



MSU Graduate Theses

Spring 2019

College Students' Mental Health: Exploring the Relationship with Resilience and Academic Performance

Bailey Hart

Missouri State University, Bailey494@live.missouristate.edu

As with any intellectual project, the content and views expressed in this thesis may be considered objectionable by some readers. However, this student-scholar's work has been judged to have academic value by the student's thesis committee members trained in the discipline. The content and views expressed in this thesis are those of the student-scholar and are not endorsed by Missouri State University, its Graduate College, or its employees.

Follow this and additional works at: <https://bearworks.missouristate.edu/theses>



Part of the [Psychiatry and Psychology Commons](#)

Recommended Citation

Hart, Bailey, "College Students' Mental Health: Exploring the Relationship with Resilience and Academic Performance" (2019). *MSU Graduate Theses*. 3353.

<https://bearworks.missouristate.edu/theses/3353>

This article or document was made available through BearWorks, the institutional repository of Missouri State University. The work contained in it may be protected by copyright and require permission of the copyright holder for reuse or redistribution.

For more information, please contact bearworks@missouristate.edu.

**COLLEGE STUDENTS' MENTAL HEALTH: EXPLORING THE RELATIONSHIP
WITH RESILIENCE AND ACADEMIC PERFORMANCE**

A Master's Thesis

Presented to

The Graduate College of
Missouri State University

In Partial Fulfillment

Of the Requirements for the Degree
Master of Science, Clinical Psychology

By

Bailey Hart

May 2019

Copyright 2019 by Bailey Hart

COLLEGE STUDENTS' MENTAL HEALTH: EXPLORING THE RELATIONSHIP WITH RESILIENCE AND ACADEMIC PERFORMANCE

Psychology

Missouri State University, May 2019

Master of Science

Bailey Hart

ABSTRACT

Negative mental health outcomes are becoming increasingly prevalent in college students. Depression, anxiety, and stress have been previously shown to negatively impact academic motivation and performance. Resilience and social support can serve as preventative factors to protect students from this adversity. Resilience is a dynamic process that changes based on environmental factors. An individual's perceptions of social support can be influenced by friends, family, and significant others. Another possible influence in the perception of social support and resilience is race/ethnicity. Social support especially has been viewed differently based on culture. The purpose of this study was to examine the links between resilience, social support, academic success, mental health, and race/ethnicity. The results showed that resilience significantly predicted both stress and depression but failed to predict anxiety. Also, resilience was a mediator in the relationship between depression and academic performance. This study was limited in the scope of participants both in number and location. Future research should focus on further examination of resilience and its connection to academic success, as well as interventions to improve it.

KEYWORDS: resilience, mental health, social support, academic performance, college students

**COLLEGE STUDENTS' MENTAL HEALTH: EXPLORING THE RELATIONSHIP
WITH RESILIENCE AND ACADEMIC PERFORMANCE**

By

Bailey Hart

A Master's Thesis
Submitted to the Graduate College
Of Missouri State University
In Partial Fulfillment of the Requirements
For the Degree of Master of Science, Clinical Psychology

May 2019

Approved

Adena Young-Jones, Ph.D., Thesis Committee Chair

Ann Rost, Ph.D., Committee Member

CaSandra Stanbrough, Ph.D., Committee Member

Julie Masterson, Ph.D., Dean of the Graduate College

In the interest of academic freedom and the principle of free speech, approval of this thesis indicates the format is acceptable and meets the academic criteria for the discipline as determined by the faculty that constitute the thesis committee. The content and views expressed in this thesis are those of the student-scholar and are not endorsed by Missouri State University, its Graduate College, or its employees.

ACKNOWLEDGEMENTS

I would like to thank my chair Dr. Adena Young-Jones for her guidance in the thesis process from beginning to end. I would also like to thank Dr. Ann Rost and Dr. CaSandra Stanbrough for serving as my committee members and helping me complete my thesis. Finally, thank you to the Coordinator of RStats Institute, Jessica Willis, for answering my endless questions about R.

TABLE OF CONTENTS

Introduction.....	Page 1
Resilience.....	Page 2
Social Support.....	Page 3
Academic Motivation.....	Page 5
Race/Ethnicity.....	Page 5
Present Study	Page 7
Methods.....	Page 8
Participants.....	Page 8
Materials	Page 8
Procedure	Page 10
Results	Page 11
Data Screening	Page 11
Regression (Hypothesis 1).....	Page 12
ANOVA (Hypothesis 2, 3, & 4)	Page 13
Mediation (Hypothesis 5 & 6)	Page 15
Discussion.....	Page 18
Hypotheses.....	Page 18
Limitations	Page 21
Future Research	Page 22
Conclusion	Page 22
References.....	Page 23
Appendix.....	Page 39

LIST OF TABLES

Table 1. Rate of mental health problems for students.	Page 29
Table 2. Depression regression.....	Page 30
Table 3. Anxiety regression	Page 31
Table 4. Stress regression	Page 32

LIST OF FIGURES

Figure 1. Friends and resilience	Page 33
Figure 2. Stress and GPA.....	Page 34
Figure 3. Depression mediation	Page 35
Figure 4. Anxiety mediation	Page 36
Figure 5. Stress mediation.....	Page 37
Figure 6. Race/ethnicity mediation.....	Page 38

INTRODUCTION

A pervasive and potentially destructive problem exists within the college student population. Mental health is of the utmost importance to overall health and well-being. Currently, there is an increase in the number of students expressing mental health concerns (Auerbach et al., 2018; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Grøtan, Sund, & Bjerkeset, 2019; Twenge, Gentile, DeWall, Ma, Lacefield, & Schurtz, 2010). Zivin, Eisenberg, Gollust, and Golberstein (2009) determined that over a third of college students report some type of mental health problem. Sixty percent of students who report a mental health problem continue to report that same problem, and likely another, two years later. Mental health problems in college students can have negative impacts on their education.

Depression, anxiety, and stress significantly predict reduced academic performance (Ahmed & Julius, 2015; Eisenberg, Golberstein, & Hunt, 2009). Students who have diagnosable symptoms of anxiety report lower admission test scores and cumulative GPA in college (Eisenberg, et al., 2009). Depression has a negative relationship with GPA and is a predictor for an increased risk of dropping out of college. Additionally, students who state they have severe symptoms of psychological distress are less likely to endorse academic self-efficacy (Grøtan et al., 2019). There are several sources of protection to guard against negative outcomes in academia.

It would be nearly impossible to prevent daily stressors related to decreased mental health. In order to combat negative mental health outcomes, it is imperative to determine protective influences. The purpose of this study is to evaluate the relationships between mental health, resilience, social support, and academic performance. The goal is to determine if

resilience and social support are related to decreased adverse mental health outcomes which could result in greater academic performance and motivation. Another goal is to look at race/ethnicity in relation to both social support and resilience.

Resilience

One preventative factor of an unhealthy mental state is resilience. Masten, Best, and Garmezy (1990) define resilience as “the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances” (p. 426). Connor & Davidson (2003) propose a list of several characteristics of resilience: commitment, viewing stress and/or change as an opportunity, capacity to comprehend the limits of control, ability to accept support from others, secure attachment in relationships, having goals, self-efficacy, past success, sense of humor, patience, tolerance of negative affect, ability to adapt, optimism, and faith.

Resilience is conceptualized in a couple of ways. The first is that resilience is a stable fixed trait (Block & Block, 1980). However, with this view, resilience is not influenced by the environment, which is a key part of an individual’s ability to adapt to change (Roberts & Masten, 2004). Therefore, resilience as a fixed and stable trait is not an all-encompassing definition. The second perspective states that resilience is more of a dynamic process (Luthar, Cicchetti, & Becker, 2000). This is the idea that resilience is impacted by interactions with the surrounding environment (i.e., friends or social system; Dyer & McGuinness, 1996). As an adaptive process, resilience can be increased and allow for individual growth. It is through the process of resilience that students can protect themselves against mental health problems.

Resilience is positively related to life satisfaction (Hu & Wang, 2015; Rathore, 2017), positive affect, and optimism (Lee, Nam, Kim, Kim, Lee, & Lee, 2013). In addition, it appears

to provide a barrier against negative events in an individual's daily life as well as improve the ability to handle potential threats (Davydov, Stewart, Ritchie, & Chaudieu, 2010; Hu & Wang, 2015). High levels of resilience are associated with less perceived stress (Connor & Davidson, 2003) and suicidal thoughts (Izadinia, Amiri, Jahromi, & Hamidi, 2010). Ahmed and Julius (2015) found that resilience is inversely related to depression, anxiety, and stress (Haddadi & Besharat, 2010; Hu & Wang, 2015).

Resilience is also a factor in academic engagement. Finn and Rock (1997) determined that high school students with higher levels of resilience are more likely to be engaged in class regardless of risk factors (i.e., low socioeconomic status or race). Classroom engagement is a contributor to academic performance (Lee, 2013; Salanova, Schaufeli, Martinez, & Bresó, 2009; Singh, Granville, & Dika, 2002). As resilience plays a role in increasing student engagement, it is likely to be linked to higher academic performance. In addition to improved academic success, increased resilience is correlated with strong social support (Connor & Davidson, 2003).

Social Support

Another protective factor against adverse mental health outcomes is social support. A major theoretical perspective of social support hypothesizes that this construct decreases the impact of adverse or stressful life events on an individual's health (Lakey & Cohen, 2000). Cohen and McKay (1984) explain further in a stress-support matching hypothesis that social support is an effective buffer for negative life events as long as the amount of support received is equivalent to the demands of stressors. Additionally, social support is negatively related to internalizing anxiety and depression (Compas, Slavin, Wagner, & Vannatta, 1986; Martire, Stephens, & Townsen, 1998).

Protection from stress occurs through support from others or the belief that the support exists. Wethington and Kessler (1986) reported that perceived social support is equal to, if not more indicative of, mental health than actual support (McDowell & Serovich, 2007). This support can be derived from a variety of sources including family (Tompkins, Brecht, Tucker, & Neander, 2016), friends (Procidano & Heller, 1983), and significant others (Zimet, Dahlem, Zimet, & Farley, 1988). Adequate perceived social support can be a source of protection against depression, anxiety, and stress, as well as other mental health problems (Hefner & Eisenberg, 2009).

Additionally, high levels of perceived quality of social support is linked to decreased likelihood of depression and anxiety. In a ten-year follow-up study, Dalgard, Bjørk, and Tambs (1995) found that individuals who experience negative life events endorse less mental health adversity when they perceive themselves to be socially supported. Another study examined the effects of social support on intimate partner violence and determined that more support is related to a reduced risk for poor mental health (Coker, Smith, Thompson, McKeown, Bethea, & Davis, 2002).

In addition to protection from adverse mental health outcomes, social support is also linked to greater academic performance in the college setting (Cutrona, Cole, Colangelo, Assouline, & Russell, 1994; DeBerard, Spielmans, & Julka, 2004). Social support is also related to increased academic persistence (Nicpon, Huser, Blanks, Sollenberger, Befort, & Robinson Kurpius, 2006). Wentzel, Battle, and Looney (2001) discovered that children are more likely to show engagement and be motivated for school work if they are supported socially by both peers and family.

Academic Motivation

Deci and Ryan's (1985, 1991) Self-Determination Theory (SDT) is one of the predominant theories to explain academic motivation. The proposed theory states that students' academic behavior can be motivated intrinsically, extrinsically, or amotivated. Intrinsic motivation is partaking in a behavior because of internal rewards or natural satisfaction. An example of this would be a student studying for a test because they find enjoyment in learning. Extrinsic motivation is related to external rewards prompting certain action. For instance, a student studying hard for a test to receive an A. Unlike the previous two forms of motivation, amotivation is not having any desire to participate, which could be the result of lack of perceived competence or failure to see the value in an activity.

Each construct of motivation contributes to an individual's academic success and their desire to participate (Fortier, Vallerand, & Guay, 1995). Specifically, students who report high academic motivation tend to also report better academic performance (Struthers, Perry, & Menec, 2000). Intrinsic motivation is related to greater self-concept, reduced anxiety in academic areas, and increased academic performance (Gottfried, Gottfried, Morris, & Cook, 2012). Additionally, intrinsic motivation can increase when students perceive their autonomy is supported (Pelletier, Fortier, Vallerand, & Briere, 2001). Feelings of autonomy can also create an opportunity for persistence which leads to increased academic performance.

Race/Ethnicity

Discrimination is a normative occurrence for people of color (García Coll et al., 1996; Ungar, 2011). The discrimination does not have to be overt, even subtle put-downs known as microaggressions can adversely impact an individual (Hollingsworth, Cole, O'Keefe, Tucker,

Story, & Wingate, 2017). Discrimination could have negative effects on self-esteem and world view. In the past, African American, Latinx, and Asian students have endorsed higher levels of depression than White students (Lipson, Kern, Eisenberg, & Breland-Noble, 2018). However, it should be noted that African American and Latinx students also reported they were more well-adjusted (i.e., relationships, self-esteem, purpose, and optimism) than their majority counterparts. This could indicate they would have higher resilience, as determined by Connor and Davidson (2003).

In addition to discrimination, the rate of poverty (Reeves, Rodrigue, & Kneebone, 2016), unemployment (Rodgers, 2008), and college drop-out rates (National Center for Education Statistics, 2015) is much higher among racial minorities. Minority students are at risk for academic failure due to several factors including stress of minority status, discrimination, isolation, and economic disadvantages (Atkinson & Juntunen, 1994). Racial discrimination can lead to academic disengagement and reduced motivation (Taylor, Casten, Flickinger, Roberts, & Fulmore, 1994). To protect minority students from the adverse effects of discrimination, both resilience and social support provide a buffer against negative mental health outcomes.

Several studies have focused on the protective power of social support in African American (Brown, 2008; Dressler & Badger, 1985; Mandara & Murray, 2002) and Hispanic populations (Malecki & Demaray, 2006). Social support has been linked to better academic performance (Cutrona et al., 1994; Malecki & Demaray, 2006) in African Americans and European Americans, but not Hispanic Americans (Young, Johnson, Hawthorne, & Pugh, 2011). The perception of social support is critical depending on culture. Taylor, Welch, Kim, and Sherman (2007) discovered that Asian Americans who receive support implicitly, knowing they have a support network, report less stress. However, if they are supported explicitly or as a result

of seeking out emotional support, it can increase stress, highlighting the importance of awareness of cultural differences. In contrast, European Americans benefit more from explicit social support.

Present Study

This study explores the relationship between mental health, social support, resilience, race/ethnicity, and academic performance.

Hypothesis 1. Based on previous research (Connor & Davidson, 2003; Davydov et al., 2010; Hefner & Eisenberg, 2009; McDowell & Serovich, 2007), it is expected that high resilience and social support will predict decreased depression, stress, and anxiety.

Hypothesis 2. It is also expected this study will produce similar findings to Finn and Rock (1997) that higher levels of resilience will result in better academic performance and motivation.

Hypothesis 3. As a result of past findings reporting that social support predicts resilience (Markstrom et al., 2000), it is predicted students with higher levels of perceived social support will have more resilience.

Hypothesis 4. In addition, it is suspected that students with higher academic performance and motivation will have less depression anxiety, and stress.

Hypothesis 5. It is hypothesized that resilience will mediate the relationship between mental health and academic performance.

Hypothesis 6. Finally, it is expected that social support will mediate the relationship between race/ethnicity and resilience.

METHODS

Participants

Students ($N = 181$) from a midsized Midwestern university participated in the study. Recruitment occurred through introductory psychology courses, the senior capstone course, as well as the Diversity and Inclusion office. The mean age was 20 and 75% of the sample reported themselves as female ($n = 136$). A majority of students stated they were White ($n = 146, 80\%$). Students who indicated membership of a racial/ethnic minority (Asian/Pacific Islander [$n = 7, 4\%$], Black [$n = 12, 7\%$], Hispanic [$n = 6, 3\%$], more than one/Biracial [$n = 8, 4\%$], and American Indian [$n = 2, 1\%$]) were combined into one group ($n = 35, 19\%$). A majority of participants were not first-generation students ($n = 108, 60\%$). The average reported GPA was 3.37.

Materials

Combined Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is composed of three subscales: depression (e.g., “I felt that I had nothing to look forward to”), anxiety (e.g., “I felt I was close to panic”), and stress (e.g., “I find it hard to wind down”). The short form is comprised of 21-items answered based on feelings from the past week, which are rated on a scale of 1 (*Did not apply to me at all*) to 4 (*Applied to me very much, or most of the time*). The scale does not determine diagnoses, but a general sense of mental health. This scale demonstrates good internal consistency, with a Cronbach’s α of 0.92 for the depression items, 0.84 for the anxiety items, and 0.85 for the stress items. Before the results of the scale are analyzed the sum of each subscale is multiplied by two in order to be comparable to

the full 42-item version. See Table 1 for a description of mental health outcomes endorsed by students.

The Connor-Davidson Resilience Scale (*CD-RISC-10*; Campbell-Sills & Stein, 2007; Connor & Davidson, 2003). This 10-item Likert-type scale assesses an individual's ability to be resilient (e.g., "I am able to deal with change"). The scale ranges from 0 (*Not true at all*) to 4 (*True nearly all of the time*). The 10-item short form is highly correlated with the full, 25-item version, and it demonstrated high internal consistency, $\alpha = .86$.

Revised Multi-Dimensional Scale of Perceived Social Support (*MSPSS*; Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS determines an individual's perceived social support of significant others (e.g., "There is a special person who is around when I am in need."), friends (e.g., "My friends really try to help me."), and family (e.g., "I can talk about my problems with my family."). It is composed of 12 Likert-type questions, and the scale ranges from 1 (*Very Strongly Disagree*) to 7 (*Very Strongly Agree*). Internal consistency was $\alpha = .94$ for the significant other factor, $\alpha = .92$ for family, and $\alpha = .93$ for friends.

Academic Motivation Scale (*AMS-C 28*; Vallerand, Pelletier, Briere, Senecal, & Vallieres, 1992). This college version of the scale contains seven subscales divided into three types of intrinsic motivation, three types of extrinsic motivation, and amotivation. Student responses were recorded on 28-items, such as "To prove to myself that I am capable of completing my college degree", with a Likert scale ranging from 1 (*Does not correspond at all*) to 7 (*Corresponds exactly*). The Cronbach's α was .92. Previous researchers have developed a self-determination index (SDI), which combines the scores from each subscale and has a Cronbach's α of .90. (Standage, Duda, & Ntoumanis, 2006). The formula for SDI is as follows:
$$2 \times \text{intrinsic motivation} + \text{identified regulation} - \text{introjected regulation} - 2 \times \text{external regulation}.$$

Demographics Form. This questionnaire is comprised of 16 questions relating to individuals' demographics (i.e., age, gender, student classification, GPA, etc.).

Procedure

Institutional Review Board approval was obtained (IRB-FY2019-262; 11/20/2018), see the Appendix. Then, the study was offered through the Sona System to students in an introductory psychology course for course credit, through a senior capstone course for extra credit, as well as to organizations consisting of historically underrepresented groups. An anonymous link through Qualtrics was distributed to participants. The survey consisted of the consent form and four scales: CD-RISC-10, AMS-C 28, DASS-21, , and MSPSS. Additionally, participants responded to a series of demographics questions.

RESULTS

Data Screening

The sample ($N = 181$) was screened for accuracy, and none of the values were out of range. An examination of missing data was then conducted and found that one individual was missing over 5% of their data. This participant did not complete any aspect of the study beyond the informed consent and the first scale, as they were missing a majority of crucial data, the participant was excluded from further analyses. There were 28 missing data points remaining, and Multivariate Imputation by Chained Equations (MICE; van Buuren & Groothuis-Oudshoorn, 2011) function in R was used to replace these data points. The data was screened for assumptions and outliers for the ANOVAs and again for the regression and mediation. For the ANOVAs, the assumptions were met for additivity, linearity, normality, homogeneity, and homoscedasticity. Two outliers meet the criteria for two for Mahal. An additional nine participants were removed due to missing GPAs. The regression/mediation group failed to meet the assumptions for linearity, homogeneity, and homoscedasticity. A square root transformation was applied and the assumptions for multicollinearity, normality, linearity, homogeneity, and homoscedasticity were all met. Outliers were examined for Leverage, Cook's, and Mahal and there were nine outliers meeting the criteria for two. The final sample consisted of 169 participants for the ANOVAs group and 171 participants for the regression/mediation group. To determine if resilience and social support were correlated, three Pearson's product-moment correlations were run. There was not a significant correlation between resilience and support from significant others ($r(167) = .07, p = .39$) or resilience and support from family ($r(167) = .14, p = .07$). A significant, but weak, positive correlation was found between resilience and support from friends ($r(167) = .19, p = .01$).

Regression (Hypothesis 1)

Three simultaneous multiple linear regressions were utilized to determine if resilience and social support are predictors of mental health. The first model examining whether depression was predicted by resilience and social support was significant ($F(4, 167) = 12.67, p < .001, R^2 = .23$). Twenty three percent of the total variance in depression can be attributed to resilience and social support. This means that resilience and social support have a fairly significant impact on an individual's depression. To determine exactly which factors were the main contributors to the variance individual predictors were looked at within the model. Both resilience ($\beta = -0.21, t(167) = -3.04, p = .003, pr^2 = .052$) and social support from family ($\beta = -0.25, t(167) = -2.88, p = .005, pr^2 = .047$) were significant individual predictors of depression, see Table 2. This indicates that the more familial social support and resilience an individual has, the less self-reported depression. However, social support from significant others ($\beta = -0.08, t(167) = -1.18, p = .240, pr^2 = .008$) and friends ($\beta = -0.15, t(167) = -1.71, p = .090, pr^2 = .017$) were not predictors of depression.

The second simultaneous multiple linear regression to determine if anxiety was predicted by resilience and social support was also significant ($F(4, 166) = 3.94, p = .004, R^2 = .09$). A small percentage, nine percent, of the variance in anxiety can be attributed to resilience and social support. This indicates that resilience and social support have little impact on the level of anxiety. There were not any individual significant predictors of anxiety; including resilience ($\beta = -0.15, t(166) = -1.97, p = .052, pr^2 = .022$), social support of family ($\beta = -0.18, t(166) = -1.93, p = .055, pr^2 = .022$), friends ($\beta = -0.08, t(166) = -0.87, p = .386, pr^2 = .005$), or significant others ($\beta = -0.001, t(166) = -0.02, p = .99, pr^2 < .001$), see Table 3. This lack of individual predictors is

likely due to the small portion of the variance attributed to the protective factors. Regardless of social support or resilience, it seems people still report the same level of anxiety.

A final simultaneous multiple linear regression was run to examine if stress was predicted by social support and resilience. The overall model was significant ($F(4, 167) = 4.59, p = .002, R^2 = .10$) and attributed 10 percent of the variance to resilience and social support. Similar to anxiety, this is a small portion of the variance and makes a small impact on stress. Only resilience ($\beta = -0.16, t(167) = -2.11, p = .036, pr^2 = .026$) was a significant individual predictor of stress. This means that stress is lower for individuals with higher resilience. However, social support from family ($\beta = -0.16, t(167) = -1.68, p = .095, pr^2 = .001$), significant others ($\beta = 0.14, t(167) = 1.78, p = .076, pr^2 = .019$), or friends ($\beta = -0.13, t(167) = -1.38, p = .168, pr^2 = .011$) were not significant predictors of stress, see Table 4. The results show that although resilience predicts reduced stress, social support does not.

ANOVA (Hypothesis 2, 3, & 4)

Hypothesis 2. Resilience was not found to significantly interact with academic performance or motivation. Two separate ANOVAs were run with resilience as the independent variable for both. Both met the assumptions for Levene's test as they were not significant (GPA and resilience [$F(2, 166) = 1.52, p = .22$]; motivation and resilience [$F(2, 166) = 0.07, p = .93$]), therefore no corrections were applied. The interaction between GPA and resilience was also insignificant ($F(2, 166) = 1.41, p = .25, \eta^2 = .02$). When comparing motivation and resilience the relationship was also insignificant ($F(2, 166) = 2.20, p = .11, \eta^2 = .03$).

Hypothesis 3. ANOVAs were utilized to determine the relationship between social support and resilience. Levene's test was not significant for any factor of social support

(significant other [$F(2, 166) = 2.98, p = .05$]; family [$F(2, 166) = 0.72, p = .49$]; or friends [$F(2, 166) = 1.24, p = .29$]). The interactions between resilience and social support from family ($F(2, 166) = 0.57, p = .56, \eta^2 = .01$) and significant others ($F(2, 166) = 2.77, p = .07, \eta^2 = .03$) were insignificant. The interaction between friends and resilience was significant ($F(2, 166) = 4.92, p = .008, \eta^2 = .06$), see Figure 1. A post hoc Independent T-test with a Bonferroni adjustment was run. High resilience was not significantly different from mid ($p = 1, ds = 0.03$) or low resilience ($p = .14, ds = -0.44$). However, there was a significant difference between low and mid resilience ($p = .01, ds = -0.51$) with a medium effect. This indicates that individuals with low resilience perceive significantly less support from their friends than individuals who endorse mid-range resilience.

Hypothesis 4. ANOVAs were also used to determine the relationship between mental health and academic success. Levene's test was not significant for GPA (depression [$F(4, 164) = 0.91, p = .46$]; anxiety [$F(4, 164) = 0.08, p = .99$]; stress [$F(4, 164) = 0.88, p = .48$]) or academic motivation (depression [$F(4, 164) = 2.69, p = .03$]; anxiety [$F(4, 164) = 0.19, p = .94$]; stress [$F(4, 164) = 0.53, p = .71$]). The interactions between depression and academic performance ($F(4, 164) = 1.01, p = .41, \eta^2 = .02$), as well as anxiety and academic performance ($F(4, 164) = 0.97, p = .42, \eta^2 = .02$) were also not significant. In addition, the interactions between academic motivation and mental health (depression [$F(4, 164) = 2.38, p = .06, \eta^2 = .05$]; anxiety [$F(4, 164) = 1.71, p = .15, \eta^2 = .04$]; stress [$F(4, 164) = 1.51, p = .20, \eta^2 = .04$]) were all insignificant.

There was a significant interaction between stress and academic performance ($F(4, 164) = 3.64, p = .01, \eta^2 = .08$), see Figure 2. A post hoc Independent T-test with a Bonferroni adjustment was run to further examine the interaction between stress and academic performance. Extremely severe stress was not significantly different from low ($p = 1, ds = 0.13$), moderate ($p =$

.64, $ds = 0.75$), or normal ($p = .29$, $ds = 0.77$) stress levels. Extremely severe stress was significantly different from severe ($p = .05$, $ds = 1.35$) stress. This indicates that students who endorsed extremely severe stress had noticeably lower GPAs than students who reported severe stress. Severe stress was not significantly different from moderate ($p = 1$, $ds = -0.58$) or normal ($p = 1$, $ds = -0.44$) stress. It was significantly different from low stress ($p = .02$, $ds = -0.91$). Contrary to the previous finding, this indicates that students with low stress have lower GPAs than those with severe stress. Moderate stress was not significantly different from low ($p = .66$, $ds = -0.49$) or normal ($p = 1$, $ds = 0.05$) stress levels. There was also not a significant difference between low and normal ($p = .16$, $ds = 0.56$) stress.

Mediation (Hypothesis Question 5 & 6)

Hypothesis 5. A series of mediations were utilized to determine whether mental health is mediated by resilience. The first model was to see if depression predicted academic performance mediated by resilience, see Figure 3. Depression was a significant negative predictor of academic performance ($b = -0.07$, $t(162) = -2.28$, $p = .01$). Also, depression had a negative impact on resilience, meaning an individual who rates their depression higher will have less resilience ($b = -0.11$, $t(162) = -3.92$, $p < .001$). When controlling for depression, resilience did not significantly impact GPA ($b = 0.05$, $t(161) = 0.60$, $p = .55$), consistent with the previous finding. However, when controlling for resilience, depression significantly negatively impacted academic performance ($b = -0.07$, $t(161) = -2.24$, $p = .03$). This indicates that resilience mediates the relationship between depression and academic performance.

The second model looked at anxiety as a predictor of academic performance mediated by resilience, see Figure 4. Anxiety was a significant negative predictor of academic performance

($b = -0.06$, $t(161) = -2.12$, $p = .04$). Also, anxiety had a negative impact on resilience, meaning an individual who reported higher anxiety indicated lower resilience ($b = -0.07$, $t(161) = -3.92$, $p = .02$). When controlling for anxiety, resilience had a positive impact on academic performance ($b = 1.15$, $t(160) = 1.96$, $p = .05$). However, when controlling for resilience, anxiety did not have a significant impact on academic performance ($b = -0.05$, $t(160) = -1.76$, $p = .08$). Therefore, resilience was not a significant mediator between anxiety and academic performance.

The third model used stress as the predictor of academic performance mediated by resilience, see Figure 5. Stress was not a significant predictor of academic performance ($b = -0.01$, $t(161) = -1.35$, $p = .18$). It did have a negative impact on resilience, meaning those who indicated a higher level of stress level also reported lower resilience ($b = -0.12$, $t(161) = -2.41$, $p = .02$). When controlling for stress, resilience did not have a significant effect on academic performance ($b = 0.01$, $t(160) = 1.16$, $p = .25$). Additionally, when controlling for resilience, stress did not have a significant impact on academic performance ($b = -0.01$, $t(160) = -1.11$, $p = .27$), meaning resilience did not mediate the relationship between stress and academic performance.

Hypothesis 6. A mediation was also used to explore the relationship between ethnicity/race, social support, and resilience. It was hypothesized that race would predict resilience with social support as a mediator, see Figure 6. Ethnicity/race was not a significant predictor of resilience ($b = 0.38$, $t(175) = 1.68$, $p = .09$). Also, ethnicity/race did not have a significant impact on social support ($b = -0.46$, $t(175) = -0.36$, $p = .72$). When controlling for ethnicity/race, social support had a significant impact on resilience ($b = 0.89$, $t(174) = 2.11$, $p = .04$). Although, when controlling for social support, ethnicity/race did not have a significant

impact on resilience ($b = -0.80$, $t(174) = -0.63$, $p = .53$). Social support did not mediate the relationship between ethnicity/race and resilience.

DISCUSSION

College students are negatively impacted by depression, anxiety, and stress (Auerbach et al., 2018; Zivin et al., 2009). This can lead to reduced academic motivation and performance (Eisenberg et al., 2009; Gottfried et al., 2012; Struthers et al., 2000). In order to best reduce this phenomenon, it is important to understand what constructs act as preventative measures. Two of these constructs are social support (Lakey & Cohen, 2000; Martire et al., 1998; Zimet et al., 1988) and resilience (Connor & Davidson, 2003; Davydov et al., 2010; Hu & Wang, 2015). The current study looked at both resilience and social support as they relate to mental health, race/ethnicity, academic performance, and motivation.

Hypotheses

Hypothesis 1. It was expected that high resilience and social support would predict decreased depression, stress, and anxiety. Overall, the hypothesis was partially supported. Resilience acted as a significant predictor of depression, anxiety, and stress. Meaning, when students endorsed the ability to bounce back from negative life events, they were less likely to be endorse a common mental health problem. This finding is supported by Hu and Wang's (2015) study which purported that resilience reduced adverse mental health. Additionally, social support was a significant predictor of depression. In other words, students who reported they were depressed, stressed, or anxious also reported less social support. However, as individual predictors, only resilience and social support from family predicted depression, no individual factors predicted anxiety, and stress was only predicted by resilience. It is possible that only a culmination of these factors is enough to protect against negative mental health outcomes.

Familial social support was a significant predictor of depression. When a student feels support from their family, they are less likely to be depressed. This is partially supported by Hefner and Eisenberg (2009) who found that negative mental health outcomes are less likely for those who perceive greater social support. However, the current results showed social support from friends and significant others, as well as family for stress and anxiety, were not predictors for mental health. Since college is such a transitory time, students might not feel the same level of dependability and support from their friends and significant others.

Hypothesis 2. It was suspected that higher levels of resilience would result in better academic performance and motivation. This hypothesis was not supported. Resilience and academic performance, as well as motivation, appear to be unrelated. Higher resilience does not increase academic performance or motivation as expected. Since this is not a largely researched area, the hypothesis was highly speculative. It was based on the idea that since resilience is a factor in academic engagement (Finn & Rock, 1997), and that is linked to increased academic performance (Lee, 2013), then it would also be linked to resilience.

Hypothesis 3. It was predicted that students with more perceived social support would have higher resilience. The hypothesis was partially supported. Resilience was connected to social support of friends. Specifically, a difference was discovered in how individuals with low resilience and mid resilience perceived social support from their friends. An explanation of this relationship could be that the greater the resilience, the better a student's ability to perceive support from their friends. This is somewhat in line with previous research by Brown (2008) that connected all three factors of social support and resilience. Contrary to the hypothesis, resilience was not linked to social support from family or significant others. It is possible that regardless of resilience students are able to perceive support from their family and significant

others. Perhaps because the strength of the relationship to family and significant others is stronger than to friends and therefore less prone to questioning the quality of the relationship.

Hypothesis 4. It was expected that students with higher academic performance and motivation would report lower depression, anxiety, and stress. The hypothesis was partially supported. Mental health was not related to academic motivation. Since the research directly connecting academic motivation to mental health is limited, this finding could be within normal expectation. In addition, there was not an interaction between depression and academic performance, or anxiety and academic performance. This discovery disagrees with past research which has determined that negative mental health outcomes are related to decreased academic performance (Ahmed & Julius, 2015). A possible explanation might be that there was not a significant enough sample of students with anxiety and depression above what is considered normal to determine differences.

Stress and academic performance were shown to be related. Students who reported extremely severe stress had noticeably lower GPAs than students who reported severe stress. This finding is congruent with previous research reporting that GPA is negatively related to lower mental health outcomes (Eisenberg et al., 2009). Additionally, students with low stress have lower GPAs than those with severe stress. This discovery is interesting because instead of a negative relationship between stress levels and GPA, severe stress seems to work to benefit a student's performance rather than acting as a hinderance. Perhaps some stress is good for academic performance, but once a student reaches the threshold of extremely severe stress, they are no longer able to excel.

Hypothesis 5. It was suspected that resilience would mediate the relationship between mental health and academic performance. The hypothesis was partially supported. Resilience

mediated the relationship between depression and academic performance. This finding indicates that when students have high depression, but also have high resilience, they are more likely to have a better GPA than students who have low resilience and high depression. Contrarily, resilience did not mediate the relationship between stress and academic performance or anxiety and academic performance. This means that resilience did not significantly impact GPA for an individual with high anxiety or stress.

Hypothesis 6. It was also hypothesized that social support would mediate the relationship between race/ethnicity and resilience. Researchers have found that perceived social support is related to resilience (Brown, 2008). Young and colleagues (2011) determined that social support is predictive of academic success in both African Americans and European Americans, but not Hispanic Americans. However, social support failed to mediate the relationship between ethnicity/race and resilience. One interpretation of this result might be that while social support and resilience are related, the strength of one does not indicate the strength of another, regardless of race/ethnicity.

Limitations

A major limitation in this study was the sample size. The number of participants was fairly modest and could have lessened the impact of the results. Another limitation was the small size of the ethnic/racial minority group. When comparing the majority to the minority the numbers were significantly skewed and may have altered the findings. Additionally, the average GPA was 3.37 which is rather high, and could have resulted in skewed results. A final limitation was the small scope of the sample in terms of the location. This study was conducted at one

midsized midwestern university. It is possible that expanding the range of data collection would affect the results.

Future Research

Future research should focus on the collection of a larger sample in a more diverse location to ascertain a better understanding of the variables involved in resilience. Additionally, there should be further exploration of effective interventions for improving resilience. Specifically, research could examine resilience as it pertains to increasing academic performance.

Conclusion

This study determined that a combination of resilience and social support significantly predict stress, depression, and anxiety. Exploring effective ways to increase resilience could reduce overall endorsement of common mental health problems in college students. Another notable finding is students who endorse mid-range resilience are able to perceive more support from their friends over those who report low resilience. This finding is important for a more thorough understanding of the interaction between social support and resilience. Additionally, students with low stress have GPAs that are less than students who report severe stress. It seems that a certain level of stress is indicative of success rather than failure. Also, worth noting is that resilience mediates the relationship between academic performance and depression. This is in additional support of finding methods to improve resilience.

REFERENCES

- Ahmed, A., & Julius, S. H. (2015). Academic performance, resilience, depression, anxiety and stress among women college students. *Indian Journal of Positive Psychology*, 6, 367-370.
- Atkinson, D. A., & Juntunen, C. L. (1994). School counselors and school psychologists as school home community liaisons in ethnically diverse schools. In P. Pedersen & J.C. Carey (Eds.). *Multicultural counseling in schools: A practical handbook* (pp. 103-119). Needham Heights, MA: Allyn & Bacon.
- Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., ... & WHO WMH-ICS Collaborators (2018). WHO World Mental Health surveys international college student project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology*. Advance online publication. <http://dx.doi.org/10.1037/abn0000362>
- Block, J. H., & Block, J. (1980). The role of ego-control and egoresiliency in the organization of behavior. In W. A. Collins (Ed.), *Minnesota symposium on child psychology* (Vol. 13, pp. 39–101). Hillsdale, NJ: Erlbaum.
- Brown, D. L. (2008). African American resiliency: Examining racial socialization and social support as protective factors. *Journal of Black Psychology*, 34(1), 32-48. <https://doi.org/10.1177/0095798407310538>
- Cohen, S., & McKay, G. (1984). Social support, stress, and the buffering hypothesis: A theoretical analysis. In A. Baum, S. E. Taylor, & J. E. Singer (Eds.), *Handbook of psychology and health* (Vol. 4, pp. 253-267). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Coker, A. L., Smith, P. H., Thompson, M. P., McKeown, R. E., Bethea, L., & Davis, K. E. (2002). Social support protects against the negative effects of partner violence on mental health. *Journal of Women's Health & Gender-Based Medicine*, 11(5). <https://doi.org/10.1089/15246090260137644>
- Campbell-Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the Connor-Davidson Resilience Scale (CD-RISC): Validation of a 10-item Measure of Resilience. *Journal of Traumatic Stress*, 20(6), 1019-1028.
- Compas, B., Slavin, L., Wagner, B., & Vannatta, K. (1986). Relationship of life events and social support with psychological dysfunction among adolescents. *Journal of Youth & Adolescence*, 15(3), 205–221.
- Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18, 76-82. DOI: 10.1002/da.10113

- Cutrona, C. E., Cole, V., Colangelo, N., Assouline, S. G., & Russell, D. W. (1994). Perceived parental social support and academic achievement: An attachment theory perspective. *Journal of Personality and Social Psychology*, *66*(2), 369-378. <https://dx.doi.org/10.1037/0022-3514.66.2.369>
- Dalgard, O., Bjørk, S., & Tambs, K. (1995). Social support, negative life events and mental health. *British Journal of Psychiatry*, *166*(1), 29-34. <https://doi.org/10.1192/bjp.166.1.29>
- Davydov, D., Stewart, R., Ritchie, K., & Chaudieu, I. (2010). Resilience and mental health. *Clinical Psychology Review*, *Elsevier*, *30*(5), 479-495.
- DeBerard, M. S., Spielmans, G. I., & Julka, D. L. (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal*, *38*(1), 66-80.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska Symposium on Motivation: Vol. 38. Perspectives on motivation* (pp. 237-288). Lincoln: University of Nebraska Press.
- Dressler, W. W., & Badger, L. W. (1985). Epidemiology of depressive symptoms in Black communities: A comparative analysis. *Journal of Nervous and Mental Disease*, *173*(4), 212-220. <https://dx.doi.org/10.1097/00005053-198504000-00002>
- Dyer, J. G., & McGuinness, T. M. (1996). Resilience: Analysis of the concept. *Archives of Psychiatric Nursing*, *10*, 276-282.
- Eisenberg, D., Golberstein, E., & Hunt, J. B. (2009). Mental health and academic success in college. *The B.E. Journal of Economic Analysis & Policy*, *9*(1), 1-35.
- Eisenberg, D., Gollust, S. E., Golberstein, E., & Hefner, J. L. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *American Journal of Orthopsychiatry*, *77*, 534-542.
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology*, *82*(2), 221-234.
- Fortier, M. S., Vallerand, R. J., & Guay, F. (1995). Academic motivation and school performance: Toward a structural model. *Contemporary Educational Psychology*, *20*, 257-274.
- García Coll, C., Lamberty, G., Jenkins, R., McAdoo, H. P., Crnic, K., Wasik, B. H., & Vázquez García, H. (1996). An integrative model for the study of developmental competencies in minority children. *Child Development*, *67*(5), 1891-1914.

- Gottfried, A. E., Gottfried, A. W., Morris, P. E., & Cook, C. R. (2012). Low academic intrinsic motivation as a risk factor for adverse educational outcomes: A longitudinal study from early childhood through early adulthood. In *Academic Motivation and the Culture of School in Childhood and Adolescence* Oxford University Press.
<https://doi.org/10.1093/acprof:oso/9780195326819.003.0003>
- Grøtan, K., Sund, E. R., & Bjerkeset, O. (2019). Mental health, academic self-efficacy and study progress among college students – The SHoT study, Norway. *Frontiers in Psychology*.
<https://doi.org/10.3389/fpsyg.2019.00045>
- Haddadi, P., & Besharat, M. A. (2010). Resilience, vulnerability and mental health. *Procedia Social and Behavioral Sciences*, 5, 639-642. doi:10.1016/j.sbspro.2010.07.157
- Hefner, J., & Eisenberg, D. (2009). Social support and mental health among college students. *American Journal of Orthopsychiatry*, 79(4), 491-499. <https://doi.org/10.1037/a0016918>
- Hollingsworth, D. W., Cole, A. B., O’Keefe, V. M., Tucker, R. P., Story, C. R., & Wingate, L. R. (2017). Experiencing racial microaggressions influences suicide ideation through perceived burdensomeness in African Americans. *Journal of Counseling Psychology*, 64(1), 104-111. <https://dx.doi.org/10.1037/cou0000177>
- Hu, T., & Wang, J. L. (2015). A meta-analysis of the trait resilience and mental health. *Personality and Individual Differences*, 76, 18-27.
<https://doi.org/10.1016/j.paid.2014.11.039>
- Izadinia, N., Amiri, M., Jahromi, R. G., & Hamidi, S. (2010). A study of relationship between suicidal ideas, depression, anxiety, resiliency, daily stresses and mental health among Tehran university students. *Procedia Social and Behavioral Sciences*, 5, 1515-1519.
<https://doi.org/10.1016/j.sbspro.2010.07.335>
- Lakey, B., & Cohen, S. (2000). Social support theory and measurement. In: Cohen, S., Underwood, L. G., Gottlieb, B. H. (Eds.) *Social support measurement and intervention: A guide for health and social scientists* (pp. 29-52). New York: Oxford University Press.
- Lee, J. S. (2013). The relationship between student engagement and academic performance: Is it a myth or reality? *The Journal of Educational Research*, 107(3), 177-185.
<https://doi.org/10.1080/00220671.2013.807491>
- Lee, J. H., Nam, S. K., Kim, A. R., Kim, B., Lee, M. Y., & Lee, S. M. (2013). Resilience: A meta-analytic approach. *Journal of Counseling and Development*, 91, 269-279.
<https://doi.org/10.1002/j.1556-6676.2013.00095.x>
- Lipson, S. K., Kern, A., Eisenberg, D., & Breland-Noble, A. M. (2018). Mental health disparities among college students of color. *Journal of Adolescent Health*, 63, 348-356.
<https://doi.org/10.1016/j.jadohealth.2018.04.014>

- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety inventories. *Behavior Research and Therapy*, *33*(3), 335-343.
- Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for futures work. *Child Development*, *71*, 543–562.
- Malecki, C. K., & Demaray, M. K. (2006). Social support as a buffer in the relationship between socioeconomic status and academic performance. *School Psychology Quarterly*, *21*(4), 375-395).
- Mandara, J., & Murray, C. B. (2002). Development of an empirical typology of African American family functioning. *Journal of Family Psychology*, *16*(3), 318-337. <https://dx.doi.org/10.1037/0893-3200.16.3.318>
- Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology*, *2*, 425-444.
- Martire, L. M., Stephens, M. A., & Townsend, A. L. (1998). Emotional support and wellbeing of mid-life women: Role specific mastery as a mediational mechanism. *Psychology & Aging*, *13*(3), 396–404.
- McDowell, T. L., & Serovich, J. M. (2007). The effect of perceived and actual social support on the mental health of HIV-positive persons. *AIDS Care*, *19*(10), 1223-1229.
- National Center for Education Statistics. (2015). The condition of education 2015 (NCES 2015-144). Retrieved from <https://nces.ed.gov/pubs2015/2015144.pdf>
- Nicpon, M. F., Huser, L., Blanks, E. H., Sollenberger, S., Befort, C., & Robinson Kurpius, S. E. (2006). The relationship of loneliness and social support with college freshmen's academic performance and persistence. *Journal of College Student Retention: Research, Theory, & Practice*. <https://doi.org/10.2190/A465-356M-7652-783R>
- Pelletier, L. G., Fortier, M. S., Vallerand, R. J., & Briere, N. M. (2001). Associations among perceived autonomy support, forms of self-regulation and persistence: A prospective study. *Motivation and Emotion*, *25*(4), 279-306. <http://dx.doi.org/10.1023/A:1014805132406>
- Procidano, M. E., & Heller, K. (1983). Measures of perceived social support from friends and from family: Three validation studies. *American Journal of Community Psychology*, *11*(1).
- Rathore, S. (2017). Life satisfaction among college students: A study exploring the role of resilience. *Indian Journal of Positive Psychology*, *8*(2), 237-239.

- Reeves, R., Rodrigue, E., & Kneebone, E. (2016). *Five evils: Multidimensional poverty and race in America*. Retrieved from https://www.brookings.edu/wp-content/uploads/2016/06/ReevesKneeboneRodrigue_MultidimensionalPoverty_FullPaper.pdf
- Roberts, J. M., & Masten, A. S. (2004). Resilience in context. In R. DeV. Peters, R. McMahon, & B. Leadbeater (Eds.), *Resilience in children, families, and communities: Linking context to practice and policy* (pp. 13–25). New York, NY: Kluwer Academic/Plenum.
- Rodgers, W. M. (2008, September 19). Understanding the Black and White earnings gap: Why do African Americans continue to earn less despite dramatic gains in education? Retrieved from http://www.prospect.org/cs/articles?article=understanding_the_black_white_earnings_gap
- Salanova, M., Schaufeli, W., Martinez, I., & Bresó, E. (2009). How obstacles and facilitators predict academic performance: The mediating role of study burnout and engagement. *Anxiety, Stress, & Coping*, 1-18. <https://doi.org/10.1080/10615800802609965>
- Singh, K., Granville, M., & Dika, S. Mathematics and science achievement: Effects of motivation, interest, and academic engagement. *The Journal of Educational Research*, 95(6), 323-332.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2006). Students motivational processes and their relationship to teacher ratings in school physical education: A self-determination theory approach. *Research Quarterly for Exercise and Sport*, 77(1), 100-110. <http://doi.org/10.1080/02701367.2006.10599336>
- Struthers, C. W., Perry, R. P., & Menec, V. H. (2000). An examination of the relationship among academic stress, coping, motivation, and performance in college. *Research in Higher Education*, 41(5), 581-592.
- Taylor, S. E., Welch, W. T., Kim, H. S., & Sherman, D. K. (2007). Cultural differences in the impact of social support on psychological and biological stress responses. *Psychological Science*, 18(9), 831-837.
- Taylor, R. D., Casten, R., Flickinger, S. M., Roberts, D., & Fulmore, C. D. (1994). Explaining the school performance of African American adolescents. *Journal of Research on Adolescence*, 4(1), 21-44. http://dx.doi.org/10.1207/s15327795jra0401_3
- Tompkins, K., Brecht, K., Tucker, B. and Neander, L. (2016). Who matters most? The contribution of faculty, student-peers, and outside support in predicting graduate student satisfaction. *Training and Education in Professional Psychology*, 10(2), 102-108. <http://dx.doi.org/10.1037/tep0000115>

- Twenge, J. M., Gentile, B., DeWall, C. N., Ma, D., Lacefield, K., & Schurtz, D. R. (2010). Birth cohort increases in psychopathology among young Americans, 1938-2007: A cross-temporal meta-analysis of the MMPI. *Clinical Psychology Review, 30*, 145-154. <http://doi.org/10.1016/j.cpr.2009.10.005>
- Ungar, M. (2011). The social ecology of resilience. Addressing contextual and cultural ambiguity of a nascent construct. *American Journal of Orthopsychiatry, 81*, 1-17.
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The academic motivation scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement, 52*, 1003-1017.
- van Buuren, S. & Groothuis-Oudshoorn, C. G. (2011). MICE: Multivariate Imputation by Chained Equations in R. *Journal of Statistical Software, 45*(3). <https://doi.org/10.18637/jss.v045.i03>
- Wentzel, K. R., Battle, A., & Looney, L. (2001, April). *Classroom support in middle school: Contributions of teachers and peers*. Paper presented at the biannual meeting of the Society for Research in Child Development, Minneapolis, MN.
- Young, A., Johnson, G., Hawthorne, M., & Pugh, J. (2011). Cultural predictors of academic motivation and achievement: A self-deterministic approach. *College Student Journal, 45*(1), 151-163.
- Zivin, K., Eisenberg, D., Gollust, S. E., & Golberstein, E. (2009). Persistence of mental health problems and needs in a college student population. *Journal of Affective Disorders, 117*, 180-185. <https://doi.org/10.1016/j.jad.2009.01.001>

Table 1

Layout of Mental Health for Students (N = 169) after Data Screening

Mental Health	Normal	Low	Moderate	Severe	Extremely Severe
Depression	95	24	20	11	19
Anxiety	85	19	27	14	24
Stress	95	20	27	18	9

Table 2

Multiple Linear Regression Analysis with Depression as the Dependent Variable

Variable	<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	R^2
Overall model				12.67**	167	<.001	.23
Resilience	-3.04	.003	-0.21**				
Family	-2.88	.005	-0.25**				
Friends	-1.71	.090	-0.15				
Significant Other	-1.18	.240	-0.08				

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

Table 3

Multiple Linear Regression Analysis with Anxiety as the Dependent Variable

Variable	<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	R^2
Overall model				3.94**	166	.004	.09
Resilience	-1.97	.052	-0.15				
Family	-1.93	.055	-0.18				
Friends	-0.87	.386	-0.08				
Significant Other	-0.02	.99	-0.001				

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

Table 4

Multiple Linear Regression Analysis with Stress as the Dependent Variable

Variable	<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	R^2
Overall model				4.59**	167	.002	.10
Resilience	-2.11	.036	-0.16*				
Family	-1.68	.095	-0.16				
Friends	-1.38	.168	-1.02				
Significant Other	1.78	.076	0.14				

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

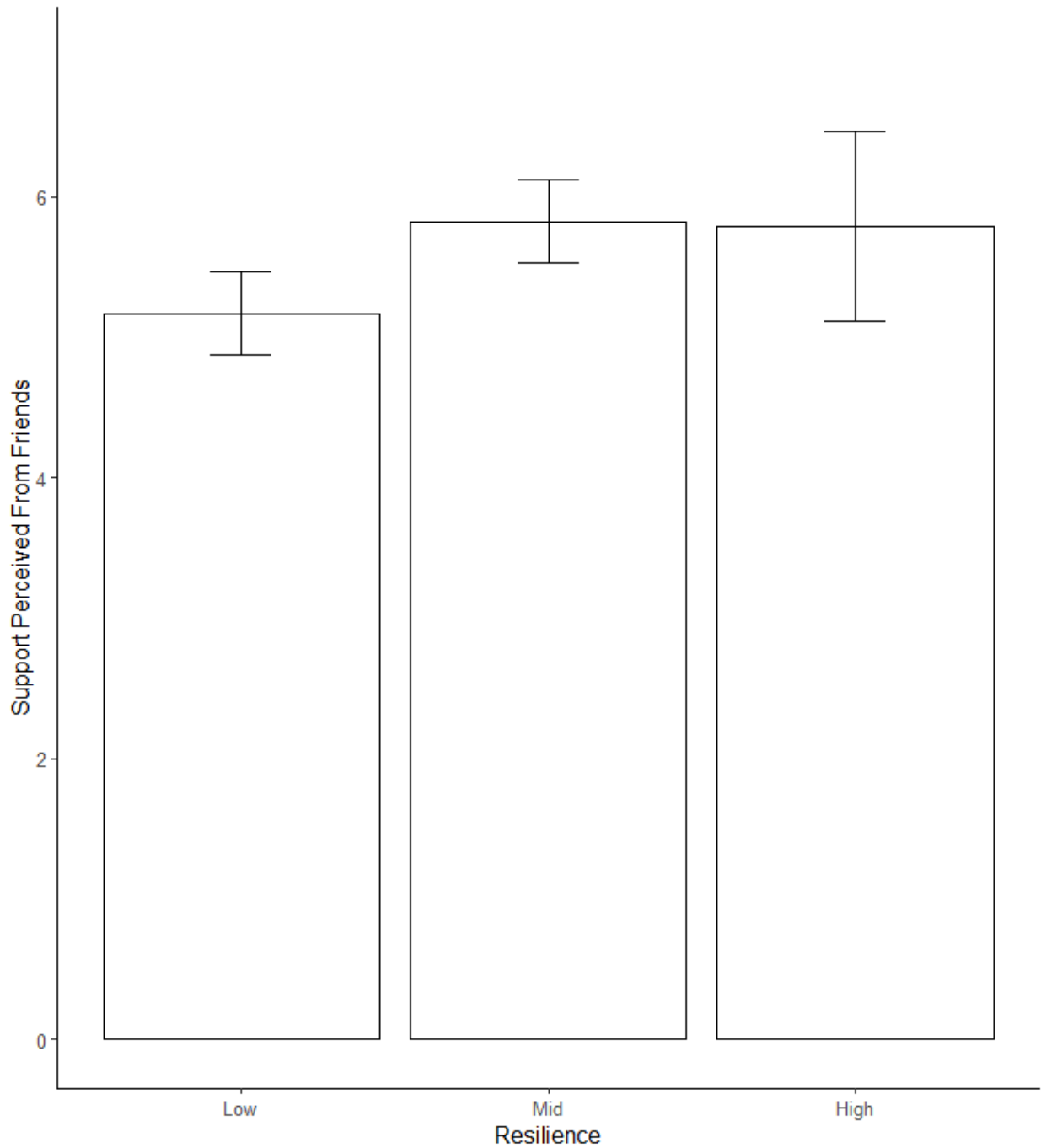


Figure 1. Friends and resilience. Students with low resilience perceive significantly less support from their friends than those with mid-range resilience. There was no difference with high resilience.

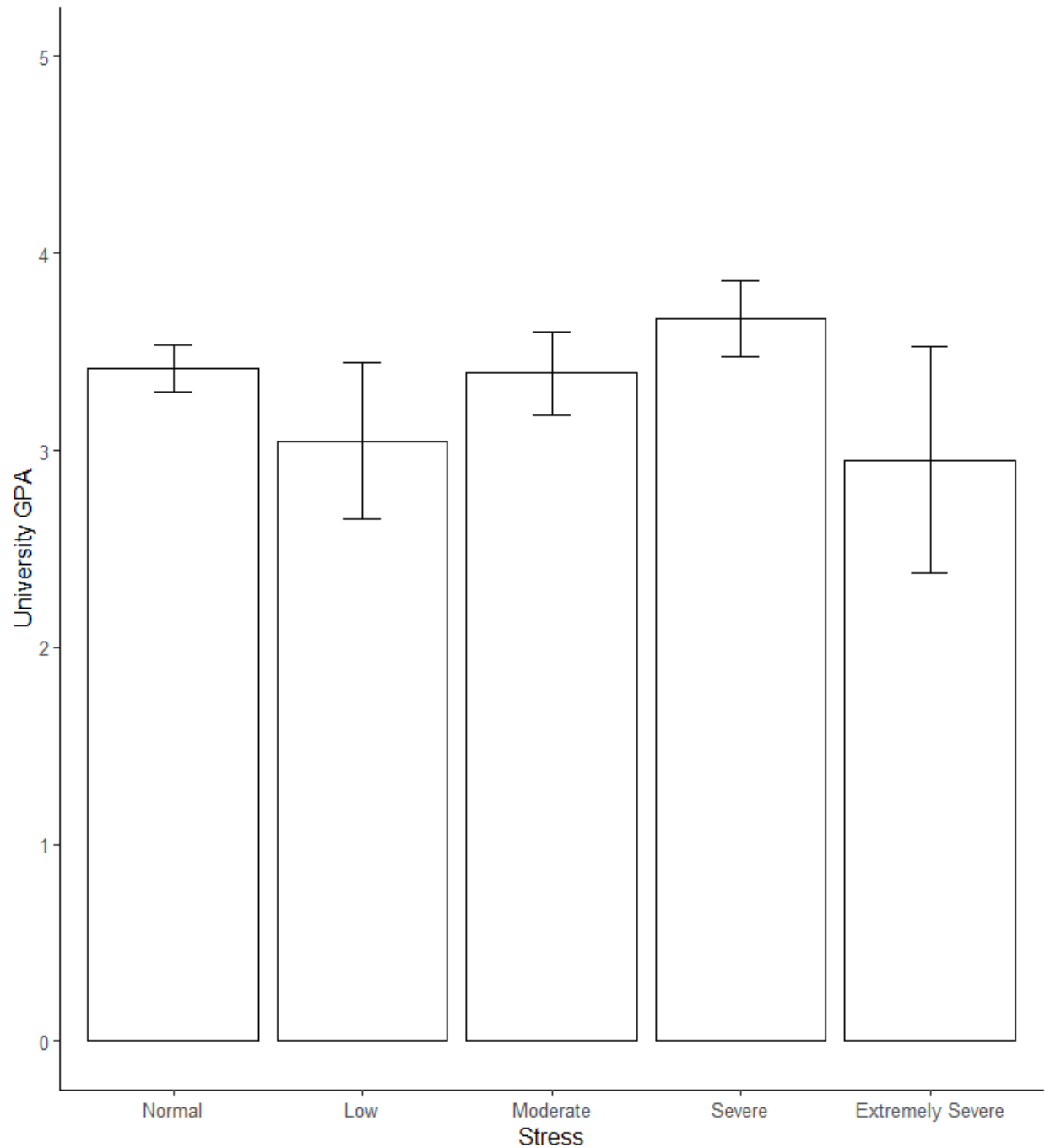


Figure 2. Stress and GPA. Extremely severe stress was only significantly different from severe stress, indicating that students who endorsed extremely severe stress had worse GPAs than students who reported severe stress. Severe stress was only significantly different from low stress, meaning students with low stress have lower academic performance than those with severe stress. No other relationships were significant.

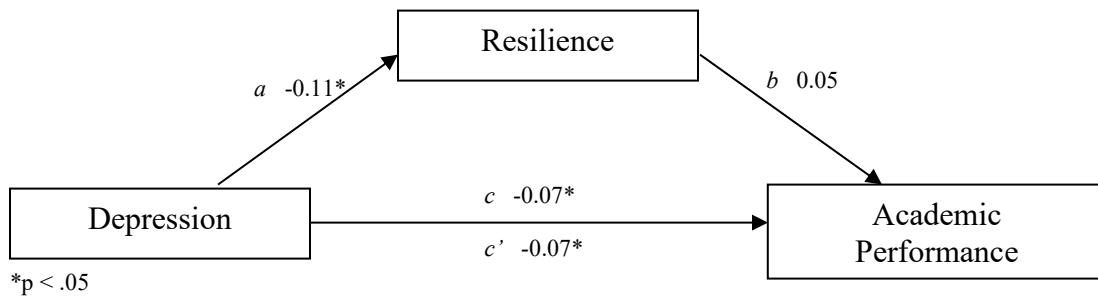


Figure 3. Depression, resilience, and academic performance mediation. Depression predicted academic performance and resilience, but resilience did not predict academic performance. Resilience did mediate the relationship between depression and academic performance.

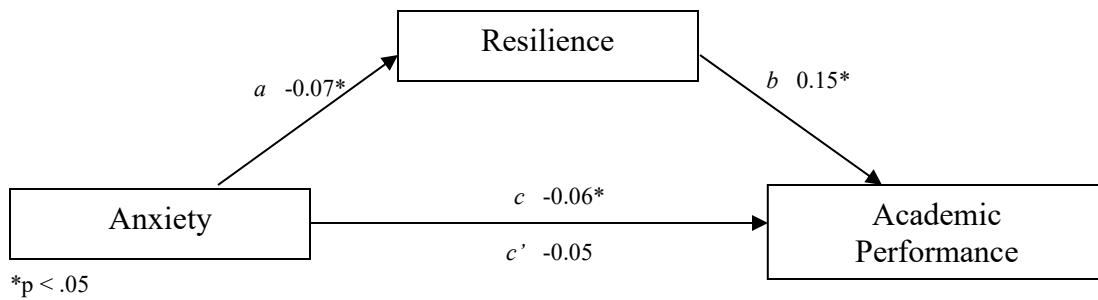


Figure 4. Anxiety, resilience, and academic performance mediation. Anxiety predicted academic performance and resilience. Controlling for anxiety, resilience predicted academic performance. When controlling for resilience anxiety no longer predicted academic performance.

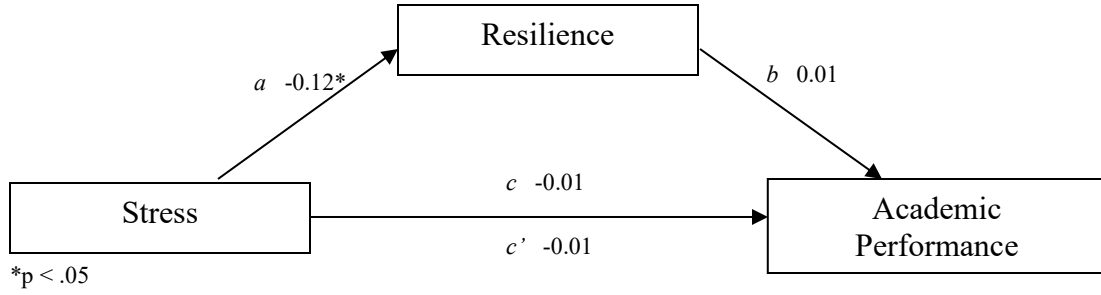


Figure 5. Stress, resilience, and academic performance mediation. Stress predicted resilience, but not academic performance. Resilience did not predict academic performance. Resilience did not mediate the relationship between stress and academic performance.

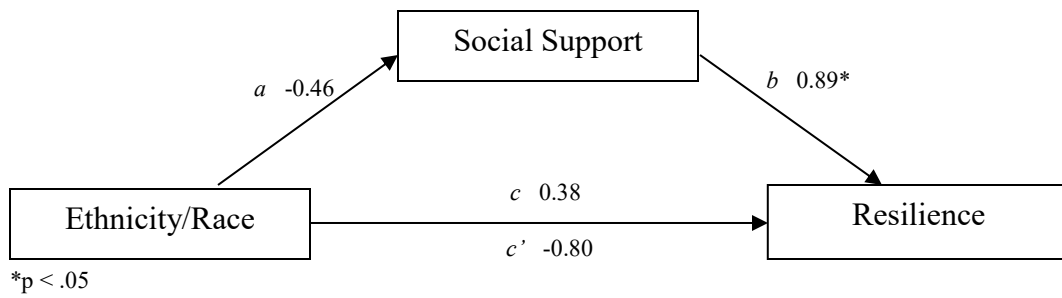


Figure 6. Ethnicity/Race, social support, and resilience mediation. Ethnicity/Race did not predict social support or resilience. Social support did predict resilience. However, social support did not mediate the relationship between ethnicity/race and resilience.

APPENDIX

Date: 2-12-2019

IRB #: IRB-FY2019-262

Title: College Students' Mental Health: Exploring the Relationship with Resilience and Academic Performance

Creation Date: 10-23-2018

End Date: 11-20-2019

Status: **Approved**

Principal Investigator: Adena Young-Jones

Review Board: MSU

Sponsor:

Study History

Submission Type	Initial	Review Type	Expedited	Decision	Approved
-----------------	---------	-------------	-----------	----------	-----------------

Key Study Contacts

Member	Adena Young-Jones	Role	Principal Investigator	Contact	ayoung@missouristate.edu
Member	Bailey Hart	Role	Primary Contact	Contact	bailey494@live.missouristate.edu
Member	Bailey Hart	Role	Investigator	Contact	bailey494@live.missouristate.edu
Member	Ann Rost	Role	Investigator	Contact	annrost@missouristate.edu
Member	CaSandra Stanbrough	Role	Investigator	Contact	cstanbrough@missouristate.edu

Initial Submission

1. General Information

What is the full title of the research protocol?

1A.

College Students' Mental Health: Exploring the Relationship with Resilience and Academic Performance

Abstract/Summary

1B. Please provide a brief description of the project (no more than a few sentences).

The purpose of this study is to determine the relationship between resilience, academic performance, and mental health. The relatively high prevalence of mental health disturbances in college students has been widely examined. Students who have more mental health problems tend to have lower academic performance. Social support and resilience have been shown to provide a buffer for the negative impact of decreased mental health.

Who is the Principal Investigator?

1C.

This MUST be a faculty or staff member.

Name: Adena Young-Jones
Organization: Psychology
Address: 901 S National Ave , Springfield, MO 65897-0027
Phone: 417-836-8914
Email: ayoung@missouristate.edu

Who is the primary study contact?

-
- 1D. *This person may be the Principal Investigator or someone else (faculty, staff, or student). This person, in addition to the PI, will be included on all correspondence related to this project.*

Name: Bailey Hart

Organization: Psychology

Address: 901, S, National Avenue , Springfield, MO 65897-0027

Phone:

Email: bailey494@live.missouristate.edu

Select the Co-Principal Investigator(s).

- 1E. *This MUST be a faculty or staff member. **Persons listed as Co-PIs will be required to certify the protocol** (in addition to the PI). This person will also be included on all correspondence related to this project.*

Select the Investigator(s).

An investigator may be faculty, staff, student, or unaffiliated individuals.

Name: Bailey Hart

Organization: Psychology

Address: 901, S, National Avenue , Springfield, MO 65897-0027

Phone:

Email: bailey494@live.missouristate.edu

- 1F.

Name: Ann Rost

Organization: Psychology

Address: 901 S National Ave , Springfield, MO 65897-0027

Phone: 417-836-5406

Email: annrost@missouristate.edu

Name: CaSandra Stanbrough

Organization: Psychology

Address: 901, S, National Avenue , Springfield, MO 65897-0027

Phone:

Email: cstanbrough@missouristate.edu

2. Research Protocol

Describe the proposed project in a manner that allows the IRB to gain a sense of the project including:

- the research questions and objectives,
- key background literature (supportive and contradictory) with references, and
- the manner in which the proposed project will improve the understanding of the chosen topic.

College students' mental health has been a widely researched topic. Zivin, Eisenberg, Gollust, and Golberstein (2009) found that over a third of college students reported some type of mental health problem. In a two-year follow-up it was discovered that 60% of the students who reported a mental health problem in the first survey also reported it in the second. In addition, the presence of one mental health problem was shown to be predictive of having another two years later.

Depression, anxiety, and stress have been shown to significantly predict academic performance, specifically those experiencing higher levels of negative symptoms report lower academic performance (Ahmed & Julius, 2015; Eisenberg, Golberstein, & Hunt, 2009). Students who have diagnosable symptoms of anxiety report lower admission test scores and cumulative GPAs in college (Eisenberg, et al.). Also, depression was determined to have a negative relationship with GPA and a predictor of increased odds of dropping out of college. It would be nearly impossible to prevent daily stressors related to decreased mental health. In order to combat negative outcomes, it is imperative to determine different ways of improving mental health.

A major theoretical perspective of social support hypothesizes that support decreases the impact of adverse or stressful life events on an individual's health (Lahey & Cohen, 2000). This protection from stress occurs through support from others or the belief that the support exists. Cohen and McKay (1984) explain further in a stress-support matching hypothesis that social support is an effective buffer for negative life events as long as the amount of support received is equivalent to the demands of stressors.

2A.

Adequate social support can also be a source of protection from the negative impact of student outcomes such as depression, anxiety, and stress. In fact, depression, and other mental health problems, were found to be significantly related to low levels of social support (Hefner & Eisenberg, 2009). The alternative is also true; high levels of perceived quality of social support were linked with decreased likelihood of depression and anxiety. Strong social support has also been linked to higher levels of resilience, which is another protective factor in mental health (Connor & Davidson, 2003).

Masten, Best, and Garmezy (1990) define resilience as "the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances" (p. 426). A portion of individuals encounter relatively good psychological outcomes regardless of exposure to negative experiences; normally resulting in adverse mental health consequences (Rutter, 2006). Resilience has also been defined as successful adaptation to adverse circumstances through personal

characteristics (Zatura, Hall, & Murray, 2010).

Richardson (2002) proposed a biopsychospiritual model of resilience (Richardson, Neiger, Jensen, & Kumpfer, 1990). The idea was that several influences can impact the regeneration and homeostasis of resilience (i.e., mind, body, and spirit). Those influences were adapted depending on internal and external factors. A person's ability to cope with life events is influenced by both effective and ineffective adaptations to prior circumstances. When adaptations are unsuccessful, they disrupt the biopsychospiritual homeostasis and can lead to a variety of outcomes. One possibility is an opening for growth and increased resilience. Another is a return to the previous level of resilience, baseline homeostasis. A third possible consequence is a recovery but results in a loss of resilience. The final outcome could be a dysfunctional state of maladaptive strategies, such as self-destructive behavior, that is used to cope negative life events.

Resilience is positively related to life satisfaction (Hu & Wang, 2015; Rathore, 2017). In addition, it appears to provide a barrier against negative events in an individual's daily life as well as improve the ability to handle potential threats (Davydov, 2010; Hu & Wang). High levels of resilience are associated with less perceived stress (Connor & Davidson, 2003). In contrast, Ahmed and Julius (2015) found that resilience is negatively related to depression, anxiety, and stress (Haddadi & Besharat, 2010; Hu & Wang). Both resilience and social support have the capacity to buffer for negative life events and even simple stress of daily tasks. The influence of these factors can lead to better mental health and possibly even improve academic performance in college students. This study will analyze the interactions between resilience, mental health (depression, anxiety, and stress), academic performance, and social support.

2B. Check all research activities that apply:

Audio, video, digital, or image recordings

Biohazards (e.g., rDNA, infectious agents, select agents, toxins)

Biological sampling (other than blood)

Blood drawing

Class Protocol (or Program or Umbrella Protocol)

Data, not publicly available

Data, publicly available

Deception

- Devices
- Diet, exercise, or sleep modifications
- Drugs or biologics
- Focus groups
- ✓ Internet or email data collection
- Materials that may be considered sensitive, offensive, threatening, or degrading
- Non-invasive medical procedures
- Observation of participants
- Oral history
- Placebo
- Record review
- Specimen research
- Surgical procedures
- Surveys, questionnaires, or interviews (one-on-one)
- Surveys, questionnaires, or interviews (group)
- Other

Describe the procedures and methods planned for carrying out the study. Make sure to include the following:

- site selection,
- the procedures used to gain permission to carry out research at the selected site(s),
- data collection procedures,
- and an overview of the manner in which data will be analyzed.

Provide all information necessary for the IRB to be clear about all of the contact human participants will have with the project.

Students will respond to a demographic form and a series of scales assessing perceived social support, resilience, academic motivation, depression, anxiety and stress. The scales include the Revised Multi-Dimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988), Connor Davidson Resilience scale (CD-RISC; Connor & Davidson, 2003), Academic Motivation Scale (AMS; Vallerand, Pelletier, Briere, Senecal, & Vallieres, 1992), and the Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995).

2C. Special Situations

With the exception of the "Demographic Information Form" the written measures are validated. No special situations for participants are anticipated.

Name and Description of Data Gathering Tools

General Measures: To assess perceived social support, resilience, academic motivation, depression, anxiety and stress all participants will complete the following measures by means of an anonymous online survey.

1. Revised Multi-Dimensional Scale of Perceived Social Support: assesses participant perceived social support overall, from significant others, family, and friends.
2. Connor Davidson Resilience Scale: measures resilience through personal competence, trust in one's instincts or tolerance of negative effects, positive acceptance of change, control and spiritual influences.
3. Academic Motivation Scale: evaluates college student intrinsic, extrinsic, and amotivation in academia.
4. Depression, Anxiety, and Stress Scale: assesses depression (i.e., dysphoria, hopelessness, devaluation of life, self-deprecation, etc.), anxiety (i.e., arousal, situational anxiety, etc.), and stress (i.e., difficulty relaxing, being easily upset or agitated, etc.).
5. Demographic Information Form: collects objective and descriptive information about the students who participate in the study (i.e., classification, ethnicity, generation of college student, grade point average, etc.).

Attach surveys, questionnaires, and other social-behavioral measurement tools, if applicable.

2D.

[Academic Motivation Scale.pdf](#)
[Connor-Davidson Resilience Scale.pdf](#)
[DASS21.pdf](#)
[DEMOGRAPHIC DATA FORM.pdf](#)
[Multidimensional Scale of Perceived Social Support.pdf](#)

3. Participants

3A. Specify the participant population(s). Check all that apply.

Adults

Children (<18 years)

Adults with decisional impairment

Non-English speaking

Student research pools (e.g. psychology)

Specify:

PSY 121: Introductory Psychology Students & historically underrepresented students recruited from the office of Diversity and Inclusion

Pregnant women or fetuses

Prisoners

Unknown (e.g., secondary use of data/specimens, non-targeted surveys, program/class/umbrella protocols)

Specify the age(s) of the individuals who may participate in the research.

3B.

Participants will vary depending on whether they are a traditional or non-traditional student with the majority of ages ranging between 18 and 26, No participants under the age of 17 will partake in this study.

Describe the characteristics of the proposed participants, and explain how the nature of the research requires/justifies their inclusion.

3C.

Participants will consist of undergraduate students from Missouri State University, which may include lower and upper classmen and vary demographically. We seek a representative sample of introductory psychology students at MSU. We also plan to collaborate with the Diversity and Inclusion office to recruit historically underrepresented individuals from Bears L.E.A.D and Brother 2 Brother organizations.

- 3D. Provide the total number of participants (or number of participant records, specimens, etc.) for whom you are seeking Missouri State IRB approval.
-

Approximately 200 students will be recruited to participate in this research study.

- 3F. Estimate the time required from each participant, including individual interactions, total time commitment, and long-term follow-up, if any.
-

Altogether the project will take about 30 minutes to complete.

- 3G. Describe how potential participants will be identified (e.g., advertising, individuals known to investigator, record review, etc.). Explain how investigator(s) will gain access to this population, as applicable.
-

Participants included in this study will be recruited through the Diversity and Inclusion office and the Introductory Psychology (PSY 121) course at Missouri State University. Students who are enrolled in PSY 121 are required to complete research participation credits; they are recruited through the research participation online system (SONA). The data collected from each participant will be kept confidential and anonymous. Researchers will in no way identify the participants' data.

Describe the recruitment process; including the setting in which recruitment will take place. Provide copies of proposed recruitment materials (e.g., ads, flyers, website postings, recruitment letters, and oral/written scripts).

3H.

Participants (N =200) will be recruited from the Introduction to Psychology (PSY 121) research pool through the online research participation system (SONA). We also plan to collaborate with the Diversity and Inclusion office to recruit historically underrepresented individuals.

3H.1. Attach recruitment materials, if applicable.

3I. Will participants receive compensation or other incentives (e.g., free services, cash payments, gift certificates, parking, classroom credit, travel reimbursement, etc.) to participate in the research study?

Yes

Describe the incentive, including the amount and timing of all payments.

Students in the Introductory Psychology (PSY 121) course will receive 1 research participation credit.

No

4. Informed Consent

4A. From the list below, indicate how consent will be obtained for this study.

Check all that apply.

Written/signed consent by the subject

Written/signed consent (permission) for a minor by a Parent or Legal Guardian

Written/signed consent by a Legally Authorized Representative (for adults incapable of consenting).

Request for Waiver of Documentation of Consent (e.g. Verbal Consent, Anonymous Surveys, etc.)

Waiver of parental permission

Consent will not be obtained from subjects (Waiver of Consent)

4B. Describe the consent process including where and by whom the subjects will be approached, the plans to ensure the privacy of the subjects and the measures to ensure that subjects understand the nature of the study, its procedures, risks and benefits and that they freely grant their consent.

The Informed Consent document will be presented to the participant before the survey is started. Respondents will be reminded that participation is strictly voluntary. Participants will also be informed that they may willingly withdraw from the study at any time and that all information will be kept confidential.

4B.1. Attach all copies of informed consent documents (written or verbal) that will be used for this study.

[CONSENT FORM.pdf](#) Sample documents: [Informed Consent Examples](#)

4B.2. Attach all copies of assent documents that will be used for this study, if applicable.

Sample documents: [Assent Examples](#)

5. Risks and Benefits

Describe all reasonably expected risks, harms, and/or discomforts that may apply to the research. Discuss severity and likelihood of occurrence.

5A.

Consider the range of risks - physical, psychological, social, legal, and economic.
As with any investigation requiring candid responses, there is a slight risk of psychological discomfort.

Describe the steps that will be taken to minimize risks and the likelihood of harm.

5B.

Upon completion of the survey, contact information for both the counseling center and Principal Investigator (P.I.) will be provided; participants will be encouraged to communicate with the P.I. regarding questions, concerns, or requests for clarification.

List the potential benefits that participants may expect as a result of this research study. State if there are no direct benefits to individual participants.

5C.

Participants will be granted credit in PSY 121 through the online SONA system. This research will provide useful information about the relationship between resilience, academic performance, and mental health in college students.

Describe any potential indirect benefits to future subjects, science, and society.

5D.

Research will provide supplementary information regarding the impact of resilience on academic performance and mental health. As well as possibly providing insight into the factors influencing resilience, such as ethnicity.

5E. Discuss how risks to participants are reasonable when compared to the anticipated benefits to participants (if any) and the importance of the knowledge that may reasonably be expected to result.

As with any investigation requiring candid responses, there is a slight risk of psychological discomfort. However, this research may provide insight into the factors that influence resilience, such as ethnicity.

6. Data Collection

Missouri State University is committed to keeping data and information secure. Please review the Missouri State [Information Security policies](#). Discuss your project with the MSU Information Security Office or your College's IT support staff if you have questions about how to handle your data appropriately.

Statement of Principal Investigator Responsibility for Data

- 6A. The principal investigator of this study is responsible for the storage, oversight, and disposal of all data associated with this study. Data will not be disseminated without the explicit approval of the principal investigator, and identifying information associated with the data will not be shared,
-

- By checking this box, all personnel associated with this study understand and agree to the Statement of Principal Investigator Responsibility for Data.

- 6B. How will the data for this study be collect/stored?
-

Check all that apply.

- Electronic storage format
 On paper

Describe where the data will be stored (e.g., paper forms, flash drives or removable media, desktop or laptop computer, server, research storage area network, external source) and describe the plan to ensure the security and confidentiality of the records

(e.g., locked office, locked file cabinet, password-protected computer or files, encrypted data files, database limited to coded data, master list stored in separate location).

- 6C. *At minimum, physical data should always be secured by lock and key when stored. Electronic data should be stored on University secure servers whenever possible (Office 365 or other secure campus server). If data has to be stored off campus, the file should be encrypted and the device password protected. Additionally, any data to be shared outside the University network will require a SUDERS request be filed and approved. See <https://mis.missouristate.edu/Central/suders/creat...>*

All identifying information, such as participant consent forms, will be maintained in a secure, separate location from the rest of the data collected. Only researchers involved in this study will have access to participant information. The Principal Investigator of this study is responsible for the storage, oversight, dissemination, and disposal of all data associated with this study.

Describe how data will be disposed of and when disposal will occur.

- 6D. *At minimum, Federal regulations require research records to be retained for at least 3 years after the completion of the research (45 CFR 46). Research that involves identifiable health information is subject to HIPAA regulations, which require records to be retained for at least 6 years after a participant has signed an authorization. Finally, funded research projects may require longer retention periods, you may need to follow the sponsoring agency guidelines.*

After completion of the study, all copies of data will be permanently deleted from computers and flash drives. Data and consent forms will be stored by the principle investigator for at least seven years after completion of this study; after this point, electronic information will be permanently deleted. The Principal Investigator of this study is responsible for the storage, oversight, dissemination, and disposal of all data associated with this study.

7. Funding

Is this study externally funded?

7A. _____

For example, this research is funded by a source outside Missouri State; a federal agency, non-profit organization, etc.

Yes

No

Potentially (this study is being submitted for funding, but has not yet been awarded)

Is this study internally funded?

7B. _____

For example, this research is funded by a source inside Missouri State; departmental funds, the Graduate College, etc.

Yes

No

Potentially (this study is being submitted for funding, but has not yet been awarded)

8. HIPAA

Does your study contain protected health information (PHI)?

8A.

PHI is any information in a medical record or designated record set that can be used to identify an individual and that was created, used, or disclosed in the course of providing a health care service, such as a diagnosis or treatment.

Yes

No

9. Supporting Documentation

Human Subjects Training Certificates

- 9A. *Attach human subjects training certificates for all listed personnel. To access your training documents, please go to [CITI Training](#).*
[Adena.Report.pdf](#)
[Bailey.pdf](#)
[Stanbrough CITI Certificate.pdf](#)
[Stanbrough CITI Certificate Responsible Conduct in Research.pdf](#)
[Stanbrough CITI Certificate Basic Course OSU.pdf](#)
[Stanbrough CITI Certificate MSU Basic Course.pdf](#)

HIPAA Training Certificates

- 9B. *Attach HIPAA training certificates for all listed personnel, if applicable. To get more information about HIPAA training and/or to access your training documents, please go to [HIPAA Information for Researchers](#).*

Informed Consent Documents

- 9C. *Attach all copies of informed consent documents (written or verbal) that will be used for this study.*
[CONSENT FORM.pdf](#) Sample documents: [Informed Consent Examples](#)

Assent Documents

- 9D. *Attach all copies of assent documents (written or verbal) that will be used for this study.*

Sample documents: [Assent Examples](#)

9E. Recruitment Tools

Attach copies of proposed recruitment tools.

Surveys/Questionnaires/Other Social-Behavioral Measurement Tools

- 9F. *Attach surveys, questionnaires, and other social-behavioral measurement tools.*
[Academic Motivation Scale.pdf](#)
[Connor-Davidson Resilience Scale.pdf](#)
[DASS21.pdf](#)
[DEMOGRAPHIC DATA FORM.pdf](#)
[Multidimensional Scale of Perceived Social Support.pdf](#)

Other Documents

- 9G. *Attach any other documents that have not been specified in previous questions, but are needed for IRB review.*
[Thesis,Debriefing.pdf](#)

10. Additional Information

10A. Would you like to add additional information?

Yes

No