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Layers of Support: Cognitive, Psychological, and Social Factors That Contribute to Success in the High School-to-College Transition

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LAYERS OF SUPPORT: COGNITIVE, PSYCHOLOGICAL, AND SOCIAL FACTORS THAT CONTRIBUTE TO SUCCESS IN THE HIGH SCHOOL-TO-COLLEGE TRANSITION

by

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ABSTRACT

The future of individual and societal progress is largely dependent on students' success following completion of K-12 education. For most traditionally aged students, this entails a journey into higher education at colleges and universities. This transition is rife with pitfalls that may lead students to stop out, fail out, or make inadequate progress towards completion – which further compounds social, psychological, financial, and personal challenges they may be facing. However, the challenges that contribute to these outcomes can be addressed and interventions can be designed to best support students in transition. This dissertation addresses these factors through a thematic literature review, a quantitative analysis of psychological and cognitive factors, and a mixed methods analysis of social experiences and the influence of friends on a myriad of outcomes. These studies are novel in the ways in which they approach measuring academic success, and the attention paid to other facets of a "successful" college experience for students such as the importance of self-regulation skills, mental health, and friendships.

The literature review explains the importance of the emerging adulthood developmental period, the critical nature of college degree completion, and the factors involved in supporting student success in the transition from high school to college. Cognitive, psychological, and social factors are all offered as highly impactful and associated theory is explicated to establish the basis for the importance of this work.

The first empirical study examines the potential impacts of cognitive functioning (self-regulation) on the psychological outcomes (mental health) and academic success of first-semester college students. Correlation analysis revealed an association and analysis of groups shows that the associations between self-regulation and academic performance are impacted by mental health.

The second empirical study uses quantitative and qualitative analyses to explore the impacts of social support on belonging in college, mental health, and academic outcomes. The lived experiences of first-semester college students and their impressions of their experiences with friends, academics, belonging, and mental health are thematically analyzed and reveal themes of the importance of mental health in successfully navigating transition and the importance of friend support in overall perceived college success.

The products that comprise this dissertation form a cohesive collection of work through which critical psychological, cognitive, and social factors that influence college student success can be more fully understood and studied in the future. In aggregate, the takeaways of this dissertation are the importance of examining success in the college transition through a multi-faceted lens, keeping in mind the importance of academic success but also considering the myriad of factors that can contribute to it and shape the student's overall experience.

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CHAPTER 1

INTRODUCTION

Abundant research focuses on the importance of college student success and the factors that make a difference (Fong et al., 2017; Sneyers & De Witte, 2017). At first glance, academic difficulty may appear to be the largest contributor to student attrition, but research suggests it may be the presenting symptom and not the root cause (Lorenzo-Quiles et al., 2023). There are several variables of interest that have consistently been found to be implicated in student success overall. Categorically, they are largely in the cognitive (self-regulation), psychological (mental health), and social domains (peer support), most often studied due to their theoretical importance, malleability, and nature of being unique among individuals (Trapmann et al., 2015; Sneyers & De Witte, 2017; van der Zaden et al., 2018).

The goal of this dissertation is to provide a comprehensive look at these variables and their importance for student success, demonstrated via qualitative and quantitative primary data collection. The variables studied are particularly important because they represent areas around which programming (i.e. mental health supports, social organizations and activities, peer-centric academic programming) can be implemented. In a time where funding is of utmost concern for institutions, evidence that indicates which factors have the greatest potential impact (and therefore could produce the greatest retention gains), stands to benefit the higher education landscape.

Higher education researchers and practitioners alike share the understanding that support for student success in such a time of tumultuous transition as the first year must be holistic and cater to the whole student – siloed academic, social, and psychological support will no longer suffice.

Student Success in College

There is a myriad of ways in which the word "success" can be defined, even within the more limited confines of being a successful college student. It is well established that college completion leads to numerous downstream impacts that benefit the individual, institution, and society (Kaushal, 2014; Ma et al., 2019; Pew Research Center, 2014; Twenge & Donnelly, 2016). By and large, a successful college experience equates to degree completion. The academic performance that allows a degree to be conferred is then, it follows, a key component of the definition of college success. Students must perform to the standards set in place and upheld by their institution in order to reach this milestone. For the purposes of this dissertation, academic success at a four-year university (GPA) was used as the standard outcome metric for success. Four-year, bachelor's degree granting institutions are the most common path for traditional age college students (Digest of Education Statistics, 2021) and attainment of a bachelor's degree produces the most consistent positive outcomes (Greenfield et al., 2019; Scheld, 2023). However, the nuance of ensuring student success in this environment lies in focusing on the ways in which a variety of more holistic factors contribute to the primary positive outcome (academic achievement).

In the studies presented in this dissertation, the focus was on traditional aged first-year college students (17-19 and entering college right after completion of high

school). This developmental period is classified as emerging adulthood. This is a critical period of human development characterized by the drive to establish and solidify an identity (Arnett, 2014; Potterton et al., 2022) and is biologically the time in which the brain is highly plastic and sensitive to stress, risk exposure, and compromised judgement (Pharo et al., 2011; Romer et al., 2017). As such, the topic of how best to support this population, specifically within the college environment, has always been an important one and one that focuses on students' psychological needs (Chung & Hudziak, 2017). This has become more prevalent in the wake of the COVID-19 pandemic and its aftereffects, where it is well known that mental health has become even more of a pressing challenge (Kauhanen et al., 2022; Gruber et al., 2023).

In a world where there are innumerable benefits from a population of young adults who are educated, confident, and prepared to contribute to society at large, the benefits of a positive college experience cannot be understated. This positive experience starts at the transition stage from high school to higher education. It benefits everyone for individuals in this age group to thrive during and upon completion of the college experience – in order for this to happen, supporting students in this adjustment in a variety of ways is critical.

Cognitive Factors: Self-Regulation

The current literature suggests that self-regulation is a significant contributor to adjustment to college and higher GPA (Duckworth & Carlson, 2013; Kryshko et al., 2020; Tangney et al., 2004). Self-regulation can best be defined as "exertion of control over the self by the self" (Muraven & Baumeister, 2000, p. 247). When grounded in the strength-based perspective of self-regulation, all self-regulatory behaviors draw on the

same, limited set of resources within the individual (Muraven, 2010). If this theory holds true, when one applies all of their self-regulation resources in one area (i.e., regulating negative emotions and coping with stressful situations), they in turn have depleted resources to draw on to engage in self-regulation efforts in other areas (i.e., persistence with challenging tasks, specifically of the intellectual variety) (Baumeister et al, 1994; Muraven & Baumeister, 2000).

Focusing specifically of first-year students, who encounter copious and unique challenges that necessitate enhanced self-regulation, contributes to this body of work. Furthermore, it is possible that in this group self-regulation may even be more finite given the new and unfamiliar competition for demands on time and attention (Koo et al., 2021; Lane, 2020). Therefore, the need exists for further investigation into self-regulation in the emerging adulthood population, as strategies regarding self-regulation could be beneficial for designing supports and interventions that lead to greater academic success and positive impacts for both individuals and institutions.

Psychological Factors: Mental Health

In a post-pandemic landscape, mental health concerns in emerging adulthood and therefore the scramble for strategies to support college students in this area have been conversations of the utmost importance. The two most common mental health concerns, depression and anxiety, each affect nearly 40% of all undergraduate students as of 2020 (Chirikov et al. 2020) – 1.5 to two times higher than the same rates in 2019. Students who do have these diagnoses were found to, in turn, be significantly more likely to experience financial hardship, challenges in adjustment to college, and a decreased sense of belonging on campus (Horogos et al., 2020). Despite the recent uptick of college students' mental health symptoms and diagnoses, this experience is not wholly new to the

developmental stage of emerging adulthood (Duffy, et al., 2019; Healthy Minds Network, 2021; Li et al., 2021; Son et al., 2020). Mental health challenges have always been present among college students (largely in part due to many of the aforementioned new stressors) and are well associated with poor academic performance (Boyraz et al., 2016; DeRoma et al., 2009; Haines, Norris, & Kashy, 1996; Hysenbegasi et al., 2005) and even dropping out of college (Boyraz, Horne, et al., 2016).

Social Factors: Perceived Support from Friends

The relationships that young adults develop and maintain have the potential to have serious impact on a multitude of factors that factor into their success and thriving. Peers, family, and even institutional personnel (like faculty and staff) play a highly significant role in influencing students' academic success (Lei et al., 2022) and their mental health (Lamis et al., 2016). Overall, it has been well documented that "expression of support predict[s] student ability to adapt to university" (Turkpour & Mehdinezhad, 2016, p. 53). Friendships in particular may be one of the mechanisms that counteract the difficulties and stress associated with major life transitions because they provide a major source of social support (Klaiber et al., 2018; Ng-Knight et al., 2019; Tokuno, 1986). Having friends has been found to be correlated from childhood through old age with psychological well-being and increased feelings of self-worth and self-esteem (Hartup & Stevens, 1997; Hartas, 2021; Lee & Szinovac, 2016), and it is well established that belonging is an essential human need (Maslow, 1962). The absence of belonging to a group of friends, in turn, can negatively impact many aspects of overall health and well-being (Baumeister & Leary, 1995; Strayhorn, 2019). According to Hoffman, et al. (2002), peer social connections are one of the most critical components

of belonging. Given these benefits, Richey and Richey (1980) conclude that adolescents "need the social support offered by friends" (p. 538) to fulfill many functions, a number of which cannot be satisfied by family members. It is probable that friendships may be one of the most important assets in major life transitions (such as the transition from high school to college) and having close friends during this stressful experience could help individuals to cope (Hartas, 2021; Klaiber et al., 2018; Ng-Knight et al., 2019; Strayhorn, 2019). However, most studies do not focus explicitly on the first-year experience or overlay experiences with peer support directly with experiences of mental health symptomology. By focusing on the importance of friends and investing in programming that helps foster the formation and continuation of positive friendships, institutions can play an appreciable role in supporting students in this critical domain.

Program of Research

To better understand the holistic constellation of factors that may impact academic student success, this dissertation consists of a literature review and two related manuscripts: (1) a quantitative analysis of self-regulation, mental health, and academic performance, including demographic moderators and variable interactions; and (2) a mixed-methods examination of the role of perceived support from friends in various domains of success, including a discussion of the overall quality of student transition from high school to college. These projects shed new light on the associations between these factors and their interconnectedness by introducing primary source data collected at a critical point in the student lifecycle, and by and analyzing both quantitative and qualitative examples of success in college across a myriad of domains.

Chapter two discusses the issue at hand by first explaining why college student success is vital, with the most critical juncture being the transition to the first year – when students are most vulnerable due to stress of the change, uprooting of support systems, and lack of established coping and self-regulatory skills. This review presents the need to examine student success as a holistic concept, focusing on academic success as the primary outcome but also on the constellation of factors that must be present to contribute. This chapter closes with recommendations for researchers, practitioners, and those in higher education leadership to consider when searching for ways to meaningfully address holistic student success.

The first related manuscript (McKeown & Dawes, submitted for publication) is an empirical paper that examines students' self-reported self-regulatory skills and behaviors to see if these are related to an association between mental health symptomatology and academic performance in the form of first-semester GPA. Correlation and regression analysis were conducted as well as ANOVA and moderation analysis to examine between-group differences in these associations. Results indicate associations between the studied factors as well as group differences that present implications for future study.

The second manuscript (McKeown, Ferguson, & Dawes, submitted for publication) builds on the first empirical paper by examining the aspects of support from friends that are most influential in success during the high school to college transition, including an investigation into the lived experiences of college students following their first semester. This paper not only includes the analysis of an additional quantitative variable in the form of perceived social support from friends, it also delves

deeper into the importance of mental health both in the context of friend support and its overall importance in the "success" the transition to college. Thematic patterns related to these topics were then examined and analyzed to look at experiences amongst the interviewees.

These studies connect the existing research on student success in higher education to a collection of data from students' perspective amid the college transition. They add depth to the broader discussion of the factors that contribute to overall student success and how these must be treated as a holistic collection rather than standalone instances. Together, these papers expand the knowledge base around multiple aspects that contribute to student success by examining the interconnected web of cognitive, psychological, and social contributing factors, and illuminate consideration for front-line student support professionals, administrators, and decision makers to positively impact the experiences and outcomes of first-year college students and beyond.

CHAPTER 2

CRITICAL VARIABLES IN COLLEGE STUDENT SUCCESS: AN EXAMINATION OF THE ROLES OF SELF-REGULATION, MENTAL HEALTH, AND SOCIAL SUPPORT

For many late adolescents, college attendance and graduation stand as a monolith representing the logical and necessary next steps in their lives. As of 2020, 63% of traditionally aged students (17-18) enroll to attend college immediately after high school graduation (National Center for Education Statistics, 2022). However, only 64% of these ultimately graduate in six years (NCES, 2022). Success in college and gaps in college graduation have vast implications for individuals (Twenge & Donnelly, 2016; McMahon, 2009) – particularly marginalized populations (Guevara-Cruz, 2018; Rhoden, 2017; Carey, 2016) – their future families and generations (Kaushal, 2014; Oreopoulos & Petronijevic, 2013), and society at-large (Ma et al., 2019; Pew Research Center, 2014). Hence, college students represent a critical population, with the incidence of attrition (i.e., dropping out) warranting special attention in the research literature (Beer & Lawson, 2016). Therefore, the central question posed is how institutions can best support college student development and success.

Abundant research focuses on college student success and contributing factors (Snyers & De Witt, 2016; Moallem, 2013; Trapmann et al., 2007) – there are several variables of interest that have been found to consistently be implicated in success. A few

of these are variables in the cognitive (self-regulation), psychological (coping skills, mental health), and social domains (peer support). The goal of this paper is to provide a review of these variables and their importance for student success. These variables are particularly important because they represent areas around which tangible interventions can be designed and implemented (e.g., mental health supports, social programming). While these factors are shown in the research to have some interaction and intersection, an overview of what is known, in order to establish any patterns, as well as further study is needed to determine the extent and strength of these relationships so that proper focus can be applied in determining what interventions will best serve students. As funding is always chief among concerns in higher education programming, evidence indicating what factors have the greatest impact, and therefore would produce the greatest retention gains if intervened upon, would be highly beneficial in the university landscape.

This review will serve as an overview of the extant research on self-regulation, academic self-perception, coping skills, mental health, and social and peer support during the time of transition from high school to college. All of these factors demonstrate some level of association in the existing body of work (de la Fuente et al., 2020; de la Fuente & Cardelle-Elawar, 2011; de la Fuente et al., 2014; de la Fuente et al., 2014; Eisenberg, Golberstein & Hunt, 2009; Finkel & Fitzsimons, 2010; Hebret et al., 2020; Mahdavi et al., 2021; Nota, Soresi, & Zimmerman, 2004; Patrick, 2010; Sahranavard, Miri, & Salehiniya, 2018; Villavicencio & Bernardo, 2012) and all appear to have some level of influence over students' academic successes in college (thus ultimate degree attainment). Therefore, they warrant additional exploration into their potential relationships and overall impacts and implications for college student success.

There is a need for further investigations into self-regulation in the emerging adulthood population, as strategies regarding self-regulation could be beneficial for designing supports and interventions that lead to greater academic success and positive impacts for both individuals and institutions. Of particular import as it relates to college student success overall is the relationship between self-regulation and mental health. Self-regulation can play a role in the management of and coping with mental health concerns (Arslan, 2018; Durand-Bush et al., 2015), which – particularly in recent years – have risen to the apex of concerns about ensuring college students are successful (Eisenberg, 2019).

Additionally, supports such as family, staff, faculty, and especially peers, play a critical role in the college experience, and touch virtually all facets of university life for students. Peers play a profound role in college students' ability to cope with adversity and several theories of self-regulation provide support for the importance of peers in these constructs. The social cognitive theory of self-regulation (Bandura, 1991; Zimmerman, 1990), for example, posits that since learning is based on interactions between personal, environmental, and behavioral factors, and self-regulation is a critical concept for learning, that the bidirectional relationship between self and environment is also a highly important factor in learning and development.

The objectives of this review are several but straightforward. A first and primary goal is to establish the strengths and weaknesses of the currently prevalent literature such that directions for potential future research can be explored. Identifying strengths and weaknesses in the literature will also support the secondary goal of identifying gaps in the existing literature where there are future research questions to be answered. As this

review will serve as the foundation for an original study and data collection, these processes are particularly important. Finally, the tertiary goal is to further establish links between these factors that all play a part in college student persistence, and to elevate the importance of these topics. When students are set up with the supports and skills to persist, a host of detrimental consequences can be avoided that lead to leaving college and worsening prospects of returning to be successful.

Importance of College Persistence

In order to persist to a degree, several factors come into play that make the likelihood of this outcome greater for any one individual student. Institution-wide retention efforts (programs like University 101 at the University of South Carolina), social influences, the personality traits of the individual, and the level of motivation all factor into overall persistence to graduation (Altman, 2017). However, retention and persistence (often used interchangeably when representing the outcome for students) are not an indicator of learning while in the college environment – that metric necessitates measuring some level of academic performance, which in turn contributes in its own way to retention. Students who struggle academically are significantly less likely to persist, either by choice or not (i.e., being put on probation or suspended). Similar factors help predict academic performance as much as retention, such as institutional programming and social support, but the traits of the individual play a much larger role. Commitment, resilience, extraversion, and self-efficacy all correlate with academic performance during the transition to college (Altman, 2017). In this way, academic performance (most often measured by GPA) could be interpreted as a mediator between all the separate factors that are shown to have an impact on retention.

The importance of defining what leads to college success for individuals cannot be understated. Obtaining at least a bachelor's degree leads to positive outcomes not just for the individual but intergenerationally. Beyond the scope of income and productivity and their effects on the greater economy and society at large, parents who are college educated are more likely to raise children who are healthier physically, less likely to engage in risky adolescent behaviors, and more likely to be academically successful themselves – thus perpetuating a cycle (Kaushal, 2014). Even with younger generations rethinking the value of a degree considering the increasing prevalence of taking on student loan debt, the outcomes remain that college degrees provides positive returns on investment – and not just for the exceptional individual, but those on the margins as well (Oreopoulos & Petronijevic, 2013). Therefore, as a means to improve any one person's social and economic capital, as well as for the overall healthy functioning of society at large, the importance of individual's continuing to persist and succeed in earning college degrees cannot be understated.

Importance of the Emerging Adulthood Developmental Period

The particular focus on students in the first year is due to the fact that it is easier to establish a strong start during the transition to college than it is to recover from adversity after issues begin to compound (Hirsch, 2010; Venezia & Jaeger, 2013). College persistence is one of the most critical goals due not only to the successes of individuals, but also the generational and broader economic impacts of greater college graduation rates (Kaushal, 2014; Pew Research Center, 2014). The transition to university coincides with adolescent development that is characterized by the need to individualize one's identity separate from their family and home life, as well as forge

new social connections and experience increase autonomy and responsibility. Concurrently, the brain is undergoing unique biological developments and is highly sensitive to risk exposure and compromised judgement – things commonly encountered in the university environment including socioemotional stressors, drug use, alcohol misuse, and poor sleeping patterns (Chung & Hudziak, 2017). Evidence shows that the prevalence of mental health diagnoses peak by early adulthood (Kessler et al., 2007), which poses the risk of college stop-out brought on by these mental health challenges (McGorry et al., 2011).

Environmentally, socially, and biologically, this transition to emerging adulthood coincides is often high stakes for determining an individuals' ability to thrive in their next stages of life. Emerging adulthood has the potential to be a very positive developmental stage where society gives adolescents a greater opportunity for exploration, but also greater challenges represented by greater educational and social role requirements (Wood et al., 2017). The loss of some supports and structures offered by K-12 schools and families means that the emerging adult is more reliant on their own resources, both internal and external. Emerging adults with sufficient economic and adult support, as well as personal resources and maturity, will be more likely to choose well (Arnett, 2014). Those lacking these resources, or those with physical and mental health or intellectual disabilities, may struggle during this period and experience a negative trajectory in the spheres of education, vocation, and relationships (Spear, 2000). Thus, it is of critical importance that institutions that are in place to support individuals during this life stage (i.e., colleges and universities) are well equipped to support late adolescents in this transition so that a favorable outcome can be reached as frequently as possible.

Factors Related to Academic Performance and Persistence

As previously mentioned, this review seeks to further solidify the potential for several factors that might play a role in students' academic performance (and therefore, success and persistence) in college. Specific attention is paid to the transition from high school to the freshman year and factors that may have an impact on students' mental health, which can then likely impact academic performance, success, and persistence. A scoping review of the literature identified the following explanatory variables that will be the focus of this review: (1) self-regulation, (2) mental health, and (3) social support. Upon further review of theoretical frameworks in the existing research, it became apparent that relationships between these variables are also of particular importance. Each of these have an evident role to play in the academic and overall success of students in the critical period of transition from high school to college. Several of these variables also have a malleability aspect – they can be influenced, taught, or changed with targeted intervention approaches that may have long-ranging benefits for student success. For instance, students in transition can be taught productive coping skills that will benefit them during new struggles that they will face in this stage of life – these productive coping skills are shown to have overall positive relationships with other aspects of wellbeing.

Self-Regulation. There is a proliferation of terminology in the field of self-regulation research, but it can be described at its most straightforward as "exertion of control over the self by the self (Muraven & Baumeister, 2000, p. 247)" (Farley & Kim-Spoon, 2014). In her 2012 article, Cohen builds upon and specifies this, citing Bandura's triadic view of self-regulation and defining it as "the self-generated thoughts, feelings,

and actions for attaining one's goals (Zimmerman, 2000)" (p. 892). This is an issue of concern in this particular population when examining self-regulation from a strengths model (Baumeister et al., 2007) – which suggests that any sort of self-regulation is a finite resource, and depletion in one area leads to less available in another. College students, especially first-semester freshmen, exist by nature in a state of choice excess (e.g., course and major selection, extracurricular activities, new freedom with time management), as well as social and academic pressure, in which self-regulation is a critical skill for success. Several studies (e.g., Cohen, 2012; Davis & Hadwin, 2021; Duckworth & Carlson, 2013; Inan et al., 2017; Kitsantas, Winsler, & Huie, 2008) have demonstrated links between self-regulation and college success (including academic performance and persistence). Most of these studies are correlational (Muenks et al., 2017; Sharp & Sharp, 2016; Tangney, Boone, & Baumeister, 2018; Wolters & Hussain, 2015) but some longitudinal evidence does exist (Nota, Soresi, & Zimmerman, 2004). This all culminates to suggest that the more students can regulate themselves, the more likely they are to succeed.

The seminal work of Baumeister (2003) on the resource, or strengths-based, approach to self-regulation helps researchers frame this important factor in a measurable way. This theoretical approach suggests that self-regulation is a limited resource, like energy, which becomes depleted with use (though it can be refilled, and the limit can be "increased" over time). This theory explains much of the self-regulation challenges faced in the higher education setting by emerging adults, but it is certainly not the sole theoretical basis for explaining self-regulation successes and failures. The work of Bandura, generally related to social-cognitive theory, is also prevalently extended to self-

regulation (1991). The social cognitive theory of self-regulation suggests that people are mainly guided by their own influence, which involves four key aspects: keeping track of one's behavior, understanding its causes and effects, judging behavior based on personal standards and the situation, and reacting emotionally to one's actions. Additionally, the theory includes self-efficacy, which impacts how confident individuals feel in influencing their thoughts, emotions, motivation, and actions. The theory also recognizes that social factors can influence how self-regulation works, which is a key component of the questions posited by the topics of this review. An understanding of the formative theoretical work surrounding self-regulation is critical when further delving into this factor as an independent and dependent variable.

The Farley and Kim-Spoon article (2014) mentioned is a suitable place to start in examining one particular goal of this review: the role of relationships in the development of self-regulation in adolescents. They lay the foundation that self-regulation plays host to success in several life domains, such as a school and social relationships. In childhood self-regulation research, much attention is paid to parents, but examining the influence of peers is less tested. Ultimately, the posit based on their review that self-regulation and peer relationships exist in a bidirectional relationship and that one must consider the influence of previous relationships on each new relationship an individual has, even if they are different (i.e., parents versus friends versus romantic partners).

It is also worth examining how self-regulation may impact success via other variables, such as psychological adjustment, which includes belongingness and general mental health and wellness. In their 2011 article, Park, Edmonson, and Lee offer a glimpse into self-regulation as having a longitudinal association with psychological

adjustment to college. Through a longitudinal and bivariate analysis, the authors were able to determine that key self-regulation subskills correlated to better adjustment to college (as represented by self-reported depression, anxiety, and stress). They divide these subskills as constructive thinking, emotional regulation, and mastery. Constructive thinking represents an individual's ability to "solve problems in everyday live at minimal cost in stress" and consists of further subskills such as task focus and avoiding tempting distractions (Park, Edmonson, & Lee, 2011, p. 41). Emotion regulation involves the individual's ability to control emotions so that they can obtain a desired affective outcome. Emotion regulation in particular is a feature of self-regulation that is strongly associated with positive mental health outcomes (Cisler et al., 2010). Finally, mastery refers to the overall sense of controllability that one has over their own life. This element, also, has been shown to have negative association with stress, depressive symptoms, and overall maladaptive psychological behaviors in first-year college students (Verger et al., 2009). Furthermore, they learned that an increase in these skills predicted an increase in feelings of adjustment to the new environment of college overall. They were able to determine that self-regulation reflects not only academic skills sets, but socio-emotional learning and well-being as well. This article helps to frame contexts for future research into the interaction of social, academic, and emotional needs of college students in the adjustment period of the first semester.

Self-regulated Learning (SRL). Academic success entails the employment of specific self-regulation strategies, usually referred to as self-regulated learning (SRL; Pintrich, 2000). Strategy use can consist of items such as organization, goal-setting, keeping records, imposing self-consequences, reviewing materials from class, and

seeking assistance from others (Young & Ley, 2005). Studies have found that use of self-regulation strategies among college students contributes strongly to positive academic outcomes, such as course performance, overall GPA, and orientation towards academic goals (Bail, Zhang, & Tachiyama, 2014; Pintrich, 2004; Wolters, 1998). In one study, it was found that in developmental college students (those who are admitted requiring additional remedial coursework) showed a drastic difference between their self-reports of use of SRL strategies on a Likert scale and in semi-structured interviews. This raises both practical and methodological concerns in the topic area of SRL – those who are less willing or able to self-regulate are going present inherent challenges in measuring said behaviors, particularly in a self-report. Young and Ley suggest that the most effective course might be starting with interventions and subsequently measuring outcomes.

This is corroborated and can be extrapolated from developmental learners to the general college student population by Graham and Shaw (2003). They argue that previous findings from the mid- to late- 20th century substantially overestimate college students' self-regulatory skills as it relates to academics, particularly in terms of metacognition and monitoring. They designed an experiment to look deeper into some of these findings and found that students displayed a poor sense of how prepared they were for a test based on multiple preparation measures, as well as a poor sense of evaluating how they had performed. Graham and Shaw's findings suggest ample room to further investigate learning aspects of self-regulation – particularly how these skill sets fit in and align with other self-regulatory behaviors and behavior patterns.

Time management refers to a particular component of self-regulation related to effective and efficient use of time to accomplish necessary or desired tasks and how that

leads to successful accomplishment of goals (Kitsantas, Winsler, & Huie, 2008; Wolters & Brady, 2021). Findings similar to other studies related to the broader definition of self-regulation have also been seen in studies specifically related to time management – one such example is recent study by Thibodeaux, Deutsch, Kitsantas and Winsler in 2016. They report the "critical" nature of time management for academic performance, starting from the first semester. The most important finding from this study suggests that planned and actual use of time over the course of the first two semesters is necessary in starting to build positive self-regulatory habits early. Logically, they were able to determine that those students who planned and spent less time on academics had lower first semester GPAs. However, these same students also lowered their target second semester GPAs rather than adjusting academic time use to reach their original goals.

Another frequently studied aspect of time management and therefore self-regulation is procrastination, which is defined "unnecessarily postponing or avoiding tasks that must be completed" (Hen & Goroshit, 2012, p. 116). Studies have linked the effects of procrastination on academic performance more directly to lower levels of self-regulation and higher levels of anxiety and stress. Procrastination it is also linked to impulsiveness, lack of self-efficacy, and issues with overall self-control. Procrastination is extremely common among college students and has been shown in previous studies to lead to negative academic outcomes when academic tasks are the subject of procrastination (Ariley & Wertenbroch, 2002).

Measures of Self-Regulation. A central question in the study of self-regulation is the measure of a such a multifaceted variable. Many measures exist, but the question that persists is which particular facet on the broad spectrum of the factor is to be measured to

answer the question at hand. The largest division in measurements of self-regulation is between practical tests (such as the Stroop test, Wisconsin Card Sorting Test, Tower of Hanoi, and Go/No-Go Task) and inventories (Welsh & Huizinga, 2005). For the purposes of this review, the focus will be placed on the several well validated inventories that appear in the recent literature. Predominant in the body of work is the Self-Regulation Questionnaire (SRQ), which proposes to assess individual differences in self-regulation, including goal setting, impulse control, and emotional regulation (Zeidner et al., 2000). This measure demonstrates high internal consistency in previous work and is a common method for collecting self-regulation data. A shortened version (SSRQ) also exists (Carey et al., 2004), which was utilized in the empirical study in chapter three of this dissertation. The Self-Control Scale (SCS) measures the ability to control one's thoughts, emotions, and behaviors in various situations (Tagney et al., 2004). Finally, the Emotion Regulation Questionnaire (ERQ) measures individual differences in emotion regulation strategies, including cognitive reappraisal and expressive suppression (Gross & John, 2003). This is a specific aspect of self-regulation that is measured in more depth, which might be beneficial in some research settings.

Risky Behavior. A final aspect of self-regulation that significantly affects college students is regulation of impulse and risk-taking behavior. “Risk-taking” can be concisely defined as behaviors that have the potential for a desired or enjoyable outcome but come with the possibility of unwanted and negative consequences (Pailing & Reniers, 2018). Notably, behavioral risk-taking, which has a classic onset in adolescence, increases in key areas (alcohol use, marijuana use, multiple sexual partners) increases in the transition from high school to college (Fromme, Corbin, & Kruse, 2008). Obviously, modulation of

and decision making regarding these types of behaviors is a form of regulation that an individual must learn. In the Pailing and Reniers study, several associations were found between risk-taking behavior, mental health symptoms, and psychosocial maturity. Of important note in this study is that psychosocial maturity is different from age – this is predominantly due to development of self-regulatory skills:

> A development gap created by a rapid increase in affective reactivity and sensitivity to reward, contrasting with a much slower but steadier development of one's abilities to self-regulate, may contribute to behavior that can be labelled as both risky and immature (p. 2).

While mental health will be discussed in greater depth later in this review, it is relevant to include in this context as symptoms in late adolescence seem to diminish with increased psychosocial maturity – such symptoms have been linked to poor impulse control, so there is a relationship of note between risky behavior, which is an aspect of self-regulation, and mental health. The implications for reduction in risk-taking behavior (and thus enhancing self-regulatory behaviors), obviously a desirable outcome, point to mental health as a key factor that must be included in future research related to the self-regulation variable and its subcomponents.

Emerging adulthood is the period of an individual's lifespan where engagement in risky sexual and substance use behavior is at its peak (Quinn & Fromme, 2011). Further research has continued to corroborate self-regulation as a "buffer" for dangerous behaviors in college, even in those students who might be pre-disposed (Pearson et al,, 2011). In a sample of college students who identified as adult children of alcoholics (ACOA), self-regulation moderated the pronounced effect of this status on the tendency

to experience alcohol-related problems. Self-regulation in this sample seems to act as a predictor of resiliency for ACOA's, who are considered individuals who have experienced adverse childhood experiences (ACEs). ACEs, in turn, tend to be reliable predictors of mental health challenges in later adolescence and early adulthood (Merrick et al., 2017). Based on the literature, there is significant room to further investigate the role of self-regulation in the constellation of traits that leads students to thrive and avoid negative outcomes from risk-taking.

Behavioral economic theory posits that an increase in engagement in substance-free activities that serve the purpose of achieving a long-term goal (such as graduating from college) can aid in decreasing instances of problematic alcohol use and outcomes from use (Soltis et al., 2018). According to Soltis and colleagues, self-regulation can be enhanced with behavioral economic interventions, thus minimizing negative alcohol related outcomes, in undergraduates. From this, it could be assumed that there is a cyclical relationship with long-term goal setting (which is a component of self-regulation), modification of risky behaviors, the outcomes of those behaviors, and then further enhanced self-regulation. This cycle as it relates to the self-contained nature of the traditional undergraduate experience (where the social pressures of risky behavior are inextricable from academic goals) is an interesting area for further investigation.

*Role of Peers in Self-Regulation***.** Per Bandura (1991), social influence plays a key role in the development and everyday utilization of self-regulatory behavior. On the topic of self-regulating risky behavior, peer influence has certainly been found to play a profound role, particularly in those ages 18-22. While it is established in practice and anecdotally that adolescents are more likely to engage in adults in specific risky

behaviors, it is harder to see in empirical studies – by mid-adolescence, approximation of the consequences of risky behavior is nearly the same among teens and adults (Gardner & Steinberg, 2005). The missing piece between the "real-world" and laboratory evidence of this trend is the influence of emotional and social contexts in which risk-taking behavior actually occurs, specifically for adolescents and emerging adults. The Gardner and Steinberg study demonstrated this with their analysis, showing not only strong influence of peers on risk-taking decisions, versus an individual making the decision alone, but also a heighted impact of peers between ages 13-22. Due to the established nature of self-regulation and risk-taking, it is identifiable from this study that peers and social contexts absolutely must be considered in a study of these factors in traditionally college-aged individuals, especially in the university setting. In summary, the existing literature posits that self-regulation is an absolutely critical piece of the skillset needed for college students to succeed and thrive in their new environments. Self-regulation can lead to greater psychosocial adjustment, more positive mental health outcomes, higher incidences of supportive relationships, and less risky behavior that can have lasting consequences.

Mental Health. Particularly over the course of the last two years (2020-2022), mental health concerns and strategies to support college students in this area have been conversations at the forefront. The two most common mental health concerns, depression and anxiety, each affect nearly 40% of all undergraduate students as of 2020 (Chirikov et al. 2020) – one and a half to two times higher than the same rates in 2019. These rates are particularly prevalent among students of color, low income and first-generation students, students who are caregivers, and those who are within the LGBTQ+ community. In the

light of the COVID-19 pandemic, students who do have these diagnoses were found to, in turn, be significantly more likely to experience financial hardship, challenges in adjustment to college, and a decreased sense of belonging on campus (Horogos et al., 2020). It could be said that there is a vicious cycle effect to a mental health diagnosis or symptoms as a college student, which raises the need for further investigation into the best ways to ensure the cycle breaks.

Though the last two years (2020-2022) and the corresponding current events of the world have seen an uptick in students' reporting of mental health symptoms and diagnoses, this experience is not something novel in this developmental stage (Duffy, et al., 2019). Since the transition to university generally takes place in the period of adolescent development that is characterized by the need to establish identity, as well as the time at which the brain is undergoing biological developments and is highly sensitive to risk exposure and compromised judgement, college students' mental health has always existed in a somewhat fragile state (Chung & Hudziak, 2017). Evidence shows the prevalence of mental health conditions emerging in this life stage and, due to the timing of other life events in this period, an association with a delay in seeking or obtaining treatment (Kessler et al., 2007). In turn, insufficiently treated mental illness can go on to progress to more complex diagnoses which can lead to a host of other severe consequences (McGorry et al., 2011). Therefore, environmentally, socially, and biologically, the transition period to university coincides with a highly sensitive period for problematic coping behaviors and academic struggle. Taken all together, these factors represent a need for institutions to take a lead role in systems of student mental health care.

Numerous studies have found that specific mental health conditions (specifically anxiety and depression) are negatively linked with student success and wellness in college. For instance, both diagnoses have been found to be negatively linked to first-semester GPAs (Kivlighan et al., 2021; Hartley, 2011), quality of sleep (Doane, Gress-Smith, & Breitenstein, 2015), assessment of risk (Pailing & Reniers, 2018), coping with common stressors (Karatekin, 2017), and feelings of hopelessness (Lamis et al., 2016). It is evident in the body of literature that mental health symptoms and diagnoses represent a significant influence on college students' overall ability to thrive and be successful in their new environments. Multiple types of studies have helped to demonstrate these associations. Both correlational (Doane, Gress-Smith, & Breitenstein, 2015; Kivilghan et al., 2021; Mahmoud et al., 2015) and longitudinal designs demonstrate these results (Hartly, 2011; Karatekin, 2017; Lamis et al., 2016; Woodhead et al., 2019). More research seems to be needed regarding whether prior mental health diagnoses (i.e., in earlier adolescence) represent a moderator between mental health experiences during college and overall success, or if there are mediators related either positive or negative associations between mental health and success.

A few distinct theories have been proposed as explanations of these associations. The two that most commonly appear in the literature are Implicit Theory (or Implicit Person Theory) (Dweck, 1986; Heslin et al., 2005; Lyndon et al., 2014; Schroder et al., 2015) and Theory of Planned Behavior (TPB) (Ajzen & Fishbein, 1980; Bohen et al., 2016; Mesidor & Sly, 2014). These two theories do not relate to one particular mental health diagnosis, but the individual's overall experience with mental health challenges and their effects on life. Implicit Theory speaks to an individual's perception of capacity

for change (fixed or entity/malleable view of traits and/or abilities), and how those changes might have effects on other aspects of one's life. TPB is a model that can help explain students' intent to seek help for mental health challenges and the factors that contribute to those decisions (i.e., wanting to get help because it will have an impact on academic success as a long-term consequence).

Interventions Related to Mental Health. Several studies have endeavored to examine where institutions should start to tackle the challenging state of mental health of undergraduate students. Many ideas for interventions and investigation into protective factors exist in the current body of literature. Eisenberg offers two key suggestions (beyond the idea of ensuring clinical mental health support is well staffed on campus) – teaching coping skills and focusing on social climate and peer connections (2019). This raises further points in favor of examining mental health and self-regulation in a parallel capacity – both of Eisenberg's major suggestions here of coping strategies and social contexts also have relationships with self-regulation, and, for the purposes of this review, will be further elaborated upon independently. Gopalan, Linden-Carmichael, and Lanza suggest that sense of belonging at the institution may be chief among these protective factors (2022). Their goal was to demonstrate that despite the current cultural climate of universities amidst COVID-19, where mental health challenges are at an all-time high, belongingness still plays a chief role in buffering symptoms of depression and anxiety. The results of their measures demonstrated this to be the case, which poses directions for future research regarding how sense of belonging can be bolstered as a way to navigate students' mental health needs.

Anxiety, depression, and stress represent the three most prominent mental health concerns for the population at large aged 18-22 (Hoyt et al., 2021; Chirikov et al. 2020). Qualitative findings in the Hoyt et al. study revealed that near "constant" stress is the "new normal" for college students, particularly among marginalized and disenfranchised subgroups (p. 272). Many different factors can contribute to college students' experiences with anxiety. In one large scale study of a national data set, academic distress, financial stress, and family and peer support comprised the biggest considerations (Jones, Park, & Lefevor, 2018). Most interestingly in this study, dissimilar to some others, was the finding that demographic variables had very small effects on experiences with anxiety, "indicating a universality" in the experience (p. 252). The top factors noted in this study reveal links to the other topics covered in this review. Students reporting that academic pressures and expectations contribute to feelings of anxiety is very logical, but also indicates that these factors may be in a bidirectional relationship. The need to further investigate this relationship is apparent. The influence of financial stress on anxiety, while it may be something that is completely out of students' control, could also be a factor that links to self-regulation. Overspending and poor financial management can be caused by individuals exhibiting a lack of self-regulation, or spending can be used as a harmful coping mechanism (Zhang et al., 2019). It is highly probable that self-regulation as a skill fits somewhere into helping students improve this aspect of a cycle that leads to anxiety symptoms. Finally, social supports, particularly from family and peers, can play a marked role in mitigating or enhancing the experience of anxiety (Mahmoud et al., 2015). The role of support and peer relationships will be covered more thoroughly later in this review.

While academic and financial stress and the role of social supports contribute in real time to college student mental health, are there factors that might be helpful in predicting these struggles prior to the transition to college? Studies argue that the answer to this might lie in an in-depth examination of adverse childhood experiences (ACEs) (Karatekin, 2017). As previously noted in regard to the unique risks that ACOAs face (Pearson, D'Lima, & Kelley, 2011), ACEs play a role in predicting mental health that worsens markedly over time during the first semester of college. In this study, number of current stressors (which refers to similar factors from the Jones, Park, and Lefevor study) seemed to act as a mediator between number of ACEs and mental health (where even individuals with a higher number of ACEs, if they were dealing with fewer current stressors, exhibiting better mental health). This study presents practical applications for student success – even though ACEs cannot be removed, screening for them as well as providing stress-related interventions to minimize the "current stressors" for those students who have experienced ACEs could positively impact their effects on a decline in mental health.

Several of the aforementioned risk behaviors engaged in by students in the transition to college can play a part in these diagnoses or experiences with their symptoms. One example is the role of sleep as it relates to symptoms of anxiety and depression. Changes in quality and quantity of sleep in the transition to college appear to have impacts on experiences with anxiety, which predicates further sleep problems. Conversely, depressive symptoms appear to impact sleep, which then can further exacerbate symptoms at a later time point (Doane, Gress-Smith, & Beritenstein, 2015). As evinced in the Pailing and Reniers study previously discussed, general risk-taking and

risk perception (tied closely to the development and expression of self-regulation) are related to depressive and socially anxious symptoms as well.

One particular category of risky behavior – alcohol misuse – can even be linked to the worsening of depressive symptoms to the point of onset of suicidality (Lamis et al., 2016). However, just as with other studies that have examined mental health, social support was found to moderate the effects of alcohol on depressive symptoms, and of depressive symptoms in predicting suicidal ideation. As it relates specifically to students in college, it was found in a 2018 examination of World Health Organization data on suicidal thoughts and behaviors (STB) that college entrance and persistence is correlated to a lower prevalence of STB than in same-age peers who never enter college or have stopped out (Mortier et al., 2018). Further research is needed to examine causality of these associations, but it appears that there is reason to postulate that sustained college enrollment supports a reduction in STB when compared to same age peers.

Coping and Help-Seeking. At the intersection of mental health and self-regulation is an individual's coping behaviors and help-seeking strategy. Mental health help-seeking is simply communicating one's struggles to others and seeking assistance or treatment (Divin et al., 2018). The source of help may be formal (for example, a counselor, psychiatrist, or psychologist) or informal (friends or family). Help-seeking behavior has not appeared to rise in the emerging adolescent population the same way that mental health problems have – only one-third of individuals meeting diagnostic criteria seek professional help (World Federation for Mental Health, 2009). While seeking help could be considered a form of self-regulation in and of itself, failure to do so has also been shown to lead to other behaviors that represent a lack of self-regulation – substance

abuse, risky sexual behavior among them (Anderson & Lowen, 2010; Brindis et al., 2002).

If an individual does not seek professional or informal help, and often even if they do, they will naturally turn to some other form of outlet to cope with their mental health struggles (or other failures and hardships that occur in life). Coping is defined as an individuals' chosen response to a stressor that leads to some level of mitigation of the stressor (Henry et al., 2022). How one chooses to cope has been categorized in the research into multiple dichotomies – among them are problem-focused versus emotion focused (Lazarus & Folkman, 1984); cognitive versus behavioral (Latack & Havlovic, 1992), engagement versus disengagement (Cooper et al., 2018); and approach versus avoidance (Roth & Cohen, 1986). Coping is also broadly adaptive or maladaptive (Skinner et al., 2003). Self-regulation and the more adaptive coping strategies are highly correlated (Zapata et al., 2016) – thus, the two concepts would both benefit from further investigating that takes them into account together.

Part of choosing to seek help or determine a desired coping mechanism for mental health struggle is the perception of said help or coping. In a university setting, one of the concerns with ensuring that all students have access to treatment when needed is imbalance between demand and practitioners available. Thus, telehealth services have become more prevalent in the past several academic years (Gatdula et al., 2021). While this strategy allows more students to be able to access some sort of support and the services have some level of proven effectiveness, they fall short in students' perception of their desirability as a treatment option (Lattie et al., 2019). Individuals surveyed expressed concerns with confidentiality in a digital environment as well as a lack of

connection to the practitioner when not face to face. This raises the need to further examine how to either make in-person support more accessible or digital support more desirable. Ultimately, some stigma to seeking valuable professional help for mental health symptoms is still prevalent – students express a higher level of comfort and positive outcomes disclosing issues to peers than to faculty or staff on university campuses (Woodhead et al., 2019). Once again, this presents several potential options moving forward – looking for ways to reduce stigma of professional help, strategies to train students to be peer supporters, and interventions to encourage any disclosure, along with positive coping strategies, would be among these.

Social Support. Self-efficacy, previously discussed in the context of the social-cognitive theory of self-regulation, serves as a crucial bridge between the topics already covered in this review and the final component – social supports from peers, university personnel, and family. There is an abundance of evidence in the literature regarding academic self-efficacy related to feedback from others, social supports, and parenting (Lei et al., 2022; Brown, Peterson, & Yao, 2016; Kim & Sax, 2018; Llorca, Richaud, & Malonda, 2017). The findings, though investigating factors related to self-efficacy in varying patterns and combinations, are consistent: social supports and self-efficacy both have a contribution in helping predict academic performance. In one study, researchers found a mediation model where self-efficacy positively predicted performance, mediated by academic buoyancy (i.e., resilience). The mediation relationship was further moderated by social support (Lei et al., 2022). In another, receiving feedback from a competent faculty member was found to have a positive relationship with self-efficacy and GPA, as well as use of self-regulated learning (Brown, Peterson, & Yao, 2016).

Finally, the long ranging implications of support from others, starting as early as impacts of parenting style and early adolescent peer relationships, were investigated in a longitudinal study that ultimately examined academic self-efficacy and academic performance (Llorca, Richaud, & Malonda, 2017). This study found that parenting style, particularly maternal, positively predicts certain types of behaviors and attachments to peers, as well as academic self-efficacy. Thus, academic self-efficacy and peer relationships act as mediators between parenting style and academic performance – this poses many societal as well as educational implications for those raising children.

As evinced, the relationships that emerging adults maintain and develop with others have the potential to have serious impact on a multitude of factors that influence their success and thriving. From impacting academic self-efficacy, performance, and success (Lei et al., 2022) to moderating the impact of depressive symptoms (Lamis et al., 2016), peers, family, and institutional personnel play a big part in determining individual student outcomes. Overall, it has been well documented that "expression of support predict[s] student ability to adapt to university" (Turkpour & Mehdinezhad, 2016, p. 53). Which individuals have the greatest impact, or potential for the greatest impact, is certainly open for interpretation and ripe for further study.

Peers. Peers, in particular those peers who become friends, play a highly prominent role in overall student wellbeing, particularly in key transitional periods (such as from high school to college) – in general, changes in life context are a critical time during which adolescents and young adults must reflect and actively adapt and protect their motivational and self-regulatory resources (Lang & Heckhausen, 2006). Pascarella and Terenzini (2005) have notably claimed that peer experiences in college are "probably

the most pervasive and powerful force in students' persistence and degree completion" (p. 615). Defining the specificities of friendships in and their roles in various aspects of student success, however, has notably been a challenge that researchers have worked to clarify.

In the research, it has been demonstrated that perceptions of peer support (via ability to disclosed academic difficulty) have a positive impact on academic self-efficacy (Altermatt, 2016; Cheong, Gauvain, & Palbausa, 2019). These studies indicates that the two-way nature of friendship, in particular, is vital. This idea can be further confirmed by studies that have examined the idea of contribution – one's involvement in helping a friend and showing compassion, concern, and social responsibility. Contribution was found to have an association with lower levels of depressive symptoms, both directly and as mediated through self-regulation and academic performance (Kurtovic, Vrdoljak, & Hirnstein, 2020). Bronkema and Bowman also looked at specific aspects of the friendship, specifically examining emotional closeness and number of friends (2017). This study found that both positively predicted six-year graduation rates (i.e., persistence), but only number of friends predicted grade point average (GPA).

The question related to peer support and friends that is especially prominent in much current literature is the matter of digital connection and social media. A recent two-part publication by Nesi, Choukas-Bradley and Prinstein (2018) discusses the significant impact of social media on adolescents' peer experiences. The widespread adoption of social media has transformed the previously established landscape of the importance of peers in adolescent development. Their papers introduce transformations framework to provide a unified perspective on the influence of social media on peer relations. In Part 1,

a framework for dyadic (i.e., pair) relationships outlines five ways in which social media alters relationships: by changing the frequency and immediacy of experiences, amplifying demands, altering the nature of interactions, creating new opportunities for compensatory behaviors, and introducing entirely novel behaviors. Part two continues this work while looking at peer groups and three key constructs: peer victimization, peer status, and peer influence. Overall, their transformation framework offers a valuable addendum to previous approaches and presents a new model for understanding peer relations in the context of social media. This model aligns with the findings in Raney and Troop-Gordon (2012) and Yang (2020), which both look at long-distance social media communication and implications for friendship quality, college adjustment, and positive impacts to mental health.

Family. Though most traditional college students experience a departure from their established norm of seeing their families every day once they transition to college – pre-2020, about 85% of full-time undergraduates at four-year institutions live away from home (National Postsecondary Student Aid Study, 2016), and this has anecdotally returned to pre-COVID levels – family support and interactions still have an impact on students' success in college. One possible reason for the powerful impact of family from a distance is that it has been shown that perceptions of support contribute more to adjustment than actual provision of that support (Levi et al., 2021). Just as support (both perceived and actual) has an impact, so do demands from family, even from a distance. One study of Jordanian and Turkish university students demonstrated that relationships existed between perceived family support and family demands and mental well-being – but that the negative correlation between family demand and levels of depression and

stress was stronger in all groups (Khallad & Jabr, 2015). This indicates, as well, that awareness of cultural and demographic differences regarding support perceptions and provision are important. One such group difference where family support is of particular importance is for students with disabilities (representing an increasingly large percentage of the college student population – potentially a number that has tripled or quadrupled in the past quarter-century (Francis et al., 2018). These students, though they have specific needs, represent the needs of a larger a group who indicated that they communicate and seek support from their families about mental health, emotional support, and feeling overwhelmed. In one study of the broader student population, students and parents both indicated a need that mutual support was necessary as the student had not fully reached adulthood (Bartoszuk, Deal, & Yerhot, 2019).

Because the vast majority of students, especially in the first year of college, are not in close physical proximity to family, other adults provide varying measures of support as well. Students respond to both perceived support from individuals representing the institution and the institution as an entity (LaMastro, 2001). Students' perceived support for their autonomy coming from individuals has been shown to positively impact academic success, with academic self-efficacy as a mediator (Gutierrez & Tomas, 2018). This indicates that students most desire that authority figures who are new to them in the university environment support their independence and exploration. This is especially true for students in marginalized populations, such as ethnic and sexual orientation minorities. In these groups in particular, faculty and staff support has a positive impact on engagement, intent to persist, and overall success (Linley et al., 2016; Tovar, 2014).

Sense of Belonging. A major reason that peer relationships in particular are so critical is due to a particular factor, one on which many students' abilities to thrive and persist hinges. This measure is sense of belonging at the institution. Sense of belonging is both an individual construct and a collection of factors. It is most commonly defined in the singular sense as "the experiences of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment (Hagerty et al., 1992)" (Hoffman et al., 2002). As a collection of items, sense of belonging represents congruence of values with others, feelings of importance to others, and the absence of loneliness. Sense of belonging acts as a key protective factor against feelings of lack of social support, anxiety, and depression – and has continued to do so amidst the impacts of the COVID-19 pandemic (Gopalan, Linden-Carmichael, & Lanza, 2022). The importance of belonging for the individual is based in Maslow's (1943) hierarchy of needs and Baumeister and Leary's (1995) belongingness work. It is a fundamental human need that is critical in an individual's overall wellbeing, self-esteem, and motivation (Leary, 2010). Once established, a fulfilled sense of belonging can create numerous positive outcomes (Gopalan & Brady, 2020; Strayhorn, 2012; Strayhorn 2019).

A firmly established sense of belonging has been found to increase retention, academic success, and student well-being, and reduce feelings of loneliness (Crawford et al., 2023). The start of college, and emerging adulthood in general, marks a major developmental shift, bringing social support changes and changes to social identity, which can result in feelings of loneliness and lead to mental health problems including depression (Parker et al., 2020). The effect of belonging represents a critically important and influential factor upon student persistence, thriving, and success.

Quality of Existing Research. Overall, the quality of existing research in these fields is strong. There is diversity in study designs, though intervention studies remain somewhat few. In studies where quantitative survey data is collected from well-validated measures, correlation analysis and regression are frequently utilized to demonstrate effect (i.e., Kitsantas et al., 2008; Park et al., 2012; Thibodeaux et al., 2016). These methods are appropriate for examining and reporting on associations between variables, and especially useful in studies with a college student population where GPA is collected as a continuous measure. A unique regression analysis was utilized in the Park et al. article to examine changes in the response variable (adjustment, measured by depression, anxiety, and stress) over time, in which they built separate models for each of the variables at each time point regressed onto their match variable at another time point. This seems to be an innovative way to look at this type of data – the authors, interestingly, do not reference the utilization of structural equation modeling, but the reason for this omission or change in phrasing is unclear in this article.

Longitudinal studies also represent a portion of the existing research and shows promise as a design (e.g., Nota et al., 2004; Park et al., 2011, Kivlighan et al., 2021). One concern with longitudinal studies is the potential for attrition – not only by decreasing overall sample size but introducing missing data into analyses. While longitudinal data in and of itself works in a study's favor, attrition is a risk that must be accounted for. Especially in studies where the constructs being measured (i.e., self-regulation, coping) related to consistency of taking certain actions which may not be preferable or desirable, study "dropouts" may represent a significant portion of the effect of a particular construct.

One interesting study that utilized randomization to groups and collection of both within- and between- subjects variables to determine the effectiveness of a note-taking intervention on students' test performance (Peverly et al., 2003). While there is value in performing a truly randomized experiment in terms of establishing some sort of causality, this of course presents limitations in generalizability to other groups. Additionally, as far as the construct of interest (self-regulation) is concerned, the intervention only examined one small skill (notetaking) associated with this much larger measure.

Future Directions. To be sure, substantial research exists in the current literature that highlights the importance of the constructs covered in this review. In the emerging adulthood life stage, self-regulation, mental health, social support, coping, and academic self-perception are key variables that contribute to academic success and overall positive outcomes in the transition to the college environment. The importance of these variables for an individual's thriving, particularly in this life stage, cannot be understated.

Currently much of the research focuses on these variables in silos or interactions between separate pairs. Therefore, there is a dearth in the literature examining where multiple instances of these variables intersect, including interactions as moderators and mediators. The empirical studies in this dissertation address some of these analytic methods, specifically moderation relationships. It is important the future research focus more intently on combinations of these intersections and the ways in which that evidence can be utilized to provide students with support and the tools to succeed in the college environment. For example, the association between self-regulation and social supports is fairly well established (see Farley & Kim-Spoon, 2014; Brown, Peterson, & Yao, 2016), as well as between social supports and mental health (see Khallad & Jabr, 2015;

Kurtovic, Vrdoljak, & Hirnstein, 2020). It is clear that self-regulation and mental health interact, but the model of the relationship, directions and types of interactions, and strength of interactions are ripe for further clarification.

Specific future research directions in the existing literature consist primarily of mentions of obtaining larger sample sizes or more institutional diversity in order to foster greater generalizability or conducting replication studies at other institution types (i.e., public versus private, religions versus secular, single sex versus co-ed, etc.) (e.g., Davis & Hadwin, 2021; Park, Edmondson, & Lee, 2011; Young & Ley, 2005). The data set used in the studies conducted for this dissertation does represent a large and fairly diverse sample size that contributes to the body of work. Studies that are correlational in nature mention the necessity for specific interventions to be developed based on those results (e.g., Hen & Goroshit, 2012; Inan et al., 2017), whereas the relatively few instances of intervention studies make calls for further refinement of measures of the constructs on which they were designed to intervene (e.g., Ariely & Wertenbroch, 2002; Bail, Zhang, & Tachiyama, 2014). In their discussions, existing longitudinal studies (e.g., Park et al., 2011; Kitsantas et al., 2008; Thibodeaux et al., 2016) present a case for the collection of still more time points worth of data. Given that the concepts discussed in this review are ones that are not static for most individuals, further exploration of longitudinal studies would be a pertinent direction for future research. Park argues for "a study design that employed more frequent assessments… and would provide a more nuanced portrait of the fluctuations in both self-regulation abilities and adjustment and would provide the opportunity to examine personal and contextual factors that may influence both" (p. 47), as well as for future research to consider collections of additional social factors, such as a

drug and alcohol use, that can impact college adjustment. The idea of creating collections of variables in future study raise the potential for latent profile analysis as an option. Latent profile analysis is a "person-oriented" research approach that allows for individual personal characteristics to be considered, and for subgroups of "profiles" fitting a type of individual to be identified and studied (Araújo et al., 2019). It has been utilized in a variety of instances in the research with the university student population (Araújo et al., 2019; Pastor et al., 2007; Ning & Downing, 2014). Given the importance of studying this collection of variables in intersection with each other, this analytical method could show promise for use in future studies.

In conclusion, further study of the constructs covered in this review represent critical directions for future research, particularly when examined in concert with each other and especially when studied in the 18-22 age group of emerging adulthood. The existing literature presents a solid starting place for delving into the importance of these variables and plays a valuable role in illuminating the gaps in the research and opportunities to further contribute to the field. It also provides a concrete basis to underscore the importance of the empirical research conducted in the remainder of this dissertation, specifically the investigation of moderators in correlational studies, use of actual GPA as an academic success metric, and successful collection of a large and diverse convenience sample. Ultimately, this review and the following studies set the stage to continue the ongoing process of determining and developing best practices that support college student success, retention, and thriving.

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CHAPTER 3

SELF-REGULATION, MENTAL HEALTH, AND ACADEMIC ACHIVEMENT: AN EXAMINATION OF VARIABLES CRITICAL IN FIRST-SEMESTER STUDENT SUCCESS[1]

[1] McKeown, P., and Dawes, M. Submitted to *College Student Journal*, 10/10/2023.

Abstract

Successful adjustment in the first year of college is critical for retention and completion of higher education. The current study was conducted to examine the relationship between self-regulation, mental health symptomatology (depression, anxiety, and stress) and first semester GPA and to develop a greater understanding of how mental health symptomatology during the transition from high school to college affects students' adjustment and academic achievement in the first year. Using a sample of 603 first-year college students (74% female, 82% white), we found a significant negative association between self-regulation and mental health symptomatology. Regression analyses revealed associations between self-regulation and mental health with first semester GPA such that greater self-regulation was associated with higher GPAs and worsening mental health was associated with lower GPAs. Implications for future study and practical applications are discussed.

Keywords: academic success, emerging adulthood, mental health, self-regulation, university adjustment

Introduction

For many late adolescents, college attendance and graduation serve as a monolith representing the logical and necessary next steps in their lives. As of 2020, 63% of traditionally aged students (17-18) enroll to attend college immediately after high school graduation (National Center for Education Statistics, 2022). However, only 64% of these ultimately graduate in six years (NCES, 2022) – representing loss of money, career capital, and self-worth upon non-completion of college attempts. Success in college and gaps in college graduation have vast implications for individuals (Twenge & Donnelly, 2016; McMahon, 2017) – particularly marginalized populations (Guevara-Cruz, 2018; Rhoden, 2017; Carey, 2016) – their future families and generations (Kaushal, 2014; Oreopoulos & Petronijevic, 2013), and society at-large (Ma, Pender, & Welch, 2019; Pew Research Center, 2014). Hence, college students represent a critical population, with the incidence of attrition warranting special attention in the research literature (Beer & Lawson, 2016). The question posed in the greater landscape of higher education is how institutions can best support college student development and success, closing the gaps between enrollment and graduation.

Abundant research focuses on college student success and contributing factors (Snyers & De Witt, 2016; Moallem, 2013; Trapmann et al., 2007) – there are several variables of interest that have been found to consistently be implicated in success (de la Fuente et al., 2020; de la Fuente & Cardelle-Elawar, 2011; de la Fuente et al., 2014a; de la Fuente et al., 2014b; Eisenberg, Golberstein & Hunt, 2009; Finkel & Fitzsimons, 2010; Hebret et al., 2020; Mahdavi et al., 2021), two of which are self-regulation and mental health. Despite the plethora of research on these key factors, critical questions remain,

and additional research is needed to investigate the intricacies of the relationships. While much of the existing research that measures academic success uses first-year GPA or subject-specific success, first-semester GPA is a unique measure because it represents the earliest measurement of achievement during the transition to college.

Additionally, the relationship between self-regulation and mental health has also been demonstrated to be bi-directional, where the toll of navigating existing mental health symptoms can compromise one's finite supply of self-regulation resources (Baumeister et al., 2005e). While some known associations have been demonstrated to exist, taken all together, self-regulation and mental health must be investigated more thoroughly as a constellation of attributes contributing to overall student success and thriving in the university transition. In this study, mental health was investigated as a moderator in the relationship between self-regulation and academic achievement.

The goal of this study is to examine the relationships of these variables, in the context of key student demographics, to academic success. These variables are particularly important because they represent areas around which tangible interventions can be designed and implemented (e.g., mental health supports). While these factors are shown in the research to have some interaction and intersection, further study is needed to determine the extent and strength of these relationships so that proper focus can be applied in determining what interventions will best serve students.

Self-Regulation in Emerging Adulthood

There is a proliferation of terminology in the field of self-regulation research, but it can be described at its most straightforward as "exertion of control over the self by the self (Muraven & Baumeister, 2000, p. 247)" (Farley & Kim-Spoon, 2014). In her 2012

article, Cohen builds upon and specifies this, citing Bandura's triadic view of self-regulation and defining it as "the self-generated thoughts, feelings, and actions for attaining one's goals (Zimmerman, 2000)" (p. 892). There are multiple existing theories and models in the present literature that suggest that lack of coping skills when an individual is faced with stressful or distressing situations or attempting to regulating negative emotions and mental health symptoms (depression, anxiety, and stress) could reduce one's ability to demonstrate self-regulation, or lead to self-regulation failure in its entirety (Wagner & Heatherton, 2013). Most prominently, a strength focused model of self-control indicates that self-regulation exists as a finite internal resource that can be depleted overtime, especially in highly stressful situations where effortful control is needed (Baumeister et al., 1998; Baumeister et al., 1994; Baumeister et al., 2007; Muraven & Baumeister, 2000).

According to this perspective, all self-regulatory behaviors draw on the same, limited set of resources within the individual. If this theory holds true, when one applies all of their self-regulation resources in one area (i.e., regulating negative emotions and coping with stressful situations), they in turn have depleted resources to draw on to engage in self-regulation efforts in other areas (i.e., persistence with challenging tasks, specifically of the intellectual variety) (Baumeister et al, 1994; Muraven & Baumeister, 2000). Abundant empirical research suggests that acts of self-regulation in one area consequently reduce an individual's performance in subsequent self-regulation tasks, particularly their performance and persistence on challenging tasks (Hagger et al., 2010).

The current literature suggest that self-regulation is a significant predictor of adjustment to college and higher GPA (Tangney et al., 2004). It is worth noting that

more in-depth study would be worthwhile specifically in first-year students, who encounter copious and unique challenges that necessitate enhanced self-regulation – and furthermore, that in this group that self-regulation may even be more finite given the new and unfamiliar competition for demands on time and attention. The need to successfully prioritize some tasks and activities over others is both critical and novel for this population of students, most of whom have no prior basis for success in managing their time and efforts in this way.

The need exists for further investigation into self-regulation in the emerging adulthood population, as strategies regarding self-regulation could be beneficial for designing supports and interventions that lead to greater academic success and positive impacts for both individuals and institutions. Self-regulation can play a role in the management of and coping with mental health concerns (Arslan, 2018; Durand-Bush et al., 2015), which – particularly in recent years – has risen to the apex of ways to ensure college students can be successful (Eisenberg, 2019). In a 2015 national college health assessment of 22,931 undergraduate students, 9.3% of male students and 17.0% of female students reported receiving or being treated for depression within the previous 12 months (American College Health Association, 2016).

The current study focused in on a specific subset of college students – those in the early months of their first semester. The central question that has been examined involves the roles of self-regulation and mental health symptomology, their relationship with each other, and their separate and shared influences on early college academic achievement. Students who start college with mental health challenges are prone to experience the

specific dilemma of managing their experiences and affect alongside all of the other challenges of their new environment.

Mental Health in Emerging Adulthood

Particularly over the course of 2020-2022, mental health concerns and strategies to support college students in this area have been conversations at the forefront. The two most common mental health concerns, depression and anxiety, each affect nearly 40% of all undergraduate students as of 2020 (Chirikov et al. 2020) – 1.5 to two times higher than the same rates in 2019. These rates are particularly prevalent among low income and first-generation students, students who are caregivers, and those who are within the LGBTQ+ community. In the light of the COVID-19 pandemic, students who do have these diagnoses were found to, in turn, be significantly more likely to experience financial hardship, challenges in adjustment to college, and a decreased sense of belonging on campus (Horogos et al., 2020). It could be said that there is a vicious cycle effect to a mental health diagnosis or symptoms as a college student, which raises the need for further investigation into the best ways to ensure the cycle breaks.

Though the last few years and the corresponding current events of the world have seen an uptick in students' reporting of mental health symptoms and diagnoses, this experience is not something novel in the developmental stage of emerging adulthood (Duffy, et al., 2019). Since the transition to university generally takes place in the period of adolescent development that is characterized by the need to establish identity, as well as the time at which the brain is undergoing biological developments and is highly sensitive to risk exposure and compromised judgement, college students' mental health has always existed in a somewhat fragile state (Chung & Hudziak, 2017). Evidence

shows the prevalence of mental health conditions emerging in this life stage and, due to the timing of other life events in this period, an association with a delay in seeking or obtaining treatment (Kessler et al., 2007).

Mental health challenges among college students are associated with poor academic performance (Boyraz et al., 2016; DeRoma et al., 2009; Haines, Norris, & Kashy, 1996; Hysenbegasi et al., 2005) and even dropping out of college (Boyraz, Horne, et al., 2016). Because the experience of distress is most often experienced alongside functional attempts at regulating that distress (Muraven & Baumeister, 2000), coping with mental health struggles is a daunting task that is bound to deplete self-regulation resources in any demographic (Cole et al., 2014) – but this is especially liable to be the case in college students. This is due to the fact that transitioning from high school to college brings a myriad of unfamiliar challenges (for instance, increased levels of freedom leading to the need for effective self-management of time, coping with homesickness or loss of support systems, navigating new and different social dynamics, and negotiating the effort required to success in a new level of academic rigor), and navigating these challenges while striving towards one's ideal academic performance requires immense effortful self-regulation (particularly at a time where the brain is not at its biological peak to do so [Chung & Hudziak, 2017]).

Associations between Self-Regulation, Mental Health, and Academic Achievement

Self-regulation is a particularly important component of academic success due to the concept of effort regulation. Effort regulation refers to an individual's ability to maintain effort and attention when faced with challenging or uninteresting academic tasks (Pintrich, 2004; Pintrich, Smith, Garcia, & McKeachie, 1991). Effort regulation

requires a great deal of broader self-regulation skill, especially if we consider the strengths model of self-regulation (Corno, 1993; Corno & Kanfer, 1993). Students with high levels of self-regulation are more likely to persist in academic tasks and see them as within their control despite difficulty, disinterest, or the presence of a more desirable activity (Pintrich et al., 1991). This ability to is practically a prerequisite for academic success. Meta-analysis on the topic shows that self-regulation is a strong predictor of several factors related to academic achievement among college students (Credé & Phillips, 2011).

Students who enter college with mental health challenges are more likely to experience difficulties with self-regulation. It is natural for one to prioritize emotion regulation over other forms of self-regulation experiencing the "fight or flight" of negative emotions (Tice, Bratslavsky, & Baumeister, 2001). Due to this, it is logical to presume that students under mental health stress may use up their already limited self-regulation resources more quickly – thus reducing their ability to self-regulate the effort needed for academic success (Boyraz, et al., 2016).

The purpose of this study was to contribute to the existing research in this area by looking at a linear model to determine how self-regulation and mental health (composed, for the purposes of this study, of symptoms of depression, anxiety, and stress) are related to each other, and how they (separately and in tandem) impact first-semester GPA among college freshmen. It is hypothesized that self-regulation will be positively associated with GPA, and that mental health symptomology will correlate negatively with both GPA and self-regulation. A variety of demographic factors that may play a role, specifically including gender and prior mental health diagnosis, have also been included.

Current Study

This study sought to investigate the relationships between college student mental health, self-regulation behaviors, and academic achievement. Further, we sought to address the gap in the research on these factors by not only looking at self-regulation and mental health as predictors of GPA, but as predictors of each other. Additionally, we addressed a more finite variable of early academic achievement by using first-semester GPA. Finally, we tested mental health symptom levels as a categorical moderator of the relationship between self-regulation and GPA.

We expected that mental health symptoms would be negatively associated with both self-regulation and GPA, and that self-regulation and GPA would be positively correlated. This expectation was based on prior research and the existing literature illustrating the relationships between these factors (Cisler et al., 2010; Pearson et al., 2011; Pailing & Reniers, 2018). In terms of group differences, we explored the idea that demographic factors such as race and gender could play a role in some of these effects, which is in line with previous studies, though the literature is mixed (Cooper, Shaver, & Collins, 1998; Proto & Quintana-Domeque, 2021). Lastly, we hypothesized that mental health would serve to moderate the relationship between self-regulation and GPA, such that students with more severe mental health symptoms would also show self-regulation as a strong predictor of GPA. We also explored group differences between levels of self-regulation scores, but because of the limited research base, we did not develop any concrete hypotheses.

We investigated these research questions in a sample of first-year students. The decision to study first-year, first-semester students was deliberate: this period represents

emerging adults at their most vulnerable due to the immensity of the life transition, and most prone to mental health symptoms and self-regulation failures (Sy et al., 2011). It also represents the period in which intervention has the most potential to be effective and impactful for the long-term of the individual's college career (Gordaniere et al., 2019).

Methods

Participants

The participants in this study included 592 first-year college students attending a large, public, state flagship university in the southeastern United States. Instructors of the university's first year seminar course (approximately 5,800 students enrolled) assisted in recruitment of participants. No course credit was incentivized for participation, but participants were informed that five random completers would be selected to receive a $50 gift card. In total, 603 students took the survey, but 11 were removed for indicating that their entry term to the university was one other than summer or fall 2022. 130 participants did not reach the completion page of the survey, or their GPA was not obtained, so were excluded from analysis where there was no information for the variables in question. This led to a total sample size of 569 GPAs, 509 replies to the self-regulation component, 472 replies to the DASS (Depression, Anxiety and Stress Scale used to measure mental health experiences), and 456 fully valid cases.

Participants' ages ranged from 16 to 19 years (M = 18.2, SD = 0.39). The majority of the participants were female (74%, n = 422), 24% (n = 139) were male, and just over 1% (n = 8) identified as another gender or nonbinary. The vast majority of the participants identified their ethnicity as White/Caucasian (82%, n = 462), 8% (n = 46) as Black/African American, 4% (n = 21) as Asian/Pacific Islander, 3% (n = 17) as

Hispanic/Latino, 3% (n = 17) as biracial/multiracial, and less than 1% (n = 1) as Native American/Indigenous; three participants (1%) reported their ethnicity as other or indicated "prefer not to say".

Measures

Demographic Information: Demographic questions were used to collect information about the participants' age, major, gender, ethnicity, state of residence (in- versus out-of-state), college entry term, current housing status, and whether the university's freshmen seminar was a required course.

History of mental health in early adolescence: Participants were asked to indicate binarily whether they have a history of mental health diagnoses from early adolescence. Previous diagnosis was used as a control variable in the analyses looked at the mental health variable.

Self-Regulation. Participants were asked to respond to the Shortened Self-Regulation Questionnaire (SSRQ; Carey et al., 2004)**.** They were asked to answer questions about their self-regulatory behaviors by selecting the response that best describes how they usually behave, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Sample items include "I usually keep track of progress towards my goals" and "it's hard for me to notice when I've 'had enough'". This measure demonstrated high internal consistency in previous work (Salonna et al., 2018). The total scoring of this metric is a sum of all responses, with a maximum possible score of 120, with high scores representing greater self-regulation behavior. The internal consistency in the current sample was acceptable at $\alpha = 0.68$.

Experience of Troubling Mental Health Symptoms. Participants were asked to respond to the Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). Participants responded to statements about a variety of mental health symptoms based on how much the statement has applied to them over the past week. Responses ranged from 0 (*did not at all apply to me*) to 3 (*applied to me very much or most of the time*). This measure demonstrated high internal consistency across subscales in Kia-Keating and colleagues (2018). In the current investigation, all responses were summed to generate a total score with a maximum possible score of 63, with higher scores representing higher levels of depression, anxiety, and stress symptoms. Internal consistency was also moderately high for the current sample at $\alpha = 0.79$.

Grade Point Averages (GPA): Participant's first semester GPA was collected from the Registrar's office based on the student ID number that they provided and consent that was given to gather this information. GPAs at the institution where the study was conducted are on a standard 0-4.0 scale.

Procedures

Following approval by the university's Institutional Review Board for a large-scale study, first-year students were recruited for data collection from the university's first-year seminar course, in which approximately 80% of the freshmen class enrolls annually. Several e-mail blasts went out to both course instructors and students encouraging participation and provided contact information for the Office of Research and the primary investigator.

Participants completed the survey electronically, which they could either do via a QR code or anonymous link. Participants were asked to provide an official university ID

number as well as a create a unique ID comprise of their initial and date of birth, so that identifying information could be removed from the dataset following GPAs being obtained at the end of the semester. Participants completed a consent form specific to the study, as well as a Family Educational Rights and Privacy Act (FERPA) consent form allowing the researchers access to their university records (GPA). Data collection began September 29, approximately five weeks after the fall semester began, and concluded in early November.

Analytic Plan

To address the first research question of this study, whether or not there is any indication of a predictive nature between self-regulation, mental health, and first-semester GPA, correlation coefficients (*r*'s) and coefficients of determination (R^2's) were calculated and regression analysis was conducted between the variables to determine if any level of change in first-semester GPA could potentially be accounted for by the explanatory variables. Coefficients and regression were also calculated between self-regulation and mental health symptoms to gain a better understanding of that relationship. To address potential moderation in the relationships due to demographic variables, independent samples *t*-tests (gender and prior mental health diagnosis) and one-way ANOVAs (race/ethnicity) were conducted to look for significance in between and within group means.

In order to address research question two more substantially, moderation analysis of the variable relationships was conducted after transforming mental health into a categorical variable (using the cutoff scores designated in Lovibond & Lovibond [1995] to create "low", "medium", and "high" symptom groups). To conduct this moderation

analysis, ANOVAs were first performed between groups to confirm mean differences. Then, we used simple slopes analysis to examine moderation effects. By doing so, it was possible to address whether mental health symptoms serve as a moderator in the relationship between self-regulation and GPA.

Results

Descriptive Statistics and Correlation Analysis

Means, standard deviations, and correlations among the study variables are presented in Table 1. Mental health and self-regulation were significantly and negatively correlated (r = -.54, p < .001), meaning that worse mental health symptoms were associated with lower self-regulation behavior. Self-regulation and GPA were significantly, positively correlated (r = .51, p < .001) whereas mental health symptoms were negatively correlated to GPA (r = -.38, p <.001).

Self-regulation was examined further using the recommended cutoff scores for the SSRQ (Brown et al., 2016): Results indicated that 33% (n = 156, scores ≥ 90) of participants demonstrate high (intact) self-regulation ability, 55% (n = 259, scores between 60 and 89) of participants demonstrate intermediate self-regulation capacity, and 12% (n = 58, scores less than 60) demonstrate low, or impaired, self-regulation ability.

Group Differences and Moderation Analysis

Analyses indicated that there were no significant differences in first-semester GPAs, mental health symptoms, or self-regulation based on gender (t's < 1, p's > 0.1.; see Table 2). There was a significant difference in first-semester GPA based on race (F= 10.82, p < .001). White students had higher GPAs (M = 3.70, SD = .43) than all other races (p's < .001). Mental health symptomology and self-regulation did not differ

significantly based on race ($F = .873$, $p = .5$). Logically, present mental health symptomology differed significantly on whether the participant reported a previous diagnosis (from age 11 to the present) ($t = 4.59$, $p < .001$).

Significant differences in self-regulation scores in the mental health symptom groups were found in an ANOVA comparing the groups ($F = 59.7$, $p < .001$). However, in moderation analysis conducted using simple slope testing, we did not see this interaction as significant (see Figure 1).

Predicting GPA from Self-Regulation and Mental Health Symptoms

The calculated regression model for self-regulation and GPA shows that self-regulation explains approximately 25% of the variance in GPA ($R^2 = .255$). Adding mental health symptoms to the model leads to almost the same predictive outcome ($R^2 = .250$). DASS-21 scores predict approximately 30% ($R^2 = .293$) of the variance in self-regulation, indicating that there is a relationship but certainly room to examine what other factors might impact self-regulation in first-semester college students.

Discussion

The current study focused on first-year students' adjustment to college by examining associations between self-regulation skill, mental health symptoms, and academic outcomes. We added to the current body of literature by looking specifically at first-semester GPA, which represents the earliest possible outcome measure of students' academic performance in the university setting and is a metric rarely used in the existing empirical base. We found reasonable indication that both self-regulation and mental health are related to first-semester academic achievement, as well as each other.

Additionally, the strength of the relationship between self-regulation and academic outcomes is moderated by the severity of mental health symptomatology experienced.

Self-Regulation, Mental Health, and Academic Achievement

As expected, we found a negative relationship between self-regulation and mental health symptomatology. Hypothesis one stated that there would be a relationship between mental health and self-regulatory behavior. It was hypothesized that these variables would be negatively correlated given previously established work around the strength model of self-regulation (Boyraz, et al., 2016; Tice et al., 2001). Our findings are consistent with the strength model of self-regulation that suggests that coping with emotional turmoil and having to regulate that emotion can exhaust an individuals' overall "bank" of self-regulation strength (referred to as ego depletion), which leaves one more prone to other self-regulatory failures in proceeding tasks (Baumeister et al., 1998; Baumeister et al., 1994; Baumeister et al., 2007; Muraven & Baumeister, 2000).

Mental health concerns are one of the most common current issues for college students, compounding challenges that are already faced in this transitional stage of life (American College Health Association, 2016). In keeping with existing research, the data collected in this study showed that about 35% of participants reported experiencing mental health symptomology in the moderate to high range (Lovibond & Lovibond, 1995), with 65% reporting in the low symptom range. While mental health challenges, specifically depression, anxiety, and stress, are shown to have a negative impact on college students, the extent to which this is directly the case, and the mechanisms by which this occurs, require additional research (DeRoma et al., 2009). It is also well established that mental health and self-regulation are directly related, and also further

associated with lower academic performance (Boyraz, et al., 2016; DeRoma et al., 2009; Haines et al., 1996; Hysenbegasi et al., 2005; Muraven & Baumeister, 2000).

Hypothesis two stated that there would be a positive relationship between self-regulation and first-semester GPA such that higher self-regulation capacity would be related to higher GPAs in the first semester of college. We found support for this expectation in the current study, aligning well with prior research that self-regulation is a critical component of academic achievement (Tangney et al., 2004). This suggests that self-regulation may be an important target for academic interventions. For instance, helping students develop their regulation skills in terms of making less "desirable" choices (i.e., studying, attending office hours, working in the library) when presented with ways to spend their time, may help them complete the necessary course requirements that will enable them to earn higher grades in their individual courses and therefore their overall GPA. The existing literature demonstrates a plethora of ways in which self-regulation is inherently linked to time management skills and the self-regulated learning (SRL) cycle, which in itself consists of critical components such as organization, academic goal setting, and help seeking (Kitsantas et al., 2008; Pintrich, 2000; Wolters & Brady, 2021; Young & Ley, 2005). These are all highly necessary skills for success in college and they can be rooted in self-regulation.

Group Differences and Moderators

The moderators examined as part of each research questions of this study included demographic differences between the participants (gender and race/ethnicity), as well as the binary of whether participants had a previously diagnosed mental health condition. We found no significant differences in means by gender for any of the main variables of

interest (self-regulation, mental health symptomatology, or GPA). Regarding mental health, this finding is in line with existing studies, which has largely found that gender does not seem to impart a significant difference in experiences of depression, anxiety, and stress in college (Gao et al., 2019). The same can be said for GPA, at least as far as the first year – the literature is largely consistent that females outperform males by a slight margin, but not statistically significantly (Tsaousis & Alghamdi, 2022). However, it should be noted that these gaps do seem to widen after the first year, with females performing consistently and males dropping in their GPA over time (Conger & Long, 2010). Finally, as gender relates to self-regulation, the findings of this study are somewhat unusual. Prior studies have stated with significance that females tend to outperform males on self-regulation tasks across the board, especially within the academic domain (Liu et al., 2021; Rohman et al., 2020). However, there is research that points to the necessity of narrowing in on the population of interest in this study (emerging adulthood) for further self-regulation research – while self-regulation differences by gender are highly consistent in adolescence, these results do become much more mixed in cohorts over 18 years old (Hosseini-Kamkar & Morton, 2014).

We found no significant differences in self-regulation or mental health between races and ethnicities in this study. This aligns with the current research, which suggests that race and ethnicity do not seem to play a role in students' self-regulation or, further still, the effects of that self-regulation on academic performance (Moore, 2013). Additionally, multiple studies have indicated little difference between races and ethnicities in relation to experiences of mental health symptoms (Lipson et al., 2022; Twentyman et al., 2017) – however, it should be noted that what these studies do confirm

is significant differences in seeking treatment for these experiences. There was a significant difference indicated in GPAs based on race and ethnicity, where white students averaged higher than black, Asian, and mixed-race students. This aligns quite plainly with the body of existing work on the topic (Fletcher & Tienda, 2010; NCES, 2012). There is research to suggest that these disparities are contingent upon high schools attended and pre-college test scores, which represent avenues for future data collection and analysis.

Finally, we examined whether there were significant differences in mental health symptomology scores in this study based on prior mental health diagnosis. Expectedly, we found that there were, with the portion of the respondents reporting a prior diagnosis since the onset of adolescence (age 11 on) (24%) scoring on average between 3.9 and 9.8 points higher on the DASS-21. There is a dearth of research that examines this relationship in this population, as indicated by one extremely recent study that has delved more deeply into this specific question (Sivertsen et al., 2023). This gap in the research and the significance of the difference represents an important practical gap in ensuring that supports are in place early on in college environments to ensure continuity of care for students who have already experienced mental health challenges throughout their lives.

Practical Implications

Significant existing research (Boyraz, Granda, et al., 2016; Boyraz, Horne, et al., 2016) as well as the findings in this study suggest that students who are navigating the high school to college transition with mental health concerns are likely to be more prone to experiencing difficulties in achieving their academic goals and expectations, specifically as it relates to GPA (which, while only one measure of academic success, is a

profound one). Furthermore, experiencing and mitigating emotional difficulties while adjusting to the first semester of college may have damaging effects on academic performance due to the potential for subsequent depletion of the students' capacity to self-regulate their effort and persistence on academic tasks.

The findings of both prior research and this study indicate the importance of proactive and early intervention programming for students in the transition to college. These types of programs are becoming more and more widespread, but there is a case for prioritizing them in a time when colleges and universities are perpetually in a resource crunch. Proactive programs that are geared towards de-stigmatization of mental health symptoms and challenges in college, while simultaneously clarifying the resources on campus that are available to support student mental health, can increase help-seeking in first-year students and play an important
part in preventing compounding challenges (Lattie et al., 2019; Zapata-Ospina et al., 2021).

In addition, given the constellation of relationships between mental health, academic achievement, and self-regulation, and given that learned self-regulation is a malleable trait (Diamond, 2002; Muraven & Baumeister, 2010), interventions that focus on improving students' self-regulation skills could enhance students' ability to manage their academic efforts and therefore performance. The strength model of self-regulation states that self-regulation can be improved with training and that practice of self-regulation depletion and additional tasks can improve the rate at which self-regulation depletes in the future (Muraven & Baumeister, 2010). To emphasize, Muraven (2010) found that those who worked towards small, low stakes acts of self-control (e.g., avoiding

junk food) self-indicated increased levels of self-regulation as compared to those who did not have the small self-regulation tasks to practice. Allowing students opportunities to improve their self-regulation with practice, as well as providing them with the knowledge that self-regulation ability as a malleable trait (Duckworth & Carlson, 2013) has the potential to enhance later persistence on academic tasks and may even bolster ability to cope with stress and other emotional challenges – since it is known that this requires self-regulation skill as well (Hu & Driscoll, 2013; Wang et al., 2017).

Limitations and Future Directions

This study is far from being without limitations, which raise a few possibilities and promising directions for future study in addition what has already been discussed. The efforts taken to increase generalizability of the findings of this study included obtaining a large sample size and working to ensure, via recruitment practices, that the sample was varied in gender, race, ethnicity, and a variety of other demographic factors. While the traits of the study sample are in some ways representative of the population at the institution where the study was conducted (particularly in race and ethnicity), the sample is not as representative as it could be (i.e., across all variables, there is more than double the number of females present compared to males). According to the National Center for Education Statistics, females, while still a majority, made up only 58% of total undergraduate enrollment nationally in Fall 2021 (less than this sample shows), and white students made up just over 51% (NCES, 2023). Generalizability of these findings is also somewhat compromised by the non-normality of the distribution of the GPA data gathered, as well as the nonprobability sampling method utilized to recruit participants. In future studies, efforts to obtain first year cumulative GPA may be helpful in normalizing

the distribution of this particular data point – however, first-semester GPA is unique and beneficial in its own right due to it representing a student's very first academic outcome in the college setting.

Because the entirety of the data collection happened at one time point during the first semester (other than first semester GPA), it is difficult to draw conclusions due to lack of temporal precedence with any of the other variables, or calculate true mediation – in future studies, a mediation path could be hypothesized that links mental health to academic performance via self-regulation. This could be tested by collecting self-reported data points in a T1/T2 fashion. While this methodology carries its own concerns, primarily attrition, it would allow for deeper statistical analysis and mediation inference to be performed.

In the present study, it is suspected that the correlation between mental health and GPA is weaker (though it is still significant) than that between GPA and self-regulation and self-regulation and mental health due to the timing of the data collection starting before mid-semester. It could also be hypothesized that, for some students, reports of mental health symptomology experiences – specifically anxiety and stress – may actually lead to greater GPAs if those symptoms are related to academic performance (i.e., an individual harnessing their anxiety to generate improved performance – see Majali, 2020).

The DASS-21 was used as a mental health measure in this study to allow us to get the fullest possible picture of mental health symptomology in participants, since it captures experiences of depression, anxiety, and stress. However, the DASS does not speak to clinical diagnosis of these issues and therefore future research is needed to

ascertain how clinical levels of mental health problems related to the factors at play in this study (self-regulation, academic performance). Another potential limitation of the DASS is the requested time frame for responses – the instrument asks respondents to report their symptom experiences in the past week. This could limit the ways in which the instrument captures overall experiences of mental health over time. Nonetheless, the DASS allowed us to capture broader experiences of symptoms, including those for whom symptoms are not posing any issues, which may not be possible if using more clinical measures with strict cutoffs. It is challenging for youth to get mental health services, let alone diagnoses, and so there may be large underreporting of mental health problems if using such a strict measure. In future studies related to these factors, there is an opportunity to narrow the scope of mental health symptomology to just depression or anxiety – which are the two most common diagnoses and experiences – or to utilize an instrument that examines the comorbidity of the two (e.g., Boyraz, et al., 2017).

An additional avenue for future research that cannot be overlooked is the extension of this study to an explanatory mixed methods study, where quantitative results could be utilized to shape additional qualitative study with extended research questions (Doyle et al., 2009). Mixed methodology is becoming more robust and prevalent in educational research and the topics investigated in the present study may be a good fit for this approach (Almalki, 2016; Meyer & Schutz, 2020). There are remaining research questions related to this study that may be best suited to this type of design. For example, learning more about an individual's perspectives and lived experiences could provide substantial insight into the relationship between mental health and self-regulation, as well as unique perceptions on the academic adjustment to college. Semi-structured interviews

may be valuable in gleaning more information about individual first-year students' experiences in their personal lives regarding the topics addressed in this study.

It is well established that variance in self-regulation strength is individual (Muraven & Baumeister, 2000). Hence, further examination of individual-level moderators of the relationships between mental health, self-regulation, and academic success could offer a deeper understanding of clusters of characteristics among college students that support them in coping with challenges. One factor that shows particular promise is a deeper investigation of coping flexibility, the idea that balancing different or multiple coping mechanisms according to the needs of the situation might reduce the amount of energy that one directs at coping as a whole. Therefore, choice and use of coping mechanisms might well operate as a protective factor against self-regulatory failure (Aldwin, et al., 2011). This hypothesis has yet to be empirically tested but is a good opening for future study. There are other individualized protective factors, such as resilience or mindfulness practice, that may also enhance self-regulation, especially in emerging adults coping with mental health challenges. In one previous study, Friese, Messner, and Schaffner (2012) demonstrated that a mindfulness meditation practice, particularly following a self-regulation depletion task, worked as a deterrent of the depletion of self-regulation, and participants performed better in subsequent self-regulation tasks. This has not been studied in relation to academic tasks and self-regulation deterioration.

Despite limitations, the findings in this study do serve to extend previous research that has indicated a significant link between mental health, self-regulation, and academic achievement, specifically during the transition from high school to college. Associations

were found across the board between mental health, self-regulation, and cumulative GPA. This study contributes to the existing body of work that sheds light on the mechanisms by which mental health plays an impactful role in the successful transition from high school to college.

Conclusions

The data collected in this study and the variety of factors measured allow us to further illuminate factors that could potentially influence a student's transition to college and their academic success. Experiences with mental health symptomology may play a profound role in a student's expressed effort on academic tasks, particularly those that are uninteresting or particularly challenging (which many students experience in the incongruence between expected and actual difficulty of college work) – this seems apparent in this study due to the stronger correlations between self-regulation and mental health, and self-regulation and GPA, as well as the moderation relationship that mental health appears to play in the correlation between self-regulation and GPA. We believe that further investigation into these factors is necessary and represents a promising avenue for both researchers and practitioners to further support students transitioning to college.

Table 3.1.

Correlation analysis (r) of self-regulation, mental health symptoms, and first-semester GPA

	1	2
1. Self-Regulation	—	
2. Mental Health Symptoms	-0.54***	
First-Semester GPA (of 4.00)	0.505***	-0.377***

*** *p<0.001*

Table 3.2.

Means and standard deviations for self-regulation, mental health symptoms and GPA by race and gender.

		Self-Regulation			Mental Health Symptoms			First-Semester GPA		
		n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Total		509	83	18.7	472	17	13.9	596	3.63	0.57
	Female	373	84	18	347	17.2	13.7	422	3.64	0.57
	Male	130	81	19.9	121	16.7	14.4	139	3.62	0.52
	White	422	84	17.8	389	16.9	13.7	464	3.71	0.43
	African American	35	81	23.5	34	20.6	16.9	46	3.08	1.06
	Hispanic	16	82	17.6	15	17.2	10.4	17	3.74	0.31
	Asian	17	72	22.6	16	14.3	11.2	21	3.44	0.61
	Two or more races	15	82	24.4	14	17.8	15.2	17	3.37	1.08

Table 3.3.

Study variables by gender and prior diagnosis.

	Female (*n*= 335)		Male (*n*= 121)		
	M	*SD*	*M*	*SD*	*t*
Self-regulation	84	18	81	19.9	-1.48
Mental health	17	13.9	17.2	13.7	-0.33
First-Semester GPA	3.64	0.57	3.62	0.52	-0.29

	No Prior Diagnosis (*n*= 115)		Prior Diagnosis (*n*= 345)		
	M	*SD*	*M*	*SD*	*t*
Mental health	15.5	13.4	22.4	14.2	4.59 ***

*** p < .001

Table 3.4.

Study variables by race.

	White (*n*= 377)		Black (*n*= 34)		Hispanic (*n*= 15)		Asian (*n*= 16)		Two or More Races (*n*= 14)		
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*
Self-regulation	84	17.8	81	23.5	82	17.6	72	22.6	82	24.4	1.1
Mental health	16.9	13.7	20.6	16.9	17.2	10.4	14.3	11.2	17.8	15.2	0.87
First-Semester GPA	3.71	0.43	3.08	1.06	3.74	0.31	3.44	0.61	3.37	1.08	10.8***

*** p < .001

Table 3.5.

Group differences of Self-Regulation Groups by Mental Health Scores

	Low (DASS 0-20) (*n*= 310)		Medium (DASS 21-42) (*n*= 114)		High (DASS 43-63) (*n*=32)			
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*	R^2 *Change*
Self-regulation	89.4	15.1	75.1	16.04	65.2	22.9	59.7 ***	0.03 ***

*** p < .001

Table 3.6.

Summary of Regression Analysis of the Relationship Between Mental Health Symptoms, Self-Regulation, and First Semester GPA (n = 456)

Dependent Variable	Independent Variable	*F*	*p*	R^2	*B*	*SE B*	*ß*	*t*
Self-Regulation*	Mental Health	194.3	<.001	0.293	-0.698	0.050	-0.541	-13.94
	GPA	166.9	<.001	0.255	0.015	0.001	0.505	12.9
Mental Health Symptoms**	GPA	75.4	<.001	0.142	-0.014	0.002	-0.377	-8.68

* Out of 120
** Out of 63

Table 3.7.

Regression results for moderation analysis of self-regulation on the relationship between mental health and GPA

	R^2	*p*	*r (part)*	*B*	*SE B*	*ß*	*t*
Model	0.29						
Mental Health		< .001	-0.23	-0.036	0.006	-0.931	-5.83
Self-Regulation		< .001	0.07	0.003	0.002	0.118	1.64
Mental Health*Self-Regulation		0.101	0.19	0.001	0.001	0.688	5.01

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CHAPTER 4

WHERE DO I BELONG? ASSOCIATIONS BETWEEN PERCIEVED SOCIAL SUPPORT AND MENTAL HEALTH, SENSE OF BELONGING, AND ACADEMIC OUTCOMES IN FIRST-SEMESTER COLLEGE STUDENTS: A MIXED-METHODS STUDY[2]

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Abstract

Successful adjustment in the first year of college is critical for retention and completion of higher education. The current study was conducted to examine the relationship between perceived social support from friends, mental health symptomatology (depression, anxiety, and stress), sense of belonging at the institution, and first semester GPA, and, using a mixed methods design, to further delve anecdotally into students experiences in the transition from high school to college when they think about the role of their friends, mental health, and academic outcomes. Using a sample of 592 first-year college students (54% out-of-state, 82% white, and 74% female), we found a significant negative association between perceived social support and mental health symptomatology, and significant positive associations between social support and sense of belonging and first-semester GPA. Data from semi-structured interviews conducted with six survey participants from the quantitative component was analyzed to reveal further implications based on themes discussed. Implications for future study and practical applications are presented.

Keywords: student success, academic achievement, college adjustment, friends, social support, mental health

Introduction

The transition from high school to college is a major transition period for a majority of emerging adults and represents a key turning point in an individual's life. As of 2020, 63% of traditionally aged students (17-18) attend college immediately after high school graduation (National Center for Education Statistics, 2022). However, this transition is not always an easy one. Studies have shown that 20% to 25% of 1st-year students do not complete a 2nd year of education (Hamilton & Hamilton, 2006) and that a further 20% to 30% may leave university in subsequent years (Grayson & Grayson, 2003). Only 64% of these ultimately graduate in six years (NCES, 2022) – representing loss of money, career capital, and self-worth upon non-completion of college attempts. A major cause for college stop-out may be the difficulties accompanying the transition itself. It is in the first year that university students experience the widest range of problems that could contribute to poor university adjustment and, ultimately, stopping out. These include homesickness (Paul & Brier, 2001), mental health challenges (Fisher & Hood, 1987), a sense of isolation (Brooks & DuBois, 1995), and struggles with academic performance (Levitz & Noel, 1989).

Success in college and the existing cultural discrepancies in college graduation rates have vast implications for both the individual (Twenge & Donnelly, 2016; McMahon, 2017) – particularly marginalized populations (Guevara-Cruz, 2018; Rhoden, 2017; Carey, 2016) – their future families (Kaushal, 2014; Oreopoulos & Petronijevic, 2013), and society overall (Ma, Pender, & Welch, 2019; Pew Research Center, 2014). Due to these downstream impacts, college students represent a critical population for study. The reigning question posed in higher education literature at large is what the

institution can do to best support college student development and success, thus closing the gaps between enrollment and graduation.

Abundant research focuses on overall college student success and the factors that both distinctly contribute and interact to help students persevere (Snyers & De Witt, 2016; Moallem, 2013; Trapmann et al., 2007). Paramount among the collection of factors is an individual's perceived level of social support, particularly from friends but also from family and institution personnel. This critical support can influence development and preservation of a sense of belonging, academic achievement, and maintenance of positive mental health – all of which are in and of themselves additional key contributors of a successful transition to college and overall outcomes. The goal of this study is to examine the relationships of these variables in the context of key student demographics, specifically the outcomes of academic achievement, sense of belonging, and mental health due to perceived friend support. These variables are particularly important because they represent areas around which tangible interventions can be designed and implemented (e.g., community building). While these factors are shown in the research to have some interaction and intersection (Gopalan & Brady, 2020; Gopalan et al., 2022; Wegemer & Sarsour, 2023) further study is needed to determine the extent and strength of these relationships so that proper focus can be applied in determining what interventions will best serve students.

Support from Friends in College

Friendships may be one of the mechanisms that counteract the difficulties and stress associated with major life transitions because they provide a major source of social support (Klaiber et al., 2018; Ng-Knight et al., 2019; Tokuno, 1986). Having friends has

been found to be correlated from childhood through old age with psychological well-being and increased feelings of self-worth and self-esteem (Hartup & Stevens, 1997; Hartas, 2021; Lee & Szinovac, 2016), and it is well established that belonging is an essential human need (Maslow, 1962). The absence of belonging to a group of friends, in turn, can negatively impact many aspects of overall health and well-being (Baumeister & Leary, 1995; Strayhorn, 2019). According to Hoffman, et al. (2017), peer social connections are one of the most critical components of belonging. Friends provide advice, guidance, reassurance, acceptance, sympathetic listening, encouragement, feedback, and a sense of belonging (Boute et al., 2007). Given these benefits, Richey and Richey (1980) conclude that adolescents "need the social support offered by friends" (p. 538) to fulfill many functions, a number of which cannot be satisfied by family members. It is probable that friendships may be one of the most important assets in major life transitions (such as the transition from high school to college) and having close friends during this stressful experience could help individuals to cope. The studies have that have focused on friendship development in university settings indicate that, while friendships undergo significant changes during this period, they are critical in the ways in which they provide support for students (Bronkema & Bowman, 2019; Pittman & Richmond, 2008; Schussler & Fierros, 2008). These studies illustrate the importance of friends in the potentially stressful college environment. Friends can support academic achievement, help students cope with challenge, and increase feelings of belonging and mattering. However, most studies do not focus explicitly on the first-year experience or overlay experiences with peer support directly with experiences of mental health symptomology.

Therefore, further investigation into the important role of friend support in the college transition, and how it may be associated with other factors, is necessary.

A major reason that social support from friends in particular is so critical is due to one key measure on which many students' ability to thrive and persist hinges – sense of belonging at the institution. Sense of belonging is both an individual construct and a collection of factors. It is most commonly defined in the singular sense as "the experiences of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment (Hagerty et al., 1992)" (Hoffman et al., 2002). The importance of belonging for the individual is based in Maslow's (1943) hierarchy of needs and Baumeister and Leary's (1995) belongingness work. It is a fundamental human need that is critical in an individual's overall wellbeing, self-esteem, and motivation (Leary, 2010). As far as the college transition is concerned, a sense of belonging may consist of feelings of acceptance not only at the institution, but, critically, with its members (peers, faculty, and staff). Once established, a fulfilled sense of belonging can create numerous positive outcomes (Gopalan & Brady, 2020; Hoffman et al., 2017; Strayhorn, 2012; Strayhorn 2019).

A sense of belonging at the institution has been found in turn to increase retention, academic success, and student well-being and reduce feelings of loneliness (Crawford et al., 2023). The start of college marks a major developmental shift, bringing social support changes and changes to social identity, which can result in feelings of loneliness and lead to mental health problems including depression (Parker et al., 2020). Sense of belonging acts as a key protective factor against feelings of lack of social support, anxiety, and depression – and has continued to do so amidst the impacts of

the COVID-19 pandemic (Gopalan, Linden-Carmichael, & Lanza, 2022). The effects of friends, and subsequent sense of belonging at the institution, represent a critically important and influential factor upon students' persistence, thriving, and success. Other correlates of belonging include associations with motivation, enjoyment, and retention, and friendship networks and social connections also have demonstrated significant associations with belonging (Crawford et al., 2023).

Interaction With Mental Health

Tangential to the positive outcomes associated with belonging lies the importance of student mental health. In recent years (2020 to the present), mental health concerns, and therefore strategies to support college student mental health, have substantially increased (Auerbach et al., 2018; Kang et al., 2020; Li et al., 2021). The two most common mental health concerns - depression and anxiety - affect nearly 40% of all undergraduate students as of 2020 (Chirikov et al. 2020). This rate is 1.5 to two times higher than the same rates in 2019 (Chirikov et al., 2020). In wake of the COVID-19 pandemic, students who do have or developed these diagnoses were found to be significantly more likely to experience challenges in adjustment to college and a decreased sense of belonging on campus (Horogos et al., 2020). It could be said that there is a vicious cycle to mental health symptoms as a college student, which raises the need for further investigation into the best ways to ensure the cycle breaks.

Though the last few years have seen an uptick in students' reporting of mental health symptoms and diagnoses (Healthy Minds Network, 2021; Li et al., 2021; Son et al., 2020), this is not a recent phenomenon in the developmental stage of emerging adulthood (Duffy et al., 2019). The evidence shows the prevalence of mental health

conditions in this life stage, with one in seven adolescents experiencing a mental health problem in any given year (WHO, 2021) and as many as 49.5% experiencing a mental health disorder at some point in their lives (NIMH, 2021). Furtheremore, generally due to other pressing life events in this developmental period (increased independence, financial changes), this group displays a particular delay in seeking or obtaining treatment (Kessler et al., 2007). Mental health challenges among college students are consistently associated with poor academic performance (Boyraz et al., 2016; DeRoma et al., 2009; Haines, Norris, & Kashy, 1996; Hysenbegasi et al., 2005) and even attrition and degree non-completion (Boyraz, Horne, et al., 2016). This specific association, along with several others, was also tested in previous research conducted using the same data set in a different study (blinded for review). However, there are gaps in the current body of research when it comes to the collection of factors that potentially connect mental health and academic performance. Such factors include those which have demonstrated standalone relationships with mental health and academic performance, such as social support and belonging, but have been investigated less so in concert with each other.

In the current study, the expectation is that social support could serve to buffer the potential negative relationship between mental health symptoms and academic outcomes (GPA) (Szkody & McKinney, 2019; Taniguchi & Tanaka, 2019; Yubero et al., 2018; Zhang, 2017). This interaction could be such that those with worse mental health symptoms will have lower GPA if they also have lower social support, compared to higher GPAs if they have high perceived support. The positive buffering effect (a type of moderation effect) of social support on health outcomes, both mental and physical, is widely substantiated in the literature (Beverly et al., 2021; Chen et al., 2021; Szkody et

al., 2021), where social support serves as a means of lessening the potential harm of negative life events on other areas of an individual's life. Several recent studies have extended the investigation of this effect into academic settings as well, finding similar positive outcomes – thus, making the case for further study into the buffering impacts of social support in the college setting (Chan et al., 2022; Goselin & Rickert, 2022; Lee, 2020; Onuoha & Idemudia, 2020; Tinajero et al., 2020). Buffering as an extension of moderation analysis has generally been well-covered and reviewed in recent methodological literature (Fairchild & McQullin, 2010; Lorah & Wong, 2018).

Current Study

The current study followed an explanatory mixed methods design, where quantitative data was collected then used to develop a qualitative component to provide additional information and further understanding of the findings. The differences in students' levels of perceived social support and the impacts of those supports on a variety of critical factors were the main focus of investigation in the present study. We hypothesized that perceived friend support would be positively related to academic performance in the first semester (as measured by GPA; Hypothesis 1 or H1). We also expected to find a positive association between perceived friend support and sense of belonging (H2). In contrast, we expected a negative association between perceived friend support and mental health symptomology such that as perceived friend support decreased, mental health symptoms would increase (H3). We also hypothesized, based on previous testing of this data set where a negative association existed between mental health and GPA (blinded for review) that perceived social support would act as a buffer of the association between mental health and GPA, such that greater perceived social support

will attenuate the negative association between mental health symptomology and GPA (H4) (see Ng-Knight et al., 2018; Rubin et al., 2016; Wright & Wachs, 2023). These hypotheses are based on the existing research surrounding the importance of friends to overall well-being during the high-stress time of high school-to-college transition.

Another variable that may play a role in these associations is a student's in- or out-of-state status. The current literature related to the different experiences of in- and out-of-state students is mixed, with some studies indicating that out-of-state students find it easier than their in-state counterparts to build community and social support in a new place (Kim et al., 2020; Lounsbury & DeNeui, 1995) and some claiming the opposite association (Nadelson et al., 2013). It is also important to note that, at the institution where this student was conducted, there is a significant average family income discrepancy between in- and out- of state students, with out-of-state students' families largely being of a higher socioeconomic status (Digest of Education Statistics, 2023). Therefore, a more exploratory approach was adopted for addressing this question and no concrete hypothesis was formulated given the mixed evidence. Nonetheless, we explored whether the key variables of interest differed between in-state versus out-of-state status and whether in- or out-of-state status moderated the associations between perceived friend support and our outcomes of interest.

Following the completion of the quantitative data collection, a second, qualitative component was conducted, in which in-depth face-to face interviews were held with a small subsample of respondents about their experiences with friends, mental health, and academics in the first semester at university. This component was used to further

understand the ways in which friendships and social support for first-year students play a role in their overall success and quality of their transition to college.

Quantitative Component

Participants

The participants in this study included 592 traditional (non-transfer) first-year college students attending a large, public, state flagship university in the southeastern United States. Instructors of the university's first year seminar course (approximately 5,800 students enrolled) assisted in recruitment of participants. No course credit was incentivized for participation, but participants were informed that five random completers would be selected to receive a $50 gift card. In total, 603 students took the survey, but 11 were removed for indicating that their entry term to the university was one other than summer or fall 2022. There were 130 participants who did not reach the completion page of the survey, or their GPA was not obtained, so were excluded from analysis where there was no information for the variables in question. This led to a total sample size of 569 GPAs, 571 replies to perceived social support, 538 replies to sense of belonging, 472 replies to the DASS (Depression, Anxiety and Stress Scale used to measure mental health experiences), and 456 fully valid cases. Based on chi-squared analysis, the 113 "non-participants" (i.e. those with a GPA but no survey responses) were not more likely to be one gender, race, or resident status (lowest $p = .20$). There was also no significant difference noted in their first semester GPAs ($p = .12$).

Participants' ages ranged from 16 to 19 years ($M = 18.2$, $SD = 0.39$). The majority of the participants were female (74%, $n = 422$), where 24% ($n = 139$) were male and just over 1% ($n = 8$) identified as another gender or nonbinary. Females in this sample were

more represented than in the incoming class as a whole. The vast majority of the participants identified their ethnicity as White/Caucasian (82%, *n* = 462), 8% (*n* = 46) as Black/African American, 4% (*n* = 21) as Asian/Pacific Islander, 3% (*n* = 17) as Hispanic/Latino, 3% (*n* = 17) as biracial/multiracial, and less than 1% (*n* = 1) as Native American/Indigenous; three participants (1%) reported their ethnicity as other or indicated "prefer not to say" – this race and ethnicity distribution is fairly representative of the incoming first-year class from which it was drawn. Participants were 54% (*n* = 319) out-of-state students, which represents the incoming class in fall 2022. Demographics of the entire incoming class were 53% in-state, 76% white, and 56% female.

First-year students at the university engage in a broad spectrum of course difficulty: of the university's 108 available undergraduate majors, which are within 11 colleges and schools, approximately half take major specific coursework starting in the first semester. There was no one major or college disproportionately represented in the current study sample, indicating that there is unlikely to be course difficulty bias in the sample that would affect GPA outcomes. All participants in this study were enrolled at the time of participation in the university's first-year seminar, a credit-bearing course whose learning outcomes include academic success, adjustment to the university, overall wellness, and community building in a classroom setting (with each section capped at 19 students).

Measures

Demographic Information. Demographic questions were used to collect information about the participants' age, major, gender, ethnicity, state of residence (in-

versus out-of-state), college entry term, current housing status, and whether the university's freshmen seminar was a required course.

Perceived Social Support. Participants were asked to respond to the Scales of Perceived Social Support (Macdonald, 1998), which contains statements about both family and friends. Participants were asked to indicate with the appropriate number the degree to which they agree or disagree with each statement, where (1) stands for *strongly disagree* and (6) stands for *strongly agree.* Sample items include "I feel very close to my friends", "My friends show that they care about me", and "There is at least one friend who helps me cope with life's everyday problems". This measure demonstrated high internal consistency in Macdonald (1998) ($\alpha = 0.92$). In the current study, responses to each section were averaged to generate a final score, with higher scores representing greater perceived social support from that group. Only the "friend" subscale was utilized for analysis in this study, which demonstrated an internal consistency for the current sample at $\alpha = 0.77$.

Sense of Belonging at the Institution. Participants were asked to respond to the Revised Sense of Belonging Scale (Hoffman et al., 2003). Participants were asked to respond to questions using the scale provided about their experiences at the institution to date, considering all classes in which they were enrolled. In the scale, (1) stands for *completely untrue* and (6) stands for *completely true*. Questions on this measure are related to classroom experiences, faculty support, peer support, and interactions with classmates. Example items include "I could contact another student from class if I had a question", "I have developed personal relationships with other students in class", and "I feel that a faculty member would take the time to talk to me if I needed help". This measure

demonstrated high internal consistency in Hoffman et al. (2003) ($\alpha = 0.91$). In the current investigation, responses were averaged to generate a total score with higher scores representing a greater sense of belonging. Internal consistency was moderate for the current sample at α = 0.67, with the peer and classmate interactions subscales showing greater consistency at α = 0.8 and α = 0.78 respectively, and the classroom experience and faculty subscales at α = 0.6 and α = 0.61. In a review of conducted confirmatory factor analyses of this measure in the recent literature, a Cronbach's alpha of higher than 0.70 is treated as adequate (Fuchs et al., 2021; Tovar & Simon, 2010). Due to slightly lower internal consistency for the overall measure in this data set, we decided to analyze the subscales separately and only included the two subscales of peer and classmate interactions in our models. The lower internal consistency for the classroom experience and faculty subscales could be due to the timing of survey administration and that students may not yet have an adequate understanding of the items on the classroom subscales (see Armellini et al., 2021; Voss, 2009). At the relatively early point in the semester when the survey was conducted, students may not yet have had an opportunity to establish classroom routine in a college setting or the differences in interactions with college professors, whereas understandings of peers and classmates have not changed as drastically.

Experience of Troubling Mental Health Symptoms. Participants were asked to respond to the Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). Participants responded to statements about a variety of mental health symptoms based on how much the statement has applied to them over the past week. Responses ranged from 0 (*did not at all apply to me*) to 3 (*applied to me very much or most of the*

time). This measure demonstrated high internal consistency across subscales in Kia-Keating and colleagues (2018). In the current investigation, all responses were summed to generate a total score with a maximum possible score of 63, with higher scores representing higher levels of depression, anxiety, and stress symptoms. Internal consistency was also moderately high for the current sample at $\alpha = 0.79$.

Grade Point Averages (GPA): Participant's first semester GPA was collected from the Registrar's office based on the student ID number that they provided and consent that was given to gather this information. GPAs at the institution where the study was conducted are on a standard 0-4.0 scale and there are no "minus" grades in the grading scale.

Procedures

Following approval by the university's Institutional Review Board for a large-scale study, first-year students were recruited for data collection from the university's first-year seminar course, in which approximately 80% of the freshmen class enrolls annually. Several e-mail blasts went out to both course instructors and students encouraging participation and provided contact information for the Office of Research and the primary investigator.

Participants completed the survey electronically, which they could either do via a QR code or anonymous link. Participants were asked to provide an official university ID number as well as a create a unique ID comprise of their initial and date of birth, so that identifying information could be removed from the dataset following GPAs being obtained at the end of the semester. Participants completed a consent form specific to the study, as well as a Family Educational Rights and Privacy Act (FERPA) consent form

allowing the researchers access to their university records (GPA). Data collection began approximately five weeks after the fall semester began and concluded in early November.

Analytic Plan

To address H1, H2, and H3, descriptive statistics, correlation analyses and regression analyses were conducted between the variables of interest using SPSS statistical software. To explore potential differences in relationships due to demographic variables (in- versus out-of-state status), independent samples t-tests were conducted to look for significance in between and within group means. Given the existing literature, this hypothesis was more exploratory in nature and the directionality of the relationship was not predicted.

To address the potential buffering effect of social support in H4, a regression analysis predicting GPA was conducted that included the interaction term between social support and mental health symptomology (Fairchild & McQuillin, 2010). To further understand the moderation effect, a plot of interaction (-/+ 1 SD above and below the mean) was created and simple slopes analysis was performed. ANOVA was conducted to analyze differences in GPAs across the groupings of mental health scores based on established cutoffs (0-21 [low], 22-42 [moderate], and 43-63 [high]) (Lovibond & Lovibond, 1995) in order to further explore the previously established (blinded for review) correlation between these two variables.

This additional analysis was conducted to more thoroughly examine the relationship between groups, adopting a person-centered approach given the inclusion of the qualitative component and the exploratory hypotheses in this study (Howard & Hoffman, 2021). Generally speaking, person-centered approaches help identify smaller

subgroups of individuals who share attributes, specifically developmental attributes (Laursen & Hoff, 2006), and help researchers understand how life experiences of individuals in those groups differ. Examing the mental health groups through a person-centered lens adds value by to this particular analysis by exposing more granular details about which groups of symptom experiences, in this case, most drive the relationship between mental health and GPA, thus moving towards greater understanding of the complexity of a factor such as mental health in this context. The smaller that subgroups can be split using person-centered analysis, the closer researchers can get to utilizing results to understand complex individual differences and inform practical intervention (Hicks et al., 2017).

Results

Descriptive Statistics and Correlation Analysis

Means, standard deviations, and correlations among the study variables are presented in Table 1. Perceived social support and mental health were weakly negatively correlated, but significant (r = -0.17, p < .001), meaning that a decrease in social support from friends was associated with higher levels of mental health symptomology. Social support was positively and significantly correlated with increased sense of belonging (r = 0.36, p <.001). Social support and GPA were also weakly correlated, but positively and with significance (r = 0.12, p = .005).

Group Differences and Moderation Analysis

GPAs differed significantly between in- and out-of-state students, where out-of-state students GPAs were higher (M = 3.77, SD = .32) (p < .001). A slight significant difference in perceived social support was also found between in- (M = 4.89) and out-of-

state students (M = 5.12) (p = .02). The results of the ANOVA test showed significant differences in GPA between the three mental health symptom groups (mild, moderate, and high) (F = 35.8, p < .001). In post-hoc comparisons with Bonferroni adjustment, all groups differed significantly from each other (ps < .001). The low mental health symptom group had a higher mean GPA (M = 3.79, SD = 0.29) than both the moderate (M = 3.56, SD = 0.60) and high (M = 3.08, SD = 1.12) symptom groups. The results of the regression analysis testing H4 revealed a significant interaction effect between social support and mental health symptomology on GPA (β = 0.63, t = 3.22, p = .001). A plot of the interaction effect is depicted in Figure 1. For individuals experiencing higher mental health symptomology over the course of the week reported in the measure, first semester GPAs did not differ significantly between those with low social support and high support, as seen in the simple slopes analysis (b = 0.022, p = 0.61). In students with low mental health symptoms, first-semester GPAs were lower for those with higher levels of social support, compared to the higher GPAs for those with reported lower levels of perceived social support (b = -0.115, p = 0.01).

Qualitative Component

Methods

Participants

Survey participants who consented to be contacted were invited to respond whether or not they were interested in participating in further research. Participants who replied were purposefully sampled for inclusion based on ensuring a variety of genders, majors, and in- or out-of-state status. Eight participants were originally selected based on these criteria when volunteers were originally contacted, and six replies were received.

This resulted in two out-of-state females, one in-state female, two in-state males, and one out-of-state male. Their majors were a mix of STEM, social sciences, and liberal arts.

Procedure

Participants were invited based on consent to follow-up to complete a semi-structured interview. Interview questions focused on participants transition from high school to college, social support within college, decision making process, and any prior relationships (see Appendix). Examples questions included, "How did your friends affect your ability to meet your academic expectations for yourself?" and "What effects do your close friendships have on your mental health during this time in your life?" Interviews were conducted in person by the first author. They lasted on average 23 minutes with the range being 17.5 minutes to 30 minutes. Participants who completed an interview received a $25 gift card.

Audio recordings from the interviews were transcribed using Otter AI and then the final transcript was uploaded to MaxQDA qualitative software. All interviews were coded in MaxQDA using a qualitative content analysis approach which blends inductive and deductive coding (as discussed in Schreier, 2012), where the authors started with a deductive approach of looking at large themes to determine how they emerged in all interviews, then dual coding interview one to see what natural themes emerged (leaning more towards inductive, thematic analysis). This approach was applied to the next interview to develop the official codebook, and finally applied to all remaining interviews. The codebook represents the initial themes based on a deductive approached and the thematic elements that emerged as the coding process unfolded.

The first and second author developed an initial high-level coding scheme based on discussion of findings from the existing literature and preliminary results of the quantitative data (i.e., transition, friend support, and mental health), as well as the qualitative research questions in the study. Then, both reviewed all of the transcripts to see if any additional codes should be added for the first round of coding. An initial codebook was developed and the first and second author separately coded Interview 1 and then discussed areas of disagreement. The codebook was edited with more themes to better reflect the data and then the second author applied the codebook to all six interviews. The first author reviewed the coding for each interview before moving on to the next one and noted specific areas of disagreements. The two authors engaged in ongoing conversation until arriving at a consensus per recommendations (Creswell & Creswell, 2018) (see Table 4 for codebook with exemplar quotes).

Results

Interviewees mentioned aspects of their transition from high school to college, where the authors utilized the theme *transition*. More specifically, transition was defined as anything that related to an individual's transition from high school to college, and subthemes could be positive or negative. In terms of difficulty transitioning, interviewees mentioned that the transition to high school from college was noticeable, but some mentioned it being more difficult (n = 3), with Interviewee 1 sharing, "the first semester was like, pretty rough" and Interviewee 4 stating, "So when I got to college, I was terrified. And then I did experience little bit of trauma. I did break my leg. And so I wasn't speaking to many people." However, some interviewees (n = 3) noted they anticipated challenges, but the transition was easier for them. For example, Interviewee 3

“So I was nervous going into college, because I thought that I would kind of eventually lose interest. But, I'm, luckily like, for my major, it's all classes I'm interested in. So I've been I got like a 4.0 last semester which was really nice.” Other aspects of the transition that were noted were difficulties transitioning back after break, challenges with mental health, and a new freedom to make decisions. For example, Interviewee 3 noted that they felt they were having to turn one life off and another on when sharing, “And then when you go home, you're like, right back in your old life. So that I feel like that's kind of affected me because it's just, it makes me feel like I'm turning off one life and then turning on the other.” Interviewee 6 discussed how they wish they knew that freshman may struggle with their mental health, especially when first arriving. Specifically, they shared “Not a lot of freshmen like realize coming in that, like, you're gonna have like, your bad days and days that like, you just want to go home and not like, continue with your degree and stuff”. Lastly, interviewees made note of the freedom to make decisions and live how they want to, with Interviewee 2 sharing, “It's also you have more freedom in what you can do. Like you can choose to not show up to class, you can choose not to do your homework, which I think that honestly puts more pressure on you” and Interviewee 5 stated “But like, it was crazy to me like now I'm technically an adult, and I'm just here. So I turned 18, like, middle of summer. So being here was when I first like, okay, now it's really like on you to do what you want.”

Interviewees also discussed different areas of social support during the conversation, after being asked questions such as “How many people did you come to college with who you knew from high school? If you didn’t come to college with people you knew from high school, how did you feel about that? Were you scared, excited,

apprehensive, etcetera?". In terms of the different aspects of social support, four themes were identified. They were *general support*, *academic support*, *support with decision making*, and *support with mental health*. The general support theme was used to identify any general social support received while in college. This could be from peers, parents, roommates, or other individuals. For example, Interviewee 3 noted, "when I'm on campus, I think that my friends have been a really nice support system when I need it." The academic support theme was applied when there was mention of support for academics. Some interviewees had mentioned shared academic goals, with Interviewee 1 sharing, know, like, my roommate, and my suitemate, like, we're always doing homework together. Like we're always in a study room." This theme was also applied when interviewees mentioned studying with peers, social relationships due to same or similar major, participating in academic organizations, or receiving academic assistance from a peer. Interviewee 3, who mentioned membership in a specific student group, shared,

> "I think I just ended up spending more time with the people in my group because of like, our similar goals. And it was just nice to have someone always like, who's always willing to study and always willing to, like, go to office hours and things like that, and not kind of find that as a burden. So I was drawn to those people more."

Support with decision making was applied when participants noted any social support that influenced their decision making, including shared self-regulation. For example, Interviewee 6 shared, "So I was like, I really don't want to study, I'm exhausted. But then I was talking to my roommate, he's like, you're gonna regret it if you don't study because

he hadn't. He had an exam tomorrow, like today, too. So we were both kind of like, thinking about it on the same page in the same way."

Lastly, support with mental health was defined as social support for mental health related issues (e.g., support with stress, anxiety, homesickness) or any mention of peers helping with coping skills. Interviewee 1 shared, "And with my roommate and like my suitemates like they're also from [out of state]. So they're in like the same boat as me of like, oh, like missing home like home is not somewhere like we can drive to really quick. So I think in college having people from like [out of state]... has been extremely helpful."

Prior relationships, another theme, was applied to the interviewee transcripts when interviewees noted support from prior relationships, such as high school, family relationships, or peers that attended the same high school and were attending the same university. Four interviewees were from out of state (n=4), so they did not come to college with as many people from their high school. On the contrary, 2 interviewees were in-state (n=2) and noted that many people from their high school came to the same university, with one sharing that around 60 people from their high school were at the university. Another aspect of prior relationships that was identified was, *parents' influence on academic path*, with interviewee 1 and 6 both mentioning it directly. Interviewee 1 sharing how she decided on her major and how the conversation with her parents went, "When I told my parents like, I was gonna change my major, they immediately were like, okay, you're transferring schools too. And like, I kind of just do whatever my parents like, want me to do, like, kind of why I ended up in like, engineering, like, as much as I like, trying to convince myself like, it was my own decision, like, in the back of my head. I know, like, if my parents probably never put

engineering in my head, I probably wouldn't be in it." Interviewee 6 also shared how their parents influenced their decision to be an engineering major, "That's pretty much why I decided to major in mechanical engineering. I really got into that, because of my father, who's been a pretty big influence in my life. Both my parents have." He goes on to say, "My dad's always been into cars, too. So, he kind of gotten me towards that hobby as well. But they, they supported me no matter what…I could have majored in anything." Interviewees also noted the benefits of having acquaintances or people that they knew from high school during the first couple weeks, with Interviewee 3 sharing "it was very comforting to especially going to places like the dining hall and stuff like that. It's very scary to go alone. So, things like that, was very comforting."

Discussion

The current study focused on first-year students' adjustment to college by examining associations between perceived support from friends and a spectrum of outcomes, including mental health, sense of belonging, and academic success. We added to the current body of literature by looking at actual (as opposed to self-reported) first-semester GPA as an academic outcome, which represents the earliest possible outcome measure of students' academic performance in the university setting and is a metric used seldomly in the existing empirical base. The mixed methods component of this study more holistically investigated these questions, as well as probing into the overall quality of a student's transition to college. We found reasonable indication that perceived friend support could be related to mental health (with greater perceived support connecting to less troubling mental health symptoms) and was significantly and positively related to sense of belonging. These findings were echoed in the qualitative interviews.

Social Support Associations to Mental Health, Sense of Belonging, and Academic Achievement

As hypothesized, we found evidence suggesting relationships between perceived social support from friends and sense of belonging, mental health symptomatology, and academic performance. These results are consistent with established evidence around the importance of support from friends in the transition from high school to college (Boute et al., 2007; Wegemer & Sarsour, 2023). and on the role of social support in positive adjustment more broadly (Lee & Szinovacz, 2016; Wang et al., 2023).

As expected, there was a negative association between perceived social support and mental health symptoms. Mental health concerns are one of the most common current issues for college students, compounding challenges that are already faced in this transitional stage of life (American College Health Association, 2016). In this study and in the extant literature, social support shows immense promise as a means of bolstering students who are experiencing troubling mental health symptoms, and the inverse is also true – those lacking support from friends are more likely to struggle more with their mental health than those who have support, even from one person (Chan et al., 2022; Goselin & Rickert, 2022; Szkody & McKinney, 2019; Taniguchi & Tanaka, 2019). The relationship between mental health and social support lends itself to additional research and study because these mental health challenges, specifically depression, anxiety, and stress, are shown to have negative outcomes for college students – but the the mechanisms by which this occurs are less well known (DeRoma et al., 2009).

We also found support for the expected positive associations between perceived social support and both sense of belonging and first-semester GPA. These results align with prior research (Gopolan & Brady, 2020; Wegemer & Sasour, 2023). Social support ties into sense of belonging by providing students with community in a new environment where much has changed and they might otherwise be struggling to find a good fit. Relationships with faculty and non-friend classmates can also create belonging in the college setting but to not have the effect that friends do (Gopalan & Brady, 2020; Hoffman et al., 2017; Strayhorn, 2012; Strayhorn 2019). Specifically in the transition stage to college and in thinking about academic success, friends are a critical component that leads students to have successful early outcomes, particularly when those friends have similar academic aspiration (Cheong et al., 2021; Goguen et al., 2010; Vignery & Laurier, 2020). This suggests that supporting students in finding and fostering healthy friendship relationships in early college may be an important target for student affairs practitioners to consider, both for implication on academic success and belonging, two highly critical factors predicting student persistence (Hausmann et al., 2007; Morrow & Ackermann, 2012).

Interaction Effects on First-semester GPA

Moderation analysis was conducted in this study to look for the potential for perceived social support to have a buffering effect between the negative association between mental health and GPA. The buffering effect, a subset of moderation, refers to the concept of the moderating factor tempering the "severity" of a negative relationship between an independent and dependent variable (Beverly et al., 2021; Chen et al., 2021). In particular, the buffering effect of social support, a sub-theory of the social support

hypothesis (Cobb, 1976) is well-established theoretically in the field and states that social support can be a mitigator of what would otherwise be negative consequences of many stressful life events (Buchwald, 2017; Schwarzer & Buchwald, 2004), including problematic health.

While the findings in this study do not align with hypothesized expectations, they do elucidate that an interaction between these factors exists and is a topic of import for further study. If the buffering effect had been present, higher GPAs in the high mental health symptom group would have been seen with increased social support. That this was not the case in this study and suggests the criticality of proactive support for mental health symptoms. Additionally and unexpectedly, a significant effect was seen in low mental health symptom students where GPAs were actually lower with increased social support. This could be due to the fact that, while social support is a well-established mitigator of the effects of health challenges, the diminishing returns of social interaction are also well-documented in the existing literature (Grant & Schwartz, 2011; Leikas & Ilmarinen, 2017; Lincoln, 2000; Roberts et al., 2009). This potential excess of social interaction or spending of social capital in the low mental health symptom group may also help explain the phenomenon seen in the interaction analysis performed in this study. The time management issue of seeking social support and dedicating time to social interaction could lead to an imbalance of time dedicated to academics, leading to lower overall performance.

The ability to monitor and predict first-semester GPA with some degree of accuracy is critical because GPA is possibly the most relevant early indicator of academic success and college completion overall (Gershenfeld et al., 2016; Saltenstall, 2013).

Therefore, when correlations exist that allow these predictions more precision, it is beneficial to be aware of possible influencing factors. Establishing correlations between these collections of factors is valuable, but further testing of the factors that might help mitigate even negative relationships is even more useful still when it comes to the applied repercussions for student success practitioners.

Transition to College and Peer Support

The hypothesized findings of the quantitative components of this study are deepened by the rich data collected in the qualitative component, justifying the utilization of an explanatory mixed methods design. The qualitative data demonstrated that the transition from high school to college can be difficult and filled with anxiety and heightened stress, which current literature supports (Arnett, 2000; Eisenberg et al., 2007). The role of social support played an important role in students' positive transition. A majority of participants shared examples of how their peers at school helped them overcome challenging mental health days. In addition, many discussed that their academic habits were largely influenced by their friends. These findings further support that social support is an important factor to consider for students' mental health (Hefner et al., 2009) and their overall academic success, habits, and engagement (Chen et al., 2023; McLean et al., 2022).

It is important to understand the factors that support students' positive transition from high school to college given the critical nature of this early stage of college in ultimate success (Bowman et al., 2019; Woosley, 2003). The qualitative findings from this study add greater context to why social support and relationships play an important role in one's transition, including their impacts on a student's mental health and academic

journey. The addition of anecdotal experiences to the overall literature on this topic is valuable when delving into factors that can be highly individualized experiences.

Practical Implications

Extant literature in this area has highlighted the importance of support from friends in any major life transition, but particularly in the late adolescent developmental stage (Brooks, 2007; Yubero et al., 2018). Furthermore, significant existing research (Boyraz, Granda, et al., 2016; Boyraz, Horne, et al., 2017), as well as the findings in this study, suggest that students who are navigating the high school to college transition with mental health concerns are likely to be more prone to experiencing more challenges across the board – both in navigating the social landscape and in achieving their academic goals and expectations, specifically as it relates to GPA (which, while only one measure of academic success, is a valuable one). The positive impacts of social support on GPA are greater in students who are experiencing troubling mental health symptoms, which tracks with existing research that broaches this topic (Sheets Jr. & Mohr, 2009; Taniguchi & Tanaka, 2019; Zhang, 2017).

The findings of both prior research and this study indicate the importance of proactive and early intervention programming in multiple domains for students in the transition to college. These types of programs are becoming more and more widespread as the student affairs profession grows, but there is a case for prioritizing increasingly holistic and interwoven supports in a time when colleges and universities are perpetually in a resource crunch. Proactive programs that are geared towards de-stigmatization of mental health symptoms and challenges in college, while simultaneously clarifying the

resources on campus that are available to support student mental health, can increase help-seeking in first-year students and play an important
part in preventing compounding challenges (Lattie et al., 2019; Zapata-Ospina et al., 2021). Programs that encourage students in developing meaningful and proximal social supports that are connected to their academic and other goals could also leave lasting impacts.

Limitations and Directions for Future Research

This study is not without limitations, which raise a number of possibilities and promising directions for future study in addition what has already been discussed. The efforts taken to increase generalizability of the findings of this study included obtaining a large sample size and working to ensure, via recruitment practices, that the sample was varied in gender, race, ethnicity, and a variety of other demographic factors. While the traits of the study sample are in some ways representative of the population at the institution where the study was conducted (particularly in race and ethnicity), the sample is not as representative as it could be (i.e., across all variables, there is more than double the number of females present compared to males). According to the National Center for Education Statistics, females, while still a majority, made up only 58% of total undergraduate enrollment nationally in Fall 2021 (less than this sample shows), and white students made up just over 51% (NCES, 2023). Generalizability of these findings is also somewhat compromised by the non-normality of the distribution of the GPA data gathered, which it must be noted is especially true in the moderation analysis conducted (Carte & Russell, 2003) as well as the nonprobability sampling method utilized to recruit participants. In future studies, efforts to obtain first year cumulative GPA may be helpful

in normalizing the distribution of this particular data point – however, first-semester GPA is unique and beneficial in its own right due to it representing a student's very first academic outcome in the college setting.

Because the entirety of the data collection happened at one time point during the first semester (other than first semester GPA), it is difficult to draw conclusions due to lack of temporal precedence with any of the other variables, or calculate true mediation – in future studies, a mediation path could be hypothesized that links social support to academic performance via sense of belonging. This could be tested by collecting self-reported data points in a T1/T2 fashion. While this methodology carries its own concerns, primarily attrition, it would allow for deeper statistical analysis and mediation inference to be performed. Primarily worth noting is that in the present study, it is suspected that the correlations between perceived social support and the outcome variables other than sense of belonging are weaker (though still statistically significant) because there are likely strong mediating factors that cannot established due to the current study design.

The DASS-21 was used as a mental health measure in this study to allow us to get the fullest possible picture of mental health symptomology in participants, since it captures experiences of depression, anxiety, and stress. However, the DASS does not speak to clinical diagnosis of these issues and therefore future research is needed to ascertain how clinical levels of mental health problems related to the factors at play in this study (social support, academic performance). Additionally, the DASS asks responders to report their experiences with reported symptoms in the past week – while this is valuable for capturing their experiences at one instance in time, it may not reflect overall symptomatology over the course of the semester for all participants. This must be

taken into consideration in the analysis of results utilizing this measure. Nonetheless, the DASS allowed us to capture broader experiences of symptoms, including those for whom symptoms are not posing any issues, which may not be possible if using more clinical measures with strict cutoffs. It is challenging for youth to get mental health services, let alone diagnoses, and so there may be large underreporting of mental health problems if using a stricter measure.

This study is strengthened by its extension into an explanatory mixed methods format, where the preliminary quantitative results were utilized to shape additional research questions and interview questions for participants who volunteered (Doyle et al., 2009). Mixed methodology has become more robust and prevalent in educational research and the topics investigated in this study, given the mutable and anecdotal nature of a factor like friendship, are a good fit for this approach (Almalki, 2016; Meyer & Schutz, 2020). Learning more about an individual's perspectives and lived experiences helped us provide substantial insight into the transition experience and unique perceptions on the academic adjustment to college. While the qualitative sample size was limited at six participants, the sampling based on volunteers received was highly intentional and we were able to vary the traits of these participants to capture a broader swath of experiences (two were in-state female students, two were out-of-state male students, one was an out-of-state female student, and one was an in-state male). It is worth considering that interview participants are more likely to be biased by the likelihood that individuals who are overall more engaged and outgoing will volunteer for such tasks, but we believe that it is evident in the qualitative outcomes of this study that a

variety of academic, social, and psychological experiences of the first semester were still captured.

Despite some limitations, the findings in this study do serve to extend previous research that has indicated a significant link between support from friends, mental health, sense of belonging, and academic achievement, specifically during the transition from high school to college. Associations were found across the board between perceived friend support, belonging, mental health, and first-semester GPA. This study contributes to the existing body of work that sheds light on the mechanisms by which mental health plays an impactful role in the successful transition from high school to college.

Table 4.1.

Correlation analysis (r) of perceived social support, sense of belonging, mental health symptoms, and first semester GPA

	1	2	3
1. Perceived Social Support	—	—	—
2. Mental Health Symptoms	-0.17**	—	—
3. First-Semester GPA (of 4.00)	0.12**	0.377**	—
4. Sense of Belonging	0.36**	-0.339**	.12*

** p<0.05 ** p<0.001*

Table 4.2.

Means and standard deviations for perceived social support, sense of belonging, mental health symptoms and GPA by in- and out-of-state status.

	Perceived Social Support			Mental Health Symptoms			Sense of Belonging			First-Semester GPA		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*
Total	573	5.0	0.9	472	17.3	13.75	437	4.07	0.81	568	3.62	0.52
In-State	262	4.8	0.9	203	18.9	13.6	243	4.00	0.85	259	3.47	0.73
Out-of-State	309	5.1	0.8	268	15.6	13.9	294	4.14	0.77	309	3.77	0.32

Table 4.3.

Differences in GPA results among mental health symptom groups

	Low (DASS 0-20)		Medium (DASS 21-42)		High (DASS 43-63)		ANOVA
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*
First-Semester GPA	3.79	0.29	3.55	0.60	3.08	1.1	35.8 ***

*** p < .001

Table 4.4.

Regression results for moderation analysis of social support on the relationship between mental health and GPA.

	R^2	*p*	*B*	*SE B*	*ß*	*t*
Model	0.19					
Mental Health		.000	-0.039	0.008	-1.014	-4.95
Social Support		.007	-0.132	0.042	-0.238	-3.12
Mental Health*Social Support		.004	0.005	0.002	0.63	3.22

Table 4.5.

Interview Codebook

Code (inductive and *deductive)*	**Working Definition**	**Exemplar Quote**
Social Support		
General Support	General social support while in college. Can be from peers, parents, roommates, etc.	"So I kind of felt already like going into college that I wasn't alone, and that I would meet people like me through those classes…I kind of knew that, like, even if those people didn't be with me, in the beginning, I still felt fine, because I knew that I would eventually make friends." (Interviewee 4)
Mental Health Support	Any social support for mental health related issues (e.g., support with stress, anxiety, homesickness). Any mention of peers helping with coping skills.	"I don't think my mental health has been this good in a long time. Since I have such a strong group of friends and strong connections, and feel like I actually belong at the school, compared to high school where you're kind of forced to go there and make your own way." (Interviewee 5)
Academic Support	Any type of support for academics. Mentions shared goals (e.g., same academic goals), studying, majors, academic organizations, academic assistance.	"…we first became friends because I was complaining about having this assignment that I didn't know how to do for accounting. And so my teammates were like, I also know what I'm doing. And we went to the library for like six hours…we did that, like four or five nights a week…so our friendship kind of initially started with us working on papers together and doing homework together." (Interviewee 3)
Decision Making Support	Social support that influences decision making. Including shared self-regulation. Can be both positive or negative.	"I think being around people that have similar goals to you is always going to help you achieve those goals as well, or people that are like better than you in certain aspects as well just will always push you to want to, like I'm competitive, maybe not everybody, but for me, personally, that always pushes me to do better." (Interviewee 2)

Transition	Anything related to an individual's transition from high school to college, both positive or negative.	"… it was nice to get away… and meet all these new people. But at the same time, at first, it was a little weird, not knowing anyone and not having any family close to me. But like, at this point, now, it's like completely normal on me. So I've made like, a decent amount of friends and stuff so far. So I feel like I have people around me." (Interviewee 4)
Prior Relationships	Support from prior relationships, such as high school or people they came to college with.	"I knew two people…Right now, I'm decently close friends with her another dude, I just like knew him, but wasn't really friends with or anything like that. So most people I didn't know, coming down here…There are a ton of people from New Jersey down here. And I met more people that I actually, like, had known before through other friends, but I didn't know of them coming down here." (Interviewee 6)

Table 4.6.

Planned semi-structured interview questions.

1. Tell me about yourself (name, age, hometown, major, etc. – what do I need to know about you? What makes up your identity and makes "you, you"?)
2. How many people did you come to college with who you knew from high school? If you didn't come to college with people you knew from high school, how did you feel about that? Were you scared, excited, apprehensive, etc.?
3. Tell about your social life in your first semester of college.
4. Tell me about adjusting academically to college. Was it easier, more difficult, or about the same from what you expected? What academic expectations did you have of yourself?
5. How did your friends affect your ability to meet your academic expectations for yourself?
6. What effects do your close friendships have on your mental health during this time in your life?
7. Tell me about how you handle difficult situations in your life.
8. Do your friends play a part in how you cope with difficult situations?
9. Tell me about a time in college so far where you've been faced with a challenging decision - i.e., a big social event you wanted to attend the night before an exam, or something similar. How do you feel like you handle these types of choices? What do you do when you make the "wrong" decision?
10. Do your feel like your social life has an impact on your decision making when it comes to the choices you make about your actions/behaviors?

Table 4.7.

Regression statistics for interaction between social support and mental health on GPA.

Gradient of slope for Low Mental Health Symptoms	-0.115
t Low Mental Health Symptoms	-2.588
p Low Mental Health Symptoms	0.01
Gradient of slope for High Mental Health Symptoms	0.022
t High Mental Health Symptoms	0.508
p for High Mental Health Symptoms	0.611

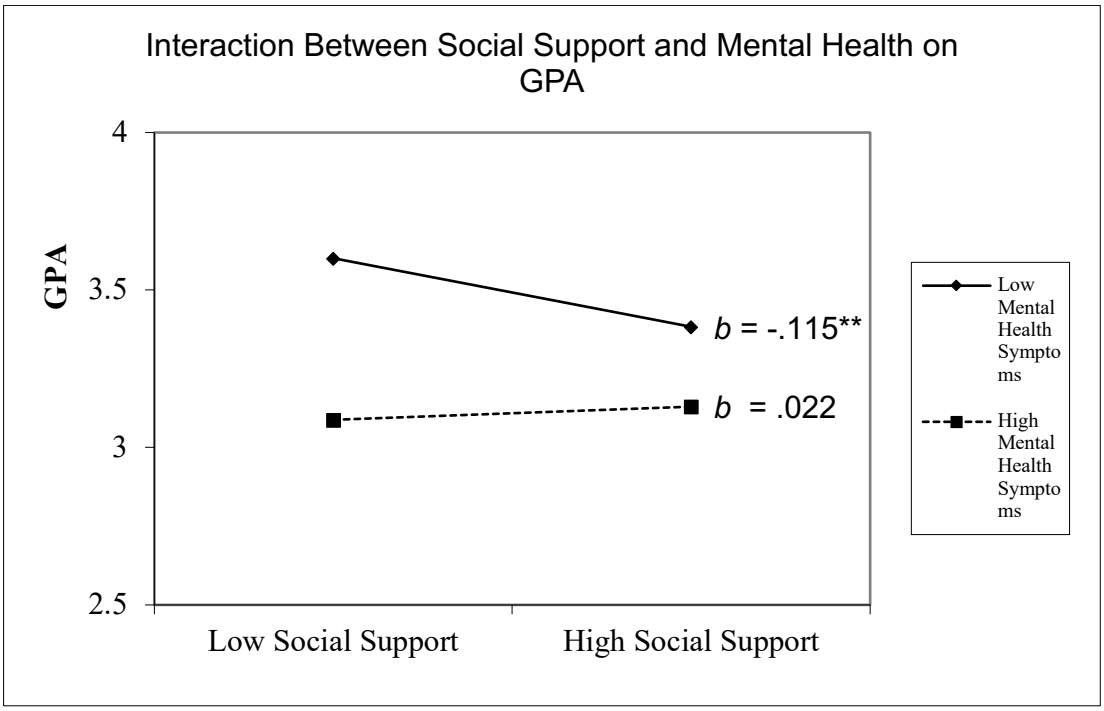

Figure 4.1.

Plot of the interaction between social support and mental health symptoms on GPA

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CHAPTER 5

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

This dissertation focused on a common theme: student success in the transition from high school to college. A more thorough understanding of the social, psychological, and cognitive factors that contribute to this success is vitally important not only to improve the experiences of individuals, but due to the vast economic and societal implications associated with college completion rates at the population level. To add to the literature, this dissertation consisted of a literature review (Chapter 2), and two empirical studies (Chapters 3 and 4), one quantitative and one mixed-methods; all with the goal to understand which factors relate to first year students' academic success (i.e., GPA). The thematic literature review lays the foundation for the subsequent empirical manuscripts and covers topics of the importance of college success and completion, peer, family, and friend support, mental health, self-regulation. To address research questions that emerged from the literature review about malleable factors related to success, two empirical studies were then conducted. The first study used data gathered from a large, public higher education institution in the Fall of 2022 to examine the interactions between self-regulation, mental health, and academic success. The study uses data from the same school and year to examine students' experiences with social support and provide anecdotal evidence to further the research questions posed in the studies

The goals of these studies was to fill in the gap in existing research regarding success in college and the factors that contribute, specifically examining academic

success as an outcome variable, to shed light on individual students' unique perspectives with regard to the myriad of factors that may pose an impact to overall success, and to tentatively inform practical recommendations that higher education institutions might employ in better supporting students and ensuring overall success. Existing research has certainly focused on various aspects of these factors and their importance. The focus has been especially prominent, particularly since 2020, on the implications of mental health struggles in adolescents and emerging adults. Less prevalent, but emerging, in the extant research are investigations into some of the possible interactions between the various facets of individual and population success in college. This dissertation focuses on the coalescence of social, psychological, and cognitive factors. Consequently, this dissertation adds to the existing body of literature that spans the higher education, developmental psychology, and educational research literature.

Overall Findings and Directions for Future Research

Overall conclusions of the literature review certainly confirm that substantial research exists that highlights the importance of the constructs covered in the review and subsequent studies. The criticality of the emerging adulthood life stage is apparent, as is the importance of the examined variables: self-regulation, mental health, social support, belonging, and academic achievement are key factors that contribute to overall positive outcomes in the transition to the college environment. As discussed in multiple chapters of this dissertation, the relationships are several and overlapping – such as self-regulation and mental health via the strength-based model of self-regulation, mental health and social support via the buffering effect, and social support and belonging via student

development theory. The importance of these variables for an individual's thriving cannot be understated.

However, much of the research reviewed focused on these variables in silo, or interactions between separate pairs (see Lee & Szinovacz, 2016; Ng-Knight et al., 2019; Turkpour & Mehdinezhad, 2016; Wegemer & Sarsour, 2023 for notable exceptions). A dearth exists in the literature examining where multiple instances of these variables interact, including instances of moderation. Moving forward, it will be important that the research focuses more intently on combinations of these intersections in order to capture the complexity of the emerging adulthood developmental phase, where the theories and science indicate that individuals benefit most when they grow holistically in interacting domains (Baggio et al., 2017; Mitchell et al., 2021; Sherman, 2021). Future works must look into the ways in which evidence can be utilized to provide students with support and the tools to succeed in the college environment. The constructs covered in the literature review chapter represent important directions and designs for future research, particularly in the context of emerging adulthood. The literature review overall finds that the existing body of work presents a solid starting place for delving into the importance of these variables and illuminates the importance of the ongoing work of determining and developing best practices that support college student success, retention, and thriving.

The findings of the first study focused on first-year students' adjustment to college by examining associations between self-regulation skills, mental health symptoms, and academic outcomes. Results indicate that both self-regulation and mental health are related to first-semester academic achievement, as well as each other. Thus, those with higher grades in the first semester were more likely to display greater self-

regulation and less likely to deal with troublesome mental health symptoms. Notably, the findings were most consistent with the strength model of self-regulation, which suggests that coping with emotional turmoil and having to regulate that emotion can exhaust an individuals' overall "bank" of self-regulation strength (referred to as ego depletion), which leaves one more prone to other self-regulatory failures subsequent undertakings. As this relates to academic outcomes, the results of this study point to the idea that, for students struggling their mental health, self-regulation will deplete more quickly and be more difficult to recover, thus leading to increased challenges in reaching academic success.

As expected, there was a positive relationship between self-regulation and first-semester GPA, such that higher self-regulation capacity was associated with higher academic achievement. This is consistent with prior research that self-regulation is a critical component of academic achievement (de la Fuente et al., 2020; Khan et al., 2020; Tangney et al., 2004). What this suggests is that self-regulation may be an important target for academic interventions. For instance, helping students develop their regulation skills in terms of making less "desirable" choices (i.e., studying, attending office hours, working in the library) when presented with ways to spend their time, may help them complete the necessary course requirements that will enable them to earn higher grades in their individual courses and therefore their overall GPA. There are many highly necessary skills for success in college (i.e., time management, regulating choice fatigue) which are very often rooted in self-regulation.

Given the web of relationships between mental health, academic achievement, and self-regulation, and that learned self-regulation is a malleable trait (Diamond, 2002;

Muraven & Baumeister, 2010), it is recommended that interventions that narrow in on improving students' self-regulation skills are given priority. This programming has the potential to enhance students' ability to manage their academic efforts and therefore performance in a way that is not limited to subject-specific course support. Consistent with the strength model of self-regulation, Muraven (2010) suggests that individuals work towards small, low stakes acts of self-control to increase levels of self-regulation overall, thus making it a time-effective intervention. Allowing students opportunities to improve their self-regulation with practice in a low-stakes and contained setting, as well as providing them with the knowledge that self-regulation ability is a malleable trait (Duckworth & Carlson, 2013), has the potential to enhance later persistence on academic tasks and may even bolster ability to cope with stress and other emotional challenges. While the strengths-based nature of self-regulation was the primary theoretical model for the studies conducted in this dissertation, it is worth acknowledging for future studies other promising theories of self-regulation that could further this work – such as a focus on self-regulated learning or co-regulation. Additionally, it would be worthwhile to consider measures of self-regulation that represent it as the malleable, versus fixed, trait that it is. This could improve reportable outcomes of future studies that investigate self-regulation in the college student population.

The second study in this dissertation focused on first-year students' adjustment to college using a mixed-methods design to examine associations between variables associated with first-semester academic success and analyze themes in students' qualitative reports of their experiences with social support, forming friendships in college, mental health, and academic transition. It was hypothesized that the variables of

study would be correlated given previously established work around the importance of support from friends in the transition from high school to college (Boute et al., 2007; Wegemer & Sarsour, 2023) and previously established models that emphasize the importance of social support in a variety of positive outcomes (Lee & Szinovacz, 2016; Wang et al., 2023).

The association between perceived social support and mental health symptoms was hypothesized to be negative (greater perceived social support would be correlated with lower mental health symptomatology), which was found to be the case. Although results revealed an interaction effect between mental health symptoms and social support on GPA, it was counter to expectations based on the existing research on the buffering effect of social support. It was expected that social support would temper the negative effects of poor mental health on first-semester GPA. Instead, results indicated that students dealing with worse mental health had lower GPAs when they had greater perceived social support. It may be that these outcomes are due to the diminishing return of increased social support that can occur (Grant & Schwartz, 2011; Leikas & Ilmarinen, 2017). Social support is still an important factor, but a variety of other variables may be at play impacting its relevance for GPA.

Additionally in this study, positive relationships were hypothesized between perceived social support and both sense of belonging and first-semester GPA. We found support for these expectations, which align with existing literature research (Gopolan & Brady, 2020; Wegemer & Sasour, 2023). This emphasizes the importance of supporting students in finding and fostering healthy friendship relationships in early college – both for implications on academic success and belonging, two highly critical factors that tend

to predict student persistence (Hausmann et al., 2007; Morrow & Ackermann, 2012). The themes revealed in the interviews from the qualitative component of this mixed methods study further emphasize the relational nature of these factors and the importance of considering them holistically – all participants talked in some context about the ways, both positive and negative, that interactions with others impacted their decision making, mental health, and academic journey in the transition to college.

A major recommendation that can be drawn from this study is that future work should continue to highlight and investigate the importance of proactive programming in multiple and interrelating domains for students during the transition to college. These types of programs are already becoming more widespread as the student affairs profession continues to grow (Ahmed et al., 2021; Akeman et al., 2020; Costello et al., 2022; Downs et al., 2019; Kirsch et al., 2014), and the studies in this dissertation echo the case that others have proposed for prioritization of holistic supports and considering college student adjustment across a range of outcome variables. However, at a time when institutions are focused on making the most out of limited resources, longitudinal and experimental studies that can identify possible malleable factors related to academic success are needed to determine where schools can best utilize funds. Proactive programs that are geared towards de-stigmatization of mental health symptoms and that that encourage students in developing meaningful and proximal social supports that are connected to their academic and other goals have the potential to leave lasting impacts.

Strengths and Limitations

A unique strength of the studies presented in this dissertation is the use of actual first-semester GPA as an outcome measure to report academic success. The more

common route in traditional studies measuring academic outcomes is self-reported GPA, approximate GPA, or GPA range (Hatos & Gyarmati, 2023; Mahdavi et al., 2023; Marmolejo et al., 2022). By conducting this study at one institution where the author was granted access to actual GPAs, this presents a unique measurement of academic success collected at the earliest possible time point in the college student experience. The drawback of utilizing specifically first-semester GPA is the small number of outcome possibilities (given minimal possible deviations of grades and averages) and therefore somewhat skewed distributions in the results of this factor. The large sample size represented in both studies is also an overall strength – while it does not wholly solve for generalizability of the results, it adds to the credibility of the findings in a way that would be more difficult with a more limited sample in size and diversity.

An additional strength of this collection, particularly in the second empirical paper, is the use of an explanatory mixed methods design to provide subjective results related to students' experiences. This is specifically relevant to the connections made to the deeply personal experiences with friends and mental health in the midst of their high school-to-college transition. The factors investigated in this study lend themselves to qualitative exploration, and thus rich, anecdotal additions to the outcomes presented were made possible by this research design.

As already mentioned, the assembly of works presented here is not without limitations. There is limited generalizability of the results by not spanning them across a variety of institutions or points in time. Specifically, the skew of the GPA data point could be corrected or accounted for with collecting multiple semesters of data and ensuring that a large sample of majors and degrees are represented. Soliciting responses

to the same survey at multiple institutions or institution types could also improve both the skewed GPA data and the diversity of results, supporting greater generalizability. Additionally, there were challenges with internal consistency in the sense of belonging measure in the second study that led us to utilize only the particular factors of interest in final analysis. Modifying the study with an additional or alternate measure of this construct may improve the outcomes in this area. Finally, the sample size of the qualitative component of the second paper was certainly more limited than it would ideally be. This could have impacted the spectrum of themes collected from the interviews and, therefore the conclusions drawn from the qualitative portion of the second empirical paper by not reflecting all students' experiences. However, despite the limited interview sample size, the selection process was highly intentional and recruited students with a variety of backgrounds. Given more time and recruitment resources, more interviews could be conducted and analyzed for themes.

Conclusion

This dissertation sought to provide a clarifying look into the complex and intermingling factors that allow emerging adults to be successful in the transition from high school to college. Variables of interest captured major domains of development including psychological, cognitive, and social. Using both quantitative and qualitative designs, the primary contribution of this dissertation to the literature is the specific focus on the first semester academic success and the factors associated with higher GPA. The findings have important implications for higher education institutions because they suggest the importance of factors that should continue to be investigate in future studies in order to inform interventions that might be designed in order for schools to create

greater senses of belonging that foster student success. All in all, it is critical to reiterate that student success in a higher education setting is invaluable to the individual, families, communities, and society at large. In totality, it behooves researchers and student success practitioners both to identify the ways in which to best support that success.

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