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Perceived Stress of College Students During COVID-19: Adverse Childhood Experiences

Kristina Morreale

A thesis presented in partial fulfillment of the requirements of the Undergraduate Honors Program at the University of New Haven.

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December 21, 2021

Date

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Abstract

ACEs are adverse childhood experiences experienced in the first 18 years of life. They are present in over a third of the population and lead to adverse health outcomes (Karatekin, 2017). The goal of this study was to examine whether ACEs could be used to identify stress levels of college students during the COVID-19 pandemic. Data on ACEs and stress levels were collected from students actively enrolled at a college or university (N= 183). Findings indicated that high ACEs were predictive of high stress, specifically considering stressful factors experienced during the COVID-19 pandemic. The results of this study suggest the implementation of conventional screenings for ACEs within college students. Introducing stress prevention and intervention measures to students could decrease the likelihood of developing adverse health outcomes.

Keywords: ACEs, COVID-19, stress, college students

Perceived Stress of College Students During COVID-19: Adverse Childhood Experiences

Adverse childhood experiences (ACEs) are defined as stressful events that children experience in the first 18 years of life. The ACE questionnaire assesses the presence of physical abuse, mental illness, incarcerated relatives, emotional abuse, if a mother was treated violently, and substance abuse in the home (Felitti et al., 1998). ACEs are experienced in childhood, however they have effects that extend beyond childhood. Individuals with unresolved childhood emotional problems have an increased likelihood of developing disorganized parent-child relationships, that can result in behavior perceived as frightening to their children (Daines, 2021; Felitti, 2002).

ACEs have a greater occurrence than traditionally recognized, as they are experienced by over a third of adults within the general population (Karatekin, 2017). They have been linked to long term negative health outcomes including mental health problems such as depression, suicide, drug use, risky sexual behavior, and poor overall physiological health (Adana, 2006; Murphy et al., 2013). Individuals with four or more ACEs have “high ACE scores”. These individuals are not only at risk for mental health issues, but also have an increased likelihood for physical health problems. Examples of health issues include cancer, heart disease, obstructive pulmonary disease and respiratory disease. Adverse health effects related to ACEs can impact emotional and physical health beyond adolescence (Bodendorfer et al., 2019; Walsh et al., 2019).

Individuals that experienced adversities in childhood account for approximately two-thirds of suicide attempts (Dube, 2001). It was found that individuals with higher ACE scores have increased levels of stress (Karatekin, 2017), especially if they experienced toxic stress. Toxic stress occurs when a child experiences frequent, chronic, or prolonged adversity. The prolonged exposure to adversity can disrupt the development of the brain architecture, organ systems, and increase the risk of stress related disease or cognitive impairment into adulthood

(Shonkoff et al., 2012). Extreme stress can cause physical and psychological impairment (Misra, 2000) as well as impact dispositions, sense of well-being, behavior and overall health (Schneiderman et al., 2005).

College students are a unique population due to the high levels of stress they experience daily (Karatekin, 2017). Students are more susceptible to stress as they further their education (Taylor et al., 2014); stressors they encounter are diverse and can include academic, financial, time, health, and self-imposed pressures (Misra, 2000; Stallman & Hurst, 2016). College students that experience stressful life events report decreased health, diminished conditions of living, and lower academic grades (Yaribeygi et al., 2017). Students with ACEs are predisposed to using harmful coping methods when confronted with stress (Mackay-Neorr, 2019).

Research has found stress is an impediment to academic performance and is associated with mental health problems among college students (Karatekin, 2017). According to research that was performed over an observed year (12 months), approximately half of all college-age individuals had a psychiatric disorder and were at a greater risk (than non-college students) to have alcohol disorders. This research used in-person interviews to analyze the sociodemographic correlates and prevalence of psychiatric disorders as well as addictions in college and non-college populations (Blanco et al., 2008). In another study performed on young adults, those who experienced one to five ACEs were three times more prone to report psychological distress, and participants that suffered from six or more ACEs had up to eight times the likelihood of reporting psychological distress (Manyema et al., 2018).

College students were assessed in a longitudinal study investigating if ACEs (evaluated at the start of the semester) would forecast a worsened mental health (at the conclusion of the semester). The research observed stress levels, depression, anxiety and suicidality as well as ACE scores throughout the semester. It was found that high levels of ACEs were associated with

worsening mental health over the semester. It was also found the number of stressors college students experience mediate the relationship of ACEs and mental health, supporting stress' involvement with ACEs and adverse health outcomes (Karatekin, 2017).

The speed of COVID-19's emergence, in conjunction with federal and state restrictions, impacts overall health and stress (Park et al., 2020). Research observing COVID-19 fear, stress and anxiety has shown that pandemics can increase overall psychological distress caused by the consequences of quarantine. In a population of Russian and Belarusian University students, it was found that living through a pandemic (and the associated quarantining) can result in both psychological and emotional distress that occurs in the form of depression, irritability, anger, emotional exhaustion, as well as other mental and psychological health issues. It was found that students who participated in increased quarantine isolation had a worsened psycho-emotional health as compared to those that engaged in limited quarantining. Individuals in limited quarantine were found not only to have a positive psycho-emotional state, but also engaged in less drug use than those who spent increased time in isolation (Gritsenko, 2020).

The relationship between stress and ACEs was elucidated by Karatekin et al. (2017), however, the research did not explore the relationship between ACEs and stress of events that occur outside of the home. To better understand the impact childhood trauma can have on the expression of stress during an unpredictable traumatic occurrence outside the home, the COVID-19 pandemic has been used to better understand the relationship between ACEs and experienced stress. To assess adversity that extends outside the home, the following question is posed: Do students' ACE scores affect stress levels, especially considering stressful factors experienced during the COVID-19 pandemic? Since ACEs and the COVID-19 pandemic have been found to lead to increased stress, it is hypothesized that students with high ACEs score will experience high stress levels during the COVID-19 pandemic.

Method

Participants

A total of 202 individuals were recruited and 183 individuals completed the study. Participants were recruited from introductory psychology classes at the University of New Haven as well as through a snowball sampling method. Students recruited from the introductory psychology course received course credit. Students recruited using the snowball sampling method were contacted via direct messages on social media and individualized emails. Participants were encouraged to share the link with peers to recruit more participants. All students that participated in the survey had the option to register for a raffle with the chance to win one of two \$25 gift cards.

Procedure

This study used a survey design to assess perceived stress of college students during the COVID-19 pandemic, with a specific focus on individuals with ACEs. The survey consisted of the COVID-19 Student Stress Scale (Zurlo et al., 2020), Perceived Stress Scale (Cohen et al., 1983), Adverse Childhood Experiences Questionnaire (Felitti, 1998), and a demographic questionnaire (see Appendix). The survey was delivered through Qualtrics and took about 7 minutes to complete.

Measures

COVID-19 Student Stress

The COVID-19 Student Stress Scale included a 7-item questionnaire that measured student stress associated to the COVID-19 pandemic. The scale used a 5-point Likert scale (ranging from “Not at all stressful” to “Extremely stressful”). The scale assessed topics that were sources of stress during the pandemic, such as risk of contagion, relationships, studies, and intimacy. Zurlo et al. (2020) conducted a study using the COVID-19 Student Stress Scale that

found the scale adequately evaluated global stress and sources of stress related to the COVID-19 pandemic. The research found the scale contained both convergent and discriminant validity within the three sub-categories (“Relationships and Academic Life”, “Isolation”, and “Fear of Contagion”). Construct validity was found by conducting exploratory factor analysis and confirmatory factor analysis. The scale was found reliable as the mean inter-item correlation was satisfactory according to Cronbach’s alpha and McDonald’s omega coefficient (Zurlo et al., 2020).

Perceived Stress

The Perceived Stress Scale is the most widely used measure to observe stress perception. The scale uses a 5-point Likert scale (ranging from “Never” to “Very Often”) and asks questions about stress experienced within the last month (i.e. in the last month, how often have you been upset because of something that happened unexpectedly? Or in the last month, how often have you felt that you were on top of things?). A review of Cohen’s Perceived Stress Scale found internal consistency reliability, and factorial validity to be well reported (Lee, 2012).

ACEs

The ACE score is a 10-item questionnaire based on participants first 18 years of life. The questionnaire investigates childhood abuse and household dysfunction, asking questions that require a “yes” or “no” answer. The ACE questionnaire has been included in multiple studies since the original CDC study performed by Felitti et al. (1998). As found by research on the German version of the questionnaire, the ACE test has adequate internal validity according to Cronbach’s alpha. The questionnaire was also found to be reliable for the retrospective assessment of adverse childhood experiences (Wingenfeld, 2010).

Results

To examine whether students' ACE scores affected stress levels, especially considering stressful factors experienced during the COVID-19 pandemic, a one-way multivariate analysis of variance (one-way MANOVA) and post-hoc independent sample t-tests were performed. Two different analyses were run to determine the effect of ACE scores, with the first using a "high" and "low" ACE score methodology (Anda et al., 2006) and the second using a "present" or "absent" ACE score methodology (Karatekin, 2017).

High vs. Low ACE Scores

In this set of analyses, ACE scores under 3 ($n = 141$, see Figure 1) defined as "low" and ACE scores of 4 or more ($n = 42$, see Figure 1) defined as "high" (Anda, et al., 2006). The analysis showed a significant difference in stress scores based on a college students ACE score, $F(2, 180) = 8.913$, $p < 0.001$; Wilk's $\Lambda = 0.910$, partial $\eta^2 = 0.090$). It was found that ACE score had a significant effect on both Perceived Stress Scale scores ($F(1, 181) = 17.375$; $p < 0.001$; partial $\eta^2 = 0.088$) and COVID-19 Student Stress Scale scores ($F(1, 181) = 6.618$; $p = 0.011$; partial $\eta^2 = 0.035$). The analysis indicated students with high ACE scores were more likely to experience increased stress during COVID-19.

A post-hoc independent samples t-test was conducted. The analysis found that participants with high ACE scores have statistically higher stress scores on Perceived Stress Scale ($M = 35.24$, $SD = 5.463$) and COVID-19 Student Stress Scale ($M = 21.52$, $SD = 3.795$) than the low ACE score group on the Perceived Stress Scale ($M = 30.63$, $SD = 6.51$), $t(181) = -4.168$, $p < 0.001$ and COVID-19 Student Stress Scale ($M = 19.26$, $SD = 5.30$), $t(181) = -2.573$, $p < 0.001$.

Presence vs. Absence of ACE Scores

An additional one-way MANOVA was conducted with ACE scores of 0 ($n = 56$, see Figure 1) defined as "absent" and all scores above 1 ($n = 127$, see Figure 1) as "present"

(Karatekin, 2017). The analysis showed a significant difference in stress scores based on a college students ACE scores $F(2, 180) = 7.627, p < 0.001$; Wilk's $\Lambda = 0.922$, partial $\eta^2 = 0.078$). Again, it was found that ACE score has a statistically significant effect on both Perceived Stress Scale scores ($F(1, 181) = 13.725; p < 0.001$; partial $\eta^2 = 0.070$) and COVID-19 Student Stress Scale scores ($F(1, 181) = 7.983; p = 0.005$; partial $\eta^2 = 0.042$). The analysis indicated students with present ACE scores experienced increased stress during COVID-19.

An additional post-hoc independent samples t-test was conducted. The analysis found that participants with present ACE scores have statistically higher stress scores on Perceived Stress Scale ($M = 32.84, SD = 6.178$) and ($M = 20.47, SD = 4.915$), $t(181) = -3.705, p < 0.001$ than the absent ACE score group on the Perceived Stress Scale ($M = 29.07, SD = 6.715$) and COVID-19 Student Stress Scale ($M = 18.21, SD = 5.134$), $t(181) = -2.825, p = 0.005$.

Discussion

The primary hypothesis that students with high ACE scores would experience high stress levels during the COVID-19 pandemic was supported. Additionally, the secondary hypothesis that students with a presence of ACEs would experience high stress levels during the pandemic was also supported. It was found that a relationship exists between ACE scores and the college students' overall stress. This relationship indicates that students with high/present ACE scores were more likely to experience higher stress levels than individuals with low/absent ACE scores. This study using the presence of the COVID-19 pandemic as a stressor, adds to previous research that found a relationship between ACEs and stress (Kartekin, 2017) by investigating the relationship ACEs and stress have to a stress inducing event that occurred outside of the home.

Results of the current study found the existence of a relationship between ACEs and perceived college student stress; with the additional factor of adversity that extends outside of the home (i.e. the COVID-19 pandemic). The findings that support the existence of a relationship

are consistent with previous findings that COVID-19 is a large source of stress. This suggests COVID-19 has been involved in the expression of stress experienced by college students with in the past year (Park et al., 2020) and has the potential to affect the relationship between ACEs and stress (Gritsenko, 2020; Kartekin, 2017).

The observation of student stress during COVID-19 allowed a specific focus to be placed on a stressor that occurs outside the home, exploring the long-term effects ACEs have on college students. Overall, this study contributes to the limited but increasing knowledge about ACEs among college students by revealing that over 69% of the students had been exposed to one or more ACEs. The rate of ACEs found in this study are similar to previous research that found at least 1 ACE was reported by 64% of respondents (Karatekin, 2017). The risk of adverse health and behavioral outcomes is significantly increased for individuals with “high” ACEs, as compared to those with “low” or less than 4 ACEs (Anda et al., 2006). In the current study almost 23% of students experienced 4 or more ACEs suggesting a considerable portion of college students are at increased risk for adverse health outcomes.

It was suggested by previous research that there is a need to screen students for ACEs to identify individuals that are at high risk for worsening mental health throughout college (Karatekin, 2017). Results obtained in this current study suggest screenings could be useful for college students, as over a third of surveyed students experiences more than 1 ACE.

Screenings could be helpful in introducing stress prevention and intervention measures to students that have high ACE scores. Past research found stressed college students have diminished conditions of living and lower academic grades (Yaribeygi et al., 2017). Given that the current study found individuals during the pandemic with high stress levels have high ACEs, it would seem beneficial to screen for ACEs. Screenings could provide insight into stress levels, offering individuals predisposed to harmful methods of coping a healthy alternative when

confronted with stress. Conventional screening for ACEs in college students could also help decrease long-term adverse health outcomes, if performed correctly. This is especially applicable if there are stressful events that impact a large number of the student body such as a pandemic or mass-casualty event, as the results were recorded during the COVID-19 pandemic. ACE screenings could prove to be valuable to early identification of student stress and have the potential to decrease the progression of adverse health outcomes traditionally associated with ACEs.

Limitations

One key limitation of this study is external validity. The participants were all college students, so generalizability becomes an issue for other groups. Ethnicity is another potential limitation, as most of the participants identified as “white” (see Table 1) further limiting the generalizability of the data. Another limitation is the use of the snowball sampling method. The sampling method increased the number of participants, but used a non-random sample of college students (Table 2). In addition, the majority of the students were female, potentially limiting the external validity of the data (see Table 3 & 4).

The study was completed during the COVID-19 and does not compare data collected from populations outside of those experiencing the pandemic, so the external validity may be limited for periods outside COVID-19. Even though the stress scales proved to be valid and reliable in previous research, only two stress scales are used. Given that stress is a complex expression and it is difficult to observe using a brief self report measure, this potentially limits the construct validity of the study.

Future Directions

Although this study provides insight into college students stress levels and it’s connection to ACEs, future research should concentrate on non-college student populations. The majority of

studies focusing on the relationship between ACEs and stress have been performed on college students. As both ACEs are pervasive issues that affect over one-third of the general population (Karatekin, 2017), more research should be performed that focuses on the general non-college student population.

It would also be valuable for future research to perform a variation of this study if another mass-stress inducing event occurs. As data collected within this study is representative of stress levels attained during a global pandemic, it would be valuable to perform a variation of this study that included pre-event, during event, and post-event data. Repetition of ACEs research during such events could provide insight to participants' mental health during stressful events. This has the potential to assist in creating useful interventions for individuals facing the event. This would create an interesting addition to the field of ACEs research, broadening the knowledge of its relationship to mental health during uncontrollable events that occur outside of the home.

Future studies could also use a longitudinal design to assess college student stress by observing if the relationship between ACEs and stress changes overtime. This would be important research because it could indicate associations between stress levels and environmental factors. For example, maybe the individuals who experienced the COVID-19 pandemic will have an increased adversity score in the future. How will individuals that lived through the pandemic compare to those who did not experience such an adverse environmental event? Research should study the effects living through the pandemic has on individuals lives.

To broaden knowledge about childhood trauma, research could incorporate the use of trauma measures other than the 10 question ACE questionnaire. It is important that future research provides a holistic view of the impact trauma has on stress levels. In this current research the only measure for 'trauma' was the adverse childhood experience questionnaire. It

could be beneficial to see if other, more detailed, trauma measures have the same relationship to stress; begging the question, would the use of an alternative trauma scale elicit a different relationship to college student stress?

Conclusion

The onset of COVID-19 was a stressful event that occurred outside of the home and was experienced by many people throughout the world. This stress is especially true for college students who already experience much stress while in pursuit of higher education. The pandemic proved to be an ideal opportunity to observe how students with high ACE scores have increased stress levels during an uncontrollable stressful event that occurs outside of the home. As the analyses performed within this study were found to be significant, it was found there exists a positive relationship between ACEs and stress during the COVID-19 pandemic.

References

- Anda, R., Felitti, V., Bremner, J., Walker, J., Whitfield, C., Perry, B., Dube, S., & Giles, W. (2006). The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neuroscience*, 256(3), 147-186. <https://doi.org/10.1007/s00406-005-0624-4>
- Blanco, C., Okuda, M., Wright, C., Hasin, D., Grant, B., Liu, S., & Olfson, M. (2008). Mental health of college students and their non-college attending peers: Results from the national epidemiologic study on alcohol and related conditions. *Archives of General Psychiatry*, 65(12), 1429- 1437. <https://doi.org/10.1001/archpsyc.65.12.1429>
- Bodendorfer, V., Koball, A., Rasmussen, C., Klevan, J., Ramirez, L., & Olson-Dorff, D. (2020). Implementation of the adverse childhood experiences conversation in primary care. *Family Practice*, 37(3), 355-359. <https://doi.org/10.1093/fampra/cmz065>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385-396. <https://doi.org/10.2307/2136404>
- Daines, C., Hansen, D., Novilla, L., & Crandall, A. (2021). Effects of positive and negative childhood experiences on adult family health. *BMC Public Health*, 21, 651. <https://doi.org/10.1186/s12889-021-10732-w>
- Dube, S., Anda, R., Felitti, V., Shapman, D., Williamson, D., & Giles, W. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span. *Journal of the American Medical Association*, 286(24), 3089-3096. <https://doi.org/10.1001/jama.286.24.3089>

- Felitti, V. (2002). The relationship of adverse childhood experiences to adult health: Turning gold into lead. *Zeitschrift für Psychosomatische Medizin und Psychotherapie*, 48(4), 359-369. <https://doi.org/10.13109/zptm.2002.48.4.359>
- Felitti, V., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V., Koss, M., & Marks, J. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults the adverse childhood experience study. *American Journal of Preventative Medicine*, 14(4), 245-258. [https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8)
- Gritsenko, V., Skugrevsky, O., Konstantinov, V., Khanmenka, N., Marinova, T., Reznik, A., & Isralowitz, R. (2020). COVID-19 fear, stress, anxiety, and substance use among Russian and Belarusian university students. *International Journal of Mental Health and Addiction*, 21, 1-7. <https://doi.org/10.1007/s11469-020-00330-z>
- Karatekin, C. (2018). Adverse childhood experiences (ACEs), stress and mental health in college students. *Stress Health*, 34(1), 36-45. <https://doi.org/10.1002/smi.2761>
- Lee, E. (2012). Review of the psychometric evidence of the perceived stress scale. *Asian Nursing Research*, 6, 121-127. <https://doi.org/10.1016/j.anr.2012.08.004>
- Mackay-Neorr, C. (2019). Adverse childhood experiences (ACEs) and toxic stress among college students: Prevalence, risks, and academic success. [Unpublished doctoral dissertation]. Washington State University.
- Manyema, M., Norris, A., & Richter, A. (2018). Stress begets stress: The association of adverse childhood experiences with psychological distress in the presence of stress. *BMC Public Health*, 18, 835. <https://doi.org/10.1186/s12889-018-5767-0>
- Misra, R. & Mckean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American Journal of Health Studies*, 16 (1), 14-51.

- Murphy, A., Steele, M., Dube, S., & Bate, J. (2014). Adverse childhood experiences (ACEs) questionnaire and adult attachment interview (AAI): Implications for parent child relationships. *Child Abuse & Neglect*, 38(2) 224-233.
<https://doi.org/10.1016/j.chiabu.2013.09.0044>
- Park, C., Russell, B., Fendrich, M., Finkelstein-Fox, L., Hutchison, M., & Becker, J. (2020). *Journal of General Internal Medicine*, 35(8), 2296-2303. <https://doi.org/10.1007/s11606-020-05898-9>
- Schneiderman, N., Ironson, G., & Siefel, S. (2005). Stress and health: Psychological, behavioral and biological determinants. *Annual Review of Clinical Psychology*, 1(1), 607-628.
<https://doi.org/10.1146/annurev.clinpsy.1.102803.144141>
- Shonkoff, J., & Garner, A. (2012). The lifelong effects of early childhood adversity and toxic stress. *American Academy of Pediatrics*. 126(1), 232-246.
<https://doi.org/10.1542/peds.2011-2663>
- Stallman, H., & Hurst, C. (2016). The University Stress Scale: Measuring domains and extent of stress in university students. *Australian Psychologist*, 51(2), 128–134.
<https://doi.org/10.1111/ap.12127>
- Taylor, Z. E., Doane, L. D., & Eisenberg, N. (2014). Transitioning from high school to college: Relations of social support, ego-resiliency, and maladjustment during emerging adulthood. *Emerging Adulthood*, 2(2), 105-115.
<https://doi.org/10.1177%2F2167696813506885>
- Walsh, D., McCartney, G., Smith, M., & Armour, G. (2019). Relationship between childhood socioeconomic position and adverse childhood experiences (ACEs): A systematic review. *Journal of Epidemiol Community Health*, 73(12), 1087-1093. <https://doi.org/10.1136/jech-2019-212738>

Wingenfeld, K., Schäfer, I., Terfehr, K., Grabski, H., Driessen, M., Grabe, H., & Spitzer, C.

(2010). The reliable, valid and economic assessment of early traumatization: first psychometric characteristics of the German version of the Adverse Childhood Experiences Questionnaire (ACE). *Psychotherapie Psychosomatik Medizinische Psychologie*, *61*(1), 10-14. <https://doi.org/10.1055%2Fs-0030-1263161>

Yaribeygi, H., Panahi, Y., Sahraei, H., Johnston, T., & Sahebkar, A. (2017). The impact of stress on body function: A review. *EXCLI Journal*. *16*, 1057-1072. <https://doi.org/10.17179/excli2017-480>

Zurlo, M., Volta, M., & Vallone, F. (2020). COVID-19 Student Stress Questionnaire: Development and validation of a questionnaire to evaluate students' stressors related to the coronavirus pandemic lockdown. *Health Psychology*, *11*. <https://doi.org/10.3389/fpsyg.2020.576758>

Table 1. Descriptive Statistics for Ethnicity

Ethnicity	Frequency	Percent
Asian/ Asian American	15	8.2%
Black/ African American	23	12.6%
White	105	57.4%
Hispanic, Latina, Latino or Latinx	24	13.1%
Other	7	3.8%
Prefer not to answer	9	4.9%
Total	183	100%

Table 2. Descriptive Statistics for University of New Haven Students and non-University of New Haven Students

College	Frequency	Percent
Non-University of New Haven	48	26.2%
University of New Haven	135	73.8%
Total	183	100%

Table 3. Descriptive Statistics of Gender

Gender	Frequency	Percent
Male	48	26.2%
Female	121	66.1%
Non-Binary/ Third Gender	8	4.4%
Prefer not to answer	6	3.3%
Total	183	100%

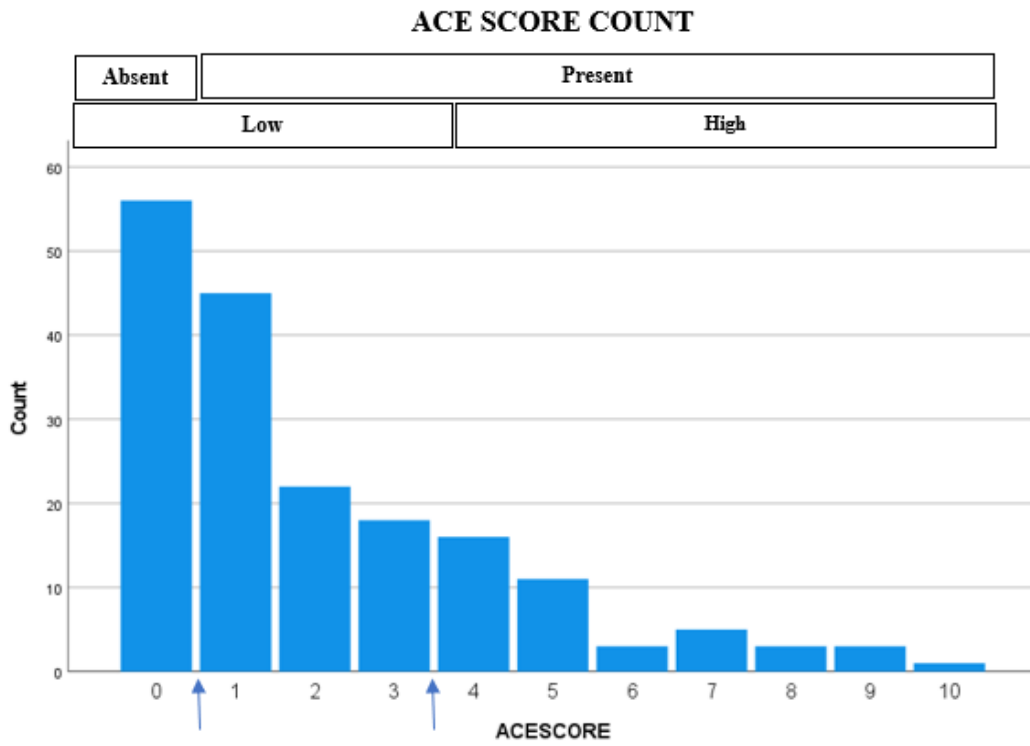
Note. Gender is how participants identify. For the number of individuals that identify differently from their born sex, see Table 4.

Table 4. Descriptive Statistics of Sex (Transgender)

Transgender	Frequency	Percent
No	168	91.8%
Yes	7	3.8%
Prefer not to answer	7	3.8%
Other	1	0.6%
Total	183	100%

Figure 1

Bar-graph Depicting Participants' ACE Scores



Note. High vs. low ACE score and presence vs. absence of ACE scores. “High” (score ≥ 4) and “low” (score < 4); “present” (score $\Rightarrow 1$) and “absent” (score = 0).

Appendix
Survey

COVID-19 Student Stress Scale

Please answer the following questions based on the past academic year (Fall 2020 - Spring 2021).

	0 Not at all Stressful	1 Somewhat Stressful	2 Moderately Stressful	3 Very Stressful	4 Extremely Stressful
1. How do you perceive the risk of contagion during this period of Covid-19 pandemic?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. How do you perceive the condition of social isolation imposed during this period of Covid-19?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. How do you perceive the relationships with your relatives during this period of Covid-19?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. How do you perceive the relationships with your university colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

during this period of Covid-19 pandemic?

5. How do you perceive the relationships with your university professors during this period of Covid-19?

6. How do you perceive your academic studying experience during this period of Covid-19 pandemic?

7. How do you perceive the changes in your sexual life due to the social isolation during this period of Covid-19 pandemic?

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by selecting how often you felt or thought a certain way

0 Never 1 Almost Never 2 Sometimes 3 Fairly Often 4 Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?

2. In the last month, how often have you felt that you were unable to control the important things in your life?

3. In the last month, how often have you felt nervous and "stressed"?

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

5. In the last month, how often have you felt that

things were
going your
way?

6. In the last
month, how
often have
you found
that you could
not cope with
all the things
that you had
to do?

7. In the last
month, how
often have
you been able
to control
irritations in
your life?

8. In the last
month, how
often have
you felt that
you were on
top of things?

9. In the last
month, how
often have
you been
angered
because of
things that
were outside
of your
control?

10. In the last
month, how
often have
you felt
difficulties
were piling
up so high

that you could
not overcome
them?

ACE Questionnaire

While you were growing up, during your first 18 years of life:

Did a parent or other adult in the household often...
Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid
that you might be physically hurt?

Yes

No

Did a parent or other adult in the household often...
Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were
injured?

Yes

No

Did an adult or person at least 5 years or older than you ever...
Touch or fondle you or have you touch their body in a sexual way? or Try to or actually have
oral, anal, or vaginal sex with you?

Yes

No

Did you often feel that...
No one in your family loved you or thought you were important or special? or Your family didn't
look out for each other, feel close to each other, or support each other?

Yes

No

Did you often feel that...

You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

Yes

No

Were your parents ever separated or divorced?

Yes

No

Was your mother or step mother often pushed, grabbed, slapped, or had something thrown at her? or Sometimes or often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?

Yes

No

Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

Yes

No

Was a household member depressed or mentally ill? or Did a household member attempt suicide?

Yes

No

Did a household member go to prison?

Yes

No

Demographics Questionnaire

Do you currently live at home with a parent of caregiver?

Yes

No

What was your age when you moved out?

Have you lived with your parents/ caregiver in the past year?

Yes

No

Was the reason you lived with your parents because of the pandemic?

Yes

No

Do you enjoy living with your parents/ caregiver? (If you do not currently live at home, did you enjoy living with your parents/ caregiver in the past?)

Yes

No

The following survey will ask questions about your experience over the past year

Have you been vaccinated against Covid-19 virus?

Yes

No

What vaccine did you receive?

Pfizer-BioNTech

Moderna

Johnson & Johnson /Janssen

How would you rate your stress level now, on a scale of 0 to 4, after being vaccinated as compared to before receiving a vaccination?

0 not stressed

1

2

3

4 very stressed

What are you most stressed about?

How old are you?

Are you an undergraduate or graduate student?

Undergraduate Student

Graduate Student

Do you attend the University of New Haven?

- Yes
- No

What year do you expect to graduate?

What is your gender?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Are you transgender?

- No
- Yes
- Prefer not to answer
- Other (please describe) _____

What is your ethnicity?

- American Indian or Alaska Native
- Asian or Asian American
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White

- Hispanic , Latina, Latino, or Latinx
- Other
- Prefer not to say