

## Article

# Students' Mental Health and Resilience During the COVID-19 Pandemic: How Colleges Could Support Them Better

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## Abstract

Transitioning to university can be challenging for young adults, and urban universities play a critical role in supporting them. The COVID-19 pandemic introduced additional challenges, especially for underrepresented minority (URM) students. The present short-term longitudinal study examined URM college freshmen at an urban university in Spring 2020 to investigate how the onset of the pandemic affected their psychological status, mental health, and resilience and whether these effects differed by first-generation versus continuing-generation college status, operationalized via parental educational attainment. We examined whether two pre-pandemic psychological factors, perceived stress (a risk factor) and perceived parental support (a protective factor), predicted depression and anxiety symptoms, psychological harm from the pandemic, and pandemic resilience differently by the end of the semester among first-generation and continuing-generation students (operationalized by parental educational attainment). Using linear and hierarchical regressions and moderation analyses, results indicated that perceived stress and parental support played distinct roles in students' mental health trajectories. First-generation students reported higher levels of anxiety before the pandemic and patterns linking pre-pandemic mental health to later psychological harm differed by group. Parental support also operated differently across groups, and for first-generation students, pre-pandemic mental health was more strongly linked to psychological harm during the pandemic. Together, findings show the importance of considering students' educational backgrounds and lived contexts when developing mental health supports at urban universities.



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## 1. Introduction

Although the transition from high school to university can be a challenging experience for older adolescents and young adults, universities, specifically urban universities in the U.S., are vital for helping older adolescents and young adults achieve life goals and supporting the social mobility of underrepresented minorities (URMs). However, the COVID-19

pandemic introduced new challenges that compounded the stress of many students, especially URM students, whose lives and families were disproportionately disrupted and harmed by the pandemic. Beyond its direct health consequences, the pandemic's "secondary" mental health effects may have long term consequences for several reasons. With the onset of the pandemic in March 2020, access to in-person social services and mental health care was curtailed, some people were forced to isolate in unsafe environments (e.g., homes with substance use or child or partner abuse), and stay-at-home orders may have spurred unhelpful coping patterns, especially among those with preexisting mental health conditions. Pertaining to college students, the COVID-19 pandemic brought unprecedented stress because of campus closures and the transition to online learning, which created more obstacles to learning [1,2].

Developmentally, the pandemic may have denied college students opportunities to explore career directions and the professional and romantic social roles that help establish their identity and place in society [1]. For URM populations, stress has been compounding even more due to increasing inequality nationally in the U.S. [2].

First-generation college students, often defined as students whose parents did not complete a four-year college degree, represent a distinct subgroup of underrepresented minority populations. Beyond socioeconomic constraints, the transition to college may require these students to navigate higher education with fewer inherited "insider" cues about how academic systems work, how to seek support effectively, and what norms and expectations are often left implicit. These added navigation demands can increase the cognitive and emotional load of the college transition, even under typical circumstances, and may become especially consequential during large-scale disruptions such as the COVID-19 pandemic. In contrast, continuing-generation college students may enter college with greater familiarity with university systems through parental experience, making academic expectations, help-seeking pathways, and institutional resources easier to interpret and access.

Finally, the disproportionate impact of COVID-19 on minority populations may have exacerbated URM students' stress and mental health to an even greater extent. Stress and mental illness are major impediments to college success [3]. Thus, supporting students' mental health better today will benefit institutions and, in turn, society in the long term.

While much research has focused on the negative mental health consequences of the pandemic, a positive psychology lens highlights complementary questions about resilience, meaning-making, and adaptive coping in the face of adversity. Understanding not only who is most vulnerable, but also which psychological processes may confer protection, is critical for informing strengths-based supports and improving interventions in higher education.

The current study examines how the stress and mental health of URM students during the onset of the COVID-19 pandemic differed by educational background, operationalized as first-generation versus continuing-generation college status in college freshmen at an urban university. In the present sample, parental educational attainment served as the primary indicator of students' educational background and was used to operationalize first-generation college status, distinguishing students whose parents did not attend college from those whose parents had prior college experience.

Empirical evidence from this same student population supports these concerns. In a previous study of this sample, Bono and colleagues [4], found that students whose parents had lower levels of education reported more perceived stress and less subjective well-being prior to the pandemic compared to students whose parents had higher levels of education. Additionally, they experienced more financial harm and greater deficits to their academic functioning at the onset of the pandemic. However, the two groups did not differ in amounts of resilience or life event stress. Therefore, building on this, the aims of this study are to examine: (1) if perceived stress before the pandemic predicts increased depression and

anxiety symptoms, greater psychological harm from the pandemic, and lower pandemic resilience three months into the pandemic; (2) whether perceived parental support before the pandemic predicts decreases in depression and anxiety symptoms, less psychological harm from the pandemic, and increased pandemic resilience by T2; (3) whether these associations differed as a function of parental educational background, reflecting differences between first-generation and continuing-generation college students; and (4) whether depression and anxiety before the pandemic exacerbated the psychological harm of the pandemic on students from first-generation backgrounds, indicating a syndemic effect.

### *1.1. Role of Urban Universities in Serving Diverse Communities*

To assess the impact of parental education on pandemic outcomes on URM students, it helps to first consider the critical role of urban universities in educating the most diverse citizens. They grant access to high-need students who might otherwise not attend college, and they support the social mobility of the students and local communities they serve [5,6]. The percentage of college students in the U.S. who identify as Latinx, Black or Asian/Pacific Islander increased steadily from 1976–2017 and enrollment in degree giving programs rose by 8% from 2007–2017 [7]. First Generation College Students (FGCSs) represent 1/3 of college student populations in the U.S. [8]. Urban university students who are FGCSs or come from households with low parental education faced an uphill battle, even before the pandemic [9,10].

The Coalition of Urban and Metropolitan Universities, formed in 1989 by the heads of several urban universities, established a shared mission that urban universities should utilize the power of their campuses in academics, research, and service to create positive change in the lives of the students and local communities they serve [11]. The pandemic's ramifications affected urban college students throughout the U.S., challenging these institutions' ability to adequately support their students' academic development. These institutions are vital because the populations they serve often go into equity-promoting careers and careers deemed essential in the pandemic. For example, the university of the current sample produces graduates in teaching, nursing, occupational therapy, marriage/family therapy, and social work.

### *1.2. Pandemic Effects on Diverse Populations*

COVID-19 helped us better understand how diverse communities were functioning in societies across the world. The impacts of the pandemic disproportionately spread among BIPOC communities, disadvantaged communities, immigrants, those with low SES, and those close to the poverty line [4,9,12,13]. For example, 28% of infections were Latinx, even though Latinos comprised about 18.5% of the U.S. population [14]. BIPOC communities in disadvantaged areas were doubly impacted due to socioeconomic status (SES) and lack of access to timely healthcare [15].

But households did not have to have a sick family member during the pandemic to experience negative mental health impacts. Research shows that the prolonged periods of forced isolation that co-occurred with the pandemic lead to additional stress. Factors that played into this included being forced to isolate in a home with an abusive parent or partner, having no access to other people or groups who could mitigate conflicts, and suffering from the financial fallout of the pandemic [16,17]. This is important because the university where this study took place closed in-person classes in March of 2020 and remained closed through the Spring 2021 semester. The ~15,000 students who attended classes on campus spent a significant amount of time isolated from communities and resources that typically would have supported them. Critically, traditional family protective factors may have been less protective for URM students during the pandemic. Crowded housing conditions, household

members at risk with preexisting conditions or front-line jobs, less access to or mistrust of healthcare exacerbated their stress during the pandemic [17]. In the context of the pandemic, parent support may not have been as beneficial as usual for lower SES students because quarantining could have exacerbated their stress appraisals.

Besides anxiety about contracting Coronavirus, prolonged isolation, and forced lockdown with stressed family members, research identified other risk factors that worsened some college students' psychological status. Students who knew someone infected with COVID-19, who were female, in fair/poor health, of below-average relative family income experienced greater psychological impacts; whereas students who were non-Hispanic White, above-average social class, spent 2 or more hours outside, or less than eight hours on electronic screens experienced lower psychological impacts [18]. Researchers found that the most common feelings mentioned were lack of motivation/concentration and productivity (21.5%), anxiety (17.4%), and being overwhelmed by stress (14.6%), and feeling isolated/lonely (13.3%). The most common changes in behavior that these researchers [18] found to cause students most concern were less socializing and social distancing (21.5%), cancelled classes/graduation and online learning (15.7%), quarantining at home and going out less (12.9%), exercising or being active less (9.5%), and poorer eating patterns (7.6%).

### *1.3. Syndemics Theory, Other Pandemic Impacts, and Socioeconomic Status*

Syndemics theory originated from HIV research in 2006 to address the co-occurrence of diseases, environmental contexts, and social contexts in clusters of individuals who share a trait and/or a geographic location [19,20]. It posits a synergistic interaction between the contextual elements experienced by such individuals that explains why some populations are impacted by increased virulence and severity in co-occurring diseases.

Central to the current study, the financial impacts of the pandemic varied based on SES or ethnicity [20–23]. Since the beginning of the pandemic outbreak in February 2020, adults in the U.S. experienced the Coronavirus outbreak differently across racial and social class identifiers. Pew Research Center discovered that of the 33% of adults in the U.S. who had to use money from their retirement or savings to pay bills since February, 16% were of upper SES levels versus 44% of lower SES adults [21]. Ethnically, 29% of white adults dipped into savings/retirement, compared to 33% of Asian adults, 40% of Black adults and 43% of Latinx adults [21]. Also, 18% of white adults experienced trouble paying bills since February 2020, compared to Asians (23%), Latinx (37%), and Black (43%) adults [21]. Adults who received food from a food bank in the same period show the same trend: 1% of upper SES adults versus 35% of lower SES adults had to use a food bank due to food insecurity during the pandemic [21]. Ethnically, white adults were far less likely to need food from a food bank (11%) during the onset of the pandemic than Asian (14%), Latinx (30%), and Black (33%) adults [21]. Finally, a similar pattern was evident in ability to pay rent/mortgage: 3% of upper SES level adults, compared to 32% of lower SES adults, had trouble paying their rent/mortgage in the time since the coronavirus outbreak [21]. White (11%) adults had less trouble paying their rent/mortgage, compared to their Asian (15%), Latinx (26%), Black (28%) counterparts [21].

The above statistics reflect various stressors that impacted underrepresented minority (URM) students' mental health in a syndemic manner. The university where the current study took place serves a population of students coming from diverse social and economic backgrounds. It serves a higher percentage of first-generation students than any other CSU campus [24]. First-generation students who are freshmen account for 52% of the total undergraduate population. The 3 biggest protective factors that help them in a public California university graduate are: (1) emotional support from family and friends; (2) developing supportive relationships with university faculty, peers, and staff; and (3) believing

that college would enable them to achieve future life and career goals [9]. While the current study directly examines the importance of the first factor, the pandemic and campus closure may have denied many students of the other two factors. Further, our study focuses on whether perceived stress and perceived parent support exerted different effects on mental health among first-generation versus continuing-generation college freshmen, whether first-generation students experienced syndemic effects, and it explores what contributes to resilience across groups. Before turning to our study, we present our theoretical perspective and a brief review of research related to our main variables.

#### *1.4. Philosophical and Theoretical Framework*

The present study is guided by a contextual psychological framework that views mental health as shaped by ongoing interactions between individual psychological processes and broader social and structural conditions. Rather than treating stressors as independent influences, we draw on syndemics theory to understand the COVID-19 pandemic as a context in which multiple challenges (e.g., socioeconomic disadvantage, disruptions to institutional support, perceived stress, and changes in family life) cooccurred and interacted to affect students' psychological well-being.

To better capture how these dynamics are experienced at the individual level, the study is also informed by an intersectional perspective. From this viewpoint, psychological experiences are shaped by the intersection of multiple social positions and life circumstances, including socioeconomic background, ethnicity, gender, and family context. While the study is informed by an intersectional perspective, our analyses focus mainly on parental educational background (first-generation status), and we did not test other social positions through formal interaction models. Vulnerability and resilience are therefore understood not as fixed traits, but as processes that emerge within specific social and relational environments.

Within this framework, perceived stress is a proximal response to overlapping demands, whereas parental support is a relational resource whose meaning and impact may differ across socioeconomic contexts. This perspective provides a conceptual basis for examining moderation effects, allowing us to test whether the psychological consequences of stress vary depending on students' social and contextual circumstances. In this sense, the present study conceptualizes syndemics not only as a population-level phenomenon, but also as a psychological process in which co-occurring stressors and resources interact within individuals to shape mental health outcomes over time.

#### *1.5. College Student Mental Health During the COVID-19 Pandemic*

Psychological impacts of the pandemic accumulated with other stressors to have profound psychological effects on urban college students. During the pandemic college students reported experiencing fear for themselves and loved ones (91%), difficulty concentrating (89%), and trouble sleeping (86%); and they handled these psychological stressors with positive and negative coping mechanisms [25]. One of the ways colleges help students cope with the stress of college has been to offer mental health services on campus. Though research has shown that students benefit from receiving campus mental health services [26], those services were cut off when campuses closed for the pandemic. So how has the onset of the pandemic affected college students' mental health?

#### *1.6. Depression and Anxiety Among College Students*

The pandemic occurred during a sensitive period for many college students because key developmental norms for emerging adults were disrupted. A study in Spain found that university staff had lower depression, anxiety, and stress scores than their students [27], indicating that college students were more vulnerable to the psychological harm from the

pandemic. A study of COVID-19's impacts on the mental health of college students in New York City found that 90% exceeded the Patient Health Questionnaire score cut-off, which indicates severe depression symptoms, while 66% displayed symptoms of severe Generalized Anxiety Disorder during the same period [28].

While socioeconomic status is a common factor of anxiety and depression in college populations, studies in China and Australia found that university students from families with lower income, lower maternal education, and/or non-heterosexual students were more susceptible to depression than their peers [22,29]. Gender differences in experiences of anxiety and depression in college students also exist. Female students experience higher levels of mixed depression and anxiety than their male counterparts [30]. These statistics highlight the role of social context in mental health, showing how anxiety and depression can collide with pandemic consequences for URM populations in a syndemic fashion.

### *1.7. Perceived Stress and Parent Support as Predictors of Students' Mental Health*

Perceived stress and social support can be used to predict mental health status [31]. From college students' perspective, stress can be due to work overload, pressure to succeed, financial instability, family responsibility pressures, and more [32]. Research shows that the pandemic was detrimental to the stress and mental health of college students globally. For example, one study in the U.S. found that younger students experienced more perceived stress and feelings of depression during the stay-at-home order, compared to older students [33]. Another found that urban college students had higher levels of anxiety that were exacerbated by stress [34]. Wathélet et al. (2020) found that college students in France who experienced more perceived stress during the pandemic were more susceptible to depression, anxiety, and suicidal ideation [35].

Parental support is very beneficial to adolescents' academic success and prospects in higher education [36]. One reason is that it is associated with higher self-esteem and self-efficacy among adolescents [37]. Parental support has also been linked to higher enrollment rates and academic success at universities for immigrant students [38]. However, parents' income and education are positively associated with higher perceived social and parental support among college students [39].

### *1.8. Pandemic Resilience*

Resilience has been described as maintaining a stable mental health trajectory despite having experienced serious stressors or aversive events [40]. Within the midst of natural disasters, resilience is an important factor in coping and perseverance toward long term goals [41]. In one of the earliest studies to examine resilience as a factor for positive change and growth, Emmy Werner led the Kauai Longitudinal Study examining youth who had suffered severe adversity or trauma [42]. Werner's work on resiliency throughout her career identified several protective factors that helped children thrive: (1) reasoning ability, (2) non-family emotional support, (3) internal locus of control, (4) autonomy, (5) sociability, and (6) seizing opportunities [42]. Children with these qualities were more likely to overcome adversity and go on to lead productive lives [42]. Socioeconomically, the second protective factor may differ. Sociologists have long known that social capital tends to be greater in quality and quantity of resources for higher SES communities [43]. On the other hand, research finds that natural mentors who are family friends or extended family members tend to provide URM freshmen with greater amounts of support (i.e., emotional, appraisal, informational, and instrumental) [44].

Though the COVID-19 pandemic has had many unprecedented and negative effects globally since it began, scholars also recognize that resilience may be innate to humans and that the pandemic may in fact provide unique opportunities to grow resilience in

its aftermath [45]. Accordingly, in addition to examining how perceived stress, parental support, and socioeconomic background influence urban college students' mental health, the current study also examines factors associated with pandemic resilience.

In the present study, parental educational attainment was used to characterize students' educational background, distinguishing first-generation college students from those whose parents had prior college experience. This distinction reflects differences in familiarity with education systems and access to educational and institutional resources rather than direct measures of family income or material wealth.

Therefore, we hypothesized the following in this study:

1. For both first-generation and continuing-generation student groups, higher perceived stress at T1 will predict higher levels of depression and anxiety at T2, whereas greater parental support at T1 will predict lower levels of depression and anxiety at T2.
2. The protective effects of parental support on pandemic-related psychological harm (negative) and pandemic resilience (positive) will be weaker among first-generation students than among continuing-generation students.
3. Across both groups, perceived stress at T1 will be associated with increases in depression and anxiety at T2, above and beyond baseline levels of these symptoms.
4. Among first-generation students only, the association between perceived stress and pandemic-related psychological harm will be stronger at higher levels of parental support, indicating a moderation effect.
5. For first-generation students only, higher levels of depression and anxiety at T1 will predict greater psychological harm from the pandemic at T2, consistent with a syndemic pattern.
6. The types of stressful life events experienced during the pandemic will differ by parental educational background, such that first-generation students will report greater disruption to family patterns, whereas continuing-generation students will report greater disruption to wider social networks.

## 2. Methods

### 2.1. Participants

The sample for this study consisted of 86 undergraduate freshmen students at an urban university in the United States, which has about 15,000 students. The average age of participants was 19.38 (SD = 2.48). Participants were mostly female (81.4%), and in terms of ethnicity, mostly Latinx (79.1%), followed by African American (14%), Asian (4.7%), White (1.2%) and other (1.2%). Parental educational attainment was assessed for both parents and used to characterize students' educational background. Reported levels of parental education included: completed elementary school (11.6%), middle school (25.6%), high school (37.2%), some college (16.3%), completed college (8.1%), or completed graduate school (1.2%). Overall, 74.4% of participants had parents with a high school education or below.

### 2.2. Procedure

The study was approved by the university's institutional review board, and participants were freshmen students in Introductory Psychology, who were recruited through the university's human subjects pool and participated for course credit. Students provided consent and completed surveys online. The primary investigator emailed those who completed the first survey the link to the second survey. Six cases that completed the first survey after campus closure were excluded, and 2 time-points were obtained for all participants, spanning just over 3 months.

The three-month interval between T1 and T2 was selected to capture early psychological responses to a rapid and large-scale environmental disruption. Prior research indicates that symptoms of anxiety and depression can change over relatively short time frames in young adults, particularly during periods of acute stress and uncertainty. Moreover, resilience is increasingly conceptualized as a dynamic process that can emerge or shift in response to changing circumstances rather than as a stable trait [40]. The onset of the COVID-19 pandemic represented a sudden and prolonged stressor, making a three-month interval well suited to detect meaningful changes in psychological distress and adaptive functioning during the early phase of adjustment.

### 2.3. Measures

The first six measures below demonstrated good reliability ( $\alpha$ s ranging from 0.80 to 0.92) in the current study. The last two measures are sum scores based on objective metrics. The CES-D 10 was used to measure common symptoms of depression in community populations [46]. The scale consists of 10 items rated on a 5-point scale. To measure general and social anxiety symptoms, the Patient Reported Outcomes Measurement Information System (PROMIS) was used [47]. It has 11 items rated on a 5-point scale. These first two scales were administered at T1 and T2 to measure mental health outcomes.

Two scales were used to measure the predictors in our study at T1. The Perceived Stress Scale assessed how much students see their lives as uncontrollable, unpredictable, and overwhelming [48]. It uses a 5-point scale and captures one's subjective appraisal of stress. Parent support was measured by the parent subscale of the Multidimensional Scale of Perceived Social Support [49]. It has 4 items rated on a 7-point scale.

Resilience response to the pandemic was measured using a modified version of the Connor and Davidson Resilience Scale [50]. Bono et al. [4] modified the scale to measure a resilient orientation to the COVID-19 pandemic. It has 10 items using a 5-point scale. A scale from the Coronavirus Impacts Questionnaire was used to assess psychological harm from the pandemic [51]. It has 3 items on a 5-point scale. These two scales were administered at T2 to measure pandemic outcomes.

The College Adjustment Rating Scale was used to measure stressful life events at T2 [52]. The 32 items capture life events that people must adjust to in their life and are weighted from most to least stressful (e.g., "Death of a close family member"; "Minor traffic violations"). The scale gives an unbiased measure of students' stress in academic, social, personal, and family/home contexts. Students answer if each event has occurred in the last 12 months, and an overall score is derived.

Parental educational attainment was used to operationalize college generational status. Students were classified as first-generation if neither parent had completed education beyond high school and as continuing-generation if at least one parent had completed some college or higher education.

### 2.4. Data Analysis

Preliminary analyses including descriptive statistics and bivariate correlations were conducted to display information about the sample. To test the hypotheses, multiple linear regressions, moderation analyses, and independent samples *t* tests were conducted. These analyses were conducted separately for first-generation and continuing-generation student groups, except for the last one, which compared both groups.

### 3. Results

Table 1 presents descriptive statistics for the study variables for the full sample and separately for first-generation and continuing-generation students. Table 2 presents correlations among all study variables for the full sample.

**Table 1.** Descriptive Statistics for the Full Sample and by First-Generation and Continuing-Generation Status.

| Variable                             | M    | SD   | Min. | Max. | Range |
|--------------------------------------|------|------|------|------|-------|
| Full Sample                          |      |      |      |      |       |
| Perceived Stress T1                  | 3.13 | 0.64 | 1.20 | 4.80 | 3.60  |
| Parent Support T1                    | 4.94 | 1.41 | 1.00 | 7.00 | 6.00  |
| Anxiety T1                           | 2.91 | 0.91 | 1.00 | 5.00 | 4.00  |
| Anxiety T2                           | 2.88 | 0.84 | 1.00 | 4.80 | 3.80  |
| Depression T1                        | 2.74 | 0.77 | 1.00 | 4.57 | 3.57  |
| Depression T2                        | 2.87 | 0.79 | 1.00 | 5.00 | 4.00  |
| Psychological Harm T2                | 2.95 | 1.07 | 1.00 | 5.00 | 4.00  |
| Pandemic Resilience T2               | 3.51 | 0.85 | 1.40 | 5.00 | 3.60  |
| First-Generation Students            |      |      |      |      |       |
| Perceived Stress T1                  | 3.27 | 0.63 | 1.80 | 4.80 | 3.00  |
| Parent Support T1                    | 4.79 | 1.44 | 1.00 | 7.00 | 6.00  |
| Anxiety T1                           | 3.01 | 0.92 | 1.20 | 5.00 | 3.80  |
| Anxiety T2                           | 3.04 | 0.80 | 1.00 | 4.80 | 3.80  |
| Depression T1                        | 2.80 | 0.74 | 1.43 | 4.57 | 3.14  |
| Depression T2                        | 2.96 | 0.74 | 1.14 | 5.00 | 3.86  |
| Psychological Harm T2                | 3.11 | 0.96 | 1.00 | 5.00 | 4.00  |
| Pandemic Resilience T2               | 3.45 | 0.82 | 1.40 | 5.00 | 3.60  |
| Continuing-Generation Students Group |      |      |      |      |       |
| Perceived Stress T1                  | 2.90 | 0.61 | 1.20 | 4.00 | 2.80  |
| Parent Support T1                    | 5.19 | 1.33 | 2.00 | 7.00 | 5.00  |
| Anxiety T1                           | 2.74 | 0.88 | 1.00 | 4.30 | 3.30  |
| Anxiety T2                           | 2.60 | 0.84 | 1.00 | 4.60 | 3.60  |
| Depression T1                        | 2.65 | 0.82 | 1.00 | 4.29 | 3.29  |
| Depression T2                        | 2.73 | 0.87 | 1.00 | 4.86 | 3.86  |
| Psychological Harm T2                | 2.67 | 1.20 | 1.00 | 5.00 | 4.00  |
| Pandemic Resilience T2               | 3.60 | 0.92 | 1.70 | 5.00 | 3.30  |

*Note.* First-generation students are defined as those whose parents did not complete education beyond high school; continuing-generation students are defined as those with at least one parent who completed some college or higher education.

**Table 2.** Correlations Between Main Study Variables, Full Sample.

|                           | 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8 |
|---------------------------|----------|----------|----------|----------|----------|----------|----------|---|
| 1. Anxiety T1             | -        |          |          |          |          |          |          |   |
| 2. Anxiety T2             | 0.60 **  | -        |          |          |          |          |          |   |
| 3. Depression T1          | 0.88 **  | 0.56 **  | -        |          |          |          |          |   |
| 4. Depression T2          | 0.54 **  | 0.83 **  | 0.64 **  | -        |          |          |          |   |
| 5. Pandemic Psy Harm T2   | 0.24 **  | 0.50 **  | 0.37 **  | 0.60 **  | -        |          |          |   |
| 6. Pandemic Resilience T2 | −0.33 *  | −0.56 ** | −0.37 ** | −0.60 ** | −0.44 ** | -        |          |   |
| 7. Parent Support T1      | −0.35 ** | −0.43 ** | −0.37 ** | −0.40 ** | −0.19 ** | 0.29     | -        |   |
| 8. Perceived Stress T1    | 0.74 **  | 0.63 **  | 0.77 **  | 0.66 **  | 0.40 **  | −0.36 ** | −0.47 ** | - |

*Note.* Pearson's  $r$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ .

#### 3.1. Hypothesis 1—Perceived Stress Predicts Lower Mental Health and Parent Support Predicts Better Mental Health for First-Generation and Continuing-Generation Students

Separate linear regressions were conducted with perceived stress or parent support at T1 as the predictor variable and depression or anxiety at T2 as the DV. Table 3 shows

that perceived stress had positive effects and that parent support had negative effects on depression and anxiety for both student groups. This pattern supports Hypothesis 1.

**Table 3.** Beta Values for Simultaneous Regressions, by Generational Status.

| Predictor                      | Depression | Anxiety   | Resilience | Psychological Harm |
|--------------------------------|------------|-----------|------------|--------------------|
| First-Generation Students      |            |           |            |                    |
| Perceived Stress               | 0.559 **   | 0.576 **  | −0.227     | 0.366 **           |
| Parent Support                 | −0.373 **  | −0.443 ** | 0.190      | −0.024             |
| Continuing-Generation Students |            |           |            |                    |
| Perceived Stress               | 0.780 **   | 0.637 **  | −0.543 **  | 0.380 *            |
| Parent Support                 | −0.411 *   | −0.363 *  | 0.429 *    | −0.378 *           |

Note. Values are standardized beta coefficients ( $\beta$ ), \*  $p < 0.05$ , \*\*  $p < 0.01$ .

### 3.2. Hypothesis 2—Parent Support Shows Weaker Protective Associations for First-Generation Students

Table 3 also shows that parent support's effects on pandemic resilience (positive) and pandemic psychological harm (negative) were also stronger and only significant for continuing-generation students. This provides support for Hypothesis 2.

### 3.3. Hypothesis 3—Perceived Stress Predicts Worsened Mental Health at T2

Next, separate hierarchical multiple regressions tested if perceived stress predicted increases in either T2 depression or T2 anxiety, beyond baseline levels of those DVs. Table 4 shows that perceived stress significantly predicted increased depression and anxiety at T2 for continuing-generation students and only increased anxiety (not depression) at T2 for first-generation students. Thus, Hypothesis 3 was partially supported.

**Table 4.** Changes in Mental Health as a Function of Perceived Stress, by Generational Status.

| Step                                       | Predictor Variable | $\beta$  | $R^2$ |
|--------------------------------------------|--------------------|----------|-------|
| First-Generation Students' Depression      |                    |          |       |
| 1                                          | Depression T1      | 0.566 ** | 0.320 |
| 2                                          | Depression T1      | 0.334    | --    |
|                                            | Perceived Stress   | 0.304    | 0.359 |
| First-Generation Students' Anxiety         |                    |          |       |
| 1                                          | Anxiety T1         | 0.582 ** | 0.339 |
| 2                                          | Anxiety T1         | 0.346 *  | --    |
|                                            | Perceived Stress   | 0.325 *  | 0.388 |
| Continuing-Generation Students' Depression |                    |          |       |
| 1                                          | Depression T1      | 0.721 ** | 0.520 |
| 2                                          | Depression T1      | 0.266    | --    |
|                                            | Perceived Stress   | 0.565 ** | 0.633 |
| Continuing-Generation Students' Anxiety    |                    |          |       |
| 1                                          | Anxiety T1         | 0.594 ** | 0.353 |
| 2                                          | Anxiety T1         | 0.264    | --    |
|                                            | Perceived Stress   | 0.439 *  | 0.436 |

Note.  $\beta$  = standardized beta coefficient, \*  $p < 0.05$ , \*\*  $p < 0.01$ ,  $R^2$  = total variance explained at each step.

Separate hierarchical multiple regressions explored if parent support also predicted decreases in depression or anxiety at T2, beyond baseline levels of those DVs. Table 5 shows that parent support only predicted reduced anxiety at T2 for first-generation students.

**Table 5.** Changes in Mental Health as a Function of Parent Support, by Generational Status.

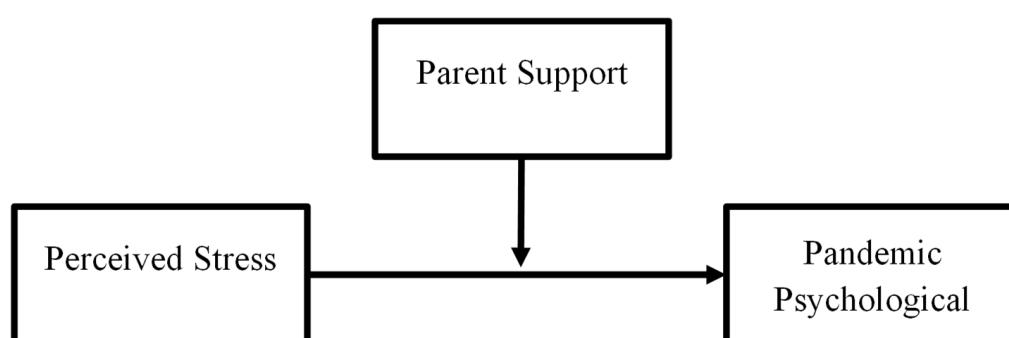
| Step                                       | Predictor Variable | $\beta$  | $R^2$ |
|--------------------------------------------|--------------------|----------|-------|
| First-Generation Students' Depression      |                    |          |       |
| 1                                          | Depression T1      | 0.566 ** | 0.320 |
| 2                                          | Depression T1      | 0.497 ** | --    |
|                                            | Parent Support     | −0.206   | 0.358 |
| First-Generation Students' Anxiety         |                    |          |       |
| 1                                          | Anxiety T1         | 0.582 ** | 0.339 |
| 2                                          | Anxiety T1         | 0.491 ** | --    |
|                                            | Parent Support     | −0.290 * | 0.415 |
| Continuing-Generation Students' Depression |                    |          |       |
| 1                                          | Depression T1      | 0.720 ** | 0.518 |
| 2                                          | Depression T1      | 0.661 ** | --    |
|                                            | Parent Support     | −0.146   | 0.536 |
| Continuing-Generation Students' Anxiety    |                    |          |       |
| 1                                          | Anxiety T1         | 0.584 ** | 0.341 |
| 2                                          | Anxiety T1         | 0.521 ** | --    |
|                                            | Parent Support     | −0.163   | 0.364 |

Note.  $\beta$  = standardized beta coefficient, \*  $p < 0.05$ , \*\*  $p < 0.01$ ,  $R^2$  = total variance explained at each step.

Given the mixed findings on parental support—it did not contribute to less psychological harm from the pandemic or more pandemic resilience for first-generation students, like it did for continuing-generation students, but it contributed to reduced anxiety for them (and not for continuing-generation students)—we wanted to better understand the role of parent support for first-generation vs. continuing-generation students. This pattern is consistent with evidence that typical protective factors in URM families may have functioned differently during the pandemic [17].

### 3.4. Hypothesis 4—The Effect of Perceived Stress on Pandemic Psychological Harm Is Stronger When Parent Support Is Higher Among First-Generation Students (Moderation Effect)

To test this notion (see Figure 1 below), we used the PROCESS macro [53] for SPSS (version 28) to examine whether perceived stress, parent support, and the interaction between both predictors influenced psychological harm from the pandemic for each student group.

**Figure 1.** Parent Support Moderates the Relationship Between Perceived Stress and Psychological Harm from the Pandemic.

For the continuing-generation group, the overall model, the interaction term, and the main effects were not significant. However, for the first-generation group, the overall model was significant,  $F(3, 50) = 5.713$ ,  $p = 0.002$ ,  $R^2 = 0.262$ , and the interaction term explained a significant amount of overall variance in psychological harm,  $F(1, 50) = 8.024$ ,  $p = 0.007$ ,  $\Delta R^2 = 0.107$ . The unstandardized regression coefficient for the main effect for parent support was statistically significant ( $b = -0.872$ , 95% CI  $[-1.517, -0.227]$ ,  $p = 0.009$ ),

although the unstandardized regression coefficient for the main effect of perceived stress was not ( $b = -0.696$ , 95% CI  $[-1.675, 0.283]$ ,  $p = 0.160$ ).

The interaction between perceived stress and parent support was significant for first-generation students ( $b = 0.286$ , 95% CI  $[0.083, 0.490]$ ,  $p = 0.007$ ). To explore the significant interaction term, simple regression lines were computed at low (1 SD below the mean), medium (at the mean), and high (1 SD above the mean) parent support. Positive simple slopes were found between perceived stress and psychological harm for those with moderate parent support,  $b = 0.675$ ,  $p = 0.002$ ; and for those with high parent support,  $b = 1.089$ ,  $p < 0.001$ . The slope for low parent support ( $b = 0.262$ ) was not significant ( $p > 0.05$ ). This means that for first-generation students with moderate-to-high parent support, higher perceived stress was associated with higher psychological harm from the pandemic. Thus, the fourth hypothesis was supported because parent support significantly moderated the effect of perceived stress on psychological harm only among first-generation students. That is, higher levels of parent support were associated with greater psychological harm from the pandemic for first-generation students.

### 3.5. Hypothesis 5—Depression and Anxiety Each Predict More Pandemic Psychological Harm Among First-Generation Students (Syndemic Effects)

Separate regressions were conducted with anxiety or depression at T1 as predictors of psychological harm from the pandemic at T2. Table 6 shows that anxiety and depression at T1 were significant predictors of psychological harm at T2 among first-generation students and not among continuing-generation students, as hypothesized. However, contrary to expectations, anxiety predicted less psychological harm at T2 among the first-generation group, whereas depressive symptoms predicted greater psychological harm. Thus, the fifth hypothesis was partially supported.

**Table 6.** Effects of Mental Health on Pandemic Psychological Harm, by Generational Status.

| Predictor Variable             | $\beta$      | $R^2$ |
|--------------------------------|--------------|-------|
| First-Generation Students      |              |       |
| Anxiety T1                     | $-0.563^*$   | --    |
| Depression T1                  | $0.955^{**}$ | 0.282 |
| Continuing-Generation Students |              |       |
| Anxiety T1                     | $-0.399$     | --    |
| Depression T1                  | $0.605$      | 0.095 |

Note.  $\beta$  = standardized beta coefficient, \*  $p < 0.05$ , \*\*  $p < 0.01$ ,  $R^2$  = total variance explained.

### 3.6. Hypothesis 6—Stressful Life Events Differ Between the Two Generational Groups

Independent samples  $t$  tests were conducted on all 32 items of the College Adjustment Rating Scale to examine which stressors differed between first-generation and continuing-generation students. Table 7 indicates the stressors that were found to be significantly different between the two groups. Among continuing-generation students, death of a close friend, sexual problems, and changing living conditions were significantly more common. Among first-generation students, responsibilities for others and difficulty in identifying a major were more common. These differences indicate broader social network disruptions in the continuing-generation group and family and academic disruptions in the first-generation group, generally supporting our sixth hypothesis.

**Table 7.** Differences in Stressful Life Events Between First- and Continuing-Generation Students.

|                                 | First-Gen<br>M (SD) | Continuing<br>Gen M (SD) | Mean<br>Difference | t-Test<br>p Value |
|---------------------------------|---------------------|--------------------------|--------------------|-------------------|
| Death of a<br>close friend      | 0.06 (0.23)         | 0.22 (0.07)              | −0.16              | 0.022 *           |
| Responsibilities<br>for others  | 0.26 (0.44)         | 0.06 (0.25)              | 0.20               | 0.023 *           |
| Sexual Problems                 | 0.04 (0.19)         | 0.19 (0.40)              | −0.15              | 0.020 *           |
| Difficulty<br>identifying major | 0.43 (0.50)         | 0.19 (0.40)              | 0.24               | 0.024 *           |
| Change in<br>living conditions  | 0.06 (0.23)         | 0.22 (0.42)              | −0.16              | 0.022 *           |

Note. Mean difference reflects First-Generation minus Continuing-Generation students. \*  $p < 0.05$ .

#### 4. Discussion

The present study examined how perceived stress and parental support predicted mental health outcomes among underrepresented minority college freshmen during the early phase of the COVID-19 pandemic, with particular attention to differences between first-generation and continuing-generation college students. These findings suggest that first-generation college status represents a distinct psychological context in which (A) elevated baseline anxiety may coexist with adaptive resilience processes and (B) high parent support (normally a protective factor) exacerbated their stress, resulting in differential responses between them and continuing-generation students to large-scale stressors such as the COVID-19 pandemic.

Our overall aims were to understand how the stress and mental health of underrepresented minority (URM) students differed as a function of parental educational background (first-generation vs. continuing-generation) during the period immediately preceding the COVID-19 pandemic and its onset. Specifically, we examined whether perceived stress and perceived parental support prior to the pandemic predicted subsequent depression and anxiety symptoms, pandemic-related psychological harm, and resilient responding to the pandemic by the end of the semester, and whether these associations differed across groups. We examined how two factors commonly associated with mental health, perceived stress (a risk factor) and perceived family support (a protective factor) [31,32] right before the pandemic predicted depression and anxiety symptoms, psychological harm from the pandemic, and resilient responding to the pandemic by the end of the semester differently for first- and continuing-generation students.

Overall, most hypotheses were supported, although several findings diverged from expectations. Perceived stress predicted increases in anxiety and depression symptoms in continuing-generation students and increases in anxiety in first-generation students. However, parent support played a more complex role for first-generation students. While it was generally helpful across all mental health and pandemic outcomes for continuing-generation students, its helpfulness to first-generation students was mixed. For first-generation students parent support was linked with reductions in anxiety, but not pandemic resilience, and it had an exacerbating effect (i.e., strengthened the effect of perceived stress on their sense of psychological harm from the pandemic). Although this moderation effect is noteworthy, it should be interpreted with caution. During the pandemic, higher levels of parental support may have reflected closer family involvement or reduced autonomy, particularly for first-generation students who were more likely to be living at home during lockdowns. In this context, parental involvement that is typically experienced as supportive may have felt intrusive or added to students' stress rather than ease it. Other explanations are also possible, including family co-dependency, increased parental worry

that may have been passed on to students, or greater exposure to family-related stressors during extended periods of isolation. Because the present study cannot disentangle these possibilities, future research that directly assesses family dynamics and living arrangements will be important for clarifying the processes underlying this finding. This interpretation is consistent with emerging evidence suggesting that family resources that are typically protective may have been less helpful—or even counterproductive—for some first-generation students during the pandemic, particularly in the context of prolonged household stress and confinement [17].

Other findings from our study helped reveal the different experiences that first-generation students had from continuing-generation students as the COVID-19 pandemic began, helping to explain the above findings. First-generation students reported more life stress due to identifying a major and having more responsibilities for others. While these issues may be more common for URM students in general, this may also reflect the greater hardship they encountered with the onset of the COVID-19 pandemic, both from the lockdown isolation and from that campus closure that ensued. The physical disconnection from campus and lower education of their parents may have contributed to increased burden in these areas. Indeed, research conducted in the aftermath of the pandemic shows that first-generation households and those who knew someone infected with COVID-19 suffered more psychological distress [18,54,55], including more academic distress [56]. Continuing-generation students reported more life stressors that indicated challenges in their broader social network. Their pandemic resilience appeared to depend more strongly on their perceived stress and parent support, compared to first-generation students. It may be that continuing-generation students and their families had more resources and social capital to draw from [43] as the pandemic started.

Finally, the mental health status of first-generation students right before the pandemic was associated with more psychological harm from the pandemic. There was no evidence of such compounding mental health challenges for continuing-generation students. That is, only for first-generation students, did depression symptoms right before the pandemic predict more harm from the pandemic. Unexpectedly, anxiety symptoms before the pandemic predicted less harm from the pandemic. This unexpected direction of effect should be interpreted cautiously given the modest sample size and the high overlap between anxiety and depressive symptoms at T1, which may have influenced the unique regression estimates. Although anxiety is typically conceptualized as a psychological risk factor, this pattern suggests that, for first-generation students, elevated anxiety may reflect heightened vigilance or preparedness that reduced the relative impact of the pandemic as an additional stressor. This suggests that, for them, higher anxiety may have been somewhat protective as the pandemic began. These findings are consistent with a syndemic pattern for first-generation students, primarily with respect to depressive symptoms. From a positive psychology perspective, these findings highlight the importance of examining resilience as a dynamic process that can coexist with psychological distress, rather than as the absence of anxiety or stress. Such results add to accumulating evidence that first-generation college students have endured greater psychological consequences from the pandemic [12,13,15,17,18,21,22,54–56].

The findings described above reflect empirical patterns observed in this sample and should be interpreted at the level of statistical associations. In the following section, we cautiously consider how these patterns might inform applied efforts to support students in higher education settings. The following implications are grounded in the observed associations between perceived stress, parental support, and mental health outcomes in this sample, as well as in prior research on first-generation and underrepresented college students.

Overall, findings from our study suggest potential implications for how urban colleges can better support URM students' mental health in the aftermath of the COVID-19 pandemic. Our analyses focusing separately on first-generation versus continuing-generation students provide insights for more effective intervention. For example, given the finding that perceived stress was a strong predictor of mental health outcomes across both groups, mental health support on university campuses may benefit from addressing students' stress appraisals directly. For moderate-SES or continuing-generation students, this may include helping students more effectively leverage existing social capital and institutional resources to support mental health and resilience, consistent with prior research [43].

In contrast, for first-generation students, among whom parental support showed a more complex and sometimes exacerbating association with psychological harm, support services may benefit from emphasizing the development of alternative sources of social capital, such as relationships with faculty, staff, or natural mentors beyond the immediate family [44]. In practice, these implications could be addressed through existing outreach efforts, such as advising check-ins, first-year support programs, or mentoring initiatives. For example, outreach that focuses on identifying high stress early and offering supportive relationships beyond the family may be particularly relevant for first-generation students.

Furthermore, and perhaps most illuminating from our findings for supporting URM students' mental health through the pandemic, counseling efforts may benefit from considering the curvilinear nature of parent support for first-generation college students. That is, it may help to consider the possibility, ironically, that supportive parents can backfire by distracting or frustrating these students, or worse, encroaching on their autonomy. Such is the nature of syndemics, and understanding these dynamics will undoubtedly improve support services for diverse college students. These implications are offered as informed possibilities rather than direct prescriptions and should be evaluated alongside institutional context and additional empirical evidence. Although this study was conducted in a U.S. context, the findings may hold broader relevance for international settings in which universities serve students from diverse socioeconomic and educational backgrounds. In particular, the results highlight how family context, first-generation status, and perceived stress can interact during periods of large-scale disruption—processes that may be relevant across different higher education systems.

#### *Limitations and Future Directions*

A key strength of this study is the timing of data collection, which captured students' psychological functioning immediately before the COVID-19 pandemic and again during its early months. This rare and unforeseen historical moment allowed us to examine how stress, mental health, and resilience unfolded as students were suddenly confronted with widespread disruption. At the same time, as with all research, the findings should be interpreted considering several limitations. The overall sample size was modest ( $N = 86$ ), and analyses conducted separately for first-generation and continuing-generation students further reduced the number of participants in each group. As a result, estimates of regression coefficients—particularly in hierarchical and moderation models—may be less stable and more sensitive to sampling variability. To clarify the sensitivity of the analyses, we conducted a post hoc sensitivity analysis, which indicated that the available sample size was sufficient to detect medium-sized effects ( $f^2 = 0.17$ ). Smaller effects, especially interaction effects, may be less consistently detectable in samples of this size, and null findings should therefore be interpreted cautiously. At the same time, the longitudinal design, theory-driven hypotheses, and the consistency of several medium-sized effects across analyses support confidence in the primary patterns observed.

The study relied on self-report measures and a correlational design, which limits conclusions about causality and leaves open the possibility that unmeasured factors influenced the observed relationships. In addition, the sample was predominantly female, which should be considered when interpreting the findings. Prior research suggests that stress responses, coping processes, and resilience trajectories may differ across genders, and the present results may therefore be most directly applicable to predominantly female underrepresented minority students. Future studies with more gender-balanced samples will be important for examining whether similar patterns emerge across genders.

Parental educational attainment was used to operationalize first-generation college status; future research would benefit from incorporating additional indicators such as family income or pandemic-related employment disruption.

Furthermore, the sample included a large proportion of Latinx students, reflecting the demographic composition of the urban university at which the study was conducted. While this strengthens the relevance of the findings for similar urban, minority-serving universities, it may limit generalizability to student populations with different ethnic compositions. Cultural factors related to family roles, interdependence, and support may shape stress and coping in ways that differ across groups. As a future direction, it would be valuable to examine whether the patterns observed here replicate in samples with greater ethnic diversity, to better understand how cultural and contextual factors shape stress, support, and resilience across different URM populations.

Finally, although the study identified meaningful differences in psychological responses and resilience processes across our generational status groups, it offers limited insight into the specific mechanisms through which resilience developed among first-generation students. Future studies with larger and more diverse samples, multiple methods, and longer follow-up periods could help clarify how social connections, mentoring relationships, and institutional support contribute to resilience over time.

## 5. Conclusions

Universities might consider various initiatives to offer instrumental, emotional, and informational support to students who face greater challenges transitioning to university life, particularly first-generation college students or those from lower parental educational backgrounds. One initiative that universities could consider is offering incentives for first-year students to attend on-campus meetings where information is provided about university resources that can foster a more equitable college experience. Additionally, many first-year students who are also the first in their family to attend university may benefit from an early meeting with an academic advisor prior to course registration for their second academic term (i.e., semester or quarter) to help develop a plan or trajectory for their courseload in the upcoming academic terms in addition to providing a space for students to ask questions regarding gaining access to on-campus academic supports that may support their learning experience (i.e., tutoring, workshops, office hours). Although they are simple, these initiatives extend a hand of support to college students that may be struggling not only with the transition but also with asking for help when facing challenges in an unfamiliar environment. These interventions may provide benefits which would familiarize the student with the on-campus resources that are there to support them in addition to providing the student with the knowledge and autonomy to be able to take on the challenges faced during their college experience going forward.

Ethnically and economically diverse communities were already under tremendous burden in the U.S. before the pandemic. Although the pandemic had widespread impacts across the globe, we can nonetheless harness insight from the inequities it revealed among urban college students. Urban universities and colleges represent the lifeblood for the

neediest communities; they produce future leaders that elevate quality of life for these communities and for society overall. As intractable problems—like pandemics or the consequences of climate change—continue to rise, it behooves society to better invest in education. Supporting diverse college students academically and personally will make human society more resilient in the long-term.

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