

Ross, K.L. (2015). *Exploring the two-continua model of mental health as a predictor of suicidal behavior among college students* (Publication No. 10187964) [Doctoral dissertation, William James College]. ProQuest LLC.

Ryan, R.M., & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist, 55,* 68-78. Doi:10.1037/0003-066X.55.1.68.

Ryan, R.M., & Deci, E.L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52*, 141-166.

Ryan, R., & Frederick, C. (1997). On energy, personality and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality, 65*, 529–565. doi:10.1111/j.1467-6494.1997.tb00326.x.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well–being. *Journal of Personality and Social Psychology, 57*, 1069–1081.

Ryff, C.D. (1995). Psychological well-being in adult life. *Current Directions in Psychological Science, 4, 99-104.*

Ryff, C.D. (2008). *Scales of psychological well-being*. University of Wisconsin, Institute on Aging.

Ryff, C.D. (2014). Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychotherapy and Psychosomatics, 83*(1), 10–28.

Ryff, C.D., & Keyes, C.L.M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*(4), 719-727. DOI: 10.1037/0022-3514.69.4.719

Ryff, C.D., & Singer, B. (1998). The contours of positive human health. *Psychological Inquiry, 9*, 1-28. Doi:10.1207/s15327965pli0901_1.

Scheier, M.F., & Carver, C.S. (2003). Self-regulatory processes and responses to health threats: Effects of optimism on well-being. In J. Suls & K.A. Wallston (Eds.), *Social psychological foundations of health and illness* (pp. 395-428). Malden, MA: Blackwell.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. Journal of Personality and Social Psychology, 67, 1063–1078.

Seligman, M.E.P. (2002). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment.* New York, NY: Simon & Schuster Free Press.

Seligman, M.E.P. (2011). *Flourish: A visionary new understanding of happiness and well-being*. New York, NY: Simon & Schuster.

Seligson, J. L., Huebner, E. S., & Valois, R. F. (2003). Preliminary validation of the brief multidimensional students' life satisfaction scale (BMSLSS). *Social Indicators Research, 61*, 121–145.

Sen, A. (1999). *Development as freedom*. New York, NY: Random House.

Sen, A. (2009). *The idea of justice*. Cambridge, MA: Harvard University Press.

Sin, N. L. (2016). The protective role of positive well-being in cardiovascular disease: Review of current evidence, mechanisms, and clinical implications. *Current Cardiovascular Reports, 18*, 106. DOI: 10.1007/s11886-016-0792-z.

Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S.T., Yoshinobu, L., Gibb, J., Langelle, C., & Harney, P. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology, 60,* 570–585.

Snyder, C. R., Hoza, B., Pelham, W. E., Rapoff, M., Ware, L., & Danovsky, M. (1997). The development and validation of the children's hope scale. *Journal of Pediatric Psychology, 22*, 399–421. doi:10.1093/jpepsy/22.3.399

Snyder, C. R., Lopez, S. J., Edwards, L. M., Pedrotti, J. T., Prosser, E. C, Walton, S. L., Spalitto, S.V., & Ulven, J.C. (2003). Measuring and labeling the positive and the negative. In S. J. Lopez & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures*, (pp. 21-39). Washington, DC: American Psychological Association.

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*, 80–93. doi:10.1037/ 0022-0167.53.1.80.

Steger, M.F., Kashdan, T.B., Sullivan, B.A., & Lorentz, D. (2008). Understanding the search for meaning in life: Personality, cognitive style, and the dynamic between seeking and experiencing meaning. *Journal of Personality, 76*, 199-228. Doi:10.111/j.1467-6494.2007.00484.x.

Suldo, S.M., & Shaffer, E.J. (2008). Looking beyond psychopathology: The dual-factor model of mental health in youth. *School Psychology Review, 37,* 52-68.

Suldo, S.M., Thaliji, A., & Ferron, J. (2011). Longitudinal academic outcomes predicted by early adolescents' subjective well-being, psychopathology, and mental health status yielded from a dual-factor model. *The Journal of Positive Psychology, 6,* 17-30. Doi:10.1080/17439760.2010.536774.

Teismann, T., Forkmann, T., Brailovskaia, J., Siegmann, P., Glaesmer, H., & Margraf, J. (2018). Positive mental health moderates the association between depression and suicide ideation: A longitudinal study. *International Journal of Clinical and Health Psychology, 18*, 1-7. https://doi.org/10.1016/j.ijchp.2017.08.001

The Dartmouth Editorial Board. (2021, May 28). Verbal ultimatum: A cry for help. *The Dartmouth*. https://www.thedartmouth.com/article/2021/05/verbum-ultimum-cry-for-help

Thielking, M. (2017, February 8). Surging demand for mental health care jams college services. *Scientific American*. https://www.scientificamerican.com/article/surging-demand-for-mental-health-care-jams-college-services/

United State Census Bureau. (2020). Type of college and year enrolled for college students 15 years and over, by age, sex, race, attendance status, control of school, and enrollment status [data table for October 2020]. *School Enrollment in the United States: October 2020- Detailed Tables.* Accessed July 25, 2022, from https://www.census.gov/data/tables/2020/demo/school-enrollment/2020-cps.html.

United States Department of Education. (2021, October 13). *Letter to educators: Students at risk for self-harm or suicide.* Office for Civil Rights. https://www2.ed.gov/about/offices/list/ocr/correspondence/stakeholders/educator-202110-students-suicide-risk.pdf?utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term=

United States Department of Health and Human Services. (1999). *Mental health: A report of the Surgeon General.* https://files.eric.ed.gov/fulltext/ED441209.pdf

Van Erp Taalman Kip, R.M., & Hutschemaekers, G.J. (2018). Health, well-being, and psychopathology in a clinical population: Structure and discriminant validity of Mental Health Continuum Short Form (MHC-SF). *Journal of Clinical Psychology, 74*(10), 1719-1729.

Watson, D., Clark, L.A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070. Doi:10.1037/0022-3514.54.6.1063.

Westerhof, G.J., & Keyes, C.L.M. (2010). Mental illness and mental health: The two continua model across the lifespan. *Journal of Adult Development, 17*, 110-119.

Wilkinson, R. B., & Walford, W. A. (1998). The measurement of adolescent psychological health: One or two dimensions? *Journal of Youth and Adolescence, 27*, 443-455.

Wood, A.M. & Joseph, S. (2010). The absence of positive psychological (eudemonic) well-being as a risk factor for depression: A ten year cohort study. *Journal of Affective Disorders, 122*(3), 213-217.

World Health Organization. (1946). *Constitution*. Accessed June 6, 2022, from https://www.who.int/about/governance/constitution.

World Health Organization. (2005). *Promoting mental health: Concepts, emerging evidence, practice.* Geneva, Switzerland. https://www.who.int/publications/i/item/9241562943

Appendix A

Existing Measurement Tools Assessing Well-being and the Individual Elements Contributing to It.

Scale	Description	Citation
Accomplishment Scale (ACC)	An 18-item self-report measure of having ambition, achieving mastery, and being achievement-oriented	Gander et al, 2016b
Adult Hope Scale (AHS)	A 12-item measure to assess determination and ability to generate pathways to achieve goals.	Snyder, et al., 1991
Affect Adjective Checklist (AAC)	A 5-item self-report measure of frequency of positive and negative emotions	Diener & Emmons, 1985
Assessment of Interpersonal Relations (AIR)	A self-report measure for children that assesses relationship quality with parents, peers, and teachers	Bracken, 1993
Authentic Happiness Inventory (AHI)	A 24-item self-report measure of overall subjective level of happiness.	Seligman, 2002

Basic Needs Scale (BNS)	A 21-item self-report assessment of autonomy, competence, and relatedness.	Deci & Ryan, 2000
Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS)	A five-item measure to evaluate life satisfaction in the areas of family, school, friends, self, and living environment	Seligson, Huebner, & Valois, 2003
Child and Adolescent Social Support Scale (CASSS)	Self-report measure of children's perception of support from parents, teachers, classmates, close friends, and school administrators	Malecki & Demaray, 2002
Children's Hope Scale (CHS)	A six-item self-report measure of thoughts of agency and pathway generation for achieving goals for use with children ages 8-16	Snyder et al., 1997
EPOCH Measure of Adolescent Well-being	A 20-item self-report assessment of engagement, perseverance, optimism, happiness, and connectedness in youth ages 10-18	Kern et al., 2016

Flourishing Scale (FS)	An eight-item self-report measure of meaning in life, relationships, engagement, social well-being, competence, life satisfaction, optimism, and self-esteem	Diener et al., 2010
Gratitude Questionnaire (GQ-6)	A six-item self-report measure designed to assess individual differences in the proneness to experience gratitude in daily life	McCullough et al., 2002
Grit Scale	A 12-item self-report measure designed to reflect the construct of grit or persistence	Duckworth et al., 2007
Growth Mindset Scale	A self-report assessment of the extent to which individuals believe their mindsets are fixed versus open to growth and experience	Dweck, 2006
Happiness Measure (HM)	A single item measure of happiness	Fordyce, 1988

Healthy Pathways Child Report Scales	Unidimensional scales that assess aspects of health, illness, and well-being in clinical and population-based research studies involving youth in transition from childhood to adolescence	Bevans, Riley, & Forrest, 2010
Life Orientation Test-Revised (LOT-R)	A 10-item self-report measure of dispositional optimism.	Scheier et al., 1994
Meaning in Life Questionnaire (MIQ)	A 10-item self-report measure of the presence of and search for the meaning in life	Steger et al., 2006
Mental Health Continuum-Short Form (MHC-SF)	A 12-item (6-point response scale) self-report instrument designed to measure psychological, emotional, and social well-being	Keyes, 2002

Mindful Attention Awareness Scale (MAAS)	A 15-item self-report assessment designed for use with general adult populations to examine frequency of mindful activity (the ability to focus on the present moment without distraction) over time	Brown & Ryan, 2003
Multidimensional Flourishing Scale	A 30-item self-report measure of emotional, psychological, and social well-being.	Mesurado et al., 2021
Multidimensional Students' Life Satisfaction Scale (MSLSS)	A self-report measure for children that assesses life satisfaction across the domains of family, friends, school, self, and living environment	Huebner, 1994
Orientations to Happiness Questionnaire	An 18-item self-report measurement for the assessment of pleasure, engagement, and meaning.	Peterson et al., 2005

Positive and Negative Affect Scale (PANAS)	A self-report assessment using two 10-item scales measuring frequency of positive and negative mood and emotions.	Watson et al., 1988
Positive and Negative Affect Scale for Children (PANAS-C)	Self-report scale that assesses frequency of positive and negative moods and emotions.	Laurent et al., 1999
Positive Relationships Scale (REL))	An 18-item self-report measure of valuing the presence of others, preference of doing things with others, and perceived importance of relationships	Gander et al., 2016b
Quality of Life Interview, Brief Version (QOL-BV)	A 32-item self-report measure that assesses an individual's quality of life across subjective domains targeting various aspects of life satisfaction and objective domains targeting one's participation in various life activities or the occurrence of specific life events	Lehman, 1995

Ryff Scales of Psychological Well-being	A 54-item self-report measure examining indicators of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance.	Ryff, 1989
Satisfaction with Life Scale (SWLS)	A 7-item self-report measure of the life satisfaction component of subjective well-being	Diener et al., 1985
Scale of Positive and Negative Experience (SPANE)	A 12-item self-report measure of the amount of time an individual experiences positive and negative emotions	Diener et al., 2010
Self-Perception Profile for Children (SPPC)	A self-report measure for children assessing self-concept across the domains of global self-worth, scholastic competence, social acceptance, athletic acceptance, physical appearance, and behavioral conduct	Harter, 1985

Short Grit Scale (GRIT-S)	An eight-item self-report measure designed to reflect the construct of grit or persistence	Duckworth & Quinn, 2009
Students' Life Satisfaction Scale (SLSS)	Brief measure of life satisfaction designed for students in 3rd-12th grades	Huebner, 1991
Subjective Happiness Scale (SHS)	A 4-item self-report measure of global subjective happiness.	Lyubomirsky & Lepper, 1999
Subjective Vitality Scale	A six-item self-report measure of one's conscious experience of possessing energy and aliveness	Ryan & Frederick, 1997

Appendix B

The Flourishing Scale (Diener et al., 2010)

Below are 8 statements with which you may agree or disagree. Using the 1–7 scale below, indicate your agreement with each item by indicating that response for each statement.

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

____ I lead a purposeful and meaningful life

____ My social relationships are supportive and rewarding

____ I am engaged and interested in my daily activities

____ I actively contribute to the happiness and well-being of others

____ I am competent and capable in the activities that are important to me

____ I am a good person and live a good life

____ I am optimistic about my future

____ People respect me

Scoring:

Add the responses, varying from 1 to 7, for all eight items. The possible range of scores is from 8 (lowest possible) to 56 (highest PWB possible). A high score represents a person with many psychological resources and strengths.

Appendix C

The Kessler Psychological Distress Scale (K6) (Kessler et al., 2002)

The Kessler Psychological Distress Scale (K6)[1] is a simple measure of psychological distress which involves 6 questions about a person's emotional state. Each question is scored from 0 (None of the time) to 4 (All of the time). Scores of the 6 questions are then summed, yielding a minimum score of 0 and a maximum score of 24. Low scores indicate low levels of psychological distress and high scores indicate high levels of psychological distress.

The following questions are about how you have been feeling during the **past 30 days**.	ALL	MOST	SOME	A LITTLE	NONE	(IF VOL) DON'T KNOW	(IF VOL) REFUSED
1. About how often during the past 30 days did you feel **nervous** - would you say **all** of the time, **most** of the time, **some** of the time, **a little** of the time, or **none** of the time?	O	O	O	O	O	O	O
2. During the past 30 days, about how often did you feel **hopeless** - **all** of the time, **most** of the time, **some** of the time, **a little** of the time, or **none** of the time?	O	O	O	O	O	O	O
3. During the past 30 days, about how often did you feel **restless or fidgety**? (IF NEC: **all, most, some, a little,** or **none** of the time?)	O	O	O	O	O	O	O
4. How often did you feel **so depressed that nothing could cheer you up**? (IF NEC: **all, most, some, a little,** or **none** of the time?)	O	O	O	O	O	O	O
5. During the past 30 days, about how often did you feel that **everything was an effort**? (IF NEC: **all, most, some, a little,** or **none** of the time?)	O	O	O	O	O	O	O
6. During the past 30 days, about how often did you feel **worthless**? (IF NEC: **all, most, some, a little,** or **none** of the time?)	O	O	O	O	O	O	O