Factors Influencing Mental Health Outcomes of University Personnel During the COVID-19 Pandemic

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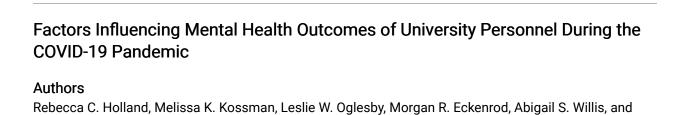Follow this and additional works at: https://scholarsjunction.msstate.edu/jphds

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Abstract

Background: Previous research links the COVID-19 pandemic to negative effects on physical and mental health. However, little is known about how those effects can be influenced. Additionally, students, faculty, and staff on college campuses experience mental health issues regularly, which were heightened during the pandemic. *Purpose*: Given the previously identified impacts of the COVID-19 pandemic on mental health, the purpose of this study was to describe the current state of mental health within a university community and identify the relationship between mental health and excessive worry during the COVID-19 pandemic, including the mediating role of resilience and grit. *Methods*: A questionnaire assessing mental health symptoms (depression, anxiety, stress) and worry related to the pandemic was created, validated, and distributed to all students, faculty, and staff on a college campus in the southeastern United States. Unadjusted and adjusted ordinal logistic regression models were used to examine the cross-sectional association between mental health and worry and the influence of resilience and grit. *Results*: Participants (n=162) experienced varying levels of stress, anxiety, and depression with normal levels of resilience (mean=3.76±0.59) and grit (mean=3.32±0.38) and some level of pandemic-related worry. Participants with mild anxiety and stress, and moderate/severe anxiety, stress, and depression were more worried, attenuated by resiliency. *Conclusion*: Resiliency is an important confounding factor between mental health and worry. College/university campuses should prioritize establishing resilience within their community to improve emotional responses to changes in mental health.

Keywords: mental health, social distancing, community-based, resiliency, grit

Introduction

The novel, severe acute coronavirus 2 or (SARS-CoV-2), is a highly contagious virus that originated in December 2019 in Wuhan, China and quickly migrated to the United States (National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases, 2021; Holshue et al., 2020). The virus, SARS-CoV-2, causes the disease known as COVID-19. According to the World Health Organization (WHO), the majority of people that contract COVID-19 will experience mild to moderate respiratory symptoms, in which recovery will require no special treatment (WHO, 2021a). Long-term, COVID-19 cases can affect multiple body systems, which may cause temporary, semi-permanent, or permanent damage to the respiratory, cardiovascular, musculoskeletal, and nervous systems. Additionally, mental health conditions, such as post-traumatic stress disorder, anxiety, depression, and insomnia, may be experienced more frequently and with longer durations (Fernández-de-las-Peñas et al., 2021). However, more research is needed to better understand the long-term and lasting effects of the COVID-19 pandemic on health, specifically mental health.

One of the biggest challenges identified as affecting individuals during the COVID-19 pandemic was the isolation that resulted from social and physical distancing, which can impact physical and mental health (Smith & Lim, 2020; CDC, 2021b). Physical distancing is maintaining a safe space, approximately six feet, or two arms-length, between yourself and those who do not reside in your household (WHO, 2020). However, many people interpreted these recommendations to mean disconnecting from loved ones and family, also known as social distancing (WHO, 2021b). While some individuals prefer being alone, forced isolation can cause physical and mental distress, particularly among those who prefer a more social atmosphere. Multiple studies have indicated the rise of stress, depression, and anxiety as a result of COVID-19 (Naser et al., 2020; Odriozola-González et al., 2020; C. Wang & Zhao, 2020). Potential drivers of this change may be exacerbated by fear of the unknown, fear of infection, insomnia, abrupt changes in mood, and constant worry about social and economic issues resulting from COVID-19 (Elmer et al., 2020).

Mental health was greatly affected during the COVID-19 pandemic including increased symptoms of emotional distress, stress, depression, anxiety, anger, mood swings, and more (Ahmed et al., 2020; Brooks et al., 2020; Cao et al., 2020; Rubin & Wessely, 2020; Y. Wang et al., 2011, 2021). Another population particularly affected by stressors brought on by the COVID-19 pandemic is students, perhaps due to changes in the educational environment for degree progression and the impact on the state of the job market (Elmer et al., 2020; Lee et al., 2021; Naser et al., 2020; Odriozola-González et al., 2020; C. Wang & Zhao, 2020). Results of one study from a university in Spain indicated that more than half of students have experienced moderate to severe impacts on their mental health during the pandemic (Odriozola-González et al., 2020). Within North America, several studies demonstrate similar relationships with varying levels of increase on stress levels and mental health from 33%-75% (Prowse et al., 2021; X. Wang et al., 2020a). Prior to the pandemic, 20% of college students suffered from a diagnosable mental health disorder. Post-pandemic, research has shown that 40-50% of college students showed moderate-to-severe levels of depression or anxiety with almost 20% having suicidal thoughts. To date, no studies have examined the effects of the COVID-19 pandemic on faculty or staff mental health in North America. In one study completed in Ireland, academic staff showed moderate stress levels, mental health status, and poor emotional well-being (Shen & Slater,

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2021). Faculty and staff tend to be more permanent members of their larger community than students and certain communities have been affected by the COVID-19 pandemic more than others. The effects of the COVID-19 pandemic on mental health tend to be heightened in communities where poorer health conditions exist (Salari et al., 2020). COVID-19 and its associated negative health-related outcomes disproportionately affect vulnerable and marginalized populations and communities with structural inequities, such as those related to low socioeconomic status (Greenaway et al., 2020; Saltzman et al., 2021). The southern region of the United States, where this study was conducted, is afflicted with many of these environmental risk factors for health. Considering faculty and staff are community members, it is possible that similar environmental factors influence their COVID-19-related outcomes as well. It is important to determine factors that can improve mental health outcomes in high-risk populations.

Resilience and grit are two factors that can influence mental health outcomes (Howard et al., 2021; Hu et al., 2015a; Rutten et al., 2013). Resilience is defined as the ability to persist when faced with challenges; whereas, grit is the strength to power through challenges (Duckworth et al., 2007; Herrman et al., 2011). Evidence suggests that individuals with high levels of resilience show fewer negative mental health impacts during periods of adversity and great stress as compared to those with lower levels of resilience (Hu et al., 2015b). A recent study focusing on grit and lifestyle behaviors during the pandemic reported that participants with higher grit tended to be more physically active, had less sedentary time, and exhibited healthier eating habits, which may protect against negative mental health outcomes (Totosy de Zepetnek et al., 2021).

Worry is a proven contributor to mental health decline during the COVID-19 pandemic (El-Gabalawy & Sommer, 2021; Elmer et al., 2020; Kämpfen et al., 2020). Alternatively, we propose that mental health could also contribute to worry due to worry being an emotional and adaptive response to circumstances (Blix et al., 2021; Sweeny & Dooley, 2017). Understanding what contributes to worry beyond what is normal for an individual can help to identify and implement resources promoting an appropriate response to pandemic-related circumstances. By intervening early, it can prevent further mental health decline brought on by excessive worry, or worry that is difficult to control (Muris et al., 2005). Given the previously identified impacts of the COVID-19 pandemic on mental health and worry, it is important to understand factors improving emotional response to mental health in students, faculty, and staff. Therefore, the purpose of this study was to describe the current state of mental health within a university community and identify the relationship between mental health and worry during the COVID-19 pandemic, including the mediating role of resilience and grit.

Methods

This cross-sectional study surveyed a convenience sample of students, faculty, and staff at a large, public university in the southeastern region of the United States. The study was approved by the University of Southern Mississippi Institutional Review Board prior to the initiation of data collection. Participants provided written informed consent before beginning the survey.

Participants and Procedures
Individuals were eligible to participate in this study if they met the following criteria: (1) at least 18 years-old; (2) access to a device allowing completion of an online survey, and (3) current

student, staff, or faculty member at the institution of interest. Participants were excluded if they did not meet these three inclusion criteria; no other exclusion criteria were used. The primary investigator used a university-wide listserv and postings within course shells on the Learning Management System to send emails to potential participants in June 2020. This email/posting detailed the purpose of the study, information about the participant role, contact information for the study team, and the link to the survey. Upon receipt of the email, potential participants could click the survey link, agree or disagree to participate, and complete the online survey if they chose to continue.

Instrumentation
The questionnaire for this study was crafted from previously validated survey instruments and included five primary sections: (1) demographics, (2) COVID-19 distancing behaviors, (3) physical health measures, (4) mental health measures, and (5) social and economic health measures. Prior to data collection, the questionnaire was piloted in a sample of students, staff, and faculty members, and revised for clarity. For the purpose of this portion of the study, the research team focused on mental health measures.

Exposure – Mental Health Measures
Questions about mental health addressed several domains of interest including depression, anxiety, and stress. Symptoms of depression, anxiety, and stress were measured through a summative validated instrument known as the Depression, Anxiety, and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995). The DASS-21 asks 21 questions all rated on a Likert scale from "did not apply to me at all" (0) to "applied to me very much, or most of the time" (3). The DASS-21 yields three subscale scores for depression, anxiety, and stress. Seven questions contribute to each domain and values are summed together and multipled by two to create a continuous domain score. The DASS-21 also provides cut-off scores to delineate severity from normal to extremely severe (Lovibond & Lovibond, 1995). For depression, a normal score is nine or less, mild is 10-13, and moderate-severe is 14 or higher. For anxiety, normal is seven or less, mild is eight-nine, and moderate-severe is 10 or higher. For stress, normal is 14 or less, mild is 15-18, and moderate-severe is 19 or higher.

Outcome – Worry
The survey also incorporated measures of social and economic health, which included several questions. These questions included categorical response options for items including how COVID-19 affected employment status and income and Likert scale options for items related to difficulty meeting monthly bill payments or eating less than one should because of a lack of money or food. One question in particular was used as the outcome for this analysis; the question read "how worried are you about the ability to do the things you need to do because of COVID-19? (For example: feed your family, complete your schoolwork, etc.). It assessed participants' level of worry, using a five-point Likert scale ranging from "not at all worried" to "worried all the time," and pertained specifically to how the pandemic has affected their ability to function normally.

Covariates
Covariates for this study included resilience, grit, physical health, and demographic variables as these are all aspects proven to influence mental health (El-Gabalawy & Sommer, 2021; Howard

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et al., 2021; Hu et al., 2015b; Kämpfen et al., 2020; PeConga et al., 2020). Resilience was measured using the validated Brief Resilience Scale (BRS - Smith et al., 2008). The BRS includes six questions that are rated on a Likert scale from strongly disagree (1) to strongly agree (5). Once completed, responses for all questions are summed and divided by six to create a final, average, continuous score (Smith et al., 2008). Grit was measured using the validated Duckworth eight-Item Short Grit Scale (Duckworth et al., 2007). This scale incorporated eight items rated on a Likert scale from not at all gritty (1) to extremely gritty (5). Points are summed and then dived by eight to create a final, average, continuous score (Duckworth et al., 2007). Both the BRS and grit scales provide cut-off scores to indicate severity of each domain (ex: low, normal, high (Duckworth et al., 2007; Smith et al., 2008)). Physical health was also measured considering its previously established relationship to mental health outcomes (Ohrnberger et al., 2017). Physical health was measured by asking participants to select the medical conditions that they had been told they had by a physician; number of physical health concerns was calculated as none, one, two, or three or more. Demographic questions included age, gender, race/ethnicity, and participants' roles at the institution (student, staff, faculty member).

Statistical Analyses
Scores for stress, anxiety, depression, grit, resilience, and worry were calculated according to instrumentation guidelines, which resulted in continuous domain scores. The DASS-21 provided clinical cut-points to determine the presence of "mild," "moderate," or "severe" depression, anxiety, and/or stress (Lovibond & Lovibond, 1995). These categorical variables were used for regression models.

A complete case analysis was conducted. Descriptive statistics were calculated for variables of interest including means and standard deviations for continuous data and frequencies and distributions for categorical data. Collinearity was examined for all variables of interest. Ordinal logistic regression models were used to examine the association between the three mental health measures, examined in independent models: stress, anxiety, and depression. First, bivariate associations were examined. Multivariable models were then examined, adjusted for covariates including physical health, role, gender, and race. Finally, resilience and grit were separately examined to determine how their addition to the model as a covariate would adjust the association between mental health measures and worry. Additionally, interactions between each mental health measure and resilience and grit were tested; Akaike Information Criterion (AIC) was used to assess the fit of models with or without the interaction terms added. The proportional odds assumption was tested to ensure each model was appropriate. All analyses were conducted in Stata/SE version 15.1 (College Station, TX), and statistical significance was set at an alpha level of 0.05.

Results

In total, 177 individuals completed the survey (mean age=42.0±14.5; 79.6% female); after excluding participants with missing data, 162 were included in analyses (92% of the full sample). A significant proportion of individuals were faculty members (n=68, 42.0%), and had no pre-existing physical health concerns (n=79, 48.8%). A majority participated in physical (n=87, 53.7%) and social (n=94, 58.0%) distancing all the time. Full participant demographics are

shown in Table 1.

Table 1

Characteristics of the Study Sample

Variable	Total Sample (n=162)
Age (mean, SD)	42.0 (14.5)
Gender [n (%)]	
Female	129 (79.6)
Male	33 (20.4)
Role [n (%)]	
Student	36 (22.2)
Staff	58 (35.8)
Faculty	68 (42.0)
Number of physical health concerns [n (%)]	
0	79 (48.8)
1	51 (31.5)
2	17 (10.5)
3 or more	15 (9.3)
Depression Category [n (%)]	
None	90 (55.6)
Mild	42 (25.9)
Moderate or Severe [n (%)]	30 (18.5)
Anxiety Category	
None	62 (38.3)
Mild	38 (23.5)
Moderate or Severe [n (%)]	62 (38.3)
Stress Category	
None	108 (66.7)
Mild	34 (21.0)
Moderate or Severe [n (%)]	20 (12.4)
Resilience [mean (SD)]	3.76 (0.59)
Grit [mean (SD)]	3.32 (0.38)
Worry [n (%)]	
Not at all	28 (17.0)
Not very	58 (35.2)
Somewhat	56 (33.9)
Mostly or All the Time	23 (13.9)

Participants experienced varying levels of depression-, stress-, and anxiety-related symptoms. Approximately half of the participants did not experience depression (n=90, 55.6%); whereas the remaining participants who did experience depression had either mild (n=42, 25.9%) or moderate/severe (n=30, 18.5%) depression. Similarly, approximately two-thirds of participants did not experience stress beyond normal ranges (n=108, 66.7%). While some participants did not suffer from symptomatic anxiety (n=62, 38.3%), just as many experienced moderate/severe symptoms of anxiety (n=62, 38.3%). Participants reported normal levels of resilience

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(mean=3.76±0.59; range=1-5) and grit (mean=3.32±0.38; range=1-5) as indicated by the pre-exiting scale cut-off scores (Duckworth et al., 2007; Smith et al., 2008). Lastly, most participants experienced at least some level of worry related to the pandemic (not at all: n=28, 17.0%; not very worried: n=58, 35.2%; somewhat worried: n=56, 33.9%; mostly worried or worried all the time: n=23, 13.9%). Additionally, resilience and grit were independently associated with worry (data not shown).

Table 2 includes the ordered logit models of the association between mental health and worry. Mild depression was not associated with worry. However, people that reported moderate/severe depression were significantly more worried as compared those who reported no depression (β = 1.74; 95%CI: 0.87, 2.61). Those that experienced mild anxiety (β = 0.89; 95%CI: 0.12, 1.67) and moderate/severe anxiety (β = 1.43; 95%CI: 0.67, 2.18) and mild stress (β=1.30; 95%CI: 0.54, 2.05) and moderate/severe stress (β = 2.03; 95%CI: 1.03, 3.03) also experienced greater worry as compared to those with no anxiety or stress. There was no change in level of significance when controlling for role, gender, physical health status, and race.

Table 2
Ordered Logit Models of the Association between Mental health Measures and Worry

	Unadjusted Coef (95% CI)	Adjusted[a] Coef (95% CI)
Depression[d]		
Mild	0.45 (-0.23, 1.13)	0.32 (-0.39, 1.02)
Moderate/ Severe	2.09 (1.26, 2.91)***	1.74 (0.87, 2.61)***
Anxiety		
Mild	0.83 (0.09, 1.57)*	0.89 (0.12, 1.67)*
Moderate/ Severe	1.60 (0.91, 2.29)***	1.43 (0.67, 2.18)***
Stress		
Mild	1.37 (0.64, 2.10)***	1.30 (0.54, 2.05)**
Moderate/ Severe	2.32 (1.37, 3.28)***	2.03 (1.03, 3.03)***

* p<0.05, ** p<0.01, *** p<0.001
[a]Adjusted for role, gender, physical health, and race.
[d]Depression, Anxiety, and Stress were examined in three independent models. Referent group for mental health variables was none.

Table 3 includes the ordered logit models of the association between mental health and worry when adjusted for resilience. Once resilience was added to the model, the association between depression and worry, and the association between anxiety and worry was eliminated, while resilience was significantly inversely associated with worry. For stress, the direct relationship with worry remained, but was attenuated once resilience was added to the model. Resilience was similarly significantly inversely associated with worry in this model.

Table 3

Ordered Logit Models of the Association between Mental Health Measures and Worry, Adjusted for Resilience

	Resilience Adjusted[b] Coef (95% CI)
Depression[d]	
Mild	-0.30 (-1.06, 0.46)
Moderate/ Severe	0.74 (-0.22, 1.69)
Resilience	-1.57 (-2.21, -0.93)***
Anxiety	
Mild	0.57 (-0.21, 1.36)
Moderate/ Severe	0.72 (-0.09, 1.52)
Resilience	-1.51 (-2.12, -0.91)***
Stress	
Mild	0.87 (0.09, 1.66)*
Moderate/ Severe	1.43 (0.40, 2.46)**
Resilience	-1.43 (-2.03, -0.84)***

* $p<0.05$, ** $p<0.01$, *** $p<0.001$
[b]Adjusted for role, gender, physical health, race, and resilience.
[d]Depression, Anxiety, and Stress were examined in three independent models. Referent group for mental health variables was none.

Table 4 includes the ordered logit models of the association between mental health and worry when adjusted for grit. Once grit was added to each of the models for the association between mental health and worry, no notable changes were seen in the association between mental health measures and worry. Grit was not significantly associated with worry in any models. Comparison of AIC between models with and without interactions indicated that models without interaction terms were a better fit. The variance inflation factor for all models was <2, indicating no collinearity concerns.

Table 4

Ordered Logit Models of the Association between Mental Health Measures and Worry, Adjusted for Grit

	Grit Adjusted[a] Coef (95% CI)
Depression[b]	
Mild	0.25 (-0.47, 0.97)
Moderate/ Severe	1.78 (0.88, 2.68)***
Grit	-0.18 (-1.03, 0.68)
Anxiety	
Mild	0.95 (0.16, 1.73)*
Moderate/ Severe	1.42 (0.63, 2.21)***
Grit	-0.004 (-0.83, 0.82)
Stress	
Mild	1.39 (0.60, 2.18) **
Moderate/ Severe	2.15 (1.05, 3.26) ***
Grit	-0.35 (-1.21, 0.51)

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

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Discussion

The purpose of this study was two-fold: 1) to describe the current state of mental health within university students, faculty, and staff and 2) identify the relationship between mental health and pandemic-related worry, including the mediating role of resilience and grit. Participants in this study reported varying levels of anxiety, stress, and depression as related to the pandemic with a moderate level of worry. Participants with mild anxiety and stress and moderate/severe anxiety, stress, and depression were more worried, attenuated by resiliency.

Prior to the pandemic, previous research shows that one in five (20%) college students experienced a diagnosable mental health disorder (Auerbach et al., 2016). Within this sample (students, faculty, and staff), approximately half of the participants did not experience depression or anxiety at any level, while the rest reported mild or moderate-to-severe clinical depression and/or anxiety, which is consistent with current literature (X. Wang et al., 2020b). Two-thirds of participants did not experience clinical levels of stress. However, stress has reportedly increased significantly throughout the pandemic (X. Wang et al., 2020b). Additionally, current studies indicate that individuals, particularly those under the age of 50 (Wilson et al., 2021), experiencing high levels of stress are not able to adequately cope under stressful circumstances (X. Wang et al., 2020b).

Despite the presence of some positive coping mechanisms, most participants in this study expressed at least some level of worry related to the pandemic, which is further supported by the literature (Son et al., 2020). Research also indicates that fear and worry are not the same in all parts of the country, but instead, are highlighted in communities highly concentrated with COVID-19 (Fitzpatrick et al., 2020). The South, where this study took place, has been disproportionately affected by COVID-19 due to the presence of many geopolitical and sociocultural factors (Centers for Disease Control and Prevention, 2021b), which may have contributed to study findings. Additionally, mental health issues and worry were found to be closely intertwined within this sample. People that reported moderate/severe depression, anxiety, and stress all experienced "worry" at greater levels than those experiencing none-to-mild mental health symptomology. Additional risk factors for experiencing pandemic-related changes in mental health include being female, having a pre-existing psychiatric condition, and experiencing previous trauma (Płomecka et al., 2020). However, pandemic-related research specific to mental health is still novel and evolving. Most individuals have been affected by the COVID-19 pandemic in some way. It is important to understand factors that help prevent a negative emotional reaction (i.e., worry) when in periods of heightened stress, anxiety, and/or depression.

It is important for those suffering from mental health concerns to be adequately prepared to deal with and manage those conditions (PeConga et al., 2020; Son et al., 2020). Considering the abruptness of the pandemic, people may not have had necessary time to prepare for the myriad changes taking place. This makes personality-related factors (e.g., resilience) even more important for responding during periods of uncertainty. Resilience can be described as the ability to continue to show up and progress, even when circumstances are less than optimal. Resilient individuals still struggle, but their response to challenge is more positive (PeConga et al., 2020).

This relationship is evident within documented research and this study. Individuals who were less resilient had greater mental health symptomology and vice versa (Antill Keener et al., 2021). Additionally, students are reported to be less resilient and more stressed compared to faculty members in college/university communities (Urban et al., 2021). Resiliency is not a trait that an individual "has" or "does not have," but it can be cultivated through community interactions. During the pandemic, communities, such as the one in which this study occurred, have banded together by showing support for local businesses, caring for their neighbors, creating community-based responses to mask mandates, and thanking front-line workers for their efforts. These efforts help to increase social capital and create a sense of community-level resilience that can inform, inspire, and foster resilience at the individual level (PeConga et al., 2020). Grit, another personality-related factor impacting mental health, was not found to have influence within this study; however, the literature supports the role grit may play in reducing the presence of mental health symptomology (McCracken et al., 2021; Mosanya, 2021).

Limitations

By the nature of survey research methodology, the limitations of this study include selection and response bias. Researchers acknowledge that certain people may feel very strongly about COVID-19 and/or mental health, thereby, choosing to participate or not participate accordingly. Selection bias was reduced as much as possible by providing participants with limited information related to the purpose of the study. Response bias may occur when examining topics influenced by social norms. To mitigate response bias, survey questions were worded neutrally, and survey responses maintained participant anonymity. Additionally, data collection occurred within the first three months of the pandemic, reducing the amount of time potential participants could form strong opinions regarding the subject matter.

Conclusions

The purpose of this study was to examine the presence of mental health symptomology within a college/university campus community during the COVID-19 pandemic. Researchers found that students, faculty, and staff within this college community experienced varied mental health symptomology during the pandemic. Furthermore, the association between mental health and pandemic-related worry was confounded by resilience, meaning resilience may, in part, explain this observed association. College/university campuses must work to establish resilience among their students, faculty, and staff through community-oriented initiatives that prioritize self-care and care-seeking behaviors, when necessary. Additionally, as the pandemic continues, efforts related to examining the presence and impact of mental health symptomology within a college/university campus community should continue. Mental health and the COVID-19 pandemic are evolving paradigms that may shift from day-to-day, week-to-week, month-to-month, and year-to-year.

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