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Life Adversity, Social Support, Resilience, and College Student Mental Health

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LIFE ADVERSITY, SOCIAL SUPPORT, RESILIENCE, AND COLLEGE STUDENT MENTAL HEALTH

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ABSTRACT

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This study investigated how adverse childhood experiences (ACEs), current college student hassles, and perceived social support relate to college student resilience. This study also explored how ACEs, current college student hassles, perceived social support, and resilience relate to college student mental health. A sample of 507 students from a public university in Washington State completed an online study which consisted of surveys operationalizing each variable. The results showed that current college student hassles and perceived social support significantly predicted resilience. Current college student hassles, resilience, and perceived social support also significantly predicted mental health. The study revealed that ACEs had no significant prediction for either resilience or mental health. These findings are discussed in light of previous research. Implications for future research and intervention ideas are also discussed.

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CHAPTER I

INTRODUCTION

College student mental health has become an increasing concern for higher education institutions over the past decade. The National Alliance on Mental Illness (NAMI) college student information page touts statistics that 75% of pervasive mental health conditions originate by the age of 24, 25% of college students are diagnosed or treated for mental health disorders, over 40% of students experienced more than average amounts of stress over the previous 12 months, over 80% felt overwhelmed by what they needed to accomplish, 31% of students reported feeling so depressed it was difficult to function within the past 12 months, and over 50% experienced overwhelming anxiety resulting in academic difficulties (NAMI, 2014). Rates for students seriously considering suicide within the previous 12 months were reported at 7% (NAMI, 2014). Further, it is estimated that only about 17% of adults in the United States are considered to be in a state of optimal mental health (Centers for Disease Control and Prevention [CDC], 2011). College is thought an opportune time to provide services and interventions to students to help improve their mental health (Douce & Keeling, 2014).

As college attendance increases, the numbers of persons requiring services also increases. However, campus mental health service providers are having difficulties meeting these needs, as they have limited resources and expertise (Douce & Keeling, 2014). Prevention measures are also limited for many universities (Douce & Keeling, 2014). Accordingly, of students who reported diagnosable mental health disorders, over 40% of students either did not seek or obtain help due to the increased focus on crisis counseling in college counseling centers (Kruisselbrink-Flatt, 2013; NAMI, 2014).

Greater understanding of the potential causes for mental illness and improved knowledge of effective interventions is hypothesized to increase student academic performance and retention rates (Kruisselbrink-Flatt, 2013). The American Psychological Association regards improving college mental health services and preventative measures as an important and strategic endeavor, which should be undertaken by every university (Douce & Keeling, 2014). However, inherently this requires counseling centers to meet increased demands with their current resources.

College students face more academic pressure than in high school, an ever-increasing financial burden of paying for school and lifestyle, and new social demands and freedoms (Kruisselbrink-Flatt, 2013). Increased accessibility to a college education for more students of various mental health backgrounds, higher rates of female than male college attendees, advances in technology making in-person social interchanges more difficult for some, and lifestyle differences such as increased independence and living on one's own are associated with more demand for counseling services (Kruisselbrink-Flatt, 2013). Other sources of distress may stem from previous life adversities. It is estimated that 60% of the United States population have experienced one or more Adverse Childhood Experiences prior to the age of 18 (Anda et al., 1999; McGavock & Spratt, 2014; Mersky, Topitzes, & Reynolds, 2013). Adverse Childhood Experiences entail, but are not exhaustive of, physical, sexual, and emotional abuse and neglect, parental separation or divorce, domestic violence, and parental substance abuse. Individuals experiencing said adversity are more prone to increased rates of mental illness (Nurius, Logan-Greene, & Green, 2012).

Amid the numerous possibilities of adverse life events and demands of the college environment, many students struggling with mental health may choose not to seek services due to the stigma attributed to mental health services (Quinn, Wilson, MacIntyre, & Tinklin, 2008). It has been speculated that upwards of 80% of students confide or seek supportive services from friends prior to those from trained mental health professionals (Novotney, 2014). The American Psychological Association indicates that integration of social support into preventative measures for mental health may result in improved rates of student mental health and less negative social stigma apportioned to mental illness (Douce & Keeling, 2014). Some research indicates that social support is not sufficient in itself to help improve student mental health (Galatzer-Levy, Burton, & Bonanno, 2012; Nurius et al., 2012), but should be part of an intervention program encompassing resilience (DeRosier, Frank, Schwartz, & Leary, 2013; Hartley, 2012).

The transition into college requires a degree of social-emotional adjustment, coping with academic stress, coping with life adversity, and balancing the myriad of school and life demands vying for students' attention. It is important to transition into college well and to recover from potentially challenging life events, also referred to as resilience. Resilience, a process through which an individual responds to adverse experiences resulting in a positive outcome, has become an increasingly popular construct within the past two decades. Numerous interventions related to resilience have been proposed and evaluated; however, the majority of recipients of these interventions are students in primary schools. In the past few years, resilience has gained more attention in terms of helping college students who experience mental illness (DeRosier et al., 2012). Research thus far shares that resilience plays an important impact on mental

health, as it is the ability to bounce back and work with the concerns at hand. Resilience entails responding to stressful or adverse circumstances with thriving and perseverance, resulting in positive outcomes (Hartley, 2012).

Screening for and promoting resilience as part of interventions in university counseling centers may comprise an efficacious asset-based, preventative approach (Hartley, 2012). Given that not all stressors faced by students in college can be eliminated, resilience interventions are found to empower students to use protective factors such as coping strategies and reappraisal of stressors, thus helping increase the outcome effect of student mental health (Hartley, 2012). Resilience has also been shown to help buffer the deleterious effects of adverse life experiences and student stress. Further, in conjunction with social support, resilience is found to improve mental health in the college student population (DeRosier et al., 2013).

Resilience is seen as a process, initiated via risk factors that engage protective factors, thereby producing favorable outcomes. In this study, adverse childhood experiences and college student hassles are regarded as risk factors that may initiate the resilience process. Social support is considered a protective factor in the resilience process. Mental health is considered the outcome of resilience. The purpose of this study is twofold. The first purpose is to investigate how the variables of adverse childhood experiences, current college student hassles, and perceived social support relate to college student resilience. The second purpose is to determine how adverse childhood experiences, current college student hassles, perceived social support, and resilience relate to college student mental health.

CHAPTER II

LITERATURE REVIEW

Resilience as a Framework

Resilience is defined as the ability to "bounce back" or experience positive outcomes, despite having experienced adverse or risky life circumstances (Luthar, Cicchetti, & Becker, 2000). That is, resilience is the positive response to an adverse experience (Fergus & Zimmerman, 2005). It consists of the ability to utilize or draw upon personal, community, or family resources available to the individual to obtain these outcomes (Garmezy, 1985). Resilience is not a personal, static characteristic (Luthar, 2003). Rather, resilience develops in light of an adverse circumstance as the process by which the individual applies mechanisms and manipulates resources to overcome said adversity (Fergus & Zimmerman, 2005). Because resilience is considered a process of development rather than a personality trait, it was proposed that the term "resilience" be the sole reference to this construct, whilst never utilizing the term "resiliency," which connotes a personality trait or characteristic (Luthar et al., 2000; Masten, 1994).

It is known that resilience varies across setting, situation, and time (Topitzes, Mersky, Dezen, & Reynolds, 2013). Resilience is considered specific to the situation and stressor. That is, resilience to one adverse experience (e.g., being teased at school) does not mean that the individual will be more resilient to another type of threat (e.g., family member's death), either in the present or future (Fergus & Zimmerman, 2005). However, an individual's awareness of the resources available to him or her, albeit personal, communal, or familial, increases the likelihood that he or she will turn to these resources when in need (Fergus & Zimmerman, 2005).

Resilience is multidimensional; there has been a proposal that resilience needs to be redefined to encapsulate various domains, such as academic resilience, emotional resilience, or social resilience (Luthar et al., 2000; Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003). Luthar et al. (2000) state that it is possible for an individual to have high levels of resilience in one domain but not another. Resilience should exist across similar domains, such as high grades and appropriate classroom behavior for individuals with higher levels of academic resilience. However, high academic resilience may not necessitate high emotional resilience in an individual. In fact, it is common for individuals to have unevenly developed degrees of resilience across dissimilar resilience domains (Luthar et al., 2000). Fletcher and Sarkar (2013) define psychological resilience as the "role of mental processes and behavior in promoting personal assets and protecting an individual from the potentially negative effect of stressors" (p. 16). As the present study aims to evaluate resilience in the college student population, and college has multiple demands from cognitive to social, psychological resilience is thought to be the best dimension of resilience to evaluate (Hartley, 2013).

Regardless of the domain of resilience, resilience should be seen as the interaction between numerous potential protective factors and risk factors across the settings of community, family, and individual (Luthar et al., 2000). It is this basic understanding of the formation of resilience that fuels theory in the field.

Historical Context. Early research in resilience focused on various qualities possessed by children showing resilience (Luthar et al., 2000). Resilience research then moved in the direction of evaluating the factors, internal and external, that promote resilience (Luthar et al., 2000). Study into protective factors and individual's strengths

began to give rise to a newer wave of research, on mechanisms by which resilience functions (Cicchetti, 2010). Numerous fields of study—business, biology, education, sports, military—have helped try to elucidate the process of resilience (Fletcher & Sarkar, 2013). However, lacking consensus of how resilience is conceptualized and even defined has been a limitation (Fletcher & Sarkar, 2013). There does exist consensus that both adverse experiences and positive outcome must occur (Fletcher & Sarkar, 2013).

The vast majority of literature on resilience addresses children and adolescents, while less research has been performed in adult populations, especially college students (Fletcher & Sarkar, 2013). Much of the early literature focused on chronic stressors children and adolescents face (Cicchetti, 2010). However, in 2004, Bonanno discussed resilience in terms of a response to potentially traumatic events (PTEs) which he proposed could be acute, not merely chronic. He indicates that most people experience one or more PTEs in life.

Conceptualization. There is debate in the field as to whether resilience is a personality trait or state-like process, with most researchers on the side of resilience as a process (Fletcher & Sarkar, 2013). Recall that resilience is more than simply an interaction of an individual's internal factors but also incorporates external factors. As adverse factors are required to initiate the process of resilience, not merely a personal choice, it should be conceptualized as a state-like process (Fletcher & Sarkar, 2013). Resilience does, however, consist of an amalgamation of protective factors, such as personal traits.

When conceptualized as a trait, resilience is the culmination of trait-like characteristics which account for positive adaptation to adversity (Connor & Davidson,

2003). This suggests that resilience is either possessed by an individual or not (Fletcher & Sarkar, 2013). However, most researchers conceptualize resilience as a state-like process that changes and develops over time through a series of contextually relevant factors (Fletcher & Sarkar, 2013). In this viewpoint, it is believed that resilience changes in response to the circumstances present at that moment, such that the protective factors utilized are thought to be responsive to the nature of the adversity.

Resilience draws upon resources that are part of the process. These resources may themselves be more state-like but resilience can also draw upon other resources that are more trait-like. In this study, resilience is conceptualized as being trait-like and process based, with the understanding that some of the resources it utilizes are more stable, state-like characteristics of the individual.

General Outcomes. Bonanno (2004) discussed the difference between resilience and recovery in response to an acute traumatic event. He found that while recovery can be quick, it may also take a longer period with a trajectory of psychopathology that is subclinical. In resilience, the individual does not experience any psychopathological concerns related to the event and maintains normal, if not excellent functioning. These outcomes should be viewed in light of the stressor or adversity. If an individual experiences a traumatic event, the outcome of their adaptation may better be understood by a lack of psychopathological disorder than exhibiting excellent functioning (Bonanno, 2004). The individual's outcome or competence must also be evaluated in the context of their sociocultural environment (Fletcher & Sarkar, 2013).

Fergus and Zimmerman (2005) proposed three main models of resilience: the compensatory model, protective model, and challenge model. In the compensatory

model, protective and risk factors function independent of one another, but cumulatively have an impact upon the outcome. The protective model posits the protective factor acts as a mediator decreasing the impact of the risk factor on the outcome, resulting in more favorable outcomes. The protective-protective model is a particular type of the protective model in which each additional protective factor further diminishes the impact of the risk factor on the outcome, such that the cumulative interaction of the protective factors is greater than their individual impact. In the challenge model a curvilinear relationship between the risk factor and outcome is observed, such that both small and large magnitude of risk are associated with poorer outcomes than a mild to moderate presence of risk. It is thought that protective factors in resilience can mediate the impact of risk upon the outcome up to a certain degree, whereupon poorer outcomes are again obtained. The better outcomes in the curvilinear model are thought to be attributable to learning how to utilize the protective factors available to the person to overcome the risk. Too little risk does not initiate the resilience process, and too much risk is appraised as insurmountable. A particular type of the challenge model is called the inoculation or steeling model. In this model, continual mild levels of risk enable an individual to learn how to draw upon resilience resources such that they are positioned to overcome more significant future adversity.

In a review of the relationship of resilience to adversity and mental health, Seery (2011) found a quadratic relationship that aligns with the challenge model proposed by Fergus and Zimmerman (2005). His finding revealed that mild to moderate adversity experience was associated with higher life satisfaction, compared to no adverse experiences or greatest levels of adversity. Seery evaluated longitudinal data in a sample

of 2,398 individuals randomly selected from the United States over the course of two years. He measured the degrees of global distress, functional impairment, post-traumatic stress, and life satisfaction in light of past life adversity and recent stress every six months. The results revealed that while recent stress does result in unfavorable outcomes momentarily, over a period of months recent adversity became associated with better life satisfaction outcomes in individuals who had mild to moderate cumulative life experiences with adversity. Seery's study is limited because he did not indicate how much adversity is too much, nor did he state any specific associations between particular types of adversity and outcomes.

Theory of Resilience. There are almost two dozen theories Fletcher and Sarkar list in their 2013 review of psychological resilience theory. Most theories stem from the conceptualization of resilience as a process. Of these theories, most are context specific, such as for sports, nursing, adolescents, community, and medicine. While these theories are proposed, Windle (2011) performed a review of the literature, revealing little research on the mechanism by which resilience actually works. Despite this need for research, there remain theories that are used widely.

Fletcher and Fletcher (2005) established the meta-model of stress, emotions, and performance. In this model, environmental stressors are appraised as potentially traumatic and processed with various coping strategies, which results in positive responses. The factors mediating the response to the stressor function at multiple stages- in the individual's appraisal, the metacognitions responding to the experienced emotions and the selection of coping skills. This model is particularly beneficial because of its incorporation of metacognitions and purposeful choice of coping skills.

The integrative ecological-transactional model is similar to Bronfenbrenner's ecological model, in that it conceptualizes resilience as a process of factors interacting across and within various proximity levels (Luthar et al., 2000). These levels are the individual, close friends and family, and cultural or community. When an individual experiences adversity, it activates protective factors in these areas to help the individual rebound.

Richardson's metatheory of resilience and resiliency is touted as a generic theory applicable to all populations and contexts, which draws from a range of concepts of physics, medicine, and psychology in its genesis (Fletcher & Sarkar, 2013). As such, Richardson's theory is frequently cited in resilience literature. In his theory, resilience is conceptualized as a process that seeks to maintain a biopsychospiritual homeostasis, in which the individual is physically, mentally, and spiritually balanced (Richardson, 2002). When a PTE is experienced and the individual does not believe they have the resources needed to manage it, the individual adjusts and begins a process to reach homeostasis again (Richardson, 2002). This process is said to have one of four outcomes: resilience reintegration, homeostatic reintegration, reintegration with loss, and dysfunctional reintegration. Resilient reintegration is the only outcome that reveals resilience and is characterized by gaining new protective factors and a higher level of homeostasis than before the adversity. Homeostatic reintegration is the ability to recover back to pre-event homeostatic events, whereas the other two outcomes, reintegration with loss and dysfunctional reintegration, fall below the original homeostatic level.

While not a fully developed theory at this point, Seery, Holman, and Silver (2010) presented evidence that previous experience with adversity in moderation is associated

with a curvilinear relationship of more favorable mental health and well-being outcomes compared to individuals with no history with adversity or those with high levels of adversity. This suggests that mild to moderate levels of adversity can help the individual access and increase resources and protective factors they did not have previously, become more socially involved, and provide a perceived sense of mastery for dealing with future adversities. Mild or "low" to moderate levels of adversity were considered as one adverse experience up to the mean of adversities for their sample (M = 7.69, out of 71 possible adverse experiences). High adversity was considered the mean of their sample's adversities plus one standard deviation (7.69 + 6.04 = 13.73 adversities).

Garcia-Dia, DiNapoli, Garcia-Ona, Jakubowski, and O'Flaherty (2013) proposed a potential mechanism of how the process of resilience works in their concept analysis of psychological resilience in the mental health field. Upon the emergence of a PTE, the individual is put at risk for diminished coping ability or ability to manage the stressor. Only if the PTE is appraised as physically or psychologically adverse or traumatic are protective factors triggered to buffer effects of adversity. During this process the individual can utilize active reasoning to understand and reframe the circumstances to be seen as manageable. The outcome is effective coping, evidenced by the ability to redefine goals, recover physically, experience personal growth, and reframe psychologically in response to this life adversity. It remains possible for the individual to feel stressed or overwhelmed in other areas of life, but in response to the PTE the individual has undergone the resilience process.

While various theories for how resilience functions have been proposed, at their core all rely upon the understanding that resilience develops out of a complex interaction

between protective factors and risk factors (Hartley, 2010; Luthar et al., 2000). Luthar et al. (2000) state that every study of resilience must root itself in this steadfast understanding of resilience as an interaction of factors in an individual's life, whilst striving to advance or affirm theoretical understanding of resilience. This study seeks to advance the literature of resilience through examining resilience as the interaction of protective and risk factors experienced by college students. Specifically, the main questions will explore how well adverse childhood experiences, current college student hassles, and social support predict college student resilience. Additionally, college student mental health will be evaluated as an outcome of the resilience process, as predicted by adverse childhood experiences, current college student hassles, social support, and reported resilience.

Risk Factors

Risk Factors in College. College is a complex interaction of interpersonal exchanges, academic expectations, intrapersonal development, and numerous external and internal demands. The unique environment that college provides can be both an opportunity for tremendous growth but also for stress and academic hardship. Therefore it is relevant to review risk factors for mental health specific to the college environment. These entail academic pressure and competition, limited academic support, requirements to make a new social network, finances, and peer pressure toward alcohol and drug use (Hartley, 2010). Students with mental health concerns experience these risk factors in addition to others: social stigma of mental illness, impairments in cognitive functioning, lower academic self-confidence, and interpersonal communication deficits (Hartley, 2010).

DeRosier et al. (2013) found the top ten stressors experienced by college students in their first year to be: completing homework, making good grades, studying, meeting personal academic standards, procrastination, heavy workload, writing assignments, too many responsibilities, meeting deadlines, and not enough time to relax. The authors also indicated that students experienced academic stress, financial concerns, identity stress, social stress, and time management concerns.

DeRosier et al. (2013) also evaluated college student mental health, resilience, and stress during the transition into college. Students reported cumulative stress via the College Stress Scale, maladaptive responses to stress through the My Responses to Stress questionnaire established in their earlier work, resilience through the My Resilience Factors questionnaire, and mental health via the My Self-Care questionnaire also established in their earlier work. Multiple regression analysis revealed that resilience and maladaptive responses to stress both significantly predicted mental health, unlike cumulative stress and the interactions between these variables. These results reveal that higher levels of resilience are associated with better mental health outcomes, with greater magnitude than maladaptive responses associated with poorer mental health. Although these results appear promising, many of these questionnaires utilized were constructed by the authors and the results should be taken with caution. Further, these correlations should be evaluated via measures with established psychometric validity. While current college struggles appear to pose risks to student mental health, it is important to note that previous experience with adversities in childhood can have negative impacts as well.

Risk Factors in Childhood. While many studies have evaluated current stressors in college student lives, numerous studies reveal that adverse experiences during

childhood are correlated with poor health, life satisfaction, and mental health outcomes in young adulthood and beyond. Adverse childhood experiences were defined thus in a recent concept analysis as "childhood events, varying in severity are often chronic, occurring in a family or social environment and causing harm or distress" (Kalmakis & Chandler, 2014, p. 1490).

A non-exhaustive list of adverse childhood experiences includes: parental separation or divorce, parental unemployment, parental death, parental incarceration, homelessness, neighborhood violence, poverty, domestic violence, household substance abuse, household mental illness, sexual abuse, physical abuse, physical or emotional neglect, and having no good friends (Finkelhor, Shattuck, Turner, & Hamby, 2014; Schilling, Aseltine, & Gore, 2007). In a resilience literature review, Vanderbilt-Adrience and Shaw (2008) found the following adverse experiences to be associated with negative outcomes: childhood maltreatment, parental death, father's incarceration, family mental illness, being bullied, low socioeconomic status, abuse, neglect, family dysfunction, and poor interpersonal relations.

A survey of childhood adversities and mental health was performed via a sample of 6,483 adolescents 13-17 years old (McLaughlin et al., 2012). The following twelve childhood adversities were assessed: parental death, parental divorce, other loss of contact with parent, parent mental illness, parent substance abuse, parent criminality, family violence, physical abuse, sexual abuse, emotional abuse, neglect, and family financial hardship. These adversities clustered into a few main categories: interpersonal loss, parental maladjustment, maltreatment, and family economic adversity. At least one childhood adversity was experienced by 58.3% of the sample. Of this 58.3%, 59.7%

experienced a mean of 3.2 childhood adversities. These childhood adversities were found to significantly predict behavior disorders (ADHD), fear disorders (social phobia, specific phobia, and IED), substance disorders (alcohol/dependence), and distress disorders (PTSD and MDD/dysthymia). Of all psychiatric disorders in the sample, childhood adversities were significantly correlated with 28.2% of them. As childhood adversity experiences increased, odds ratios increased accordingly. Of those individuals who experienced 5 adversities, they were 3.8 times (odds ratio = 3.8) as likely to develop a mental health disorder, while those with 6 or more adverse experiences faced odds of being 4.6 times more likely to develop a disorder than individuals who experienced no childhood adversities.

It is thought that not only cumulative number, but the type of childhood adversity may impact mental health outcomes. A systematic literature review of childhood adversities and the cluster effect they have on outcomes was performed by Jacobs, Agho, Stevens, and Raphael (2012). The authors posit that some adversities may occur concurrently with others and be considered a cluster of adversities, such as abuse or neglect which each contain specific adversities. The authors indicate that exposure to numerous adversities is often the case, and individually occurring childhood adversities are less common, thus indicating that clusters of adverse experiences are likely. The literature reviewed by the researchers was published from 1980 to February 2011. A total of twelve articles met the search string criteria and addressed cluster effects. The most common adversities found across these studies were: parental divorce, separation and a broken home, child physical abuse, child sexual abuse, parental mental illness, parent death, child health problems, financial difficulties, and family conflict. Although

there was some overlap in childhood adversities, 75 childhood adversities were addressed in only one of these twelve studies, indicating that a number of adversities exist. All twelve studies showed significant, negative impact of childhood adversities associated with one of the following areas: internalizing disorders, externalizing disorders, and behavioral disorders. However, given the numerous methods of assessing childhood adversity, multiple outcomes with which adversities were associated, and variation of ages evaluated, determining an over-arching cluster effect was deemed not possible. Due to this wide variation of results, the authors indicate that without the use of a standard and comprehensive questionnaire it is unlikely to determine child adversity cluster effects. This questionnaire would need to limit intuitive and subjective clustering results, while maximizing comprehensiveness of childhood adversities. Having such a tool would enable researchers to determine large-scale impacts of specific childhood adversities. The Adverse Childhood Experience study, discussed below, may provide a solution.

Adverse Childhood Experiences Studies. Several childhood adversities are integral in the Adverse Childhood Experience (ACE) Study. The ACE study is a partnership between Kaiser Permanente's Health Appraisal Center (HAC) and the CDC, which aims to address the impact of adverse childhood experiences on the health and well-being of individuals (Anda et al., 2006). All patients seen in the HAC network between fall 1995 and spring 1996 were asked to complete a survey called the ACE questionnaire. After some responses were excluded, a sample size of 17,337 individuals remained. The ACE questionnaire was pared down to 10 items in areas related to emotional abuse, physical abuse, sexual abuse, parental substance abuse, parental mental illness, domestic violence, parental death, and parental incarceration. Scoring of the ACE

questionnaire results in a cumulative score of adversities from 0 to 10 points. The authors indicate that dichotomous variables can be used to classify these scores: 0 (the referent for the other scores), 1, 2, 3, and 4 or more ACEs. The prevalence rates of ACE scores for the initial sample size (n = 17, 337) were: 36.1% with 0 ACEs, 26.0% with 1, 15.9% with 2, 9.5% with 3, and 12.5% with 4 or more. The larger the ACE scores were found to be, so too, were the negative outcomes. In regard to the mental health outcomes individuals with ACE scores of 4 or more were 2.5, 3.6, and 2.4 times more likely than those with ACE scores of 0 to develop panic reactions, depressed affect, and anxiety, respectively. Individuals with ACE scores from 1 through 3 also experienced greater odds of experiencing negative mental health outcomes, however not to the same degree as individuals who experienced 4 or more. In regard to perceived stress, individuals with 4 or more ACEs had adjusted odds ratios of 2.2 (AOR 2.2), revealing they were 2.2 times more likely to experience stress than those with no ACEs. Individuals with ACE scores of 1 (AOR 1.2), 2 (AOR 1.4), and 3 (AOR 1.5) also experienced elevated rates of perceived stress. The authors indicate that ACE scores of 4 or more out of 10 should be noted as a cut off point for denoting poorer outcome probability.

The ACEs survey was used to assess prevalence rates of childhood adversities in a sample of 765 first-year undergraduates in Northern Ireland (McGavock & Spratt, 2014). The ACE prevalence rates for this population are: 0 (44%), 1 (21%), 2 (14%), 3 (9%), and 4 or more (12%). Interestingly, the ACE scores for these students were not significantly associated with gender or physical current health status. Mental health status was not evaluated in this study, which is a limitation. However, this study provides a potential estimate of prevalence rates that may be noted in other university settings and

few studies have explored ACEs in the university population (McGavock & Spratt, 2014).

In an ACEs study with a sample of 1,142 young adults from the Chicago Longitudinal Study, Mersky et al. (2013) evaluated the impacts of ACEs on mental health. Poor outcomes considered were poor overall health, low life satisfaction, frequent depression or anxiety, and use of tobacco, alcohol, or marijuana. The authors found adverse childhood experience prevalence rates for the sample of: 0 ACEs (20.5%), 1 ACE (31.6%), 2 ACEs (20.8%), 3 or 4 ACEs (18.8%), and 5 or more (8.3%). Poor outcomes for their sample were found with prevalence rates of: 28.8% experiencing three or more ACEs and 15.6% experiencing four or more. No significant differences were found between males and females, across experience with adversities or poor outcome.

As the ACEs questionnaire appears to have similar results to other studies of childhood adversities, it is thought this tool may be useful in future research. It is brief and requires limited interpretation of questions, as called for by Jacobs et al. (2012). The aforementioned risk factors in childhood studies suggest that experiencing childhood adversities may make an individual more prone to mental health disorders. However, it should be noted that none of these studies accounted for potential impacts of resilience or other protective factors against said mental health concerns.

In this section, risk factors in college student mental health were explored. These risks include previous life adversities as well as current hassles college students may face. Despite these risks, many students still succeed in the college environment and maintain

functional mental health. It is speculated that resilience plays a role in these positive outcomes through the use of protective factors.

Protective Factors

While noteworthy risks from current college life stressors and previous childhood adversities are posed to college student adjustment and well-being, there are important protective factors that may be involved in the resilience framework. In a concept analysis of protective factors for resilience, the following attributes were most common: rebounding, self-determination, positive social support, flexibility (easy temperament), sense of humor, and self-esteem (Earvolino-Ramirez, 2007). The factors of easy temperament, good self-esteem, planning skills, supportive social and family network, hardiness, positive emotions, extraversion, self-efficacy, spirituality, and positive affect were preeminent in a recent literature review (Fletcher & Sarkar, 2013). The protective factors of regular physical exercise, genetic factors associated with stress tolerance, positive emotionality, optimism, agency, high cognitive functioning and executive functioning, secure proximal relationships, volunteerism, and satisfying work life were associated with higher rates of resilience (Zautra, Hall, & Murray, 2008). Attributes associated with resilience in at-risk students were internal locus of control, high self-efficacy, optimism about future (hopeful outlook), positive expectations about their abilities, and meaningful social support (McMillan & Reed, 1994).

Studies have investigated the impact of resilience on numerous populations, including college students. Internal and external protective factors for college students were explored by Hartley (2010). He found higher intelligence, faith and purpose in life, active coping, and emotional self-regulation were important internal factors bolstering

resilience. The external protective factors he explored are a safe neighborhood, a caring adult or mentor, peer support networks, counseling support, academic accommodations and social support.

The role of resilience in promoting positive adaptation during the transition into college life was evaluated through a series of studies (DeRosier et al., 2013; Leary & DeRosier, 2012). In both studies, the authors measured resilience through a questionnaire, called My Resilience Factors, which the authors had previously established to probe the areas of social connections, self-care, life skills, and cognitive style. In their first study, Leary and DeRosier (2012) evaluated how resilience predicted levels of perceived stress, as measured by the Perceived Stress Scale. Their findings revealed that students with higher resilience ratings on the social connections and cognitive style subscales experienced significantly lowered levels of perceived stress, for both males and females.

Fergus and Zimmerman (2005) and Seery (2011) found that previous exposure to mild to moderate levels of adversity were associated with higher degrees of resilience later in life. Therefore, previous experience with mild to moderate amounts of adversity may serve as a protective factor against future adversity. To determine the impact that maltreatment has on resilience in young adulthood, Topitzes et al. (2013) conducted a longitudinal study with a population size of 1,539 minority, low socioeconomic participants. Children who experienced maltreatment in elementary school reported lower scores of resilience as a young adult. These lower levels of resilience in young adulthood also correlated to lower levels of high school commitment; conversely, higher levels of resilience were correlated with greater high school commitment. These studies

pique interest in determining if individuals who attend college are more prone to having higher rates of resilience, particularly if they have experienced adversity in life. If students are more committed to school, despite life adversities, and choose to gain higher education, their degree of resilience is hypothesized to be greater. Further, as higher rates of resilience are associated with more favorable mental health, it is thought that life adversities, in mild degree, may help result in more favorable mental health. The literature also reveals that protective factors have a role in the resilience framework, such as social support, and may help result in favorable outcomes, specified as mental health in the current study.

Resilience and Mental Health. While positive mental health is a possible outcome of resilience, it is also a protective factor against other unfavorable outcomes (Fletcher & Sarkar, 2013; Zautra et al., 2008). In one study, Haddadi and Besharat (2010) evaluated a sample of 214 college students in Iran to explore how resilience is correlated to mental health. Resilience was measured via the Connor-Davidson Resilience Scale (CD-RISC) and mental health measures used were the Mental Health Inventory, Beck Depression Inventory, and Beck Anxiety Inventory. Significant differences were found between males and females in respect to depression, anxiety, and poor general health, with females presenting higher degrees of distress. Despite these differences, resilience was shown to correlate individually with depression, anxiety, poor general health, psychological well-being, and psychological distress for both males and females. Their results show that resilience has a positive correlation with the protective factor of psychological well-being and a negative correlation with risk factors of depression, anxiety, poor general health, and psychological distress.

Robinson, Larson, and Cahill (2014) performed a study on 355 undergraduate students from Michigan evaluating how resilience relates to positive and negative emotionality. Resilience was measured via the CD-RISC; positive and negative emotionality was measured by the Multidimensional Personality Questionnaire. The reported results indicated that the CD-RISC is moderately, positively correlated with positive emotionality. Again, these data indicate that higher resilience scores predict more favorable mental health outcomes in college students. This is in line with resilience research, in that positive emotions have largely been indicated as protective factors contributing to resilience, and in bolstering future positive mental health outcomes (Fletcher & Sarkar, 2013; Zautra et al., 2008).

The framework of resilience can also help explain positive outcomes of mental health in response to childhood adversities. Fergusson and Horwood (2003) performed a 21 year longitudinal study of 991 individuals from birth until the age of 21 to evaluate the impact of childhood adversity on mental health and resilience. They evaluated the following adverse experiences: low socioeconomic status, parental separation, parental physical abuse, child physical abuse, child sexual abuse, parental substance abuse, and parental criminal activity. The authors found that with more adverse childhood experiences, rates of internalizing and externalizing disorders increased. Individuals with six or more adversities experienced rates of externalizing disorders and internalizing disorders of 50.0% and 68.5%, respectively. These individuals, when compared to those with less than two adversities, were 2.5 times more likely to develop an externalizing disorder (50.0% versus 20.5%) and 1.8 times as likely to develop an internalizing disorder (68.5% versus 38.8%). The authors measured resilience through a cumulative

series of factors all measured at or before the age of 16 via parental report. These factors included parental attachment, parental bonding, gender, child attention problems, child conduct problems, self-esteem, grades, grade retentions, and parental concerns about their child's potential use of illicit substances, being truant, or breaking the law. Of those individuals with high adversity in childhood and high degrees of resilience to externalizing disorders, only 18.2% developed an externalizing disorder. Externalizing disorders were developed in 70.3% of individuals with high childhood adversity but low degrees of resilience. These trends were similar to internalizing disorders, with 44.4% of highly resilient versus 75.7% of low resilient individuals developing internalizing disorders. These results suggest that resilience does play an important role in buffering individuals from experiencing poor mental health outcomes, in specific regard to childhood adversities.

Similar results were postulated by Campbell-Sills, Cohan, and Stein (2006) who compared resilience to childhood trauma and present psychological well-being, an aspect of mental health, in a sample of 132 undergraduate students. The CD-RISC was used to measure resilience. A regression model revealed that psychological well-being was significantly predicted by resilience and the interaction between resilience and childhood trauma. Childhood trauma by itself did not significantly predict present psychological well-being. Their results revealed that "individuals who report significant emotional neglect and low resilience are highly symptomatic, while individuals who report significant emotional neglect and high resilience are virtually asymptomatic" (Campbell-Sills et al., 2006, p. 593). In fact, their results showed that the lowest degrees of symptomatology were found in individuals with high levels of both resilience and

childhood trauma exposure. This finding aligns with the previously mentioned theories that resilience helps promote growth in response to adversity (Bonanno, 2004) and previous exposure to adversity can help increase resistance to minor life stressors (Seery, 2011).

While these immediately preceding studies evaluated the relationship between childhood adversities, resilience, and mental health, current life stressors for college students have similar results. In a study of 237 Hong Kong undergraduate students, Lai and Mak (2009) investigated how resilience mediates the impact of daily life hassles on psychological well-being. The authors used the Inventory of College Students' Recent Life Experiences (ICSRLE) to evaluate the number of daily life stressors (hassles) experienced by college students. The General Health Questionnaire was chosen to evaluate both positive and negative psychological well-being, both components of mental health (CDC, 2011). Resilience was measured with three separate scales, the Life Orientation Test (measuring optimism), the Rosenberg Self-Esteem Scale, and the Mastery Scale (to obtain perceived control over life events).

Lai and Mak's (2009) results revealed that resilience significantly correlated with the number of hassles the students experienced, student positive psychological well-being, and student negative psychological well-being. Resilience significantly predicted positive psychological well-being, both singularly and through interaction with the ISCRLE. Resilience was able to significantly predict negative well-being singularly, but not through interaction with the ISCRLE. Evaluation of β weights of multiple regression predicting well-being reveals that hassles have more weight in determining negative well-being ($\beta = 0.32$) than positive well-being ($\beta = -0.12$), while resilience has a similar

magnitude for both positive well-being ($\beta = 0.40$) and negative well-being ($\beta = -0.41$). These results indicate that resilience helps promote positive well-being directly and through mediating, or over-powering, the impact of daily hassles on positive well-being. The author's explanation for this finding is that the experience of daily hassles is claimed to initiate the resilience process, which ultimately results in positive psychological well-being for individuals with higher resilience scores. Resilience was negatively correlated with negative well-being and did not show a significant mediating impact between daily hassles and negative well-being, in which both hassles and resilience had similar predictive β weights. The authors indicated that they did not understand why no interaction effect was found between resilience and hassles on negative psychological well-being.

Lai and Mak (2009) hypothesized that this lack of interaction effect could be due to how they operationalized resilience, focusing more on intraindividual factors impacting resilience, while neglecting the potential impact of external factors such as social support. The authors speculated that if they accounted for external protective factors in their operationalization of resilience a more significant moderating impact of resilience on daily life hassles may have been seen. The current study seeks to evaluate this claim through the use of a perceived social support measure. The authors further indicate that the analysis they utilized assumed linearity of the impact of hassles on resilience, which may not be the case as mentioned previously in Seery's (2011) work. If the relationship between hassles and resilience is curvilinear, it is possible that this trend may be masked if evaluated holistically.

Mental Health and Social Support. The role of social support, another protective factor for resilience, has been found to help promote favorable college student mental health outcomes. In a sample of 1,378 university students, Hefner and Eisenberg (2009) found that higher levels of perceived social support, as measured by the Multidimensional Scales of Perceived Social Support (MSPSS), were predictive of lower incidences of depression, anxiety, suicidality, and eating disorders. Conversely, students who reported having perceived lower quality social support were associated with reporting more mental health problems of depression, anxiety, suicidal ideation, nonsuicidal ideation, and eating disorders.

The relationship between college student daily life hassles, social support, and mental health has also been studied. For Iranian university students, correlations were found between social support and mental health, as well as daily hassles and mental health (Tajalli, Sobhi, & Ganbaripanah, 2010). Current mental health was also significantly predicted by social support and a history of positive mental health. These results reveal that higher amounts of social support and lower amounts of daily hassles were associated with better mental health outcomes.

Similarly, Galatzer-Levy et al. (2012) studied distress levels and social support in students adjusting to college. The authors found that for the most distressed students in their sample, social support had an important adaptive role in helping the student adjust to college. For the least distressed students, those adapting well to the college transition, social support has limited impact on their adjustment. The authors further specified that integration of social support into the individual's life, rather than merely a large social

network size, resulted in more stability and less distress. That is, quality, not quantity, of social support predicts adaptation.

The impact of social support on mental health has been found to be associated with not only current hassles of college, but also with adverse experiences in childhood. Powers, Ressler, and Bradley (2009) explored the protective role of social support on outcomes of childhood adversity. The authors measured depression via the Beck Depression Inventory, social support via the Social Support Behaviors Scale, and childhood adversity with the Childhood Trauma Questionnaire. Data analysis revealed that emotional abuse and emotional neglect predicted more variance of adult depression than did childhood sexual and physical abuse combined. In combination, child abuse and neglect predict depressive symptoms significantly. Even more variance of depression symptoms was explained when perceived friend support was added to the prediction. However, when evaluated by gender, females were shown to have a significant amount of variance explained, while male rates of variance were not statistically significant. Perceived family social support did not significantly predict depression symptoms, in males or females. These results indicate that perceived friend social support, but not family social support, plays a predictive role for depression in women and not men. The authors indicate that increased levels of perceived friend social support indicate lower depressive symptomatology for women, although not significantly so for men.

Nurius et al. (2012) found that poorer mental health outcomes were correlated with higher numbers of ACEs. The authors also found that the ACEs related to parent mental health, physical abuse, and emotional abuse had the most significant impact on the individual's adult mental health outcomes. However, social and emotional supports

were found to protect against the negative impact of adversity on mental health. Childhood adversity was measured by the ACEs questionnaire. Mental health outcomes were defined in three different ways; the number of mentally healthy days per month, satisfaction with life, and a total of six symptoms of mental health (feeling worthless, nervous, hopeless, restless, depressed, and daily tasks require a lot of effort). Social and emotional support were not explicitly defined by the researchers. The authors call for more research into the impact of social support on mental health, in light of childhood adversity. While the impact of social support on mental health has been evaluated in these studies, they do not address the interaction between resilience and social support on college student mental health.

Resilience and Social Support. As indicated previously, social support is thought to play an important role in college student resilience (DeRosier et al., 2013; Zautra et al., 2008), however the following studies indicate that this claim is conflicted, in part. Wilks (2008) investigated resilience and academic stress in 314 college students studying social work. He performed a path analysis, with academic stress predicting resilience as an outcome, using family and friend support as mediating variables. He found that the direct path of academic stress to resilience was negatively correlated with resilience. This means the more stress perceived by the student, the lower their resilience became. Both family and friend support played a positive, mediating effect on resilience directly. However, family support did not significantly moderate the effect of academic stress on resilience, and friend support did so weakly. Therefore, Wilks indicates that friend support is considered a weak protective factor for resilience and family support was not a protective factor.

In a follow-up study, Wilks and Spivey (2010) investigated the relationship between academic stress, family and friend social support, and resilience in 145 undergraduate students. Their results indicated that academic stress was negatively correlated with family and friend social support and resilience. Friend social support, but not family social support, played a mediating role in negative effect of academic stress on resilience. Family social support, friend social support, and resilience were all moderately, positively correlated. The specific effect of high resilience and social support, versus low resilience and social support, were not evaluated for their effect on academic stress. While the current study does not address academic stress, it does evaluate current college life hassles, which can be inherently stressful.

Other studies have posed contradictory results to those performed by Wilks and Spivey (2010). The relationship between social support, resilience, and mental health was explored in a sample of 183 Chinese college students (Liu & Xu, 2013). Social support was evaluated via the MSPSS, resilience via the Resilience Scales for Adults, and mental health via the SCL-90. The results indicated that social support, resilience, and the interaction between social support and resilience all significantly predicted mental health. Students with high scores of resilience and social support reported having the best mental health outcomes. Students with low social support but high degrees of resilience experienced better mental health than students with low social support and low resilience. Students with high social support and low resilience showed fair mental health outcomes, but not as favorable as low social support and high resilience.

In another Chinese study, medical students (n = 1, 998) were studied to determine the impact of adverse life experiences, resilience, social support, and personality on

mental health outcomes (Peng et al., 2012). Adverse life experiences were found to be associated with poorer mental health. More favorable mental health outcomes were associated with higher levels of social support, extraversion, and resilience. Resilience and social support were found to significantly predict mental health outcomes. It should be noted that Liu and Xu (2013) and Peng et al. (2012) studied Chinese college students, which culturally place more emphasis on social support than Westernized nations. These conflicting results pique interest into the relationship of social support, resilience, and life adversities of college students. Taken in conjunction with the findings between social support and mental health, it is speculated that social support does play a protective role.

Literature Review Summary

In the preceding pages, this current study has explored resilience as a framework, triggered by a PTE, which draws upon protective factors to result in a positive outcome. It is thought that protective factors in resilience can mediate the impact of risk upon the outcome up to a certain degree, whereupon poorer outcomes are again obtained. The better outcomes in the curvilinear model are thought to be attributable to learning how to utilize the protective factors available to the person to overcome the risk. Too little risk does not initiate the resilience process, and too much risk is appraised as insurmountable (Fergus & Zimmerman, 2005; Seery, 2011). Specific to this study, ACEs and college student recent life hassles serve as PTEs which may initiate the resilience process and result in the outcome of positive mental health.

As mentioned, the top ten stressors experienced by first year college students were found to be completing homework, making good grades, studying, meeting personal academic standards, procrastination, heavy workload, writing assignments, too many

responsibilities, meeting deadlines, and not enough time to relax (DeRosier et al., 2013). Other hassles experienced by college students include academic stress, financial concerns, identity stress, social stress, and time management concerns (DeRosier et al., 2013; Hartley, 2012). These hassles, in addition to adverse experiences from childhood, have been shown to be associated with negative mental health outcomes in college students (Anda et al., 1999; DeRosier et al., 2013; McLaughlin et al., 2012; Vanderbilt-Adrience & Shaw, 2008). The childhood adversities most common are childhood maltreatment, parental death, father's incarceration, family mental illness, being bullied, low socioeconomic status, abuse, neglect, family dysfunction, and poor interpersonal relations (Vanderbilt-Adrience & Shaw, 2008).

Individuals who experienced higher levels of college student hassles and childhood adversity experienced less favorable mental health, with the exception of students who experienced higher rates of resilience (DeRosier et al., 2013; Fergusson & Horwood, 2003; Leary & DeRosier, 2012). Resilience has proven to have positive correlations with positive emotionality and psychological well-being and negative correlations with depression, anxiety, poor general health, and psychological distress (Haddadi & Besharat, 2010; Robinson et al., 2014). Resilience also buffered the negative effects of ACEs, resulting in little to no symptomatology, as well as college student hassles, resulting in better academic performance and positive psychological well-being (Campbell-Sills et al., 2006; DeRosier et al., 2013; Fergusson & Horwood, 2003; Hartley, 2013; Lai & Mak, 2009).

Social support, thought of as a protective factor that can be utilized in the resilience process, has also been shown to result in more favorable college student mental

health, both in respect to childhood adversities and college student hassles (DeRosier et al., 2013; Galatzer-Levy et al., 2012; Hefner & Eisenberg, 2009; Powers et al., 2009; Tajalli et al., 2010). Higher levels of perceived social support are predictive of lower incidences of depression, anxiety, suicidality, and eating disorders (Hefner & Eisenberg, 2009). Higher amounts of social support and lower amounts of daily hassles are associated with better mental health outcomes (Tajalli et al., 2010). Social support was found to protect against the negative impact of adversity on mental health (Nurius et al., 2012). Distressed students have found that social support can help them during the transition to college (Galatzer-Levy et al., 2012). Additionally, social support, resilience, and the interaction between social support and resilience all significantly predict mental health, with resilience having more of an impact than social support (Liu & Xu, 2013).

From these studies, it is determined that ACEs and college student recent life hassles have a potentially negative impact on college student mental health, except in individuals with higher levels of resilience and social support. Therefore, this current study aims to further investigate the relationship between ACEs, current college student hassles, perceived social support, and resilience; variables thought to initiate and play a role in the initiation and process of resilience, an assumption that should be evaluated. Another primary goal is to determine how the variables of ACEs, current college student hassles, perceived social support, and resilience relate to college student mental health as an outcome of the resilience process.

Hypotheses

The purpose of this study is twofold. The first purpose is to investigate how the variables of ACEs, current college student hassles, and perceived social support relate to

college student resilience. The second purpose is to determine how ACEs, current college student hassles, perceived social support, and resilience relate to college student mental health.

The specific hypotheses of the current study were:

1. Adverse childhood experiences, current college student hassles, and social support would significantly predict college student resilience.
2. Adverse childhood experiences, current college student hassles, social support, and resilience would significantly predict college student mental health.
3. ACEs would negatively correlate with resilience and mental health.

CHAPTER III

METHODS

Quantitative, Correlational Design

In this survey, participants were asked to complete a battery of self-report instruments related to resilience, mental health, social support, previous and current experiences with adverse situations, and demographic information. Each term is defined here:

- Resilience is defined as the ability to rebound from difficult life circumstances. Examples of resilience factors are: one's ability to adapt to changes, belief in one's self to cope with stress and challenges, having close friends that provide support, not getting discouraged easily, and feeling in control of life. The CD-RISC-10 was used to measure resilience (Campbell-Sills & Stein, 2007).
- ACEs are defined as "childhood events, varying in severity that are often chronic, occurring in a family or social environment and causing harm or distress" (Kalmakis & Chandler, 2014, p. 1490). The ACEs Questionnaire was used to measure these events (Felitti et al., 1998).
- College student life events, or college hassles, are current adverse situations related to college life that vary in severity and emotional impact academically, socially, or physically, such as lack of sleep, hardship with academics, or concerns with social life. The ICSRLE was utilized as a measure of college student hassles (Kohn, Lafreniere, & Gurevich, 1990).
- Perceived social support refers to the perceived help or support available to the individual through friends, family, or a significant other. The MSPSS was used to

measure social support as a holistic construct (Zimet, Dahlem, Zimet, & Farley, 1988).

- Mental health can be conceptualized as a lack of psychological distress or illness, such as depression or anxiety, such that an individual can cope with the daily stressors of life, work productively, and contribute to society (CDC, 2011). It consists of three parts-- emotional well-being, psychological well-being, and social well-being (CDC, 2011) -- although a great deal of attention has been given to psychological well-being, as in the current study (Lundgren-Nilsson, Jonsdottir, Ahlborg, & Tennant, 2013). The Psychological Well-Being Index (PGWBI) was used to evaluate mental health (Dupuy, 1984).

Participants

Participants between 18 and 30 years of age proficient in English and with access to the internet were recruited from a university in Washington State. Participants were obtained via e-mails to student organization officers, approved campus bulletin boards, and an online system, which provides extra credit for undergraduate psychology students who complete surveys. A university-operated communication management system that allows cross-media communications to students was also used to recruit participants. All participants were provided the opportunity to enter a raffle for one $50 gift card. The contact information provided for this raffle was not associated with the survey data provided.

Measures

Resilience. Resilience was evaluated through use of the CD-RISC-10. The CD-RISC was created by Connor and Davidson (2003) as a measure to evaluate treatment

response of individuals experiencing post-traumatic stress disorder. The CD-RISC originally consisted of 25 items (CD-RISC-25), but a 10 item (CD-RISC-10) and 2 item (CD-RISC-2) version have also been produced. Each item is rated on a five point Likert scale and the total score is obtained via adding the obtained scores, with higher totals representing higher degrees of resilience. CD-RISC-10 scores are categorized as follows: low-range from 12-25, mid-range from 26-30, high from 31-34, and very high from 35-40.

The CD-RISC-10 is a 10 item, shortened version of the CD-RISC-25 developed by Campbell-Sills and Stein (2007). The researchers examined the psychometric properties of the CD-RISC-10 in three samples of undergraduate students each with over 500 participants. Overall, 72% of the participants were women, 60.6% were Caucasian, and the mean age was 18.8 years. The first two samples were utilized to complete an exploratory factor analysis (EFA), whereas a confirmatory factor analysis (CFA) was performed on the third sample. The EFA from the first two samples resulted in a 13-item measure that was provided to the third sample and analyzed via a CFA. The CFA indicated that some of these items overlapped and should be omitted, resulting in a 10 item survey. These 10 items loaded onto a single factor with an internal consistency coefficient of .85, indicating good reliability. Convergent validity was evaluated in 131 individuals (mean age = 18.9 years, 60.6% Caucasian, 72.0% women). The combination of CD-RISC-10 and childhood trauma was significantly able to predict psychological well-being (Brief Symptom Inventory 18) suggesting convergent validity. The CD-RISC-10 correlated strongly with the CD-RISC-25.

Hartley (2012) reviewed the psychometric properties of the CD-RISC 10 for use in college counseling. The sample consisted of 605 students, 71% of whom were women, with mean age of 21.03 years, and 93% reported Caucasian ethnicity. Cronbach's alpha for this sample was .87. The CD-RISC-10 showed convergent validity with measures of mental health (Mental Health Inventory-5, r = .40) and social support (Social Support Questionnaire-6, r = .34). Given that the CD-RISC-10 was normed on college students and resulted in a high internal consistency and good convergent validity, this scale is applicable for the present study.

Adverse Childhood Experiences. The ACEs Questionnaire was published in 1998 (Felitti et al., 1998). The authors created a 10-item questionnaire addressing the areas of physical, emotional, and sexual abuse, emotional and physical neglect, domestic violence, parental mental health disorders, parental substance abuse, parental divorce, and parental incarceration. Participants indicate whether they experienced a particular event prior to the age of 18, revealing a total score range from 0 to 10. While this questionnaire has been extensively used in medical research, and to a lesser degree psychological research, limited psychometric data are available for the ACE questionnaire (Ford et al., 2014).

An exploratory factor analysis of data from 27,545 people from a 2009 CDC study incorporating the ACE revealed a three factor model (Ford et al., 2014). These factors are emotional/physical (3 items), household dysfunction (5 items), and sexual abuse (3 items). The three factors were all significantly correlated to the total ACE score and showed acceptable internal consistency: emotional/physical (r = .58-.68, α = .61),

household dysfunction (r = .76-.80, α = .70), and sexual abuse (r = .62-.79, α = .80). The coefficient alpha for the total ACE score was α = .78.

Test-retest reliability was reported by Dube, Williamson, Thompson, Felitti, and Anda (2004). The sample consisted of 658 participants (mean age = 64 years, 51% women, 79% Caucasian) from patients seen in the Kaiser Permanente HMO network, of whom 70% experienced some college or obtained a college degree. The ACE was administered at two separate times, with test-retest interval of 20 months. The authors presented their test-retest reliability in the form of kappa coefficients: emotional abuse (.66), physical abuse (.55), sexual abuse (.69), household substance abuse (.75), and witnessing domestic violence (.77). The weighted kappa coefficient for the total ACE score was .64. The authors indicate these kappa coefficients are acceptable to indicate the ACE questionnaire is reliable across time. Kappa coefficients are beneficial for use in test-retest statistics for nominal variables in which participants indicate a statement about themselves is true or false (Sim & Wright, 2005).

In a sample of 99 students in Germany, with mean age 24.0 years and female gender prevalence of 72%, Wingenfeld et al. (2011) found an average ACE score of 1.2 and Childhood Trauma Questionnaire (CTQ) score of 31.1. The authors aimed to reveal convergent validity between the CTQ and ACE. The individual items of the ACE were correlated to the five factors of the CTQ (emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect). ACE items pertaining to emotional abuse (r = .72), physical abuse (r = .79), sexual abuse (r = .73), emotional neglect (r = .73), and physical neglect (r = .65) were strongly correlated with their corresponding factor of the CTQ and moderately (r = .34-.63) for all other CTQ factors. Of the remaining five items

on the ACE, correlations to the CTQ factors ranged from r = .24 to .54 and were significant for all, with the exceptions of parental divorce and household mental illness. Parental divorce was not significantly correlated to the CTQ factors of sexual abuse or emotional neglect. Household mental illness was not significantly correlated to the CTQ factors of emotional and physical neglect. While the sample size in this study was not large, the magnitude of correlations with the CTQ revealed convergent validity for the ACE questionnaire.

Some critics of these surveys claim that retrospective report of childhood adversities is faulty and potentially unreliable (Ford et al., 2014). However, Brewin, Andrews, and Gotlib (1993) performed a meta-analysis of studies using retrospective recall of childhood adverse experiences. They concluded that, while retrospective recall of childhood adversities may be an imperfect method, "provided that individuals are questioned about the occurrence of specific events or facts that they were sufficiently old and well-placed to know about, the central features of their accounts are likely to be reasonably accurate" (Brewin et al., 1993, p. 94). This indicates that retrospective reporting is not ideal but can be performed, given that college students are old enough to be aware of their previous experiences and capable of introspection. Further, longitudinal follow-up studies performed with individuals who had documented records of their childhood abuse showed that retrospective reports of childhood abuse were prone to underestimation of the events, rather than overestimation (Della-Femina, Yeager, & Lewis, 1990; Pereda, Guilera, Forms, & Gomez-Benito, 2009). These studies indicate that if participants are to incorrectly recall their experiences with childhood adversity,

they are more likely to underreport the events. If reports of childhood adversity are below that of actual experience, the possibility of a Type I error may increase.

In the current study, the events are more recent for the students and students are being asked questions that require little interpretation, thereby decreasing the possibility of incorrect recall of events (McGavock & Spratt, 2014). Additionally, participants reported higher rates of adverse life experiences in studies that did not involve direct participant contact, which may result in higher reports for this study because participants will participate anonymously online (Wilson & Ross, 2003). It should also be noted that one review of retrospective recall of traumatic events found recall has no negative impact on current emotional functioning, rather participants may actually gain psychological distance from the former events potentially increasing emotional health (Wilson & Ross, 2003).

Social Desirability. The Social Desirability Response Set 5-item scale (SDRS-5) distributed by RAND (Hays, Hayashi, & Stewart, 1989), was used to help evaluate the data for participant response bias. Given that students are asked to report sensitive life experiences, some participants may choose to respond in a more "socially acceptable" manner and underreport adversities. The administration of the SDRS-5 provides a way to evaluate social desirability response bias. Participants respond to 5 items via a 5 point Likert scale according to how true a socially desirable statement is of them. Only the most socially desirable response option per item is scored as 1, the other options are scored as 0. Participants with cumulative scores of 5 were considered to respond to items in a manner indicating response bias. Accordingly, the data from these participants was not utilized in this study as it is potentially invalid.

In a sample of 614 individuals (56% female, mean age 37) the internal consistency of the SDRS-5 was found to be .66 (Hays et al., 1989). In another sample, in the same study, 3,053 individuals (62% female, mean age 47) showed the internal consistency of the SDRS-5 to be .68. Across both samples in this study, the test-retest reliability was acceptable (r = .75).

Across two samples of undergraduate students (sample 1: n = 466, mean age of 21, 49.8% women; sample 2: n = 401, mean age of 20, 47.1% women), the SDRS-5 was shown to exhibit adequate convergent validity (Barger, 2002). A significant degree of goodness of fit for the SDRS-5 was found via a comparative fit index (.819 for sample 1; .989 for sample 2) and a standardized root mean squared residual (.051 for sample 1; .027 for sample 2). The authors suggest that the brevity of this survey can be helpful in increasing the internal consistency and fit consistency, more than longer versions of this social desirability measure.

College Life Adversity. The ICSRLE is a 49-item scale that measures current hassles and adverse experiences specific to college students (Kohn et al., 1990). Students respond to the items through a 4-point Likert scale indicating how much of a part of their life that item was during the past month. Scores range from 0 to 147.

The ICSRLE was developed with a sample of 208 Canadian college students with mean age of 22.99 years and 75 % female (Kohn et al., 1990). These students were provided both the ICSRLE and the Perceived Stress Scale (PSS) to provide a measure of convergent validity. The total score on the ICSRLE was correlated to the PSS (r = .67) and the internal consistency was indicated by Cronbach's alpha of .88. Individual

correlations of specific items to the PSS ranged from r = .17 - .48, all of which were significant.

The ICSRLE reports of university students in the Midwestern United States (n = 216, 68% women, mean age 23.05, 90.7% Caucasian) were utilized in the validation study of the ICSRLE (Osman, Barrios, & Longnecker, 1994). Correlations of the ICSRLE with stress measures, controlling for college maladjustment, resulted in partial correlations: PSS (r = .40, α = .86), Daily Hassles Scale-Revised (DHS-R) Covert Hassles (r = .66, α = .95), DHS-R Overt Hassles (r = .55, α = .93), and DHS-R Total score (r = .66, α = .96). These correlations indicate convergent validity. The authors also found the ICSRLE had the following seven factor loadings through confirmatory factor analysis: developmental challenges, time pressures, academic alienation, romantic problems, assorted annoyances, general social mistreatment, and friendship problems. These factors had coefficient alphas between .68-.80, with assorted annoyances having an alpha of .47. Therefore, it was determined that the ICSRLE evidenced internal consistency and convergent validity deeming it useful for the college student population. The current study's author performed an informal Google Scholar review of this inventory which revealed that the ICSRLE has been cited over 200 times from its inception, almost half of which have occurred since 2009. Therefore, while this inventory has not been updated or further psychometrically validated, it remains a widely used measure of college student hassles.

Social Support. Social support was evaluated via the MSPSS (Zimet et al., 1988). The MSPSS is a 12-item scale, with each item scored on a 7-point Likert scale. There are three factors, or subscales, that compose the MSPSS: friends, family, and significant

other. Scores are averaged and then classified from 1 to 2.9 (low range), 3-5 (medium range), and 5.1-7 (high range), in which higher scores reflect higher perceived social support.

Osman, Lamis, Freedenthal, Gutierrez, and McNaughton-Cassill (2014) performed the most recent psychometric studies of the MSPSS in the college student population. Their sample consisted of 610 undergraduate students (55.7% women, average age 19.6 years, 77.9% Caucasian). Means for each subtest and total are as follows: family (male M = 22.10, SD = 5.66; female M = 23.77, SD = 5.57), friends (male M = 21.74, SD = 5.45; female M = 23.63, SD = 5.37), significant other (male M = 21.61, SD = 6.22; female M = 24.05, SD = 5.65), total (male M = 60.01, SD = 14.32; female M = 65.36, SD = 13.35). The range of subscale intercorrelations fell from r = .66-.73, which is considered adequate. The total mean of the MSPSS was 62.99 (SD = 14.03), with family subscale mean of 23.03 (SD = 5.67), friend subscale mean of 22.79 (SD = 5.48), and significant other subscale mean of 22.97 (SD = 6.03). The internal consistency was α = .869. All internal consistency values were favorable. The authors explored differences between males and females on individual items, at the subscale level, and as a total score through multiple-group CFA, IRT bifactor analysis, and through convergent correlations. The results of these studies suggested that the MSPSS total score is impervious to differences between males and females, although individual items show gender bias resulting in internally inconsistent subscales across gender. The authors recommend that caution be taken when interpreting gender differences for subscale scores, but state that doing so at the total scale level does not reveal this gender bias. Convergent validity was shown for the total scale, combined gender score between the

MSPSS and the Reasons for Living Inventory for Young Adults scales (family relations, r = .48; peer relations, r = .42; positive evaluation, r = .42), the Inventory of Interpersonal Problems-Short Circumplex (r = -.27), Beck Hopelessness Scale (r = -.39), and Beck Depression Inventory-II (r = -.33). Overall, this study revealed that the MSPSS shows good internal consistency and convergent validity. It does caution using the MSPSS total score rather than the subscales, especially for gender-related interpretations.

Mental Health. Mental health was measured via the Psychological General Well-Being Index (PGWBI). The PGWBI was originally developed as the 18-item General Well-Being instrument, but developed into the 22-item PGWBI to account for structural difficulties of the original instrument (Dupuy, 1984). Students respond via a 5-point Likert scale to items related to how they have been feeling over the previous two weeks. The PGWBI is generally interpreted as one total score but consists of the following six factors: positive well-being, general health, depressed mood, self-control, anxiety, and vitality (Lundgren-Nilsson et al., 2013). Scores range from 0 to 110, with higher scores representing more favorable psychological well-being.

Gaston and Vogl (2005) evaluated the psychometric properties of the PGWBI in a sample of 449 first year undergraduate students (mean age of 19.3 years, 65% female). Test-retest delay of 7 weeks was found to be α = .66 (the initial alpha was provided as α = .94). Convergent validity was obtained via correlation with the Depression Anxiety Stress Scales (DASS). The PGWBI's correlations with the DASS Depression scale (r = -.73), DASS Anxiety scale (r = -.57), and DASS Stress scale (r = -.70) reveal strong discriminant validity. A principal factors extraction with varimax rotation found three

factors with eigenvalues above one which, when combined, explained 59.24% of the variance.

Lundgren-Nilsson et al. (2013) evaluated the construct validity of the PGWBI in a sample of 179 individuals being treated for stress disorders (mean age 43 years, 70% female). High internal reliability of the items was found via $\alpha = .92$. A Rasch analysis found that the six factors, when examined as single items, could be combined to form one dominant well-being construct. The present study aims to use the method of using one total score of mental health, as obtained from the PGWBI.

Demographics. Demographic information was also gathered about individuals, such as age, gender, family household income, GPA, hours worked per week, hours involved in extracurricular activities per week, standardized test scores, and expected time to degree completion. This demographic data enabled the researchers to determine if the current results are affected via such variables in comparison to previous research findings. The demographic data were not analyzed beyond this comparison to previous studies.

Procedures

This study was approved by the local Institutional Review Board. Participants were recruited via e-mails to student organization officers, approved bulletin boards, CPORT, and an online system which provides extra credit for undergraduate psychology students who complete surveys. Participants were required to be between 18 and 30 years of age, proficient in English, and had Internet access. All participants were provided an opportunity to enter a raffle for one $50 gift card through supplying their

e-mail information at the end of the study. This procedure did not link their contact information to their responses.

Students followed a link from the advertisement to the study housed on the online survey company Qualtrics. After following the link to the secure Qualtrics website for this survey, students provided online consent prior to initiation of the survey, indicating they were of legal age and understood risks and complications related to completion of this survey. The link to the survey on Qualtrics was available from February 2015 through June 2015. Students were provided a referral to the university mental health clinic, a national crisis line, and a national suicide prevention hotline should they experience any psychological discomfort from completing this survey. Explicit caution that psychological discomfort may occur as a result of participation in this experiment was stated on the consent form and again after the survey. A recommendation was made for participants to call the provided national crisis line if experiencing psychological discomfort from participation in this study. Finally, a recommendation to contact the National Child Abuse hotline was made for anyone aware of any abuse or neglect of a child, elderly person, or mentally disabled person.

Data Analyses

Four independent quantitative variables and two dependent quantitative variables were used in this study. The independent variables are experience with adversity historically and currently, resilience, and perceived social support. The dependent variables are resilience and mental health, evaluated individually. Missing data were addressed through each survey's specific scoring recommendations. Additionally,

participants with a score of 5 on the SDRS-5 were removed from statistical analysis due to concerns about possible social desirability influences.

Prior to statistical analysis, data were screened for the assumptions of multiple regression analyses. These assumptions necessitate testing for large enough sample size, linearity, homoscedasticity, and multicollinearity. As the data did not violate the assumptions of multiple regression, homogeneity of variance, or normality, parametric statistical methods were used.

Hypothesis 1 aimed to predict college student resilience from the variables of childhood adversity, current college student hassles, and social support. To answer Hypothesis 1 a simultaneous multiple regression analysis was performed. Regression analysis is most applicable for this hypothesis because the variables may correlate and it is desired to establish a model which predicts a dependent variable from multiple independent variables. A simultaneous multiple regression reveals which independent variable accounts for the most variance without prior knowledge of weight or theoretical orientation of the predicting variables.

Hypothesis 2 aimed to predict college student mental from the variables of childhood adversity, current college student hassles, social support, and resilience. To answer Hypothesis 2 a simultaneous multiple regression analysis was performed, according to the same reasoning for Hypothesis 1.

In order to test Hypothesis 3 that ACEs negatively correlate with resilience and mental health, a correlational analysis was performed as part of the multiple regression analysis performed in Hypothesis 2.

In the current study, the rate of Type I error was 1%. Given that a Type I error means rejecting a hypothesis when it should be accepted, this error is not considered as detrimental as a Type II error, accepting the hypothesis when it should have been rejected. Type II error was limited in this study by utilizing a large sample size of 200 or more participants and a conservative power estimate of 85%, which is larger than the more traditional 80% (Tabachnick & Fidell, 2001).

CHAPTER IV

RESULTS

Sample Demographics

As detailed in Table 1, the current study resulted in a sample size of 507 participants. The sample consisted of more females than males with a mean of 20.8 years of age. The predominant ethnic group is Caucasian. Participants also reported combined childhood household income.

Table 1
Gender, Ethnicity, and Income Demographics

Demographic	*N*	%
Gender		
Male	134	26.4
Female	372	73.4
Other	1	0.20
Ethnicity		
Caucasian	358	70.6
Latino/Hispanic Origin or Race	55	10.9
African American/Black	15	2.9
Asian	14	2.8
Native Hawaiian or other Pacific Islander	6	1.2
American Indian or Alaska Native	5	<1.0
Some other race	5	<1.0
More than one race	49	9.7
Combined Household Income		
Below $20,000	93	18.3
$20,001-$30,000	55	10.8
$30,001-$45,000	70	13.8
$45,001-$60,000	76	15.0
$60,001-$75,000	54	10.7
$75,001-$90,000	62	12.2
Above $90,001	86	17.0

Participant current living situations and relationship statuses are presented in Table 2. The majority of participants reported being single and living with roommate(s).

Table 2
Relational Demographics

Demographic	*N*	%
Current Living Situation		
Alone	74	14.6
With Roommate(s)	336	66.3
With a Partner	48	9.5
With a Partner and Child(ren)	7	1.4
With Family	42	8.3
Relationship Status		
Single	440	86.8
Married	19	3.7
Divorced	4	0.8
Domestic Partnership	42	8.3

Participant class standing demographics are detailed in Table 3. The majority of respondents are juniors or seniors. Academic demographics of the current sample are presented in Table 4. More participants reported SAT scores than ACT scores. The majority of respondents provided both high school and college GPAs, with high school GPAs slightly higher than college GPAs. The average hours of paid and unpaid extracurricular activities per week were reported by the majority of respondents.

Table 3
Class Standing Demographics

Demographic	*N*	%
Class Standing		
Freshman	97	19.1
Sophomore	102	20.1
Junior	167	32.9
Senior	139	27.4
Post-Baccalaureate	1	0.2
Graduate	1	0.2

Mental health treatment and study exposure demographics are detailed in Table 5. The majority of the sample's participants reported not currently receiving professional mental health treatment. Participants reported learning about the study through SONA and CPORT primarily.

Table 4
Academic Demographics

Demographic	*N*	*M*	*SD*
Standardized Assessments			
SAT	237	1580	260
ACT	74	24	5
Cumulative GPA			
High School GPA	458	3.37	0.47
College GPA	480	3.27	0.54
Extracurricular Activities/Work in Hours			
Paid Work Per Week	471	9.28	11.34
Unpaid Work Per Week	483	6.03	7.26

Table 5
Mental Health Treatment and Study Exposure

Demographic	*N*	%
Avenue of Study Exposure		
SONA	239	47.1
CPORT	260	51.3
Campus Bulletin Board	5	1.0
Student Intranet	2	0.4
Club Officer	1	0.2
Receiving Professional Mental Health Treatment		
Yes	76	15.0
No	430	84.9

Data Cleaning

A total sample size of $N = 660$ was achieved, with a final sample of $n = 507$ used for data analysis. Data for 3 participants over the age of 30 were rejected according to previously stated exclusionary criteria indicating the use of data only for participants ages 18 through 30. Participant data were also rejected if one or more scales were incomplete, resulting in a loss of data from 116 participants. Participant data were eliminated for surveys that were begun but not adequately completed, including failure to complete full pages or surveys. A total of 7 participants (1.1%) left the study immediately after completing the consent page without completing any further items. If a single item was

not answered on the ACEs questionnaire that individual's data were excluded, as the specific number of ACEs was an important variable, resulting in the loss of data from 11 participants. The PGWBI manual provides a missing data chart that is used to replace missing data with proper item responses according to the other subject's responses. A total of 8 missing PGWBI responses were replaced through this method. Finally, the SDRS-5 was used to score responses for social desirability and responses of 5 out of 5 resulted in that participant's entire data set being rejected, as recommended by Hays et al. (1989). This was especially due to the nature of the current study's sensitive and self-reported items. A total of 11 participants were rejected for SDRS-5 scores.

Descriptive and Reliability Statistics

In order to know if the data obtained were representative of previous samples, and therefore within the bounds of expected reporting, the data were compared to previous studies. This comparison is made in regard to sample size, demographics, reliability coefficients (coefficient alpha), mean, and standard deviation. These comparisons were made after data cleaning was completed. The current descriptive and reliability statistics are presented in Table 6.

Table 6
Basic Descriptive Statistics, Coefficient Alpha, and Correlations Between Predictor Variables (*n = 507)*

Variable	ACEs	ICSRLE	MSPSS	CD-RISC-10	PGWBI
CD-RISC-10					.53**
MSPSS				.27**	.36**
ICSRLE			-.35**	-.29**	-.64**
ACEs		.28**	-.25**	-.09*	-.25**
M	1.79	44.57	66.03	27.59	67.95
SD	2.02	23.15	14.32	6.37	18.11
α	.74	.95	.93	.88	.95

*p < .05 level; **p < .01 level (2-tailed)

The PGWBI coefficient alpha (.95) in the current study aligned with those of Gaston and Vogl (2005) who found the internal consistency coefficient to be .94 for a sample of 449 undergraduate students (mean age 19.3 years, 65% female). The coefficient alpha for PGWBI was .92 for a sample of 179 individuals being treated for stress disorders, with mean age of 43 years, and 70% female (Lundgren-Nilsson et al., 2013). Accordingly, the high reliability of PGWBI for the current study aligns with previous findings.

The current study's CD-RISC-10 coefficient alpha (.88) was congruent with previous research findings. The developers of the CD-RISC-10, Campbell-Sills and Stein (2007), obtained a coefficient alpha level of .85 in a sample with over 500 undergraduate students (72% women, 61% Caucasian, mean age 18.8 years). In a sample of 605 university students, mean age 21.03, 93% Caucasian, and 71% female Hartley (2012) reported a CD-RISC-10 coefficient alpha of .87. The current study reports congruent internal consistency data in a similar population, suggesting high reliability of the CD-RISC-10.

The coefficient alpha of .74 for the ACEs Questionnaire in the current study compares with other samples and is acceptable. In a sample of 27,545 people responding to the ACEs Questionnaire as part of the 2009 CDC study, the coefficient alpha was .78 (Ford et al., 2014). In a sample of 658 participants (mean age 64 years, 51% women, 79% Caucasian, over 70% college educated) from the Kaiser Permanente HMO network, the coefficient alpha was .64 (Sim & Wright, 2005). Wingenfeld et al. (2011) studied a sample of 99 German college students, with mean age of 24 years, 72% female, and an

average ACE score of 1.2. Overall, according to the results of these previous authors, the ACEs mean and coefficient alpha obtained in this current study align with previous samples. The internal reliability of the ACEs scale is not high but is acceptable.

The specific number of ACEs experienced correlates with health problems later in life. Therefore, it is important to compare the frequency of ACEs in the current study with previous sample populations, as shown in Table 7. While the internal reliability of the ACE questionnaire is acceptable but not high, the prevalence rates of ACEs in this current study are similar to rates presented in other samples.

Table 7
ACE Prevalence Rates Across Studies (%)

ACEs	Anda	McGavock	Mersky	Current
0	36.1	44	20.5	34.5
1	26.0	21	31.6	22.1
2	15.9	14	20.8	15.0
3	9.5	9	11.8	11.0
4 or more	12.5	12	15.3	17.4
M	1.61	1.57	1.81	1.79
N	17,337	765	1,142	507

Source: Anda et al. (2006); McGavock and Spratt (2014); Mersky et al. (2013)

The current study exhibits continuity of demographics and descriptive statistics with former studies concerning age, gender, ethnicity, ACEs coefficient alphas, and ACEs score frequencies (Anda et al., 2006; Ford et al., 2014; McGavock & Spratt, 2014; Mersky et al., 2013; Sim & Wright, 2005; Wingenfeld et al., 2011). The observed standard deviation of ACEs in the current study was larger than the mean (see Table 6). The ACEs standard deviation values were not listed in the referenced studies and without an explanation (Anda et al., 2006; Ford et al., 2014; McGavock & Spratt, 2014; Mersky et al., 2013; Sim & Wright, 2005; Wingenfeld et al., 2011). Given that the ACEs

frequencies and means show continuity with previous research, the value of standard deviation is likely similar. Further, given the nature of the instrument to be skewed positively, elevated standard deviation levels are expected.

The MSPSS coefficient alpha, mean, and standard deviation for this current sample is congruent with former studies. The most recent psychometric study of the MSPSS was performed by Osman, Lamis, Freedenthal, Gutierrez, and McNaughton-Cassill (2014). These authors found that in a sample of 610 undergraduate students (55% female, mean age 19.6 years, 78% Caucasian) the internal consistency coefficient was .87. They also presented the mean total score of the MSPSS as 65.36 for women (*SD* = 13.35) and 60.01 for men (*SD* = 14.32). The current sample does concur with this reliability data, suggesting that the obtained MSPSS scale results are reliable.

Finally, the ICSRLE produces a coefficient alpha, mean, and standard deviation similar to previous studies. A coefficient alpha of .88 was obtained in a sample of 208 university students with mean age of 23 and 75% female (Kohn et al., 1990). In a sample of 216 university students (68% female, 91% Caucasian, mean age 23.05), the coefficient alpha was .96 (Osman et al., 1994). The high ICSRLE coefficient alpha found for this sample does align with that from other studies and is indicative of acceptable reliability.

Multiple Regression Assumptions

In order to run a multiple regression analysis, the following assumptions must be met: a large enough sample size, normality, linearity, homoscedasticity, independence of errors, and absence of singularity and multicollinearity.

Sample Size. The general rules established for testing multiple correlation and individual predictors in multiple regression analysis were provided by Tabachnick and

Fidell (2001). Tabachnick and Fidell recommend using the larger number provided from the two equations $N > 50 + 8m$ and $N > 104 + m$, where m represents the number of independent variables. They also indicate that using even larger sample sizes than this equation's estimate are needed when the dependent variable is skewed, a smaller effect size is expected, or variables are less reliable. Therefore, the requirement of sample size to run this analysis was set *a priori* at a minimum of 200 participants for both Hypothesis 1 and 2. A total sample size of $N = 660$ was achieved, with a sample of $n = 507$ used for data analysis. Therefore, the current sample size was sufficient to meet the multiple regression assumptions.

Normality. An exploratory data analysis was performed in which each scale's histogram, with the normal curve superimposed, was evaluated for both skewness and kurtosis. Additionally, scales with skewness and kurtosis values outside of the range from -1.0 to 1.0 were transformed. Specifically, the ACEs scale was transformed via a square root transformation, bringing its skewness value from 1.39 to 0.17 and kurtosis value from 1.7 to -1.0. Of note, this transformation changed the descriptive statistics of ACEs accordingly: $M = 1.02$, $SD = 0.86$. All other scales' skewness and kurtosis values fell within the range of -1.0 to 1.0. Histograms appeared normal for the CD-RISC-10, PGWBI, ICSRLE, and MSPSS variables. The histogram distribution of the responses on the transformed ACEs scale was still slightly skewed, but fell within the acceptable skewness range of -1.0 to 1.0.

The statistical measure of Shapiro-Wilks assessed normality of all scales. The null hypothesis of the Shapiro-Wilks test is that these scales are normally distributed. The null hypothesis was rejected for all scales (CD-RISC-10, PGWBI, ICSRLE, MSPSS,

ACEs; $p < .001$), suggesting that these scales are not normally distributed. However, Tabachnick and Fidell (2001) state:

> Conventional but conservative (.01 or .001) alpha levels are used to evaluate the significance of skewness and kurtosis with small to moderate samples, but if the sample is large, it is a good idea to look at the shape of the distribution instead of using formal inference tests. Because the standard errors for both skewness and kurtosis decrease with larger *N*, the null hypothesis is likely to be rejected with large samples when there are only minor deviations from normality. […They continue to indicate that] with large samples [over 200], the significance level of skewness is not as important as its actual size (worse the farther from zero) and the visual appearance of the distribution. (p. 80)

Therefore, as the sample size of this data set is large ($n = 507$), the results of the Shapiro-Wilks test should not be considered as heavily as the visual inspection of histograms and evaluation of skewness and kurtosis. As mentioned, these histograms do appear normally distributed for predicting both CD-RISC-10 (Hypothesis 1) and PGWBI (Hypothesis 2).

Hypothesis 1. In Hypothesis 1, CD-RISC-10 was predicted from the independent variables of ACEs, ICSRLE, and MSPSS. Assessment of normality was performed via standardized residual plot analyses of the histogram, P-P plot, and scatter plots for CD-RISC-10. The distribution of residuals in the histogram follows the normal curve, with no skewness observable. The P-P plot results in an R^2 linear line of best fit of .999, indicating that the residuals do fall closely on the P-P plot line. Finally, the scatter plot

shows no major asymmetry, bunching, or outliers. Therefore, according to residual plot analyses of the histogram, P-P plot, and scatter plots for CD-RISC-10, it is concluded that the data appear normally distributed.

Regression analysis was also performed to reveal outliers using casewise diagnostics, Mahalanobis test, and Cook's distance test in accordance with procedures established in Tabachnick and Fidell (2001). Cases with *z* scores greater than 3.29 were deemed outliers. Outliers were defined according to the Mahalanobis distance as being greater than $\chi^2 = 16.27$ for prediction of CD-RISC-10 ($df = 3$, $p < .001$). Outliers were defined according to Cook's distance as being greater than 1.0 for prediction of CD-RISC-10. Data from 3 participants were deleted due to the CD-RISC-10 multiple regression casewise diagnostics indicating them as outliers. Data were deleted for 1 participant exceeding the Mahalanobis distance cutoff for CD-RISC-10. No outliers were found according to the Cook's distance test for the CD-RISC-10.

Hypothesis 2. In Hypothesis 2, PWGBI was predicted from ACEs, ICSRLE, MSPSS, and CD-RISC-10. Assessment of normality was performed via standardized residual plot analyses of the histogram, P-P plot, and scatter plots for PGWBI. The distribution of residuals in the histogram follows the normal curve, with no observed skewness. The P-P plot results in an R^2 linear line of best fit of .998, indicating that the residuals do fall closely on the P-P plot line. Finally, the residual scatter plot shows no major asymmetry, bunching, or outliers. Therefore, according to residual plot analyses of the histogram, P-P plot, and scatter plots for PGWBI, it is concluded that the data appear normally distributed.

Regression analysis was utilized to reveal outliers using casewise diagnostics, Mahalanobis test, and Cook's distance test in accordance with procedures established in Tabachnick and Fidell (2001). Cases with *z* scores greater than 3.29 were deemed as outliers. Outliers were defined according to the Mahalanobis distance as being greater than $\chi^2 = 18.47$ for prediction of PGWBI ($df = 4$, $p < .001$). Outliers were defined according to Cook's distance as being greater than 1.0 for predicting PGWBI. Data from 4 participants were deleted due to the PGWBI multiple regression casewise diagnostics indicating them as outliers. Data were deleted for 2 participants exceeding the Mahalanobis distance cutoff for PGWB. No outliers were found according to the Cook's distance test for PGWBI.

Linearity and Homoscedasticity. Regression analysis requires a linear relationship between the independent and dependent variables. Linearity is evaluated via visual inspection of the line of best fit from the bivariate scatterplots of each independent variable to the dependent variable. Additionally, if the variables are normally distributed and linearly related an oval-shaped scatterplot is obtained. Homoscedasticity was also assessed via the scatterplots obtained in the normality and linearity assumption analyses. If the data appear normal and are linearly related, the chances of homoscedasticity are increased.

Hypothesis 1. The independent variables for Hypothesis 1 consisted of ACEs, MSPSS, and ICSRLE. Under Hypothesis 1, each independent variable had a linear relationship to the dependent variable, CD-RISC-10. The R^2 linear value and the slope of the R^2 linear line of best fit between each variable and CD-RISC-10 visually appear to represent its respective data pattern. The relationship between each independent variable

and CD-RISC-10 visually appear to meet the assumption of linearity. Visual analysis of the scatterplots forged between the independent and dependent variables for the linearity analysis showed that the data points were generally of equal width and showed no skewness or bunching in any of the scatterplots. This visual inspection suggests that the assumption of homoscedasticity can be made for Hypothesis 1.

Hypothesis 2. Hypothesis 2 consisted of the independent variables ACEs, MSPSS, CD-RISC-10, and ICSRLE. For Hypothesis 2 each independent variable had a linear relationship with PGWBI, the dependent variable. Visual inspection of best fit and scatterplot composition supports the assumption of linearity. Visual analysis of the scatterplots produced between each independent and the dependent variable during the linearity analysis showed that the data points were generally of equal width and showed no skewness or bunching in any of the scatterplots. This visual inspection suggests that the assumption of homoscedasticity stands for Hypothesis 2.

Independence of Errors. Independence of errors is the assumption that the errors of prediction are not dependent upon one another. As the variables in the current study are determined to be non-time-series variables, a visual analysis of the residual plot versus independent variable was performed to investigate the presence of error independence (Nau, 2015).

Hypothesis 1. Visual analysis of the scatterplots forged between the unstandardized residuals and independent variable CD-RISC-10 showed that the data points were homoscedastic, generally of equal width apart and showed no skewness or bunching in any of the scatterplots. As the residuals are randomly and symmetrically

distributed around zero, this visual inspection supports the assumption of error independence. Additionally, the unstandardized residuals were normally distributed.

***Hypothesis 2*.** Visual analysis of the scatterplots forged between the unstandardized residuals and independent variable PGWBI showed that the data points were homoscedastic, generally of equal width apart and showed no skewness or bunching in any of the scatterplots. As the residuals are randomly and symmetrically distributed around zero, this visual inspection supports the assumption of error independence. Additionally, the unstandardized residuals were normally distributed.

Multicollinearity and Singularity. Multicollinearity is present in multiple regression analyses when high correlations exist between the variables. If there are high correlations between the variables in the multiple regression, then the squared multiple correlation will be higher. To create statistical problems related to multicollinearity, the value of these correlations must be .90 or higher (Tabachnick & Fidell, 2001). Additionally, the degree of statistical significance between the variables in the intercorrelation matrix is not as important as the magnitude of the correlations (Cohen & Cohen, 1983). Singularity occurs in the presence of a perfect correlation between independent variables, essentially meaning the variables are identical in their contribution to the multiple regression. Multicollinearity was assessed via the VIF and Tolerance statistical tests produced in the SPSS regression analysis. Singularity was assessed via the Tolerance statistical test. Tolerance is defined as the "proportion of the variance of that variable [in question] *not* associated with independent variables already entered into the equation ($1\text{-}R^2$)" (Cohen & Cohen, 1983, p. 484). As such, higher Tolerance levels are preferred for each independent variable, revealing that there is a good degree of

variance not explained by another independent variable in the multiple regression equation. A Tolerance value of .10 or higher is typically considered acceptable, whereas values below .10 make it impossible to run the statistical analysis (Tabachnick & Fidell, 2001). For the current study, values of Tolerance less than .10 were considered as indicating a high chance of multicollinearity as were values greater than 10 for VIF. Values of Tolerance close to .00 were considered as indicating singularity.

Further investigation of multicollinearity can be performed through evaluating the condition index. Tabachnick and Fidell (2001) discuss using a condition index to measure the degree of dependency of one variable upon the others. Large condition indices and variance proportions are indicative of multicollinearity. The condition index criteria for multicollinearity is generally established as a condition index > 30 in addition to two or more variance proportions > .50 for any single variable (Tabachnick & Fidell, 2001).

Hypothesis 1. The Tolerance and VIF values for each independent variable are as follows: ACEs (Tolerance: .90; VIF: 1.11), ICSRLE (Tolerance: .84; VIF: 1.20), and MSPSS (Tolerance: .85; VIF: 1.18). Further, the strongest correlation found in the intercorrelation matrix (shown in Table 6) was -.35 between MSPSS and ICSRLE. The weak correlations between the independent variables, as expressed in the intercorrelation matrix, suggest that multicollinearity is not a concern for this hypothesis, as all correlations fall well below the .90 cutoff established by Tabachnick and Fidell (2001). Investigation of the condition indices for the variables in this hypothesis revealed that all values fall below 30 with fewer than two variance proportions over .50, the criterion established as the cutoff for multicollinearity concerns. The Tolerance and VIF values

obtained from predicting CD-RISC-10 were not of concern for any of the independent variables, indicating there is low chance of multicollinearity or singularity.

As the Tolerance values for CD-RISC-10 are all above .80, the VIF values are all below 10, and all values of the condition indices fall below 30, it was determined that there is no evidence for concerns related to multicollinearity between the variables for Hypothesis 1. Accordingly, it is deemed that the assumptions of multicollinearity and singularity are met for this hypothesis.

Hypothesis 2. The obtained Tolerance and VIF values are as follows: ACEs (Tolerance: .90; VIF: 1.12), ICSRLE (Tolerance: .80; VIF: 1.26), MSPSS (Tolerance: .82; VIF: 1.22), and CD-RISC-10 (Tolerance: .88; VIF: 1.13). These values indicate a low chance of multicollinearity or singularity between these independent variables. Further examination of the intercorrelation matrix (depicted in Table 6) revealed moderate correlations between ICSRLE and PGWBI (r = -.64) and between CD-RISC-10 and PGWBI (r = .53). The remaining intercorrelation matrix values ranged from -.09 to -.35, providing evidence that multicollinearity is not a concern for this hypothesis, as all correlations fall well below the .90 cutoff established by Tabachnick and Fidell (2001). Investigation of the condition indices for the variables in this hypothesis revealed that all values fall below 30 with fewer than two variance proportions above .50, the criterion established as the cutoff for multicollinearity concerns. The Tolerance and VIF values obtained from predicting PGWBI for each independent variable were not of concern.

As the Tolerance values for PGWBI are all above .80, the VIF values are all below 10, and all values of the condition indices fall below 30, it was determined that there is no evidence for concerns related to multicollinearity between the variables for

Hypothesis 2. Accordingly, the assumptions of multicollinearity and singularity are met for this hypothesis.

Multiple Regression Analyses

The current study utilized simultaneous multiple regression for analyses of the first two hypotheses. The simultaneous analysis is beneficial in revealing the unique contribution each variable provides in predicting the dependent variable after interpretation and consideration of the full correlation and beta weight (Tabachnick & Fidell, 2001). The *F* ratio tests the significance of each model's multiple *R*. The *t*-test evaluates each independent variable's unique contribution to the model's variance. The adjusted R^2 corrects for inflation in the sample's R^2 and provides the population estimate of variance. The standardized beta coefficient, β, indicates that for every one standard deviation change of a predictor, a corresponding standard deviation change of the outcome variable occurs equal to the magnitude and direction of the β coefficient. An advantage of utilizing β is that all variable, unstandardized beta weights are converted to the common unit of *z*-scores ($M = 0$, $SD = 1$) and accordingly can reveal which variable has the greatest influence on the prediction. Further, standardized beta weights are useful when any of the dependent variables are transformed, as was the case for ACEs. The square root transformation of ACEs does not affect the current study's results beyond necessitating the use of standardized beta weights.

Hypothesis 1. A simultaneous multiple regression analysis produced a model predicting college student resilience from the variables of adverse childhood experiences, current college student hassles, and perceived social support. The results (indicated in Table 8) reveal that the amount of variance in resilience was significantly predicted by

the collective contribution of adverse childhood experiences, college student hassles, and social support, $F(3,503) = 22.28$, $p < .05$, *adjusted* $R^2 = .12$. Current college student hassles significantly predicted resilience scores. Perceived social support significantly predicted resilience scores. Adverse childhood experiences did not significantly predict resilience scores. Every increase in ICSRLE's standard deviation is associated with a -0.23 decrease in CD-RISC-10. Per standard deviation increase of MSPSS, CD-RISC-10 increased by 0.20. The standard deviation change of ACEs contributed a trivial amount to changes in CD-RISC-10. The standardized multiple regression equation is: $Z_{CD\text{-}RISC\text{-}10} = 0.03 * Z_{ACEs} - 0.23 * Z_{ICSRLE} + 0.20 * Z_{MSPSS}$.

As shown in Table 8, CD-RISC-10 was more significantly correlated to MSPSS and ICSRLE ($p < .01$) than with ACEs ($p < .05$). MSPSS was significantly correlated ($p < .01$) with both ICSRLE and ACEs. ICSRLE and ACEs were significantly correlated ($p < .01$).

Table 8
College Student Resilience Related to Adverse Childhood Experiences, College Life Hassles, and Social Support (*N = 507)*

Variable	Zero-Order *r*				β	*t*
	ACEs[a]	ICSRLE	MSPSS	CD-RISC		
MSPSS				.27**	0.20	4.33**
ICSRLE			-.35**	-.29**	-0.23	-4.97**
ACEs		.28**	-.25**	-.09*	0.03	0.56
					Adjusted $R^2 = .12$	
M	1.02	44.57	66.03	27.59		
SD	0.86	23.15	14.32	6.37		

[a] ACEs was square root transformed for the purpose of normality
*$p < .05$ level; ** $p < .01$ level

***Hypothesis 2*.** A simultaneous multiple regression analysis produced a model predicting college student mental health from the variables of adverse childhood

experiences, current college student hassles, perceived social support, and resilience. The results indicated in Table 9 reveal that the amount of variance in mental health was significantly predicted by the collective contribution of adverse childhood experiences, college hassles, social support, and resilience, $F(4,502) = 152.92$, $p < .01$, *adjusted* $R^2 = .55$. College student resilience significantly predicted mental health scores. Current college student hassles significantly predicted mental health scores. Perceived social support significantly predicted mental health scores. Adverse childhood experiences did not significantly predict mental health scores. Every increase in ICSRLE's standard deviation is associated with a -0.50 decrease in PGWBI. For every one standard deviation change in CD-RISC-10, PGWBI increased by 0.36. Per standard deviation increase of MSPSS, PGWBI increased by 0.07. The standard deviation change of ACEs contributed a nonsignificant amount. The standardized multiple regression equation is: $Z_{PGWBI} = -0.06*Z_{ACEs} - 0.50*Z_{ICSRLE} + 0.07*Z_{MSPSS} + 0.36*Z_{CD\text{-}RISC\text{-}10}$. As part of the multiple regression analysis, a correlation matrix was computed. As shown in Table 9, PGWBI significantly correlated with CD-RISC-10, MSPSS, ICSRLE, and ACEs.

Table 9
College Student Mental Health Related to Adverse Childhood Experiences, College Life Hassles, Social Support, and Resilience (*N = 507)*

Variable	Zero-Order *r*					β	*t*
	ACEs[a]	ICSRLE	MSPSS	CD-RISC	PGWBI		
CD-RISC					.53**	0.36	11.18**
MSPSS				.27**	.36**	0.07	2.18*
ICSRLE			-.35**	-.29**	-.64**	-0.50	-14.86**
ACEs		.28**	-.25**	-.09*	-.25**	-0.06	-1.83
						Adjusted $R^2 = .55$	
M	1.02	44.57	66.03	27.59	67.95		
SD	0.86	23.15	14.32	6.37	18.11		

[a] ACEs was square root transformed for the purpose of normality
*$p < .05$ level; **$p < .01$ level

Hypothesis 3. A correlation was performed in the multiple regression analysis of Hypothesis 2 in order to answer Hypothesis 3. The correlational analysis, seen in Table 9, revealed that adverse childhood experiences negatively correlate with college student resilience ($r = -.09$, $p < .05$) and mental health ($r = -.25$, $p < .01$).

CHAPTER V

DISCUSSION

Interpretation of Results

Demographics. Previous research indicates that there are inconclusive gender and racial differences at the composite, not subscale, analysis level for social support, recent college life hassles, resilience, mental health, and adverse childhood experiences (McLaughlin et al., 2012; Oldehinkel & Ormel, 2015; Schilling et al., 2007). As discussed previously, the variables MSPSS, PGWBGI, ICSRLE, CD-RISC-10, and ACEs reveal continuity with former studies regarding descriptive statistics; therefore, this suggests that the demographic variables do not affect the interpretation of results.

Hypothesis 1. This hypothesis evaluates the outcome of resilience in response to the interaction of its protective and risk factors. The collective contribution of adverse childhood experiences, college student hassles, and social support explain 12% of the variance of resilience which is statistically significant but clinically unmeaningful. As shown in Table 8, ICSRLE has the largest impact on predicting CD-RISC-10. The negative correlation shows that increased rates of current life hassles correlate mildly with lower reported rates of resilience. The MSPSS also has a significantly large impact on the prediction of CD-RISC-10, however, not quite as large as ICSRLE. The mild, positive correlation indicates that increased levels of perceived social support are associated with mildly increased levels of resilience. There was no significant impact of ACEs on CD-RISC-10. Reported adverse childhood experiences were significantly, albeit very weakly, correlated with resilience but not to the prediction model. The CD-RISC-10 is mildly, but significantly, correlated to MSPSS and ICSRLE. Higher rates of

resilience correlate with higher rates of perceived social support, with approximately the same magnitude as lower rates of resilience correlated with increased rates of college hassles. The CD-RISC-10 is significantly, yet not clinically meaningfully, correlated with ACEs. The MSPSS was mildly and significantly correlated with both ICSRLE and ACEs. Higher reports of perceived social support correlate with lower reports of college life hassles and ACEs. Additionally, increased rates of current college life hassles correlate with higher reports of ACEs. The correlations are significant primarily due to a large sample size and are not deemed practically significant.

As previously indicated, resilience develops as a response to an adverse circumstance through a process by which the individual applies mechanisms and manipulates resources to have more a favorable outcome (Fergus & Zimmerman, 2005; Hartley, 2012). The interaction between protective and risk factors for resilience also results in better outcomes (DeRosier et al., 2013; Hartley, 2012). In the current study, social support is considered a protective variable for resilience, while life adversities are risk factors. As seen in Table 8, the equal but opposite magnitude of correlation between MSPSS and CD-RISC-10 and between MSPSS and both ICSRLE and ACEs, aligns with former findings (Haddadi & Besharat, 2010; Hefner & Eisenberg, 2009; Lai & Mak, 2009; Liu & Xu, 2013; Peng et al., 2012; Tajalli et al., 2010). The magnitude of the correlation between ACEs and resilience is not clinically meaningful and is much smaller than resilience's correlation with either current hassles or social support. This finding indicates that a potential interaction of social support and current hassles on ACEs may exist. This finding might be attributable to a buffering effect of social support on ACEs and current college hassles resulting in more favorable resilience rates, which remains

indicative of the resilience process and congruent with previous research (Liu & Xu, 2013; Peng et al., 2012; Wilks, 2008; Wilks & Spivey, 2010). While the current study indicates that college hassles has a more significant impact on resilience than social support, this finding does not negate a potential interaction effect with social support nor does it negate the impact of social support on resilience. The current findings align with resilience research in this field, which show a complex interaction between protective and risk factors (Hartley, 2010; Hartley, 2012). Further, current life hassles are repeatedly shown to have a higher correlation with resilience than either social support or childhood adversities, a finding consistent in the current study (Haddadi & Besharat, 2010; Lai & Mak, 2009; LaNoue, Graeber, Helitzer, & Fawcett, 2013; Liu & Xu, 2013; McLaughlin, Conron, Koenen, & Gilman, 2010; Peng et al., 2012; Tajalli et al., 2010).

Hypothesis 2. This hypothesis evaluates psychological well-being as the outcome of the resilience process in which protective and risk factors interact. The regression model of adverse childhood experiences, college student hassles, social support, and resilience explains 55% of the variance of mental health. While the obtained *F*-value is large, this is a result of the equation for the *F* statistic (Nau, 2015). Since the obtained adjusted R^2 value is high, the *F*-value will be higher. Further, given that the current sample size is large (n = 507) the *F* value is reasonably larger. The main factor to consider is if the significant results are also substantively meaningful, which is detailed below. As shown in Table 9, ICSRLE has the largest impact on predicting PGWBI, much larger than with CD-RISC-10. The moderate, negative correlation shows that increased rates of current life hassles correlate with lower reported rates of mental health. The CD-RISC-10 had the second greatest contribution to the prediction model of

PGWBI. Resilience is associated with a moderate, positive correlation with mental health. The MSPSS also has a significantly large impact on the prediction of PGWBI. Although the magnitude of MSPSS's correlation with PGWBI is greater than with CD-RISC-10, it is less significant in the prediction model. The mild, positive correlation indicates that increased levels of perceived social support are associated with mildly increased levels of mental health. There was no statistically or clinically significant contribution of ACEs to the prediction model for mental health; however, the correlation between reported ACEs and mental health was significant and larger than for resilience.

The current study's results align with former findings in that higher levels of resilience are associated with better mental health outcomes, in specific regard to childhood adversities and current life hassles (DeRosier et al., 2013; Fergusson & Horwood, 2003; Hartley, 2012; Robinson et al., 2014). The current results also align with findings that higher reported rates of resilience correlated with more favorable mental health outcomes and with lower rates of childhood adversities and life distress (Fergusson & Horwood, 2003; Haddadi & Besharat, 2010; Peng et al., 2012). The current results support Haddadi and Besharat's (2010) results that resilience has a positive correlation with psychological well-being and a negative correlation with risk factors of distress. In agreement with Lai and Mak's (2009) results, the current findings show that resilience significantly correlated with the number of hassles the students experienced and with student psychological well-being. Lai and Mak indicate that in their study, resilience significantly predicted psychological well-being, both singularly and through interaction with ISCRLE, an interaction not investigated in the current study.

The current results agree with Liu and Xu (2013) who revealed that resilience has more influence on mental health than social support.

In accordance with previous findings, the current study shows that life hassles have a higher correlation with mental health than social support, childhood adversities, and even resilience (Lai & Mak, 2009; LaNoue et al., 2013; Liu & Xu, 2013; McLaughlin et al., 2010; Peng et al., 2012; Tajalli et al., 2010). The current study results show that poor mental health is associated more strongly with current life hassles than with childhood adversities as also indicated by LaNoue et al. (2013). In agreement with Tajalli et al. (2010), higher rates of daily life hassles were associated with poorer mental health outcomes in the current study. McLaughlin et al. (2010) found that only for individuals with three or more childhood adversities were recent life adversities associated with increased mental health symptomatology. While the current study does not show significance for ACEs, it is important to note that they may play an important role in how future (now current) life hassles impact mental health.

While current life hassles do appear to impact mental health outcomes, so does social support. The current study revealed that most students rely on social support not support from trained mental health professionals, a finding also noted by Novotney (2014). The current finding that higher rates of social support are associated with better mental health aligns with former findings (DeRosier et al., 2013; Hartley, 2012; Hefner & Eisenberg, 2009; Nurius et al., 2012; Peng et al., 2012; Tajalli et al., 2010). However, some research indicates that social support is not sufficient in itself to help improve student mental health (Galatzer-Levy et al., 2012; Nurius et al., 2012), but should be part of an intervention program encompassing resilience (DeRosier et al., 2013; Hartley,

2012). The results in the current study do corroborate with this mixed finding in that social support was only slightly significant in its prediction of mental health.

Hypothesis 3. The mild, negative correlation between adverse childhood experiences and college student mental health was larger in magnitude and significance level than the weak, negative correlation between adverse childhood experiences and resilience, as seen in Table 9. These results show that increased rates of adverse childhood experiences correlate with lower reported scores of both resilience and mental health. A stronger association between mental health and ACEs exists than between resilience and ACEs. However, ACEs did not significantly contribute to the prediction models of either resilience or mental health nor did it contribute clinical meaningfulness given the coefficients of determination for resilience (.0081) and mental health (.0625) were trivial.

The magnitude of the correlation between ACEs and mental health was larger than between ACEs and resilience, which indicates that ACEs has a stronger association with mental health than with resilience. These findings align with those previously reported by Nurius et al. (2012) who found that poorer mental health outcomes were correlated with higher numbers of ACEs. The current results are also congruent with those of Campbell-Sills et al. (2006) who compared resilience to childhood trauma and present psychological well-being. These authors showed that psychological well-being was significantly predicted by resilience and the interaction between resilience and childhood trauma. Childhood trauma by itself did not significantly predict present psychological well-being. Their results revealed that individuals with the highest resilience rates have the least symptomatology. Interestingly, their results showed that

the lowest degrees of symptomatology were found in individuals with high levels of both resilience and childhood trauma exposure. The current study shows that ACEs alone do not significantly predict present psychological well-being, while resilience does.

The lack of ACEs significance on either resilience or mental health does not mean it is unimportant. McLaughlin et al. (2010) found that among individuals with three or more childhood adversities, recent life adversities are associated with increased mental health symptomatology. Research also indicates that a delayed impact of childhood adversities on mental health is possible. Teicher, Samson, Polcari, and Andersen (2009) found that there was typically a several year delay between exposure to childhood sexual abuse and the onset of depression (9.2 ± 3.6 years) and posttraumatic stress disorder (8.0 ± 3.9 years). Their research indicates there may be a time window in which interventions may minimize later mental health consequences, specifically for individuals who experienced sexual abuse. They also indicate that the lack of mental health symptomology at the time of the sexual abuse should not be interpreted as signifying resilience. Greeson et al. (2014) revealed a concurrent, dose-response relationship between emotional and behavior problems in association with total number of traumatic experiences. This association between traumatic experiences and emotional and behavioral problems was significant for individuals 1 ½ to 18 years of age, necessitating the need for early interventions. Schilling et al. (2007) and McLaughlin et al. (2012) showed that the effects of ACEs are observed beginning in adolescence and continuing into adulthood. Both studies indicate that substance abuse disorders are more prevalent among adolescents who experienced higher rates of ACEs, as are externalizing behaviors, depression, and distress. Adolescent onset of increased rates of anxiety disorders

associated with ACEs were also observed (Oldehinkel & Ormel, 2015). Accordingly, the college student population should exhibit mental health concerns associated with ACEs. However, Oldehinkel and Ormel (2015) indicate that the onset of a psychiatric disorder depends on the nature and immediate outcome of the early life adversity and the amount of time elapsed between the adversity and psychiatric disorder onset. Therefore, if college students are not presenting mental health concerns related to early life adversities it is less likely they will develop a psychiatric disorder. The degree of symptomology and manifested mental health problems are associated with the individual's allostatic load and cortisol levels (Rogosch, Dackis, & Cicchetti, 2011). Individuals indicated as having lower allostatic thresholds are at the highest risk of long-term physical and mental health problems (McLaughlin et al., 2010). Ultimately, the variables of resilience and mental health are complex and outcomes depend on the individual in question (Hartley, 2010; Hartley, 2012).

Limitations

There are several reasons why the current study's findings for ACEs do not align with former research. Lack of statistical significance in this study does not indicate that ACEs have no impact on either resilience or mental health overall; however, it does show that the current methodology and analyses used do not reveal significance. Nonsignificance for ACEs might be due to instrumentation, evaluating ACEs as a continuous variable, and the chosen statistical analysis, among others.

Limitation of Instrumentation. In the literature review of the current study it was shown that few studies assessed adverse childhood experiences using the ACEs Questionnaire particularly in association with resilience and mental health (Ford et al.,

2014; Nurius et al., 2012; Wingenfeld et al., 2011). Most previous research utilized their own measures or the CTQ (Campbell-Sills & Stein, 2007; Finkelhor et al., 2014; Jacobs et al., 2012; McLaughlin et al., 2012; Oldehinkel &Ormel, 2015; Powers et al., 2009; Schilling et al., 2007; Vanderbilt-Adrience & Shaw, 2008). Of these studies, the most frequently used tool was the CTQ; however, Wingenfeld et al. (2011) showed that the CTQ and ACEs Questionnaire provide similar findings. Therefore, there is a possibility that the ACEs Questionnaire may not provide the best measure of ACEs when evaluating resilience and mental health outcomes, although this was not expected.

The current measure of mental health may not measure the same construct of mental health as other studies because other studies used different instruments to assess mental health. Recall the PGWBI is generally interpreted as one total score but consists of the following six factors: positive well-being, general health, depressed mood, self-control, anxiety, and vitality (Lundgren-Nilsson et al., 2013). Mental health is a large construct and can be measured via positive or negative affect, lack or presence of symptoms, alignment with DSM-V criteria, or focus more on particular topics such as health practices or suicidality. If the instruments chosen are the same across studies, the measure of mental health is uniform and decreases the variability of what is measured while also increasing the validity. Although the PGWBI showed validity and was used in studies evaluating resilience and mental health, it is possible that its lack of use in studies evaluating ACEs exposure make it a weaker instrument. Therefore, it may be more beneficial to use a different measure of mental health. Many studies use DSM criteria from multiple disorders as a reference for their measure of mental health (McLaughlin et al., 2012; Oldehinkel &Ormel, 2015; Schilling et al., 2007). Haddadi and Besharat

(2010) used the Mental Health Inventory, Beck Depression Inventory, and Beck Anxiety Inventory. Robinson et al. (2014) used the Multidimensional Personality Questionnaire to assess positive and negative emotionality. Nurius et al. (2012) defined mental health outcomes in three different ways: the number of mentally healthy days per month, satisfaction with life, and six symptoms of mental health (feeling worthless, nervous, hopeless, restless, depressed, and daily tasks require a lot of effort). A study combining a few of these measures might help improve the measure of mental health and improve the validity of the current study. It is possible that ACEs exposure might be more associated with some types of mental health outcomes than others and evaluation through multiple measures might help clarify this belief, as posited by previous researchers (Haddadi & Besharat, 2010; Schilling et al., 2007). Depression, anxiety, life satisfaction, suicidality, low life satisfaction, drug use, and psychological distress are some of the most negatively impacted domains of mental health (Haddadi & Besharat, 2010; Mersky et al., 2013; Schilling et al., 2007). In the most extreme cases, Schizoaffective Disorder, Oppositional Defiant Disorder, and Antisocial Personality Disorder are also associated with high rates of ACEs exposure (Jacobs et al., 2012). Specific investigation of these areas of mental health was not the focus of the current study.

Numerous measures of resilience have been used in association with ACEs and mental health, with no clear predominating measure. The Brief Resilience Scales, Resilience Scales for Adults, CD-RISC-10, CD-RISC-25, and self-created measures have been used (DeRosier et al., 2013; Liu & Xu, 2013; Peng et al., 2012; Wilks & Spivey, 2010; Zautra et al., 2008). The CD-RISC-10 did appear to be used frequently in association with both resilience and mental health, while having acceptable psychometric

properties and convergent validity with other measures of resilience, as shown previously. However, the CD-RISC-10 was originally created by Connor and Davidson (2003) as a measure to evaluate treatment response of individuals experiencing post-traumatic stress disorder but has since been used for a wide population of individuals experiencing trauma (Campbell-Sills & Stein, 2007). It is possible that the CD-RISC-10 remains most effective for individuals with post-traumatic stress disorder and can be a limitation for the current study. This lack of uniformity in resilience measure across studies potentially results in conflicting findings and stalls progress in the larger field of inquiry. This diverse use of resilience measures, though potentially a benefit, also has costs associated with it. There is a dearth of studies that have evaluated all three variables of resilience, ACEs, and mental health in the same study. Even fewer studies have evaluated these variables in addition to social support and current life hassles. Given the lack of publications in this area, there is a lack of studies to which comparisons can be made. Accordingly, it is difficult to indicate the best measure of each variable and lends to a limitation due to instrumentation.

Magnitude of ACEs Exposure. McLaughlin et al. (2010) found that among individuals with three or more childhood adversities, recent life adversities are associated with increased mental health symptomatology. The current study showed that recent life adversities are associated with decreased mental health and resilience rates. Therefore it is possible that such an interaction is present in the current study; however, this study evaluated the number of ACEs as a continuous variable, not according to low versus high levels of adversity exposure. The lack of investigation of ACEs exposure rates in the current study might have masked a potential difference in resilience and mental health

rates among participants who had higher versus lower ACEs exposures. Further, the magnitude of the ACEs exposure rates in the current study might have been lower than other studies. Approximately 28% of participants in the current study reported ACEs of 3 or more, which may simply not have been a large enough proportion to indicate significant associations. Therefore, a true lack of significance in predicting resilience and mental health may be observed for the current prevalence rates of ACEs reported.

Statistical Analysis Limitations. While it was appropriate to use simultaneous multiple regression in the current study as part of an exploratory analysis, it may have presented limitations. Tabachnick and Fidell (2001) show that when performing simultaneous multiple regression some independent variables appear nonsignificant but may actually be significant when evaluated with a different type of multiple regression analysis. This is because using simultaneous multiple regression results in the other independent variables competing with ACEs for significance in predicting the model. This competition for significance might result in lowered significance values for ACEs in the prediction model than it may actually have.

Retrospective Reports. Retrospective reporting of ACEs may have resulted in recall bias (Ford et al., 2014). It is difficult to state whether participants would overreport or underreport their exposure of ACEs if a bias did result. Retrospective reports of childhood abuse obtained in person are more prone to underestimation of the events, rather than overestimation (Della-Femina et al., 1990; Pereda et al., 2009). However, not all reports are biased (Brewin et al., 1993). According to these findings, it is possible that a recall bias might be present in the current study, but if it exists it might result in an

underestimation of ACEs exposure. This increases the possibility that a Type I error exists in the current study.

Anonymous, online reporting may have impacted the type of responses obtained (Wilson & Ross, 2003). However, because the participants were asked questions that involve little interpretation, the possibility of obtaining incorrect reporting or recall is much lower (McGavock & Spratt, 2014). Further, the use of SDRS-5 as a screening tool increased the chances of eliminating responses from participants at greatest risk of providing socially desirable responses (Hays et al., 1989). It remains possible that the method of data collection resulted in less accuracy in responses, thereby impacting the findings. However, there is a fair amount of evidence that reporting of stigmatized behaviors (e.g. sexual experiences and mental health) is more accurate in online administration (Major & O'Brien, 2005; Turner et al., 1998).

Restriction of Range. The current study presents an inherent restriction of range in demographic variables such as age, gender, ethnicity, and economic background. Given that the current study focuses on college students at a public university in Washington State, the results may not generalize to other populations who might have higher rates of ACEs exposure. This produces a decreased range in ACEs responses and may contribute to the lack of clinical significance of the correlation between ACEs and resilience. The current study also restricted participants to ages 18 to 30 resulting in a slightly smaller range than the whole student body which might have resulted in lower correlations. However, as the majority of students on the college campus are between the ages of 18 and 30, this is not expected to have a significant impact on the results.

Nonsignificant Findings in Publications. It is possible that ACEs does not have a significant association with resilience or mental health in the current study. It is also possible that ACEs may have a more limited impact on resilience and mental health than is reported in the literature. In peer reviewed literature there is publication bias against nonsignificant findings (Møller & Jennions, 2001). As such it is unknown how common the nonsignificance of findings are for ACEs.

Future Research

Given the nature of these variables, the potential for future research is vast. The current study raised several questions which may be helpful to further developing the field. Evaluation of the magnitude of ACEs exposure, interaction effects between variables, and investigation of demographic variables might elucidate the direction for future interventions.

Magnitude of ACEs Exposure. Many studies have investigated the impact of individual childhood adversities on resilience and mental health rather than evaluating impacts associated with an accumulation of ACEs measured (Schilling et al., 2007). The current study investigated the cumulative impact (i.e. total number) of ACEs on resilience and mental health, not per individual ACE. Further, Schilling et al. (2007) showed that individual ACEs such as sexual abuse, physical abuse, or domestic violence result in more significant impacts on adult mental health outcomes than cumulative ACEs effects. The current study assumed linearity of the impact of ACEs and college hassles on resilience, which might not be the case as Seery (2011) notes. If the relationship between ACEs and college hassles with resilience is curvilinear, it is possible that this trend may be masked, when evaluated holistically instead of via dichotomous categories. Further as

McLaughlin et al. (2010) found, individuals with three or more childhood adversities experienced more mental health problems when experiencing current life hassles. Therefore an important question for future researchers, with broader data sets, to answer is how low versus high levels of ACEs magnitude affect the other independent variables, resilience, and mental health.

Interaction Effects. The current study did not investigate interaction effects between variables, though a future data analysis with the current data set could reveal such an interaction. The similar magnitude, but opposite effect, of MSPSS and ICRLE on both ACEs and CD-RISC-10 may imply interaction effects. If interaction effects do exist, this finding would align with previous research indicating that interaction effects are notable between the variables of ACEs, social support, life hassles, and resilience (Haddadi & Besharat, 2010; Hefner & Eisenberg, 2009; Lai & Mak, 2009; Liu & Xu, 2013; Peng et al., 2012; Tajalli et al., 2010).

The interaction effects between resilience and ACEs on psychological well-being were also not investigated in the current study; neither was the impact of low versus high levels of adversity exposure on psychological well-being. McLaughlin et al. (2010) found that among individuals with three or more childhood adversities, recent life adversities are associated with increased mental health symptomatology. It is possible that such an interaction is present in the current study; however, this study evaluated the number of ACEs as a continuous variable, not as a dichotomous one. Further investigation into interaction effects between ACEs and college student hassles is recommended in addition to evaluation of the low versus high magnitude of ACEs exposure. Swenson, Nordstrom, and Hiester (2008) indicate that peer relationships play

an important role in resilience and mental health during the adjustment to college. Fergusson and Horwood (2003) suggest that resilience plays an important role in buffering individuals from experiencing poor mental health outcomes, in specific regard to childhood adversities. The current study did not seek to explore the interaction effects between ACEs, social support, current life hassles, resilience, and mental health. Therefore, future research into these interaction effects, including studies using path analyses, may prove beneficial.

Demographics Investigation. The current study's focus was not to investigate the obtained demographic factors of school performance, relationship status, and living situation. However, resilience and mental health is considered a predictor of academic achievement and success in college and life (Allan, McKenna, & Dominey, 2014; Eckenrode, Laird, & Doris, 1993; Hartley, 2011). Students who have experienced some adversities but remain academically successful show some of the highest rates of resilience (Kitano & Lewis, 2005). Swenson et al. (2008) indicate that social support plays an important role in resilience and adjustment to college. Investigation of these demographic factors in light of ACEs and current life hassles may prove beneficial to creating interventions for students transitioning into college. Using a covariate analysis may help achieve this goal.

Substance abuse disorders are elevated in individuals with higher rates of ACEs (McLaughlin et al., 2012; Schilling et al., 2007). These disorders are more common in Caucasians than other ethnicities (Schilling et al., 2007). Future studies should investigate the association between ACEs, mental health, resilience, and substance abuse.

Varese et al. (2012) indicated that childhood adversities increase the risk of psychosis across demographic variables. Given the current restriction of range in age and demographics, further studies should consider more demographic diversity. Further, bridging the literature between concurrent medical and mental health outcomes in association to ACEs, mental health, and resilience rates would prove beneficial (Ford et al., 2014).

Implications of Research

There are numerous concerns and needs of university students with poor mental health that necessitate the construction of good interventions which utilize coping strategies and protective factors (Southwick & Charney, 2012; Steinhardt & Dolbier, 2008; Weiner & Wiener, 1996). As indicated by Fergusson and Horwood (2003), and supported in the current study, resilience may help buffer the deleterious effects of ACEs and current college student hassles. Further, in conjunction with social support, resilience is found to improve mental health in the college student population in the current study and in previous research (DeRosier et al., 2013; Hartley, 2011; Hartley, 2012). Given that not all stressors faced by students in college can be eliminated, resilience interventions may empower students to use protective factors such as social support, coping strategies and reappraisal of stressors, thus helping improve student mental health, as suggested by Hartley (2012). The current study's results support the potential efficacy of interventions comprised of an asset-based, preventative approach promoting resilience and social support. Screening for and promoting resilience and social support as part of interventions in university counseling centers may prove beneficial, in agreement with Hartley (2012). Additional screening for ACEs exposure

and current life adversities may prove helpful in determining potential resilience and mental health outcomes. These screenings may help counseling centers determine more proactive measures of providing support to their students who are experiencing current or previous life adversity.

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