2022

Stress Coping Responses of Undergraduate University Students Prior to & Since the Onset of the COVID-19 Pandemic

Kaylee Diefenderfer
Minnesota State University, Mankato

Stress Coping Responses of Undergraduate University Students Prior to & Since the Onset of the COVID-19 Pandemic

Kaylee Diefenderfer

College of Allied Health & Nursing

A Thesis Submitted in Partial Fulfillment of the

Requirements for the Degree of Master of Science

In Community Health Education

Minnesota State University, Mankato

Mankato, MN

April 2022

April 5, 2022

Stress Coping Responses of Undergraduate University Students Prior to & Since the Onset of the COVID-19 Pandemic

Kaylee Diefenderfer

This thesis has been examined and approved by the following members of the student's committee.

_____

Dr. Joseph Visker: Advisor

_____

Dr. Emily Forsyth: Committee Member

_____

Dr. Charis Davidson: Committee Member

Abstract

The stress coping mechanisms used by undergraduate university students affects their psychological well-being, stress level, and mental health outcomes. Increasing students' use of positive coping mechanisms may increase academic outcomes, and overall health and well-being. This study evaluated the stress coping mechanisms used by undergraduate university students prior to and since the COVID-19 pandemic began. The Brief COPE inventory was used to measure stress coping responses. The results of this research indicated a significant change in 9 out of the 14 main coping mechanisms used by undergraduate university students prior to since the pandemic began. The top two stress coping mechanisms used by undergraduate university students both prior to and since the pandemic began were avoidance and humor. The third most commonly used coping mechanism prior to the COVID-19 pandemic was avoidance but since the pandemic began, students are using acceptance. Universities must create programs to increase students' use of positive coping mechanisms to improve their academic and health outcomes. Future research should examine the mechanisms used by specific student groups to better target coping mechanism programs.

Contents

Chapter 3

Chapter 4

Chapter 5

Chapter 1

Background to the Topic

Undergraduate university students are in a transitional life period, encountering numerous unique stressors. Globally, colleges are experiencing a dramatic rise in the number of students facing common mental health disorders, namely anxiety and depression (Auerbach et al., 2018). At any given time, 10-20 % of the college student population suffers from stress, anxiety, or depression (Bhujade, 2017). The COVID-19 pandemic poses additional, unprecedented challenges to students that exacerbate this already taxing and transitional time in their lives (Bhujade, 2017). Since the pandemic started, the stress level of undergraduate university students has continued to rise significantly (American Psychological Association [APA], 2020). Research found that student mental health has deteriorated significantly since the pandemic began, along with increasing depression and anxiety symptoms, and distress (Bäuerle et al., 2020). The pandemic has led to more reported and worsening mental health problems such as stress, anxiety, depression, and insomnia (Torales et al., 2020). Elevated levels of sleep disturbances (57.1%) generalized anxiety (32.1%), and distress (41.8%) have been reported since the beginning of the pandemic (Bäuerle et al., 2020). In Germany, increased symptoms of generalized anxiety (44.9%) and depression (14.3%), distress (65.2%), and COVID-19-related fear (59%) were highly prevalent (Bäuerle et al., 2020).

Young adults (those age 18-23) have a heightened desire for and receptivity to social interaction, which physical distancing and other COVID-19 related precautions have reduced (Orben et al., 2020). Students continue to experience changes and

disruptions in their education due to the pandemic such as transitions to remote learning and stay-at-home orders (Kazerooni et al., 2020). The decrease in social interactions since the pandemic began, has affected students' mental health and well-being and increased their stress level (Orben et al., 2020). Alarmingly, 8 out of 10 young adults ages 18 to 24, said they could have used more emotional support over the last 12 months (APA, 2020).

Students must adapt and adjust their coping responses and strategies to cope with the simultaneous challenges of both college and COVID-19 (Grubic et al., 2020). Universities have a role in educating students about coping mechanisms to increase their overall academic, future, and health outcomes. Using a higher number of positive coping mechanisms (active coping, use of emotional support, and use of instrumental support) is associated with better emotional regulation and better academic achievement overtime (Heffer & Willoughby, 2017). Tran and Lumley (2019) found positive coping strategies help with stress management.

There is concern of increased use of negative coping mechanisms during the pandemic and the future implications of this transition. A study by Heffer and Willoughby (2017) found that use of a greater number of negative coping mechanisms predicted more depressive symptoms and poorer emotion regulation over time. In addition, Tran and Lumley (2019) found that using negative coping mechanisms may reinforce mental distress. While students must be aware of increased use of disengagement strategies, they can also strive to increase the use of adaptive, engagement coping strategies.

Statement of the Problem

Since the start of the pandemic undergraduate university students have shown a significant increase in distress, depression, and anxiety symptoms (Bäuerle et al., 2020). It is unclear how students have been positively or negatively coping with the pandemic. Fear, uncertainty, and distorted risk perceptions associated with the pandemic may evolve into severe health concerns including increased use of negative coping mechanisms namely substance use, behavioral disengagement, and denial, as well as increases in distress (Shigemura et al., 2020). There is no knowledge about how positive and negative coping strategies used during the pandemic may affect individuals' future coping mechanism use and overall health. Negative coping strategies are associated with intensified depression, less emotional regulation over time, and may decrease an individual's ability to deal with life stressors (Heffer & Willoughby, 2017).

Severity of the Problem

Prior to the COVID-19 pandemic, researchers consistently found between 10-33% of undergraduate university students suffered from anxiety, a mood disorder, or substance use disorder (Auerbach et al., 2020; Bhujade. 2017). The pandemic impacted students' academics lives and mental health. Current stress, fear, depression, and/or anxiety may be exacerbated by concerns about one's own health and that of their loved ones (Coiro et al, 2020; Fiorillo & Gorwood, 2020). If these concerns continue, they may increase students' risk of serious and disabling mental health conditions and anxious disorders including panic, obsessive–compulsive, stress, and trauma-related disorders (Fiorillo & Gorwood, 2020).

The pandemic has placed an abnormal amount of distress on undergraduate university students and may have reduced their ability to use their typical coping strategies (Grubic, Badovinac, & Johri, 2020). Coiro et al. (2016) highlighted interpersonal stressors' link to more depression and anxiety; and decreased use of engagement coping strategies and greater use of disengagement coping strategies. This stresses the urgent need for further research in the area. If universities act now to help support undergraduate university students, they may be able to reduce the significant burden a second mental health pandemic would bring (Choi, Heilemann, Fauer et al., 2020; Grubic, Badovinac, & Johri, 2020).

Purpose Statement

The purpose of this research is to examine potential changes in stress-coping mechanisms used by undergraduate university students prior to and since the COVID-19 pandemic began at a mid-sized midwestern university. This research may inform universities and help them create successful programs to help students cope with the unique stressors of COVID-19, in addition to university stressors. Results from the present study may inform interventions designed to improve students' use of coping strategies (Coiro et al., 2016).

Research Questions

1. Which stress coping responses were most commonly used by undergraduate university students prior to the onset of the COVID-19 pandemic?
2. Which stress coping responses are most commonly used by undergraduate university students since the onset of the COVID-19 pandemic?

3. To what extent have the stress coping responses used by undergraduate university students changed since the COVID-19 pandemic began?

Limitations

The following are limitations on this study:

1. Recall bias may apply due to the retrospective nature of this study.
2. Survey burnout is a concern due to the duration of the survey instrument.
3. Online survey response options are not visible for all questions, which is a usability and readability issue.

Delimitations

The following are delimitations on this study:

1. Undergraduate university students at a mid-sized, public, midwestern university.
2. Students registered during the Fall 2021 semester at a mid-sized, public, midwestern university.
3. Undergraduate university students registered in approved courses.

Assumptions

The following are assumptions of this study:

1. The COVID-19 pandemic has put unique stressors on all participants to some degree.
2. All participants will respond openly, honestly, and to the best of their ability.
3. Participants are able to recall their coping responses and changes in coping responses.

4. The results of the paper and electronic versions of the survey will yield similar response rates.

Definitions

Acceptance: a positive coping strategy, learning to live with it (Carver, 2018a).

Active coping: is doing something about the situation or taking action to try and make it better, a positive coping mechanism (Carver, 2018a).

Behavioral disengagement: involves giving up trying to cope or deal with it, a negative coping mechanism (Carver, 2018a).

Brief COPE Inventory: a twenty-eight item survey that assesses the follow stress-coping responses: self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame (Carver, 2018a)

Coping flexibility: an individual's ability to modify and change coping strategies depending on the context (Heffer & Willoughby, 2017)

COVID-19: a respiratory illness caused by the coronavirus (CDC, 2020)

Denial: saying to yourself "this isn't real" or refusing to believe something has happened, a negative coping mechanism (Carver, 2018a).

Distress: severe and prolonged stress that has a negative effect on an individuals' quality of life and psychological well-being; when coping mechanisms fail and a person cannot return from a state of acute or chronic stress (National Research Council, 2008)

Emotional support: getting comfort and understanding, and/or emotional support from someone, which is a positive coping mechanisms (Reblin & Uchino, 2009).

Humor: is making fun of or jokes about it, which is a positive coping strategy (Savage et al., 2017).

Instrumental support: trying to get help and/or advice from people, a positive coping strategy (Carver, 2018a).

Mental Impacts: of or relating to the total emotional and intellectual response of an individual to external reality (Merriam-Webster, n.a.)

Negative coping mechanisms: aimed at avoiding stressor and the related emotions (Dijkstra & Homan, 2016). Includes substance use, self-distraction, self-blame, behavioral disengagement and denial.

Planning: thinking hard about what steps to take and trying to come up with a strategy for what to do(Carver, 2018a).

Positive coping mechanisms: mechanisms that faces the stressor and the related emotions (Dijkstra & Homan, 2016) Includes acceptance, active coping, emotional support, humor, instrumental support, positive reframing, planning, religion, and venting are positive coping mechanisms (Dijkstra & Homan, 2016).

Positive reframing: trying to see the situation from a different light or making it seem more positive and looking for something good in it, a positive coping mechanism (Carver, 2018a).

Religion: finding comfort in religious/spiritual beliefs and praying or meditating, a positive coping strategy (Carver, 2018a).

Self-blame: criticizing oneself and/or blaming oneself for things that happened, a negative coping strategy (Carver, 2018a).

Self-distraction: turning to work or other activities to take your mind off something or doing something to think less about the situation, a negative coping strategy (Carver, 2018a).

Substance use: involves using alcohol or other drugs to feel better and/or to get through something, a negative coping mechanism (Carver, 2018a).

Stressor: a situation, concern, or challenge that triggers your stress response (Mayo Clinic, 2019).

Venting: is saying things to express unpleasant and negative feelings, a negative coping mechanism (Carver, 2018a).

Chapter 2

Review of Literature

The purpose of this study was to examine the potential impact COVID-19-related changes had on the stress-coping mechanisms used by undergraduate university students. Numerous databases were used to conduct the literature review. Databases used were EBSCO, ELM, Google Scholar, NCBI, PubMed, and SAGE. These databases were searched using the terms: *covid-19 or coronavirus or 2019-ncov or sars-cov-2 or cov-19, college students or university students or undergraduates, mental health or mental illness, stress in college students, and coping strategies or coping skills or coping or cope.* Areas addressed in this review of literature are mental health and stress in undergraduate university students, COVID-19, mental impacts of COVID-19, and stress-coping strategies.

Mental Health & Stress in Undergraduate University Students

Researchers consistently find a high prevalence of anxiety, mood, and substance disorders in undergraduate university students (Auerbach et al., 2020). Approximately 10-33% of undergraduate university students suffer from anxiety, a mood disorder, or substance use disorder (Auerbach et al., 2018; Bhujade, 2017). College can be a stressful time for undergraduate university students, who are experiencing numerous transitional life events during their years at university; relationships, career changes, and instability (Auerbach et al., 2020; Pedrelli et al., 2015). The instability that comes with these transitions is a known contributor to increased stress and mental disorders, and decreased social support (Auerbach et at., 2020). The compounding effects of numerous transitions

increases the distress experienced by students. The majority of undergraduate university students are young adults, ages 18-24 years; the age range when 75% of those who will have a common mental health problem, such as depression and anxiety have experienced first onset of their problem (Pedrelli et al., 2015). Psychological stress is a major risk factor for developing and progressing numerous diseases including cardiovascular disease, cancer, arthritis, and major depression (Dijkstra & Homan, 2012; Muscatell & Eisenberg, 2012). Stress can activate the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis. Prolonged stress exposure in these areas can inflame the body which increases the chance of developing or increasing risk for disease and early mortality (Muscatell & Eisenberg, 2021).

The Stress in America 2020 survey, conducted by the American Psychological Association, indicated that increased stress levels prior to and during the pandemic may have serious long-term consequences for individuals born between 1997-2015; which includes most undergraduate university students. Specifically, 34% of students reported their mental health was worse than it was at this time last year (APA, 2020). The survey used by Stress in America 2020 evaluated stress levels using a ten-point scale where 1 meant “little to no stress” and 10 meant “a great deal of stress”. The average stress level of adults before the pandemic was 5 out of 10 (Stress in America 2020, 2020). In 2020, respondents aged 18-25 reported an average stress level of 6.1 out of 10 for the prior month. These statistics show the increase in stress levels and number of reported anxiety, depression, and other mental health condition cases when students are in college (Shigemura et al., 2020; Stress in America 2020, 2020).

COVID-19

COVID-19 created an unprecedented global health challenge. On March 11th, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic (Cucinotta & Vanelli, 2020). COVID-19 is a disease caused by coronavirus SARS-CoV-2. The pandemic is increasing health problems such as stress, anxiety, depressive symptoms, insomnia, denial, anger, and fear, in those with and without previous mental health problems (Torales et al., 2020). The collective concern, fear, and vulnerability felt by all individuals during the pandemic has been paralleled in a previous incident with Korean MERS-CoV; a pandemic influences daily behaviors, the economy, mental distress, and increases the need for mental health support services (Torales et al., 2020). The vast number of collective concerns and challenges faced by all individuals during a pandemic can lead to an increase in morbidity and mental health needs on a global level (Torales et al., 2020).

Mental Impacts of COVID-19

COVID-19 Specifics

Since COVID-19 began there have been changes in the mental health and health status of individuals. The data from one study indicated that COVID-19 is causing an enormous psychological burden globally (Bäuerle et al., 2020). The rapidly evolving nature of the pandemic suggests mental and physical health consequences in the most vulnerable populations can more or less be predicted; such as fear, uncertainty, decreased mental health, and distress (Shigemura et al., 2020). As the pandemic continued, there was concern about the wide range of mental health concerns that may increase. Fear,

uncertainty, and distorted risk perception may evolve into more severe health concerns including increases in distress, substance use, behavioral disengagement, and denial (Shigemura et al., 2020).

In addition to the mental impacts of the pandemic, university students worldwide have experiencing pauses in their education and university closures over COVID-19 concerns (Kazerooni et al, 2020). Grubic et al. (2020) posit that students during the pandemic experienced increased academic stressors, pre-existing heightened stress levels, potentially a reduced ability to rely on typical coping strategies, and an increased amount of distress from the pandemic.

Undergraduate University Students

Undergraduate university students are traditionally young adults under age twenty-four (National Center for Education Statistics, 2021). Young adults under age twenty-four have an increased sensitivity and need to socialize in comparison to older adults over the age of twenty-four (Orben et al., 2020). Peer interaction, peer influence, and peer acceptance are increasingly influential for young adult development. COVID-19 precautionary measures (e.g., physical distancing), reduced opportunities for young adults to have necessary peer interactions. Students' access to social interactions decreased after the pandemic began, which had lasting effects (Orben et al., 2020). Young adults are in a life stage where their social environment is critically important for brain development, self-concept construction, and mental health. While all individuals are facing challenges during the pandemic, undergraduate university students are in a life stage where isolation and physical distancing might have a disproportionate effect. Social

isolation is a stressor, which may further lead to decreased learning, due to decreasing hippocampus neurogenesis and increasing anxiety-like symptoms (Orben et al., 2020).

Mental Health

In a study conducted by Kecojevic et al. (2020), high levels of depression were found to be associated with difficulties in focusing on academic work and employment losses. High levels of anxiety were more common in upper division students and those who spend more than one hour per day looking for information on COVID-19. The findings of Kecojevic et al. (2020) showed significant and negative impacts of the pandemic on the mental health of undergraduate university students. Risk factors associated with the mental health of undergraduate university students are substance use, coping responses, and social support (Kecojevic et al., 2020). Students who exhibited greater academic and life difficulties were more vulnerable to higher levels of distress during the pandemic. A cross-sectional study conducted by Bäuerle et al. (2020) in Germany aimed to assess changes in individual mental health status before and after the pandemic began. Overall, since COVID-19 began, participants showed a significant increase in depression and anxiety symptoms, and distress, while health status deteriorated since pandemic began (Bäuerle et al., 2020).

Stress-Coping Strategies

Undergraduate university students may use a wide range of coping mechanisms. In general, students under many stressors usually tend to use less positive coping mechanisms and more negative coping ones (Coiro et al., 2017). Active coping, social support, positive reframing, and expressing emotions are positive coping mechanisms

(Dijkstra & Homan, 2016). Positive coping mechanisms are those that confront and deal with a stressor. Negative coping mechanisms are those that avoid a problem, such as avoidance (Dijkstra & Homan, 2016).

Using a wider variety of positive, engagement coping strategies leads to more positive adjustment, in comparison to using a smaller number of positive coping strategies (Heffer & Willoughby, 2017). It is necessary to help undergraduate university students adjust their coping strategies to maintain successful coping throughout adjusting to university life and transitioning successfully to the workforce. Research has found that positive adjustment is associated with positive reframing, humor, emotional support, instrumental support, and religion as coping strategies (Heffer & Willoughby, 2017). Using a greater number of positive coping mechanisms is associated with better emotional regulation, better academic achievement, and less depressive symptoms over time (Heffer & Willoughby, 2017).

Summary

The COVID-19 pandemic has had lasting effects on the mental health and well-being of the global population, especially vulnerable individuals (Fiorilla and Gorwood, 2020). A comprehensive public health response to the mental health impacts of the pandemic will be necessary to combat the lasting effects of COVID-19 (Choi et al., 2020). Chandu et al. (2020) calls for action: to use our current valid and reliable mental health measurement instruments to study and comprehend the unique psychological burden COVID-19 poses on different populations and in different settings. Increasing interventions to help undergraduate university students increase their use of positive

coping mechanisms will help students work through the mental impacts and changes that have occurred since the beginning of the pandemic.

The purpose of this research is to examine the potential impact COVID-19-related challenges had on the stress-coping responses used by undergraduate university students at a mid-sized midwestern university. Areas addressed in this review of literature were mental health and stress in undergraduate university students, COVID-19, mental impacts of COVID-19, and stress-coping strategies.

Chapter 3

Methodology

This chapter describes the research design, data collection procedures, subjects and sampling, instrumentation, and analysis used for the study. The purpose of the study was to examine the impact of COVID-19-related challenges on the stress-coping responses used by undergraduate university students at a mid-sized midwestern university.

Research Design

This study utilized a retrospective, descriptive study design. A descriptive study design was used to assess a sample at a point in time without making a causal statement and could be used to identify areas for further research (The National EMSC Data Analysis Resource Center, 2019a). A retrospective study design was used to help define if the outcome of interest had already occurred before this study was conducted (The National EMSC Data Analysis Resource Center, 2019b). This has helped researchers understand the coping mechanisms used prior to and since the COVID-19 pandemic began (The National EMSC Data Analysis Resource Center, 2019).

Data Collection Procedures

Surveys were distributed to undergraduate university students at a mid-sized midwestern university. After receiving committee and IRB approval (Appendix B), professors from various degree programs were contacted to inquire about survey distribution in one or more of their courses. Professors who didn't respond within a week received a follow up email. Professors who gave permission to survey their students had

submission deadlines. The survey was available online through Qualtrics (https://www.qualtrics.com/) or on paper. Students received the online Qualtrics (https://www.qualtrics.com/) survey in an email or D2L from their professor. The researcher physically gave the students the paper surveys. During the approved class time, the researcher entered the classroom, verbally explained the informed consent document (Appendix A), and then distributed the survey. Participants who chose to take the survey after distribution provided their consent. Completed paper surveys were collected in a manila envelope after the researcher left the room.

Subjects & Sampling

A convenience sample was collected by contacting professors in various disciplines throughout the mid-sized midwestern university. Convenience sampling was used due to ease of access, data privacy, potential cost barriers, and time restrictions. Surveys that were not at least 95% completed were deleted. Any full-time, undergraduate university student over the age of 18 was eligible to complete the survey.

Instrumentation

The COPE inventory is a theory-based, sixty question survey that assess a range of fourteen coping responses (Carver, 2018b). There is also a shorter, twenty-eight item Brief COPE inventory (Carver, 2018a). The Brief COPE inventory uses two items to measure use of each coping mechanism, in comparison to three items per mechanism in the full COPE inventory. The COPE inventory instrument assesses use of: self-distraction, active coping, denial, substance use, use of emotional support, use of

instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame as stress-coping responses (Carver, 2018a).

While the full COPE inventory is more comprehensive, the Brief COPE inventory was used for this study due to time and length constraints. Internal consistency of the COPE inventory was measured using Cronbach's alpha reliability coefficients. Five of the six coefficients were above 0.60 (Carver, 1989). The Brief COPE has a Cronbach's alpha of 0.70, and measures the same fourteen coping responses. There were four questions after the 28-item Brief COPE inventory retrospective and current sections, collecting demographic information; gender, age, year in school, and race. Participants were not required to answer the demographic questions. Participants are required to finish each statement in the 28-item Brief COPE inventory retrospectively; prior to the start of the COVID-19 pandemic; and currently.

For demographic information students could select their gender; male, female, non-binary, prefer not to say, or other. In addition, students could select their age; 18, 19, 20, 21, 22, or 23+. Participants indicated their year in school; 1st year, 2nd year, 3rd year, 4th year or 5th year +. Last, students were asked "How would you best describe your race?"; White, Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, other, prefer not to answer or 2 or more.

Analysis

The IBM Statistical Package for the Social Sciences (SPSS™), Version 27 was used to analyze all data collected. Fourteen paired sample t-tests were conducted to analyze the fourteen different stress coping responses measured by the Brief COPE

inventory. A Bonferroni correction was applied, yielding an alpha value of 0.0036. Descriptive statistics were used to show which stress coping responses were most commonly used by undergraduate university students prior to and since COVID-19 began. Table 1 outlines how each research question was addressed in data collection:

Table 1

Research Design Specifications

Research Question	Survey items used to assess	Survey items level of data	Analysis used to assess RQ
Which stress coping responses are most commonly used by undergraduate university students prior to the onset of the COVID-19 pandemic?	Brief COPE	Ordinal, Interval/ratio	Descriptive statistics
Which stress coping responses were most commonly used by undergraduate university students since the onset of the COVID-19 pandemic?	Brief COPE	Ordinal, Interval/ratio	Descriptive statistics
To what extent have the stress coping Responses used by undergraduate university students changed since the COVID-19 pandemic began?	Brief COPE	Interval/ratio	Series of paired sample t-tests

Chapter 4

Overview

The purpose of this research is to examine potential changes in stress-coping mechanisms used by undergraduate university students prior to and since the COVID-19 pandemic began at a mid-sized midwestern university. The study answered the following research questions:

1. Which stress coping responses were most commonly used by undergraduate university students prior to the onset of the COVID-19 pandemic?
2. Which stress coping responses are most commonly used by undergraduate university students since the onset of the COVID-19 pandemic?
3. To what extent have the stress coping responses used by undergraduate university students changed since the COVID-19 pandemic began?

In total, 404 completed surveys were used for analysis. Surveys missing responses totaling 5% or more were excluded.

Demographics

Four demographic items were collected and analyzed to further understand the participants. The majority of participants were female (287, 71%) and 20 (91, 22.5%) or 21 (91, 22.5%) years old. The majority of participants were white (341, 84.4%) and in their third year of college (108, 26.7%). Table 2 provides a breakdown of demographic responses to the survey.

Table 2

Demographics of the Sample (n=404)

Classification	n(%)	Classification	n(%)
Gender		**Year in College**	
Male	94 (23.1)	1st year	57 (14.1)
Female	287 (71)	2nd year	96 (23.8)
Non-binary/ third gender	6 (1.5)	3rd year	108 (26.7)
Prefer not to say	2 (0.5)	4th year	92 (22.8)
Other	15 (3.7)	5th year	34 (8.4)
		Missing	17 (4.2)
Age			
18	44 (10.9)	**Race**	
19	78 (19.3)	White	341 (84.4)
20	91 (22.5)	Black or African American	10 (2.5)
21	91 (22.5)	American Indian or Alaska Native	1 (0.2)
22	36 (8.9)	Asian	14 (3.5)
23-24	26 (6.4)	Native Hawaiian or Pacific Islander	0
25+	21 (5.2)	Other	12 (3)
Missing	17 (4.2)	Prefer not to answer	1 (0.2)
		Two or more races	8 (2)
		Missing	17 (4.2)

*Totals not equaling 100% indicate missing data

Answers to Research Questions

Which stress coping responses were most commonly used by undergraduate university students prior to the onset of the COVID-19 pandemic?

The results of the survey indicated the top coping mechanism used by 40.1% (163) of participants was “doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.” The second most

reported mechanism used by 36.4% (123) of students was making jokes about it . The third most common, used by 32.7% (132) of participants “a lot” was turning “to work or other activities to take my mind off things.” Table 3 shows participant responses to the stress-coping mechanisms used before the pandemic began.

Table 3

Descriptive Statistics for Coping Mechanisms Used Prior to the Pandemic

	I typically didn’t do this at all n(%)	I typically did this a little bit n(%)	I typically did this a medium amount n(%)	I typically did this a lot n(%)	Missing n(%)
I turn to work or other activities to take my mind off things.	19 (4.7)	94 (23.3)	159 (39.4)	132 (32.7)	0
I concentrate my efforts on doing something about the situation I’m in.	17 (4.2)	109 (27)	170 (42.1)	107 (26.5)	1 (0.2)
I say to myself “this isn’t real.”	268 (66.3)	88 (21.8)	29 (7.2)	19 (4.7)	0
I use alcohol or other drugs to make myself feel better.	263 (65.1)	92 (22.8)	33 (8.2)	16 (4)	0
I try to get emotional support from others.	75 (18.6)	156 (38.6)	110 (27.2)	61 (15.1)	2 (0.5)

	I typically didn't do this at all n(%)	I typically did this a little bit n(%)	I typically did this a medium amount n(%)	I typically did this a lot n(%)	Missing n(%)
I give up trying to deal with it.	171 (42.3)	152 (37.6)	61 (15.1)	17 (4.2)	3 (0.7)
I take action to try to make the situation better.	13 (3.2)	96 (23.8)	206 (51)	88 (21.8)	1 (0.2)
I refuse to believe that it has happened.	256 (63.4)	116 (28.7)	23 (5.7)	9 (2.2)	0
I say things to let my unpleasant feeling escape.	126 (31.2)	147 (36.4)	100 (24.8)	27 (6.7)	4 (1)
I get help and advice from other people.	37 (9.2)	139 (34.4)	153 (37.9)	75 (18.6)	0
I use alcohol or other drugs to help me get through it.	282 (69.8)	80 (19.8)	28 (6.9)	14 (3.5)	0
I try to see it in a different light, to make it seem more positive.	36 (8.9)	119 (29.5)	179 (44.3)	69 (17.1)	1 (0.2)
I criticize myself.	32 (7.9)	102 (25.2)	140 (34.7)	129 (31.9)	1 (0.2)
I try to come up with a strategy about what to do	22 (5.4)	109 (27)	179 (44.3)	94 (23.3)	0

	I typically didn't do this at all n(%)	I typically did this a little bit n(%)	I typically did this a medium amount n(%)	I typically did this a lot n(%)	Missing n(%)
I give up the attempt to cope.	203 (50.2)	146 (36.1)	42 (10.4)	12 (3)	1 (0.2)
I get comfort and understand-ing from someone.	35 (8.7)	140 (34.7)	149 (36.9)	80 (19.8)	0
I look for something good in what is happening.	33 (8.2)	101 (25)	178 (44.1)	92 (22.8)	0
I look for something good in what is happening.	33 (8.2)	101 (25)	178 (44.1)	92 (22.8)	0
I make jokes about it.	39 (9.7)	94 (23.3)	123 (30.4)	147 (36.4)	1 (0.2)
I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	12 (3)	81 (20)	148 (36.6)	163 (40.1)	1 (0.2)
I accept the reality of the fact that it has happened.	18 (4.5)	85 (21)	170 (42.1)	128 (31.7)	3 (0.7)
I express my negative feelings.	50 (12.4)	181 (44.8)	111 (27.5)	61 (15.1)	1 (0.2)

	I typically didn't do this at all n(%)	I typically did this a little bit n(%)	I typically did this a medium amount n(%)	I typically did this a lot n(%)	Missing n(%)
I try to find comfort in my religion or spiritual beliefs.	187 (46.3)	92 (22.8)	73 (18.1)	52 (12.9)	0
I try to get advice or help from other people about what to do.	49 (12.1)	137 (33.9)	150 (37.1)	67 (16.6)	1 (0.2)
I learn to live with it.	20 (5)	101 (25)	161 (39.9)	122 (30.2)	0
I think hard about what steps to take.	36 (8.9)	130 (32.2)	160 (39.6)	77 (19.1)	1 (0.2)
I blame myself for things that happened.	93 (23)	140 (34.7)	110 (27.2)	61 (15.1)	0
I pray or meditate.	197 (48.8)	93 (23)	68 (16.8)	45 (11.1)	1 (0.2)
I make fun of the situation.	77 (19.1)	113 (28)	114 (28.2)	98 (24.3)	2 (0.2)

Which stress coping responses are most commonly used by undergraduate university students since the onset of the COVID-19 pandemic?

The most common stress coping mechanism used by 45% (182) of participants "a lot" since the start of the pandemic was turning "to work or other activities to take my mind off things." The second most used mechanism by 43.6% (176) of participants was making jokes about it. The third coping mechanism used by 38.4% (155) of participants

"a lot" was learning to live with it. Table 4 shows participant responses to the stress-coping mechanisms used since the start of the pandemic.

Table 4

Descriptive Statistics for Coping Mechanisms Used Since the Pandemic Began

	I typically didn't do this at all n(%)	I typically did this a little bit n(%)	I typically did this a medium amount n(%)	I typically did this a lot n(%)	Missing n(%)
I turn to work or other activities to take my mind off things.	18 (4.5)	76 (18.8)	128 (31.7)	182 (45)	0
I concentrate my efforts on doing something about the situation I'm in.	26 (6.4)	106 (26.2)	161 (39.9)	111 (27.5)	0
I say to myself "this isn't real."	222 (55)	83 (20.5)	57 (14.1)	40 (9.9)	2 (0.5)
I use alcohol or other drugs to make myself feel better.	221 (54.7)	84 (20.8)	64 (15.8)	35 (8.7)	0
I try to get emotional support from others.	58 (14.4)	139 (34.4)	129 (31.9)	78 (19.3)	0
I give up trying to deal with it.	155 (38.4)	135 (33.4)	73 (18.1)	39 (9.7)	2
I take action to try to make the situation better.	20 (5)	102 (25.2)	180 (44.6)	100 (24.8)	2 (0.5)
I refuse to believe that it has happened.	238 (58.9)	97 (24)	48 (11.9)	21 (5.2)	0
I say things to let my unpleasant feeling escape.	115 (28.5)	138 (34.2)	107 (26.5)	43 (10.6)	1 (0.2)

	I typically didn't do this at all n(%)	I typically did this a little bit n(%)	I typically did this a medium amount n(%)	I typically did this a lot n(%)	Missing n(%)
I get help and advice from other people.	43 (10.6)	110 (27.2)	149 (36.9)	101 (25)	1 (0.2)
I use alcohol or other drugs to help me get through it.	252 (62.4)	68 (16.8)	52 (12.9)	31 (7.7)	1 (0.2)
I try to see it in a different light, to make it seem more positive.	29 (7.2)	116 (28.7)	165 (40.8)	94 (23.3)	0
I criticize myself.	38 (9.4)	97 (24)	121 (30)	147 (36.4)	1 (0.2)
I try to come up with a strategy about what to do.	24 (5.9)	98 (24.3)	174 (43.1)	108 (26.7)	0
I get comfort and understanding from someone.	40 (9.9)	113 (28)	135 (33.4)	115 (28.5)	1(0.2)
I give up the attempt to cope.	199 (49.3)	114 (28.2)	63 (15.6)	26 (6.4)	2 (0.5)
I look for something good in what is happening.	31 (7.7)	94 (23.3)	165 (40.8)	114 (28.2)	0
I make jokes about it.	48 (11.9)	70 (17.3)	110 (27.2)	176 (43.6)	0
I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	15 (3.7)	46 (11.4)	136 (33.7)	207 (51.2)	0
I accept the reality of the fact that it has happened.	17 (4.2)	73 (18.1)	169 (41.8)	145 (35.9)	0

	I typically didn't do this at all n(%)	I typically did this a little bit n(%)	I typically did this a medium amount n(%)	I typically did this a lot n(%)	Missing n(%)
I express my negative feelings.	54 (13.4)	150 (37.1)	120 (29.7)	79 (19.6)	1 (0.2)
I try to find comfort in my religion or spiritual beliefs.	184 (45.5)	92 (22.8)	61 (15.1)	66 (16.3)	1 (0.2)
I try to get advice or help from other people about what to do.	44 (10.9)	112 (27.7)	149 (36.9)	98 (24.3)	1 (0.2)
I learn to live with it.	14 (3.5)	71 (17.6)	164 (40.6)	155 (38.4)	0
I think hard about what steps to take.	33 (8.2)	109 (27)	152 (37.6)	110 (27.2)	0
I blame myself for things that happened.	110 (27.2)	119 (29.5)	90 (22.3)	84 (20.8)	1 (0.2)
I pray or meditate.	180 (44.6)	96 (23.8)	71 (17.6)	57 (14.1)	0
I make fun of the situation.	74 (18.3)	107 (26.5)	91 (22.5)	132 (32.7)	0

To what extent have the stress coping responses used by undergraduate university students changed since the COVID-19 pandemic began?

The paired sample t-tests indicated 9 of the 14 coping mechanisms changed significantly since the beginning of the pandemic. There was a significant difference in reported use of: self-distraction, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, humor, and acceptance. All nine coping mechanisms increased significantly since the pandemic began. Table 5 shows results of the paired sample t-tests.

Table 5

Coping Mechanisms Use Prior to and Since COVID-19 Began Paired Sample T-tests

	N	*M*	*SD*	*t(df)*	*p*
Self- distraction (prior)	403	6.1439	1.3417	-4.823 (402)	<.001*
Self-distraction (since)	403	6.4963	1.3900		
Active coping (prior)	400	5.8325	1.3561	0.824 (399)	.410
Active coping (since)	400	5.7776	1.5244		
Denial (prior)	402	2.9602	1.3054	-6.488 (401)	<.001*
Denial (since)	402	3.4154	1.7064		
Substance use (prior)	403	2.9530	1.5046	-6.886 (402)	<.001*
Substance use (since)	403	3.4442	1.912		
Use of emotional support (prior)	401	5.0773	1.5721	-3.963 (400)	<.001*
Use of emotional support (since)	401	5.3641	1.7523		
Use of instrumental support (prior)	401	5.2394	1.5867	-3.638 (400)	<.001*
Use of instrumental support (since)	401	5.5137	1.7523		
Behavioral disengagement (prior)	397	3.4710	1.4468	-4.849 (396)	<.001*
Behavioral disengagement (since)	397	3.7909	1.7289		
Venting (prior)	399	4.5213	1.4576	-3.673 (398)	<.001*
Venting (since)	399	4.7494	1.5441		

	N	*M*	*SD*	*t(df)*	*p*
Positive reframing (prior)	403	5.5112	1.5281	-3.673 (398)	<.001*
Positive reframing (since)	403	5.7022	1.6179		
Planning (prior)	403	5.5484	1.4827	-2.800 (402)	.005
Planning (since)	403	5.7395	1.5926		
Humor (prior)	403	5.5112	1.8799	-3.165 (402)	.002*
Human (since)	403	5.7196	2.0008		
Acceptance (prior)	401	5.9751	1.4256	-4.101 (400)	<.001*
Acceptance (since)	401	6.2494	1.3956		
Religion (prior)	402	3.8856	1.9930	-2.196 (401)	.029
Religion (since)	402	4.042	2.0892		
Self-blame (prior)	401	5.2444	1.6897	-.772 (400)	.440
Self-blame (since)	401	5.2943	1.8312		

*Indicates a statistically significant difference

Summary

The purpose of this study was to assess the stress-coping mechanisms used by undergraduate university students prior to and since the COVID-19 pandemic began. The most commonly used stress-coping mechanism before and since the pandemic began was "doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping" (*M*=6.1439, *SD*=1.3417; *M*=6.4963, *SD*=1.3900), which is an avoidance coping mechanism. The second most used coping mechanism prior to and since the pandemic was "making fun of it" (*M*=5.5112, *SD*=1.8799; *M*=5.7196, *SD*=2.0008), a humor coping mechanism. The third coping mechanism changed; prior to the pandemic students turned "to work or other activities to take my mind off of things"

(*M*=6.1439, *SD*=1.3417) which is self-distraction. Since the beginning of the pandemic students have been learning to live with it (*M*=6.2494, *SD*=1.3956), which is acceptance. There was a statistically significant change in the use of self-distraction ($t(402)=-4.823$, $p<.001$), denial ($t(401)=-6.488$, $p<.001$), substance use ($t(402)=-6.886$, $p<.001$), use of emotional support ($t(400)=-3.963$, $p<.001$), use of instrumental support ($t(400)=-3.638$, $p<.001$), behavioral disengagement ($t(396)=-4.849$, $p<.001$), venting ($t(398)=-3.673$, $p<.001$), humor ($t(402)=-3.165$, $p<.001$), and acceptance ($t(400)= -4.101$, $p<.001$) to cope since the beginning of the pandemic. The use of active coping, positive reframing, planning, religion, and self-blame did not change significantly.

Chapter 5

Overview

This study used a convenience sample of undergraduate university students in select courses from a mid-sized midwestern university to assess the stress coping mechanisms used by undergraduate university student prior to and since the COVID-19 pandemic began. Participants were asked to complete the 28-item Brief COPE inventory for which stress-coping mechanisms they used prior to and since pandemic began. The 28-item Brief COPE inventory measures 14 different coping responses. At the end of the survey, four demographic items were collected; gender, age, year in school, and race.

Data collection was done electronically and in person in a supervised format. Electronic surveys were collected using Qualtrics (https://www.qualtrics.com/). Paper surveys were collected by the student researcher after entering classrooms with professor permission to survey courses. The paper and Qualtrics (https://www.qualtrics.com/) surveys were combined, and data analysis was done using the IBM Statistical Package for the Social Sciences (SPSS™) 27. In total, 404 completed surveys were used for analysis.

Conclusions

The first and second most commonly used coping mechanisms prior to and since the pandemic were avoidance and humor. The third most commonly used coping mechanism changed since the COVID-19 pandemic began. Prior to the pandemic students turned to work or other activities to take their mind off of things, which is an avoidance coping mechanism. Since the pandemic began, students are learning to live with it, which is an acceptance coping mechanism. Five of the coping mechanisms that

significantly increased were positive coping mechanisms. The increased use of emotional support, instrumental support, venting, humor, and acceptance are encouraging. Increased use of positive coping mechanisms has been associated with better emotional regulation, mental health, health outcomes, and academic achievement (Heffer & Willoughby, 2017; Kecojevic et al., 2020). Four of the coping mechanisms that significantly increased were negative coping mechanisms; denial, substance abuse, behavioral disengagement, and self-distraction. This is concerning because negative coping mechanism use can impact students' health, well-being, and academic performance (Chao, 2012; Deasy, et al., 2014; Dijkstra & Homan, 2016; Gustems-Carnicer & Calderón, 2012). Long-term, the vast number of concerns and challenges faced during a pandemic may lead to an increase in global morbidity and poor mental health (Torales et al., 2020). Increasing interventions to help undergraduate university students increase their use of positive coping mechanisms will help students work through the mental impacts and changes that have occurred since the beginning of the pandemic. Programming specifically focused on reducing the use of avoidance as a coping mechanism may reduce psychological distress and increase students' well-being (Gustems-Carnicer & Calderón, 2012; Chao, 2012).

Discussion

There was an increase in the use of emotional and instrumental support and venting. This shows some students were able to adapt and use positive coping mechanisms to increase their overall well-being. Venting confronts stress, so in the short term venting is a healthy and positive way for students to cope (Dijkstra & Homan, 2016). However, long term use of venting can become a negative coping mechanism. For

students to successfully adjust to university life and the pandemic, students need emotional and instrumental support (Heffer & Willoughby, 2017). Emotional and instrumental support are increasingly important during the COVID-19 pandemic in young adults to help them improve academic performance, regulate their emotions, and increase overall well-being (Kazerooni et al., 2020). Since the pandemic began the students' stress levels have continued to rise (Kecojevic et al., 2020). Researchers have found that using positive coping mechanisms can improve students' mental health and overall health outcomes (Kecojevic et al., 2020).

Social isolation and COVID-19 precautions have decreased students' ability to connect with their peers, which hurts students' mental health, use of social support, and overall stress level (Orben et al., 2020). Increasing the emotional support students receive has been associated with increasing their psychological well-being and use of other positive stress-coping mechanisms (Deasy, et at. 2014; Frydenberg, 2014; Roming & Howard, 2019). The sooner students are able to effectively use positive coping mechanisms their risk of anxiety disorders, depression, and future disease will decrease. Programming focused on positive coping mechanisms could help students gain the knowledge they need to cope with stress.

The statistically significant changes in the use of negative coping mechanisms reported in this study shows an urgent need for student programming. Results from this study indicated an increase in the use of self-distraction, denial, substance use, behavioral disengagement, and venting. Self- distraction and denial allow individuals to avoid a stressor, which can be okay in the short term, but when used for long periods of time

becomes a negative coping strategy (Dijkstra & Homan, 2016). Stressors must be dealt with eventually. Decreasing the use of self-distracting, denial, and behavioral disengagement would encourage students to face stressors head on rather than trying to avoid them. Using negative strategies to cope with stressors commonly leads students to turn to alcohol or other drugs (Deasy, et al., 2014; Dijkstra & Homan, 2016; Gustems-Carnicer & Calderón, 2012). Reducing the use of avoidance as a coping mechanism may reduce psychological distress and increase students' well-being (Gustems-Carnicer & Calderón, 2012; Chao, 2012). When students negatively cope with stress, it impacts their health, well-being and academic performance (Chao, 2012; Deasy, et al., 2014; Dijkstra & Homan, 2016; Gustems-Carnicer & Calderón, 2012).

Implications for Health Educators

Understanding students' current use of coping strategies will help universities create effective programs to support students well-being and decrease their use of negative coping mechanisms. Universities may provide information and programs for students to learn about positive coping strategies (Deasy, et al., 2014). Research suggests increasing emotional support is key, as it is positively correlated with increased psychological well-being and using more positive stress-coping mechanisms (Deasy, et at. 2014; Frydenberg, 2014; Roming & Howard, 2019). Students may decrease distress quicker if emotional support is one of the first coping mechanisms discussed in a program. Emotional support is positively related to students' mental health and has also been shown to increase use of other positive coping strategies (Kecojevic et al., 2020). Educating students on how to properly cope with stressors may decrease their risk of poor

mental health, distress, and poor academic outcomes (Gustems-Carnicer & Calderón, 2012). Improving students' ability to cope with stress will also benefit universities by increasing students' academic performance and overall health and well-being. Coping is the key to reducing, minimizing, and/ or tolerating stress and preventing psychological distress (Deasy et al., 2014).

Some successful coping programs have implemented classroom education, modeling, role playing, and homework assignments to teach coping strategies (Bettis et al., 2016). Interventions that teach coping skills in a classroom setting have been effective (Bettis et al., 2016). These program help educate students on stress, health, and to aid students in developing positive coping strategies. Modeling and role-playing stressful events and how to cope with them, was well received by undergraduate university students in the programs because of the hands-on approach. Other evidence-based programs have been successful when involving principles of cognitive behavioral therapy, positive psychology, goal-oriented performance psychology, mindfulness, and meditation to help students develop positive coping mechanisms to cope with stress (Delany et al., 2015; Deasy et al., 2014; Kang et al., 2008). Involving different types of psychology and behavioral therapy in programs has been shown to help students identify personal stressors and their beliefs and responses about their stressors. Once students understood their stressors, the program helped them refocus into how they can instead use positive coping strategies (Delany et al., 2015). Mindfulness and meditation teachings have been effective to significantly decrease stress and anxiety in nursing students (Kang et al., 2008).

Student mentoring or advising have not been used in the past but could help increase the amount of emotional and instrumental support students receive. This additional support would encourage a sense of community among students and increase the likelihood they will reach out when they are struggling and thus decreasing anxiety and depression rates. Previous coping mechanism programs can help guide health educators to successful programs for the undergraduate student population (Deasy et al., 2014). Information sharing between universities, like used in the 'Healthy Universities' program could be used help universities learn what has worked in various settings and better adapt programming strategies to the needs of the undergraduate student populations (Deasy, et at. 2014). Universities who begin implementing student centered support programs now to help students combat poor mental health and academic outcomes may help decrease the overall global mental health burden of COVID-19 (Grubic et al, 2020).

Implications for Future Research

This study used a convenience sample to collect data. It did not target specific undergraduate student groups and participants varied by year in school. Most respondents were white, female, and in their third year of college. It would be beneficial to use a sample more similar to the actual student gender and race composition at the university being studied. A larger sample should also be used to increase accuracy. A focus on freshmen students specifically, may be helpful to understand students' knowledge and ability to coping when they enter college. This would allow universities to tailor programming to best fit their students. The ability to begin teaching applicable skills to

younger students, based off of research, may help them cope better throughout their whole college experience.

Future research should explore which stress coping mechanisms are used by high-risk students who are more likely to experience pandemic stress and negative health outcomes. Research should focus on understanding the unique effects of decreased peer interactions on students. How often students accurately use positive coping mechanisms should be evaluated. Future research should explore if the positive and negative coping mechanisms used by individuals during the pandemic may affect their future coping mechanism use and overall health. Qualitative data collection could help researchers create tools to identify individuals at an increased risk or in need of intervention. The specific, current stress level of undergraduate students since the pandemic began should be evaluated. Gathering data from various universities would help researchers understand how large, medium, and small universities' student populations have coped with stress during the pandemic and the potential differences between universities. Further research in these areas may help researchers combine different components of previously successful coping programs to best fit the universities' undergraduate student population. Knowledge sharing between universities would also be helpful to see the different program responses from students.

The usability and readability issue of the electronic version of the survey must be addressed if the study is repeated. The stress coping response options were not visible for all questions which made electronic survey response much more difficult than on paper. Online, the survey was listed on one long page versus two pages from front to back like

the in-person paper surveys. Some respondents missed one side of the survey because of the format, but otherwise the paper survey seemed to be more well-received than the electronic survey. There was a much lower electronic response rate than in-person, although electronic distribution could reach a larger student population. Electronic survey responses were also clearly marked. In-person surveys were not always clearly marked, and some answers had to be disregarded because they were not clear. In-person surveys included two pages both front and back.

Summary

Researchers found significant changes in 9 out of the 14 main coping mechanism groups used by undergraduate university students. Before and since the pandemic began the top two stress coping mechanisms used by undergraduate university students were avoidance and humor coping mechanisms. These both significantly increased since the pandemic began. The third most common coping mechanism used prior to the pandemic was self-distraction, while since the pandemic began students have been using acceptance as a coping mechanism.

This research provides evidence to support the need for student health programming to increase students' use of positive coping mechanisms. Programs to increase students' use of positive coping strategies and positive reframing may increase their psychological well-being, stress level, mental health, and health outcomes. Universities must begin implementing strategies to help undergraduate university students understand crisis management, self- care, and use of positive coping mechanisms (Kazerooni et al., 2020). Universities have a role in educating students about

coping mechanisms to increase their overall academic, future, and health outcomes. Specifically increasing students' emotional and instrumental support may help emotional regulation and increase overall well-being (Kazerooni et al., 2020). Future research should explore a larger and accurately diverse university population and which stress coping mechanisms are used by high risk students who are more likely to experience pandemic stress and negative health outcomes.

References

Adams, S. K., Murdock, K. K., Daly-Cano, M., & Rose, M. (2020). Sleep in the social world of college students: bridging interpersonal stress and fear of missing out with mental health. *Behavioral Sciences, 10*(2), 54. https://doi.org/10.3390/bs10020054

American Psychological Association (2020). *Stress in America™ 2020: A national mental health crisis.* https://www.apa.org/news/press/releases/stress/2020/report-october

Arenas, D. L., Viduani, A. C., Bassols, A. M. S., & Hauck, S. (2020). Peer support intervention as a tool to address college students' mental health amidst the COVID-19 pandemic. *International Journal of Social Psychiatry, 67*(3), 301-302. https://doi.org/10.1177/0020764020954468

Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D. D., Green, J. G., Hasking, P., Murray, E., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Stein, D. J., Vilagut, G., Zaslavsky, A. M., Kessler, R. C., & WHO WMH-ICS Collaborators. (2018). WHO world mental health surveys international college student project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology, 127*(7), 623–638. https://doi.org/10.1037/abn0000362

Bäuerle, A., Steinbach, J., Schweda, A., Beckord, J., Hetkamp, M., Weismüller, B., Kohler, H., Musche, V., Dörrie, N., Teufel, M., & Skoda, E.-M. (2020). Mental Health Burden of the COVID-19 Outbreak in Germany: Predictors of Mental

Health Impairment. *Journal of Primary Care & Community Health, 11*. https://doi.org/10.1177/2150132720953682

Bettis, A.H., Coiro, M.J., England, J., Murphy, L. K., Zelkowitz, R.L., Dejardins, Eskridge, R., Adery, L. H., Yarboi, J., Pardo, D., & Compas, B.E. (2017). Comparison of two approaches to prevention of mental health problems in college students: Enhancing coping and executive function skills, *Journal of American College Health*, *65*(5), 313-322. https://doi.org/10.1080/07448481.2017.1312411

Bhujade, V. M. (2017). Depression, anxiety and academic stress among college students: A brief review. *Indian Journal of Health & Wellbeing*, *8*(7), 748–751. http://www.i-scholar.in/index.php/ijhw/article/view/156895

Carver, C. (2018a). *Brief COPE.* Department of Psychology. https://local.psy.miami.edu/people/faculty/ccarver/availbale-self-report-instruments/brief-cope/

Carver, C. (2018b). *COPE (complete version).* Department of Psychology. https://local.psy.miami.edu/people/faculty/ccarver/availbale-self-report-instruments/cope/

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. *International Journal of Behavioral Medicine*, *4*(92). https://doi.org/10.1207/s15327558ijbm0401_6

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, *56*(2), 267-283. https://doi.org/10.1037//0022-3514.56.2.267

Center for Disease Control and Prevention. (2020). *Coronavirus disease 2019 (COVID-19)*. https://www.cdc.gov/coronavirus/2019-nCoV/index.html

Center for Disease Control and Prevention. (2021). *Mental health and coping during COVID-19*. https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html

Chandu, V. C., Marella, Y., Panga, G. S., Pachava, S., & Vadapalli, V. (2020). Measuring the impact of COVID-19 on mental health: A scoping review of the existing scales. *Indian Journal of Psychological Medicine, 42*(5), 421-427. https://doi.org/10.1177%2F0253717620946439

Choi, K. R., Heilemann, M. V., Fauer, A., & Mead, M. (2020). A second pandemic: Mental health spillover from the novel coronavirus (COVID-19). *Journal of the American Psychiatric Nurses Association*, *26*(4), 340–343. https://journals.sagepub.com/doi/full/10.1177/1078390320919803

Chao, R. C. (2012). Managing perceived stress among college students: The role of social support and dysfunctional coping. *Journal of College Counseling, 15*(1), 5-21. https://doi.org/10.1002/j.2161-1882.2012.00002.x

Coiro, M. J., Bettis, A. H., & Compas, B. E. (2016). College students coping with interpersonal stress: Examining a control-based model of coping. *Journal of American College Health*, *65*(3), 177–186. https://doi.org/10.1080/07448481.2016.1266641

Cucinotta, D., & Vanelli, M. (2020). WHO Declares COVID-19 a Pandemic. *Acta Biomedica Atenei Parmensis*, *91*(1), 157–160. https://doi.org/10.23750/abm.v91i1.9397

Deasy, C., Coughlan, B., Pironom, J., Jourdan, D., & Mannix-McNamara, P. (2014). Psychological distress and coping amongst higher education students: A mixed method enquiry. *PloS one*, *9*(12), e115193. https://doi.org/10.1371/journal.pone.0115193

Delany, C., Miller, K. J., El-Ansary, D., Remedios, L., Hosseini, A., & McLeod, S. (2015). Replacing stressful challenges with positive coping strategies: a resilience program for clinical placement learning. *Advances in Health Sciences Education: Theory and Practice*, *20*(5), 1303–1324. https://doi.org/10.1007/s10459-015-9603-3

Dijkstra, M. T., & Homan, A. C. (2016). Engaging in rather than disengaging from stress: Effective coping and perceived control. *Frontiers in Psychology*, *7*, 1415. https://doi.org/10.3389/fpsyg.2016.01415

Fiorillo, A., & Gorwood, P. (2020). The consequences of the COVID-19 pandemic on mental health and implications for clinical practice. *European Psychiatry*, *63*(1), e32, 1–2 https://doi.org/10.1192/j.eurpsy.2020.35

Frydenberg, E. (2014). Coping research: Historical background, links with emotion, and new research directions on adaptive processes, *Australian Journal of Psychology*, *66*(2), 82-92. https://doi-org.ezproxy.mnsu.edu/10.1111/ajpy.12051

Grubic, N., Badovinac, S., & Johri, A. M. (2020). Student mental health in the midst of the COVID-19 pandemic: A call for further research and immediate solutions. *International Journal of Social Psychiatry*, *66*(5), 517–518. https://doi.org/10.1177/0020764020925108

Gustems-Carnicer, J. & Calderón, C. (2012). Coping strategies and psychological well-being among teach education students. *European Journal of Psychology of Education, 28*(4), 1127-1140. https://doi.org/10.1007/s10212-012-0158-x

Heffer, T., & Willoughby, T. (2017). A count of coping strategies: A longitudinal study investigating an alternative method to understanding coping and adjustment. *PLoS ONE*, *12*(10), 1–16. https://doi.org/10.1371/journal.pone.0186057

Huang, J., Nigatu, Y. T., Smail-Crevier, R., Zhang, X., & Wang, J. (2018). Interventions for common mental health problems among university and college students: A systematic review and meta-analysis of randomized controlled trials. *Journal of Psychiatric Research, 107*, 1–10. https://doi.org/10.1016/j.jpsychires.2018.09.018

Kang, Y.S., Choi, S.Y., & Ryu, E. (2008). The effectiveness of a stress coping program based on mindfulness meditation on the stress, anxiety, and depression experienced by nursing students in Korea. *Nurse Education Today, 29*(2009), 538-543. https://doi.org/10.1016/j.nedt.2008.12.003

Kazerooni, A. R., Amini, M., Tabari, P., & Moosavi, M. (2020). Peer mentoring for medical students during the COVID-19 pandemic via a social media platform. *Medical Education*, *54*(8), 762–763. https://doi.org/10.1111/medu.14206

Kecojevic A., Basch C.H., Sullivan M., & Davi N.K. (2020) The impact of the COVID-19 epidemic on mental health of undergraduate students in New Jersey, cross-sectional study. *PLoS ONE 15*(9). https://doi.org/10.1371/journal.pone.0239696

Mayo Clinic. (2019). *Identify your stress triggers*. https://www.mayoclinic.org/healthy-lifestyle/stress-management/in-depth/stress-management/art-20044151

Merriam-Webster. (n.d.). *Mental.* In Merriam-Webster dictionary. Retrieved August 13, 2020, from https://www.merriam-webster.com/dictionary/mental

Muscatell, K. A. & Eisenberger, N. I. (2012). A social neuroscience perspective on stress and health. *Soc Personal Psychol Compass*, *6*(12), 890-904. https://doi.org/10.1111/j.1751-9004.2012.00467.x

National Center for Education Statistics. (2021). *College enrollment rates*. https://nces.ed.gov/programs/coe/indicator/cpb

National Research Council (US) Committee on Recognition and Alleviation of Distress in Laboratory Animals (2008*). Stress and distress: Definitions.* National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK4027/

Orben, A., Tomova, L., & Blakemore, S. (2020). The effects of social deprivation on adolescent development and mental health. *The Lancet Child & Adolescent Health*, *4*(8), 634-640. https://doi.org/10.1016/s2352-4642(20)30186-3

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2015). College students: Mental health problems and treatment considerations. *Academic Psychiatry: The Journal of the American Association of Directors of Psychiatric Residency*

Training and the Association for Academic Psychiatry, *39*(5), 503–511. https://doi.org/10.1007/s40596-014-0205-9

Rai, K., & Gill, G. (2016). Loneliness in relation to social networking site usage among university students. *Indian Journal of Health & Wellbeing*, *7*(5), 518–521. https://www.semanticscholar.org/paper/Loneliness-in-Relation-to-Social-Networking-Site-Rai-Gill/caa8396ceaafe8a3701b0fc06878f9416bfee681

Reblin, M., & Uchino, B. N. (2008). Social and emotional support and its implication for health. *Current opinion in psychiatry*, *21*(2), 201–205. https://doi.org/10.1097/YCO.0b013e3282f3ad89

Roming, S., & Howard, K. (2019). Coping with stress in college: Can examination of spirituality, social support, and quality of life. *Mental Health, Religion & Culture*, *22*(8), 832–843. https://doi-org.ezproxy.mnsu.edu/10.1080/13674676.2019.1674794

Shigemura, J., Ursano, R. J., Morganstein, J. C., Kurosawa, M., & Benedek, D. M. (2020). Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. *Psychiatry and Clinical Neurosciences*, *74*(4), 281–282. https://doi.org/10.1111/pcn.12988

The National EMSC data analysis resource center. (2019a). *Descriptive study*. University of Utah. https://www.nedarc.org/statisticalhelp/projectdesign/descriptivestudy.html

The national EMSC data analysis resource center. (2019b). *Retrospective Study.* University of Utah. https://www.nedarc.org/statisticalhelp/projectdesign/retrospectivestudy.html.

Torales, J., O'Higgins, M., Castaldelli-Maia, J. M., & Ventriglio, A. (2020). The outbreak of COVID-19 coronavirus and its impact on global mental health. *International Journal of Social Psychiatry*, *66*(4), 317–320. https://doi.org/10.1177/0020764020915212

Tran, A. W. Y., & Lumley, M. N. (2019). Internalized stigma and student well-being: The role of adaptive and maladaptive coping. *Social Work in Mental Health, 17*(4), 408–425. https://doi.org/10.1080/15332985.2018.1563023

Welle, P.D. & Graf, H.M. (2011). Effective lifestyle habits and coping strategies for stress tolerance among college students, *American Journal of Health Education*, *4*(2), 96-105. https://doi.org/10.1080/19325037.2011.10599177

Appendix A

Informed Consent Document

Project Title: Assessing Stress Coping Strategies in Relation to the COVID-19 Pandemic

Principal Investigator: Joe Visker, PhD, MCHES®, FESG; Minnesota State University, Mankato

Student Investigator: Kaylee Diefenderfer, MS Student, Department of Health Science

WHAT IS THE PURPOSE OF THIS STUDY?

You are being invited to take part in a research study designed to assess differences in stress coping strategy use prior to the COVID-19 pandemic and in the present among university students.

WHAT IS THE PURPOSE OF THIS FORM? This consent form gives you the information you will need to help you decide whether to be in the study or not. Please read the form carefully in its entirety. You may ask any questions about the research, the possible risks and benefits, your rights as a volunteer, and anything else that is not clear. When all of your questions have been answered, you can decide if you want to be in this study or not.

WHY AM I BEING INVITED TO TAKE PART IN THIS STUDY?

You are being invited to take part in this study because you are currently enrolled as an undergraduate student at Minnesota State University, Mankato. You must be 18 years or older and a current undergraduate student to participate in this study.

WHAT WILL HAPPEN DURING THIS STUDY AND HOW LONG WILL IT TAKE?

You will be asked to complete a survey designed to assess your use of stress coping strategies prior to the onset of the COVID-19 pandemic and those you currently use. The survey will take approximately 15 minutes to complete.

WHAT ARE THE RISKS OF THIS STUDY?

The risks involved in participating in this study are minimal and are no more than what a person would experience on a typical day-to-day basis. No identifying marks, personal-identifying information, or contact information (other than demographic items) will be collected. Data from the surveys and all data will be kept on password protected computers and on the secure survey through Qualtrics®. You are free to stop answering

survey at any time and may skip any question(s) you do not want to answer. If you are taking this survey online and decide to participate, you are advised to take the survey in a location that offers maximum privacy (out of the view of others). In addition, if you decide to take the survey, please make sure that your internet connection is secure before beginning the survey. If you are taking this survey in paper format, please keep your eyes on your own survey.

WHAT ARE THE BENEFITS OF THIS STUDY?

We do not know if you will benefit from being in this study. However, this study will help health professionals understand if/how coping methods have changed and the extent to which unhealthy coping strategies are being used. This will then allow health professionals to plan health promotion programs designed to promote healthy stress coping.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study.

WHO WILL SEE THE INFORMATION I GIVE?

The information you provide during this research study will be kept confidential. To help protect confidentiality, all surveys will be confidential. Electronic data will be kept on a password-protected computer and on the secured server of Qualtrics®. After 3 years, electronic files will be deleted. Data access will be limited to the principal investigator. If the results of this project are published your identity will not be made public.

DO I HAVE A CHOICE TO BE IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. You will not be treated differently if you decide to stop taking part in the study. The decision whether or not to participate will not affect your relationship with Minnesota State University, Mankato, and refusal to participate will involve no penalty or loss of benefits. If you have any questions about this research study, contact Dr. Joe Visker at 507-389-2757 or joseph.visker@mnsu.edu. If you have any questions about participants' rights and for research-related injuries, please contact the Administrator of the Institutional Review Board at (507) 389-1242. By proceeding to the survey, you agree that you have read the informed consent document and wish to participate in the study. Completion of the survey implies informed consent. If you would like more information about the specific privacy and anonymity risks posed by online

surveys, please contact the Minnesota State University, Mankato IT Solutions Center (507-389-6654) and ask to speak to the Information Security Manager.

IRBNet# 1816947

Sources:

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. International Journal of Behavioral Medicine, 4, 92-100

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267-283.

Appendix B

MINNESOTA STATE UNIVERSITY
MANKATO

September 29, 2021

Re: IRB Proposal [1816947-3] Assessing Stress Coping Strategies in Relation to the COVID-19 Pandemic
Review Level: Exempt (Level I)

Congratulations! Your Institutional Review Board (IRB) Proposal has been approved as of September 29, 2021.

On behalf of the Minnesota State University, Mankato IRB, we wish you success with your study. Please remember that you must seek approval for any changes in your study, its design, funding source, consent process, or any part of the study that may affect participants in the study (https://research.mnsu.edu/institutional-review-board/proposals/process/proposal-revision/).

Should any of the participants in your study suffer a research-related injury or other harmful outcomes, you are required to report them immediately to the Associate Vice-President for Research and Dean of Extended Campus at 507-389-1242.

When you complete your data collection or should you discontinue your study, you must submit a Closure request. All documents related to this research must be stored for a minimum of three years following the date on your Closure request (https://research.mnsu.edu/institutional-review-board/proposals/process/proposal-closure/).

If the PI leaves the university before the end of the 3-year timeline, he/she is responsible for ensuring proper storage of consent forms (https://research.mnsu.edu/institutional-review-board/proposals/process/leaving-campus/). Please include your IRBNet ID number with any correspondence with the IRB.

Be well,

Julie Carlson, Ed.D.,
Co-Chair of IRB

Jeffrey Buchanan, Ph.D.,
Co-Chair of IRB

Jason A. Kaufman, Ph.D., Ed.D.,
Director of IRB

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Minnesota State University, Mankato IRB's records.