

Article

Perceived Stress and Coping among University Students Amidst COVID-19 Pandemic

Coral L. Shuster ^{*}, Marie C. Tate, Christina T. Schulz , Cheyenne T. Reyes, Megan M. Drohan, Angela G. Astorini, Amy L. Stamates , Manshu Yang and Mark L. Robbins 

Department of Psychology, University of Rhode Island, Kingston, RI 02881, USA; astamates@uri.edu (A.L.S.); myang@uri.edu (M.Y.)

* Correspondence: coral_shuster@uri.edu

Abstract: University students may have experienced heightened levels of stress during the COVID-19 pandemic; however, less is known about coping mechanisms (i.e., approach and avoidance) that were used to manage such stress. Further, there is a need to identify groups of students who may have been at elevated risk for stress. The present study examined the association between coping and perceived stress and whether there were differences in stress based on sociodemographic factors and COVID-19-related changes in employment, housing, and income. Data were collected from 150 university students between the ages of 18 and 25 years ($M = 20.68$; $SD = 1.73$). Results indicated that those who endorsed more approach coping skills had lower levels of stress and those who endorsed more avoidance coping skills had higher levels of stress. Additionally, females, those who lost income, and non-heterosexual individuals endorsed higher levels of stress. The results demonstrate the importance of targeted discussions with university students regarding stressors and coping mechanisms.

Keywords: COVID-19; young adults; perceived stress; coping



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1. Introduction

University students may be prone to increased stress due to a variety of factors. Some of the most common stressors for university students include issues such as heavy course loads, low grades, changes in eating and sleeping habits, working alongside strangers, changes in social environment, and making new friends [1]. The COVID-19 pandemic may have exacerbated these known stressors and added further sources of stress that may have heightened levels of perceived stress among students. Evidence suggests that college students experienced a multitude of negative mental health effects and negative academic effects due to the COVID-19 lockdowns and shift to remote courses [2]. Students reported experiencing greater study-related stress during the first academic semester after the onset of the COVID-19 pandemic [3]. Some research suggests that college students are at greater risk of anxiety and depression due to COVID-19-related factors than individuals in other age groups [4]. Increased stress and mental health difficulties are of particular concern, as students may engage in risky coping behaviors, such as increased substance use or schoolwork avoidance [1,5]. Perceptions of stress may be exacerbated for students of marginalized identities, as the COVID-19 pandemic has highlighted disparities in employment, housing, and health [6]. The present study sought to examine the association between coping mechanisms and perceived stress among university students as well as to identify individual-level variables that may impact stress.

1.1. Perceived Stress and Coping Strategies

Individuals may vary in how they cope with stress. One common classification of coping mechanisms focuses on approach and avoidance coping [7–9]. Approach and

avoidance coping styles may be adaptive or maladaptive depending on situational factors surrounding the source of stress. Specifically, approach coping is the engagement in appropriate action that matches the stressor and provides a resolution to it, while avoidance coping is the withdrawal from or denial of the existence of a stressor [8]. Some students may engage in approach coping in an effort to either maintain their status quo in school or to identify remedies for stressful experiences that promote positivity [8]. Although avoidance coping mechanisms were associated with worse mental health during the COVID-19 pandemic [4], this type of coping may be necessary for long-term stressors, as it allows for individuals to experience the stress in doses rather than one large, overwhelming wave of extreme stress [8]. Additionally, individuals tend to use avoidance coping when attempting to manage stress regarding uncertain or uncontrollable events, such as a global pandemic [8,10]. Research regarding college students' use of coping mechanisms in relation to pandemic-related stress and coping found that endorsement of dysfunctional coping mechanisms mediated associations between avoidant and hyperactive reactions to pandemic news and overall mental health, resulting in worse depression, anxiety, and stress [11]. Students may have engaged in avoidance coping in order to lessen the impact of constant pandemic-associated stress by concentrating on anything other than the pandemic, sometimes withdrawing from responsibilities or relationships.

University students may not utilize the most effective or adaptive coping strategies. Data from a survey conducted among a U.S. adult sample suggested that younger adults, individuals who identify as members of non-heterosexual groups, and those under extreme financial pressure experience more frequent use of avoidance or less helpful coping mechanisms such as behavioral disengagement, humor, and substance use [12,13]. In relation to the current pandemic, Ye and colleagues found that university students in China who reported experiencing high levels of stress associated with COVID-19 also reported decreased engagement in adaptive coping strategies (e.g., looking on the bright side, rediscovering what is important in life), which predicted higher rates of symptoms associated with acute stress disorder [9]. There is additional concern that rates of alcohol and substance use among university students may increase as a way of coping with increased stress and uncertainty surrounding the COVID-19 pandemic [7,14]. Further, evidence from a multicohort study examining associations between stress, meaning in life, and alcohol consumption suggested that university students who report high levels of stress tended to drink more often to cope, unless that student also reported having a more meaningful life, which seemed to play a protective role against drinking-to-cope behaviors [15]. Taken together, it is clear that college students may experience heightened stress in relation to the COVID-19 pandemic and the use of avoidant coping mechanisms may be common, but additional research is needed to better understand individual factors that may play a role in the association between perceived stress and coping during the onset of the COVID-19 pandemic.

1.2. Individual-Level Factors Influencing Stress

Although high levels of stress during the COVID-19 pandemic were of concern for all students, there was additional concern for students who identified as members of marginalized groups. There may have been heightened risk for stress among non-heterosexual university students, given the freedom of expression allotted from the college living experience, which may have been removed when students were forced to move home [16]. Additional stressors to consider during this time were loss of income, changes in occupation, and changes in living situation, as these all added to burden and uncertainty and were increasingly common during the pandemic. Due to the effects of the COVID-19 pandemic, universities opted to close campuses and university students experienced exponentially more stress due to potential housing insecurity, food insecurity, loss of normal university activities, virtual learning, potentially moving to complicated living situations, and potential job/income loss [17]. Thus, it may be that individuals experienced increased stress due to COVID-19 if they experienced change in income or changes in employment.

1.3. Current Study

The present study had two aims. Our first aim was to examine the association between perceived stress and coping mechanisms, specifically defined as approach and avoidance coping. It was hypothesized that approach and avoidance coping would be associated with perceived stress, though the relationship was predicted to be negative for approach and positive for avoidance coping mechanisms. Our second aim was to determine whether stress varied based on demographic factors and COVID-19-related changes to income, occupation, or living situation. It was hypothesized that participants who experienced stressful life events such as changes to their occupation or living situation, or reduced income, due to COVID-19 would report greater instance of perceived stress compared to participants who had not experienced these stressful changes. Findings from this study may aid in the development of preventive measures aimed at reducing negative health outcomes among university students.

2. Method

2.1. Participants and Procedures

Participants were recruited for this study through a campus-wide email server at a mid-sized university in the northeast. Individuals were eligible to participate in the study if they were at least 18 years old and enrolled as a student at the university. Eligible participants provided informed consent and were directed to an online survey link to complete a 15 minute questionnaire that included questions regarding, but not limited to, perceived stress, coping skills, and CDC guidelines around COVID-19. Data were collected from April 2020 to July 2020. Participants were entered into a raffle for the chance to win one of ten USD 25 online gift cards. The current study was approved by the university's institutional review board, and APA ethical guidelines were adhered to.

Participants included 150 (82.7% female) college students between the ages of 18 and 25 ($M = 20.68$, $SD = 1.73$). There were 20 freshmen, 22 sophomores, 44 juniors, 49 seniors, and 15 graduate students. In terms of racial/ethnic background, 78% ($n = 117$) of participants self-identified as White, 7.3% ($n = 11$) as Asian, 7.3% ($n = 11$) as mixed-race, 4% ($n = 6$) as Black, and 1.3% ($n = 2$) as Pacific Islander. Fourteen participants identified as Hispanic or Latino (9.3%). One hundred and twenty-five (83.3%) participants were straight, 6 (4%) were gay/lesbian, 16 (10.7%) were bisexual, and 3 (2%) identified as a sexual orientation that was not listed.

Of the total sample, 69 (46%) participants did not experience a change in living situation while 81 (54%) participants did experience a change in living situation. At the time of data collection, 108 (72%) participants reported living with their parents, 29 (19.3%) lived in an apartment or house of their own, and 13 (8.7%) lived with another family member, friend, or in a dorm. Seventy (46.7%) participants reported having less income after the pandemic began, 28 (18.7%) reported an increase in income, and 52 (34.7%) did not experience a change in income. At the time of data collection, 38 (25.3%) participants reported being an essential worker reporting to their workplace, 10 (6.7%) were essential workers that worked from home, and 102 (68%) were not essential workers. Of note, 43 students (28.8%) did not work prior to the onset of the pandemic but 4 of these participants gained employment as essential workers after the pandemic began. Three individuals had been previously diagnosed with COVID-19.

2.2. Measures

2.2.1. Sociodemographic Factors

Participants were asked a variety of demographic questions, including personal demographics (i.e., age, sex, racial background, ethnicity, sexual orientation) as well as employment and living situation at the point of data collection. Age was a continuous variable. Categorical demographic variables included sex (male = 1; female = 2), race (White = 1; Black/African American = 2; Asian = 3; Pacific Islander = 4; American Indian/Alaskan Native = 5; other = 6; mixed = 7), ethnicity (Hispanic/Latino = 1; not Hispanic/Latino = 2),

and sexual orientation (0 = non-heterosexual; 1 = heterosexual). These variables were considered independent variables in group comparisons and covariates in regression models.

2.2.2. COVID-19-Related Personal Changes

Participants were asked whether their living situation had changed due to COVID-19, about whether their occupation changed due to COVID-19 (hours cut, furloughed, laid off, picked up a second job, or hours increased), whether their income had changed (1 = no change; 2 = more income now; 3 = less income now), and whether they were an essential worker (1 = no; 2 = yes—work from home; 3 = yes—report to place of employment). These variables were considered independent variables in group comparisons and covariates in regression models.

2.2.3. Coping Mechanisms

The 12-item Brief Approach/Avoidance Coping Questionnaire (BACQ) was used to assess the degree to which a person utilizes approach or avoidance coping strategies in stressful situations [18]. These items were designed to address approach and avoidance coping behaviors, particularly socioemotional (e.g., “I have been well on the way towards feeling like I have given up”), action-related (e.g., “I have made an active effort to find a solution to my problems”), and cognitive (e.g., “I have firmly believed that my problems will decrease (and my situation improve)”) approaches to dealing with stress. See Appendix A for approach and avoidance items. Participants were asked the degree to which they had used coping behaviors over the past 2 months on a 5-point Likert scale (1 = completely disagree to 5 = completely agree). Two subscales were created, each scale was calculated by summing the score of six items. Higher scores on each subscale indicated stronger endorsement of approach- or avoidance-oriented coping mechanisms. These coping mechanisms were considered independent variables in the regression models. Internal consistency for the two scales ranged from $\alpha = 0.70$ to 0.78 in the present study.

2.2.4. Perceived Stress

The Perceived Stress Scale (PSS) is a 10-item scale designed to measure current levels of perceived stress, including how unpredictable, uncontrollable, and overloaded participants may find their lives (e.g., “In the last month, how often have you felt that you were unable to control the important things in your life?”) [19]. Participants rated their perceptions of stress on a 5-point Likert scale (0 = never to 4 = very often). Scores were summed with higher scores on the PSS indicating higher levels of perceived stress. Perceived stress was the dependent variable in regression models and in demographic group comparisons. Internal consistency was $\alpha = 0.88$ in the present study.

2.2.5. Data Analytic Plan

Data were examined for normality and listwise deletion was utilized for missing data, given that there was just over 10% of missing data. An a priori power analysis was calculated for the most complex aim (Aim 1). A medium effect size of 0.25, alpha of 0.05, and power of 0.80 with 5 predictors (sex, race, ethnicity, sexual orientation, and perceived stress) yielded 58 participants would be needed; thus, the present analyses were adequately powered to test the study hypotheses. For Aim 1, we conducted regression analyses to examine avoidance and approach coping, separately, as predictors of perceived stress. Two regression models were fit with each coping style as an independent predictor, including a baseline model without controlling for demographic characteristics and a full model controlling for demographic/personal factors, including sex, age, change in income due to the pandemic, and change in housing due to the pandemic. Race, ethnicity, and sexual orientation were not included in these regression models given the uneven group sample sizes. For Aim 2, independent measures analysis of variance (ANOVA) was conducted to identify whether perceived stress differed by demographic characteristics (i.e., sex, sexual orientation) and COVID-19-related personal changes (i.e., change in income, change in

living situation, becoming essential worker, etc.). A post-hoc Tukey test was conducted to further examine group differences for change in income.

3. Results

3.1. Aim 1: Associations between Coping Mechanisms and Stress

Regression analyses revealed that approach coping significantly predicts perceived stress, $\beta = -0.21$, $SE = 0.12$, $p = 0.017$, 95% CI (B) [-0.51, -0.05], $R^2 = 0.04$. After accounting for sex, age, income change, and housing change, the effect of approach coping on perceived stress remained significant, $\beta = -0.22$, $SE = 0.11$, $p = 0.009$, 95% CI (B) [-0.51, -0.08], $R^2 = 0.17$. Participant sex was also a significant predictor of perceived stress in this model, $\beta = 0.29$, $SE = 1.44$, $p = <0.001$, 95% CI (B) [2.06, 7.77] (see Table 1).

Table 1. Regression for approach coping predicting perceived stress.

Model	Predictor	Unstandardized Coefficients		Standardized Coefficients			R ²
		B	SE	β	p	95% CI (B)	
1	Approach	-0.28	0.12	-0.21	0.017	-0.51, -0.05	0.04
2	Approach	-0.29	0.11	-0.22	0.009 *	-0.51, -0.08	0.17
	Sex	4.92	1.44	0.29	<0.001 **	2.06, 7.77	
	Age	0.04	0.31	0.01	0.889	-0.57, 0.66	
	Income change	0.96	0.63	0.13	0.129	-0.28, 2.20	
	Housing change	0.92	1.10	0.07	0.405	-1.26, 3.09	

Note: * $p < 0.05$; ** $p < 0.001$.

Regression analyses revealed that endorsement of avoidance coping skills significantly predicted perceived stress, $\beta = 0.48$, $SE = 0.11$, $p < 0.001$, 95% CI (B) [0.46, 0.90], $R^2 = 0.23$. After sex, age, income changes, and housing changes were included as covariates, approach coping still significantly predicted perceived stress, $\beta = 0.44$, $SE = 0.11$, $p < 0.001$, 95% CI (B) [0.40, 0.84], $R^2 = 0.31$. Participant sex also significantly predicted perceived stress in this model, $\beta = 0.27$, $SE = 1.30$, $p < 0.001$, 95% CI (B) [1.96, 7.12] (see Table 2).

Table 2. Regression for avoidance coping predicting perceived stress.

Model	Predictor	Unstandardized Coefficients		Standardized Coefficients			R ²
		B	SE	β	p	95% CI (B)	
1	Avoidance	0.68	0.11	0.48	<0.001 **	0.46, 0.90	0.23
2	Avoidance	0.62	0.11	0.44	<0.001 **	0.40, 0.84	0.31
	Sex	4.54	1.30	0.27	<0.001 **	1.96, 7.12	
	Age	0.12	0.29	0.03	0.684	-0.45, 0.68	
	Income change	0.32	0.58	0.04	0.579	-0.83, 1.48	
	Housing change	0.27	1.00	0.02	0.791	-1.72, 2.25	

Note: ** $p < 0.001$.

3.2. Aim 2: Factors Associated with Stress

Group difference tests revealed no significant differences in perceived stress between change in living situation, or occupational changes due to COVID-19 (Table 3). There were no significant differences in PSS for year in college or essential worker status (Table 3). An independent samples *t*-test comparing PSS scores between males ($M = 16.71$; $SD = 5.67$) and females ($M = 21.72$; $SD = 6.01$) was significant, $t(140) = -3.76$, $p < 0.001$, $d = 0.84$ [0.39, 1.29]. An independent samples *t*-test comparing PSS scores between those identifying as heterosexual ($M = 20.31$; $SD = 6.28$) and those who identified as non-heterosexual ($M = 23.62$; $SD = 5.23$) was significant, $t(140) = -2.42$, $p = 0.017$, $d = 0.54$ [0.10, 0.98]. Females and people who were not heterosexual reported higher perceived stress.

Table 3. Comparing means of PSS for demographic variables.

Variable	N	Mean	SD	t/F(df)	p Value	Effect Size
Sex						
Male	24	16.71	5.67	3.76 (140)	<0.001	<i>d</i> = 0.84
Female	118	21.72	6.01			
Sexual orientation						
Heterosexual	118	20.31	6.28	−2.42 (140)	0.017	<i>d</i> = 0.54
Not heterosexual	24	23.62	5.23			
Race						
White	113	20.90	6.01	1.22 (5, 136)	0.30	
Black/African American	5	23.20	6.41			
Asian	10	22.00	8.40			
Pacific Islander	1	9.00	-			
Mixed	10	19.10	7.61			
Other	3	20.00	2.65			
Ethnicity						
Non-Hispanic	13	20.38	6.98	−0.12 (140)	0.91	
Hispanic	129	20.60	6.54			
Year in college						
Freshman	18	18.83	5.94	1.56 (4, 137)	0.19	
Sophomore	20	21.35	7.92			
Junior	42	21.62	4.82			
Senior	48	21.60	6.75			
Graduate student	14	18.07	5.12			
Essential worker						
Not essential	98	21.22	6.48	0.515 (2, 139)	0.56	
Essential, work from home	7	19.71	2.93			
Essential, report to workplace	37	20.16	6.00			
Change in occupation						
No	38	19.47	5.98	1.63 (140)	0.11	
Yes	104	21.38	6.26			
Change in income						
No	48	20.42	5.96	6.89 (2, 139)	0.001	$\eta^2 = 0.09$
Yes, more income	28	17.64	4.82			
No, less income	66	22.58	6.42			
Change in living situation						
No	65	20.32	6.22	−0.97 (140)	0.34	
Yes	77	21.34	6.23			

Note: PSS = Perceived Stress Scale; race and ethnicity analyses were exploratory given small group sizes.

A one-way ANOVA revealed a significant difference between individuals who experienced changes to their income on PSS, $F(2, 139) = 6.89, p = 0.001, \eta^2 = 0.09$. A post-hoc Tukey test indicated people who reported having less income now ($M = 22.58; SD = 6.42$) demonstrated significantly greater stress when compared to those who reported having more income now ($M = 17.64; SD = 4.82$), $d = 0.82 [0.36, 1.28]$, but not when compared to those whose income remained the same ($M = 20.42; SD = 5.96$).

4. Discussion

The aims of the current study were twofold. Our first aim was to examine the association between coping mechanisms used by university students and perceived stress during the pandemic. Prior research has shown that individuals tend to use avoidance coping mechanisms to regulate traumatic experiences, such as a global pandemic, regardless of the potential negative ramifications of avoidance coping [13]. In line with our hypotheses, approach and avoidance coping were both significantly associated with perceived stress. When participants endorsed greater use of avoidance coping mechanisms, they reported higher levels of perceived stress. When participants endorsed greater use of approach coping, their perceived stress was lower. These findings align with previous work suggesting that college students relying on avoidant strategies (or strategies seen as maladaptive) to

cope with effects of the COVID-19 pandemic also experienced high levels of perceived stress and worse mental health outcomes [11,20]. Students who tend to engage in these avoidant mechanisms may have been experiencing more pronounced stress effects given the ineffective nature of avoidance mechanisms over longer periods of time [8]. These data were collected between one and three months after the pandemic began in the U.S.; the students who utilized avoidance to cope in the initial days of the pandemic may have still been utilizing avoidance mechanisms even though they were no longer effective in reducing stress. This continued use of avoidance may be attributed to individuals having stronger feelings of uncertainty or strong feelings regarding a lack of control around various aspects of the COVID-19 pandemic [10]. Due to the unforeseen length and consequences of the COVID-19 pandemic, young adults may have been using approach coping mechanisms less and avoidance coping mechanisms more.

Second, we investigated whether certain groups of university students were at greater risk for experiencing stress during the COVID-19 pandemic. In order to reduce stress and negative health outcomes among university students, it is important to elucidate who might be at greater risk of stress. Previous research has demonstrated that individuals from marginalized backgrounds or who experience stressful life events may experience greater stress [16,21]. In line with our hypothesis and the previous literature, we found that females reported greater stress compared to males [22,23]. Internationally, females who are college students have been reported to experience increased stress in relation to the COVID-19 pandemic, supporting the need for targeted interventions [23]. Further, in line with our hypotheses and the previous literature, we found that participants who identified as non-heterosexual reported greater stress when compared to participants who identified as heterosexual even though our sample of non-heterosexual participants was fairly small [16,22]. Previous research suggests that correlates of stress for college students may be multidimensional [24], which could contribute to reasons that non-heterosexual students may be experiencing increased perceived stress. Perhaps these specific students were living at home with parents who were unsupportive or were removed from their typical support group given the move to online classes.

Counter to our hypothesis, we found that individuals whose living situation or occupation had changed due to the pandemic did not demonstrate greater stress compared to participants who did not experience such stressful life events. Further, participants who reported having less income due to the pandemic did not experience greater stress compared to participants whose income had not changed. Our finding contrasts previous findings suggesting increased stress perceptions for college students who lost individual income due to the pandemic [22]. Given that our population of interest was comprised of university students between the ages of 18 and 25, participants may have had alternate sources of financial support (e.g., parents, families). Relatedly, approximately 72% of participants in this study reported living at their parent's home. Thus, these participants may have had supplementary financial support that may have protected them from stress attributed to loss of personal income.

5. Limitations

There are several limitations that should be noted. First, we did not have a baseline measurement to which we could compare participants' perceived stress and coping prior to the start of the COVID-19 pandemic. Second, our sample consisted of primarily White, non-Hispanic, female, heterosexual, and cis-gendered individuals and thus generalizability may be limited. Given the limited variability reported for demographic variables, the group comparisons reported for some variables (e.g., race, ethnicity) were underpowered, which resulted in an inability to detect any differences that may exist. Future research should examine the associations between coping and perceived stress amongst minoritized groups to better understand how to support college students of all backgrounds. Third, we cannot attribute reported perceived stress as being directly related to the COVID-19 pandemic. That is, when asked about their perceptions of stress, COVID-19 was not

explicitly mentioned as a source of stress. Thus, participants' reporting of perceived stress may have been attributed to other stressors. We did not collect data regarding financial support that students received or whether there were pandemic-related changes to overall family income. Additionally, it may be that participants were using coping mechanisms in response to stressors not associated with the COVID-19 pandemic. Thus, there may have been stressors other than the pandemic associated with approach or alternate coping mechanisms. Lastly, we did not query participants regarding utilization of mental health services during the COVID-19 pandemic onset. Previous research suggests that university students may not engage with university-based counseling services for a variety of reasons, including feeling as if their stress/mental health status is not severe enough to warrant services [20] even though evidence supports use of college counseling services in improving mental health and academic achievement [25].

6. Conclusions

Overall, these findings highlight the importance of engaging university students in conversations surrounding stress and coping skills, especially during and after this turbulent time. Although mental health and counseling services may be available to students, additional education regarding possible ways to cope with severe stressors is vital for maintaining the health of the student population. Connecting college students with clinical services or directly providing information to assist with coping and stress relief during turbulent experiences is especially important given previous findings that online messages regarding the mental health impact of COVID-19 and available counseling services were provided inconsistently during the COVID-19 pandemic [26]. The findings from the current study contribute to the literature regarding the impact of COVID-19 on college student stress, while considering their coping abilities, individual demographic factors, and additional stressors related to the COVID-19 pandemic. The COVID-19 pandemic presented college students with a unique set of challenges, and these findings highlight the importance of disseminating information regarding stress relief methods and the potential benefits of campus counseling services while having additional university-based supports prepared for future events.

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Data Availability Statement: The data presented in this study are available on request.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Brief Approach and Avoidance Questionnaire Items

Approach:

1. I have said so if I'm angry or sad.
2. I have spoken with a few chosen people when things get too much for me.
3. I have made an active effort to find a solution to my problems.
4. I have exercised because it is important to me.

5. I have thought something positive could come out of my complains/problems.
6. I have firmly believed that my problems will decrease (and my situation improve).

Avoidance:

1. I have tried to forget my problems.
2. I have put my problems behind me by concentrating on something else.
3. I have buried myself in work to keep my problems at a distance.
4. I have often found it difficult to do something new.
5. I have been well on the way towards feeling like I have given up.
6. I have withdrawn from other people when things have gotten difficult.

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