



COVID-19 Related Stressors, Parent–Child Relationship, and Alcohol Use and Mental Health Profiles Among White and Hispanic/Latinx First-Year College Students

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Abstract

Transitioning to college during the novel coronavirus disease 2019 (COVID-19) pandemic may increase risk for alcohol use and mental health problems. We examined how COVID-19 related stressors and parent–child relationships are independently and interactively associated with alcohol use and mental health profiles in a sample of first-year college students ($N = 425$, 34.8% Hispanic/Latinx; 74.9% female) who completed an online survey in October 2020. Latent profile analysis identified four profiles: well-adjusted (53.2%), mental health problems only (21.6%), alcohol use only (17.4%), and comorbid (7.8%). COVID-19 related stressful events increased risk of being in the alcohol use only and comorbid profiles, whereas COVID-19 related worries increased risk of being in the mental health problems only profile. Parent–child relationship quality lowered risk of being in the mental health problems only and the comorbid profiles. In addition, parent–child relationship quality moderated the role of COVID-19 related worries such that COVID-19 related worries were associated with lower odds of being in the comorbid profile when parent–child relationship quality was high but not when parent–child relationship quality was low. Strengthening parent–child relationship quality appears important for promoting college students' well-being.

Keywords COVID-19 · Alcohol · Mental health · Person-centered analysis · Parent–child relationship

Introduction

Alcohol use and related mental health problems are significant public health concerns in the United States [1, 2]. College students are at high risk for alcohol use and mental health problems [3, 4] due to developmental and environmental transitions (e.g., leaving home and forming new peer groups, academic and social stress, college drinking norms) [5]. In particular, the first year of college marks a key transitional period when students need to navigate new social and academic challenges, and are exposed to more peer drinking, which can be stressful and associated with heightened risk

for alcohol use and mental health problems [6, 7]. Indeed, first-year college students who experience higher levels of stress during this transitional period are at higher risk for alcohol use and related consequences, anxiety, and depression [8, 9]. This risk could be further exacerbated by making this transition to college during the novel coronavirus disease 2019 (COVID-19) pandemic, a time with numerous uncertainties, social and physical isolation, and COVID-19 related stressors (e.g., health and safety concerns) [10, 11]. Alternatively, given that the majority of college drinking occur in social contexts, risk for problematic drinking may be reduced during the pandemic due to social distancing restrictions [12]. Understanding how COVID-19 related stressors are associated with college students' alcohol use patterns and mental health functioning, and identifying protective factors that may buffer their impact is important to inform intervention efforts.

Students' adjustment during the COVID-19 pandemic can vary tremendously due to a variety of sociodemographic, family, and cultural factors, as well as the degree to which they experience COVID-19 related stressors. Students may differ in their patterns of alcohol use behaviors and mental

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health outcomes (e.g., some students report alcohol use only, whereas others report comorbid alcohol use and mental health problems). However, prior research has primarily taken a variable-centered approach, which fails to consider the heterogeneity in the patterns of students' alcohol use and mental health outcomes and assumes that the impact of COVID-19 on college students' well-being is homogeneous for all students [10–12]. A person-centered approach can further reveal the heterogeneity in students' adjustment by identifying latent profiles of distinct patterns of alcohol use and mental health outcomes, as well as examining the role of risk and protective factors in distinguishing different profiles [13, 14]. Different alcohol use and mental health profiles are likely to have different implications for subsequent adjustment [15, 16]. Thus, it is important to understand the role of COVID-19 related stressors in distinguishing different alcohol use and mental health profiles to inform tailored preventions and interventions.

Family factors may be important in moderating the impact of COVID-19 related stressors. Parents continue to play an important role in college students' lives [17, 18], and parental influences may be even more salient during the COVID-19 pandemic due to many students living with their parents and the decrease in peer interactions. A high-quality parent–child relationship, characterized by high levels of warmth, support, and closeness, is well-documented to be associated with lower levels of alcohol use and mental health problems [19, 20]. In addition, high parent–child relationship quality and positive parenting can buffer the negative effects of stress exposure [21]. Thus, it is plausible that parent–child relationship quality attenuates the association between COVID-19 related stressors and students' adjustment.

It is crucial to investigate the role of COVID-19 related stressors and protective factors in relation to alcohol use and mental health outcomes among racially and ethnically diverse students. Racial/ethnic disparities in alcohol and mental health outcomes are well-documented. For example, despite lower rates of alcohol consumption, Hispanics/Latinx and other racial/ethnic minorities are more likely to suffer negative social and health consequences related to alcohol use than Whites [22]. Moreover, racial/ethnic minorities are less likely to receive mental health care and thus are more likely to suffer chronic mental health disorders and related negative consequences [23]. Among college students, despite decreasing practical barriers to care access, in part due to the availability of on-campus mental health services, college students of racial/ethnic minority backgrounds (including Latinx students) show elevated mental health problems and lower mental health care utilization compared to White students [24–26]. The COVID-19 pandemic may exacerbate these existing racial/ethnic health disparities [27]. Racial/ethnic minorities are disproportionately impacted by COVID-19 [28]; they are more likely

to experience COVID-related illness or have a family member infected by COVID-19 and experience negative financial and psychosocial consequences due to the COVID-19 pandemic. In addition, prior research suggests that the influence of risk and protective factors associated with alcohol use and mental health outcomes may differ across racial/ethnic groups. For example, parent–child relationship was more strongly associated with the age of alcohol initiation and substance use for Hispanic adolescents than for White adolescents [29, 30]. Life stressors are more strongly associated with substance use and symptoms of psychopathology for White youth than for Hispanic and Black youth [31, 32]. However, it is less clear whether college students' adjustment during the COVID-19 pandemic, as well as the associations between COVID-19 related stressors, parent–child relationship, and alcohol and mental health outcomes, vary across racial/ethnic groups.

In the present study, we took a person-centered approach to investigate how are COVID-19 related stressors and parent–child relationship associated with alcohol use and mental health outcomes among White and Hispanic/Latinx first-year college students. Specifically, we used a latent profile analysis to identify distinct profiles of alcohol use patterns and mental health functioning, capturing the heterogeneity in students' adjustment during the transition to college in the COVID-19 pandemic. We examined how COVID-19 related stressors, both experiences of COVID-19 related stressful life events and perceived COVID-19 related worries, were related to alcohol and mental health profiles. We then examined whether parent–child relationship moderated the associations between COVID-19 related stressors and identified profiles. Finally, we tested whether these associations differed between White and Hispanic/Latinx students. We expected to identify distinct alcohol use and mental health profiles; a large group of students would be in a low-risk profile characterized by none or low levels of alcohol use and mental health problems, along with other groups characterized by different combinations of alcohol use and mental health problems. We hypothesized that students with more COVID-19 related stressors would be more likely to be in profiles characterized by alcohol use and/or mental health problems, and that higher parent–child relationship quality would attenuate the impact of COVID-19 related stressors. We did not have any specific hypothesis regarding racial/ethnic differences in these associations due to limited prior research.

Methods

Sample and Procedures

Data were drawn from the Pathways to College Health Study, a longitudinal study aimed at understanding pathways

of risk and resilience for behavioral and emotional health outcomes among White and Hispanic/Latinx college students. Launched in October 2020, this study recruited first-year college students who enrolled full-time at a large public university in the Southwestern United States. Email invitations introducing the study were sent to all first-year students in the College of Liberal Arts and Sciences and an electronic banner advertising the study was posted on an online platform viewable by all students in the university. Advertising emails were also sent to student organizations geared towards Hispanic/Latinx students. Students 18 years or older and self-identified as White/European American or Hispanic/Latinx (the two largest racial/ethnic groups in the university student population) were eligible to participate. Participants completed an online survey via Qualtrics in October or November 2020, which included a variety of measures that assessed their COVID-19 related experiences, family relationships, and behavioral and emotional health. Informed consent was obtained from all individual participants included in the study. Participants were compensated with a \$15 Amazon e-gift card. All procedures were approved by the University's Institute Review Board. The present study used data from the baseline survey ($N=425$, 34.8% Hispanic/Latinx; 74.9% female; age ranged 18–22).

Measures

COVID-19 Related Stressful Events

Participants indicated whether they had been exposed to someone likely to have COVID-19, had been suspected of having COVID-19 infection, had experienced various symptoms of COVID-19, had anyone in their family been diagnosed with COVID-19, and had any major negative events (e.g., hospitalized, lost job, passed away) happened to their family members or close friends because of COVID-19 since the onset of the pandemic, using items from the CoRoNa-virus Health Impact Survey (CRISIS) [33]. A sum score was created to indicate experience of *COVID-19 related stressful events*, with a possible range of 0 to 17; 70.4% of the participants reporting at least one COVID-19 related stressful event ($\alpha = .75$).

COVID-Related Worries

Participants also responded to four questions from CRISIS about how much they had been worried about (1) being infected by COVID-19, (2) friends or family being infected by COVID-19, (3) their physical health being influenced by COVID-19, and 4) their mental/emotional health being influenced by COVID-19, since the onset of the pandemic. Responses ranged from 0 (*not at all*) to 5 (*extremely*). Scores

were averaged across the items and higher scores indicate higher levels of *COVID-19 related worries* ($\alpha = .85$).

Alcohol Use and Misuse

Participants answered two questions from the Alcohol Use Disorders Identification Test [34] assessing their *frequency* and *quantity of alcohol use* during the past year. *Binge drinking* was assessed by participants reporting how frequently they had five (for males) or four (for females) drinks in one sitting during the past year. *AUD symptoms* was measured as the number of AUD criteria (e.g., had times when ended up drinking more, or longer, than intended) endorsed during the past year, based on the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) [35]; scores ranged from 0 to 11 and higher scores indicate more AUD symptoms ($\alpha = .78$).

Mental Health

Depressive symptoms were assessed using the Center for Epidemiologic Studies Depression Scale Short-Form [36]. Participants rated seven items to indicate how often over the past week they experienced symptoms associated with depression (e.g., "I felt depressed") based on a four-point scale ranging from 1 (rarely or none of the time) to 4 (most or all of the time); $\alpha = .84$. *Anxiety symptoms* were measured using the anxiety subscale from the Depression, Anxiety, and Stress Scale [37]. Participants indicated the degree to which seven statements applied to them over the past week (e.g., "I felt I was close to panic") based on a four-point scale ranging from 1 (*did not apply to me at all*) to 4 (*applied to me very much*); $\alpha = .84$. *Loneliness* was measured using a validated three-item loneliness scale [38]. Participants indicated how often they felt that they lacked companionship, felt left out, and felt isolated from others. Responses were 1 (*hardly ever*), 2 (*some of the time*) or 3 (*often*); $\alpha = .85$. *Life satisfaction* was measured by a single item "Overall, how satisfied are you with life as a whole these days?", based on a scale of 0 (*least satisfied*) to 10 (*most satisfied*) [39].

Parent–Child Relationship Quality

Participants answered eight questions about the quality of relationships with their mothers (e.g., "how well do you and your mother understand each other?") [40] and the same questions about their fathers from 1 (*never*) to 5 (*always*). Scores were averaged across items by parent and then a composite parent–child relationship variable was formed by averaging the mother–child and father–child relationship variables ($\alpha = .91$). For participants with data available from one parent (7.8%), the variable for the one parent was used.

Covariates

Participants' age, sex, and parental education were included as covariates. Participants also indicated their living arrangement (58.6% in residence hall, 35.4% with family, 6% off campus alone or with friends), mode of learning (55% all online classes and 45% combination of online and in-person classes), and whether or not they had ever experienced a number of stressful life events (e.g., physical assault, sexual assault, parental divorce, death of father/mother, parental serious mental or physical illness, etc.) [41]. These general (non-COVID-19 specific) stressful life events were included as covariates to examine the unique impact of COVID-19 related stressors.

Analytic Plan

We first examined descriptive statistics and bivariate correlations between study variables using SPSS. We then conducted latent profile analysis (LPA) using Mplus 8.5 [42] with frequency and quantity of alcohol use, binge drinking, AUD symptoms, depressive symptoms, anxiety symptoms, loneliness, and life satisfaction as indicators, to identify distinct profiles of alcohol and mental health functioning. We estimated a series of LPA models that specified different number of latent profiles (from 2 to 6). The optimal model was determined based on model fit statistics [e.g., Lo-Mendell-Rubin likelihood ratio test (LMR-LRT), Akaike information criterion (AIC), Bayesian Information Criteria (BIC), and entropy] and model interpretability (e.g., profile size and meaningfulness of each profile) [43].

Next, we conducted multinomial logistic regressions to examine how COVID-19 related stressors and parent–child relationship were associated with profile membership using the automatic R3STEP command [44]. We started with a multinomial logistic regression examining the main effects of COVID-19 related stressful life events and worries in predicting alcohol and mental health profiles (Step 1), and subsequently added the main effect of parent–child relationship quality (Step 2) and the product terms between mean-centered COVID-19 related stressors and parent–child relationship quality (Step 3). Significant interaction effects were probed following the approach suggested by Aiken and West [45]; coefficients for the effects of COVID-19 related stressors were calculated at prototypical values (± 1 SD) of parent–child relationship quality. Furthermore, we explored potential differences in regression coefficients between White and Hispanic/Latinx students by testing interactions between ethnicity, COVID-19 related stressors, and parent–child relationship quality (Steps 4 and 5). Missing data were accounted for using the full information maximum likelihood estimation method.

Results

Descriptive Statistics

Table 1 presents means and standard deviations of the key study variables, along with bivariate correlations. COVID-19 related stressful events and worries are moderately correlated ($r = .11$), indicating that they are related but unique constructs.

Alcohol Use and Mental Health Profiles

Model fit indices suggested that the 3-class model fit better than the 2-class model (Table 2). Although the LMR-LRT was not statistically significant when comparing the 4-class model to the 3-class model, AIC, BIC, and entropy nonetheless indicated the superiority of the 4-class model. Adding additional classes did not result in significant improvements in model fit and yielded a profile of a small size (< 5%). Furthermore, the 4-class model revealed distinct and meaningful classes (see Fig. 1). In consideration of the balance between model fit, parsimony, and interpretability of the classes, we selected the 4-class model as the final model.

The majority (53.2%) of students were classified as *well-adjusted*, who exhibited low levels of alcohol use and mental health problems and high levels of life satisfaction; 21.6% of students were in the *mental health problems only* profile, characterized by high levels of depressive and anxiety symptoms and loneliness, low life satisfaction, and low alcohol use; 17.4% were classified as *alcohol use only*, with moderate levels of alcohol use and low mental health problems. Finally, 7.8% of the sample were in the *comorbid* profile, showing the highest levels of alcohol use and AUD symptoms and moderate levels of mental health problems.

The Role of COVID-19 Related Stressors and Parent–Child Relationship

COVID-19 related stressful events was associated with greater odds of being in the alcohol use only [odds ratio (OR) 1.20, $p = .010$] and the comorbid (OR 1.32, $p < .001$) profiles compared to the well-adjusted profile, above and beyond the effects of age, sex, ethnicity, parental education, living arrangement, mode of learning, and general stressful life events, whereas COVID-19 related worries was associated with higher odds of being in the mental health problems only profile (OR 1.74, $p = .019$; see Table 3). Higher levels of parent–child relationship

Table 1 Descriptive statistics and bivariate correlations for key study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	–															
2. Sex	.07	–														
3. Ethnicity	–.02	–.02	–													
4. Parental education	–.04	.01	–.50**	–												
5. Frequency of alcohol use	.11*	–.10*	–.16**	.13**	–											
6. Quantity of alcohol use	.12*	–.09	–.13*	.12*	.71**	–										
7. Binge drinking	.11*	–.13**	–.13*	.08	.70**	.70**	–									
8. AUD symptoms	.06	–.11*	–.08	.07	.61**	.55**	.66**	–								
9. Depressive symptoms	–.05	–.20**	.01	–.07	.13*	.14*	.10	.18**	–							
10. Anxiety symptoms	–.06	–.12*	.01	–.05	.06	.02	.04	.15**	.64**	–						
11. Loneliness	.12*	.03	–.06	–.02	–.01	.04	–.08	.02	.57**	.43**	–					
12. Life satisfaction	.00	.08	.02	.06	–.11*	–.13*	–.08	–.15**	–.61**	–.46**	–.52**	–				
13. General stressful life events	.00	–.08	–.05	–.03	.12*	.06	.18**	.20**	.12*	.20**	.11*	–.06	–			
14. COVID stressful events	.02	–.08	.12*	–.06	.22**	.12*	.19**	.23**	.16**	.17**	.08	–.10	.22**	–		
15. COVID worries	–.12*	–.18**	.13**	–.05	–.04	–.09	–.09	–.03	.27**	.25**	.25**	–.19**	.12*	.11*	–	
16. Parent–child relationship quality	–.04	–.13**	.01	.05	–.07	–.13*	–.10	–.09	–.36**	–.35**	–.34**	.35**	–.16**	–.19**	–.10	–
N	422	422	425	413	403	350	401	425	386	386	385	385	425	425	382	395
Mean	19.83	.25a	.35b	6.53	.87	1.30	1.17	.72	2.22	1.62	2.00	6.22	.45	3.09	3.12	3.81
SD	.44	–	–	2.28	.94	1.27	1.92	1.51	.72	.60	.66	2.15	.81	3.01	1.08	.72

Sex was coded as 1 = male, 0 = female. Ethnicity was coded as 1 = Hispanic/Latinx, 0 = non-Hispanic White

p < .05, ***p* < .01

^aProportion of males

^bProportion of Hispanic/Latinx students

Table 2 Model fit statistics across latent profile models

Model (classes)	AIC	Adjusted BIC	LMR LRT (<i>p</i>)	Entropy
2	8041.64	8063.61	< .001	.98
3	7678.39	7816.16	.005	.85
4	7471.20	7508.99	.26	.86
5	7289.4	7335.44	.37	.86
6	7158.44	7212.04	.39	.88

Final selected model bolded

quality were associated with lower odds of being in the mental health problems only (OR .29, *p* < .001) and the comorbid (OR .39, *p* < .001) profiles relative to the well-adjusted profile.

There was a significant interaction between COVID-19 related worries and parent–child relationship quality in relation to the odds of being in the comorbid profile relative to the well-adjusted profile (OR .56, *p* = .004; see Fig. 2). COVID-19 related worries were associated with lower odds of being in the comorbid profile when parent–child relationship quality was high (*B* = − .83, OR .44, *p* < .001), but not when parent–child relationship quality was low (*B* = .02, OR 1.02, *p* = .960).

Differences Between Non-hispanic White and Hispanic/Latinx Students

There was a significant interaction between ethnicity and parent–child relationship quality in relation to the odds of being in the comorbid profile relative to the well-adjusted profile (OR .11, *p* < .001). Parent–child relationship quality was associated with lower odds of being in the comorbid profile among Hispanic/Latinx students (*B* = − 2.43, OR .09, *p* < .001) but not White students (*B* = − .52, OR .60, *p* = .085). There were no significant interactions between ethnicity and COVID-19 related stressors, suggesting that the role of COVID-19 related stressors did not differ between White and Hispanic/Latinx students. Finally, there was no significant three-way interaction between ethnicity, COVID-19 related stressors, and parent–child relationship quality.

Discussion

This study took a person-centered approach to identify distinct profiles of alcohol use and mental health functioning and to examine whether COVID-19 related stressors and parent–child relationship quality were associated with these profiles in a sample of White and Hispanic/Latinx first-year students. We identified four distinct profiles: well-adjusted, mental health problems only, alcohol use only, and comorbid. COVID-19 related stressors and parent–child

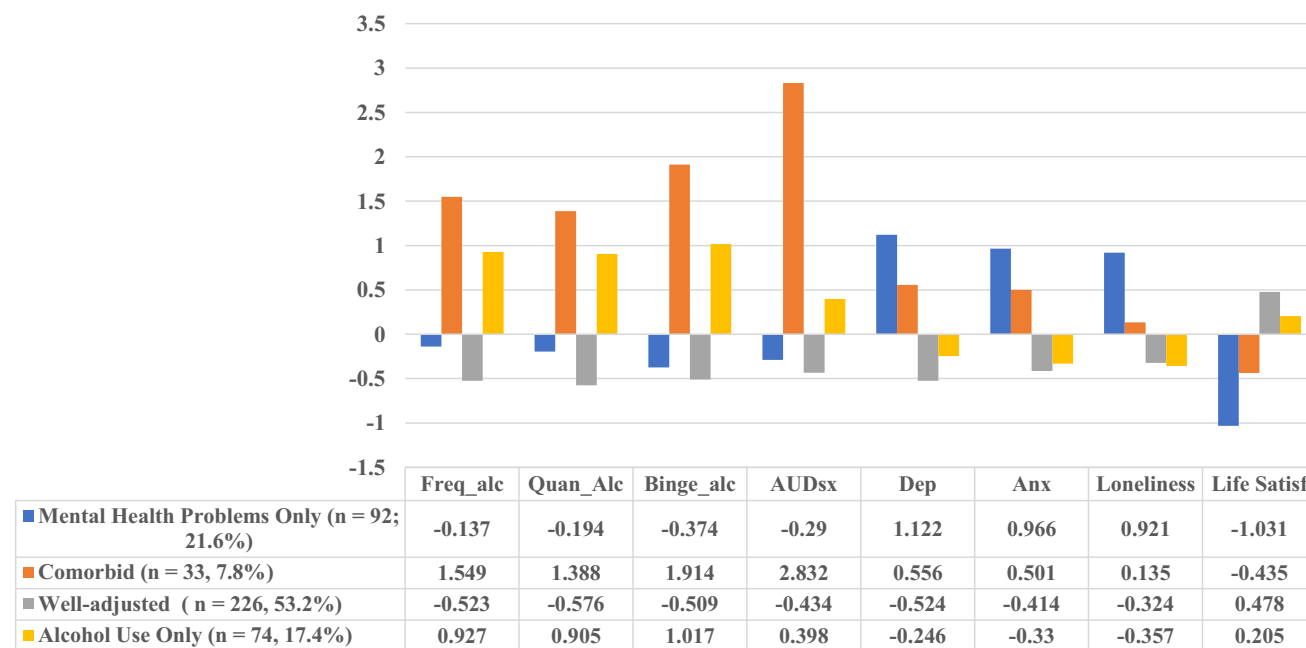


Fig. 1 Estimated means (standardized) of alcohol use and mental health functioning by latent profiles. *Freq_alc* frequency of alcohol use, *Quan_alc* quantity of alcohol use, *Binge_alc* frequency of binge

drinking, *AUDsx* alcohol use disorder symptoms, *Dep* depressive symptoms, *Anx* anxiety symptoms, *Life Satisf* life satisfaction

Table 3 Coefficients (odds ratio) from multinomial logistic regressions predicting class memberships

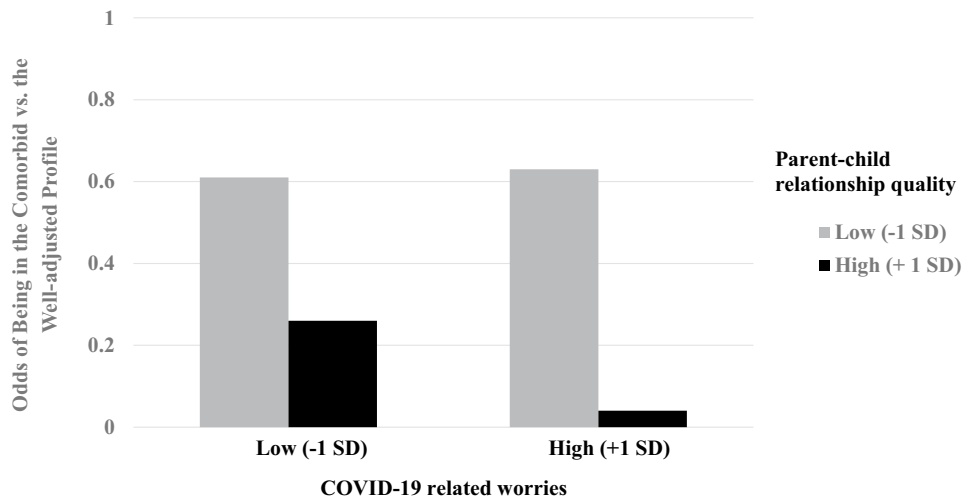
	Mental health problems only vs. well adjusted	Alcohol use only vs. well adjusted	Comorbid vs. well adjusted
Step 1			
Age	.38 (1.45)	.41 (1.50)	.52 (1.69)
Sex	– .69 (.50)*	– .94 (.39)**	– 1.60 (.20) ***
Ethnicity	– .71 (.49)**	.00 (1.00)	– .66 (.52)
Parental education	– .04 (.97)	.14 (1.15)	.16 (1.18)
Live off campus with family ^a	– .18 (.84)	– 1.26 (.28)***	– 1.28 (.28)***
Live off campus with friends ^a	1.11 (3.02)	.24 (1.27)	1.47 (4.36)
In-person class ^b	– .85 (.43)***	– .65 (.52)*	– .55 (.57)
General stressful life events	.11 (1.12)	.12 (1.12)	.53 (1.69)
COVID-related stressful events	.13 (1.14)	.18 (1.20)*	.28 (1.32)**
COVID-related worries	.56 (1.74)*	.00 (1.00)	– .19 (.83)
Step 2			
Parent–child relationship quality (PCR)	– 1.23 (.29)***	– .38 (.69)	– .95 (.39)***
Step 3			
COVID-19 stressful events × PCR	.13 (1.14)	.15 (1.16)	.11 (1.12)
COVID-19 worries × PCR	.16 (1.17)	.21 (1.24)	– .59 (.56)**
Step 4			
Ethnicity × COVID-19 stressful events	– .07 (.94)	.02 (1.02)	.12 (1.13)
Ethnicity × COVID-19 worries	.43 (1.54)	.23 (1.25)	.65 (1.92)
Ethnicity × PCR	– .24 (.78)	.18 (1.19)	– 2.21 (.11)***
Step 5			
Ethnicity × COVID-19 stressful events × PCR	– .19 (.83)	.04 (1.04)	– .30 (.74)
Ethnicity × COVID-19 worries × PCR	– .18 (.83)	– .52 (.60)	.58 (1.78)

* $p < .05$, ** $p < .01$, *** $p < .001$

^aLiving on campus in residence halls was the reference group

^bTaking all classes remotely was the reference group. Sex was coded as 1= male, 0= female. Ethnicity was coded as 1=Hispanic/Latinx, 0= non-Hispanic White

Fig. 2 Interaction between COVID-19 related worries and parent–child relationship quality in relation to profiles of alcohol use and mental health. Values on the y-axis are predicted odds of membership in the comorbid profile relative to the well-adjusted profile based on prototypical values (– 1/+ 1 SD) of covid-19 related worries and parent–child relationship quality



relationship quality were associated with profile memberships, with some difference in these associations between White and Hispanic/Latinx students.

There was substantial heterogeneity in students’ adjustment during the COVID-19 pandemic. The majority of students (53.2%) were well-adjusted, with none or low levels

of alcohol use and mental health problems. However, a large proportion of students reported relatively high levels of mental health symptoms, with 21.6% reporting mental health problems only, and an additional 7.8% reporting mental health problems coupled with high levels of alcohol use and AUD symptoms. This is consistent with recent research showing high prevalence of mental health problems among college students and other populations during the COVID-19 pandemic [10, 46]. This finding underscores an urgent need for universities to provide mental health services to their students. Contradictory to findings in college students prior to the COVID-19 pandemic where 29% were moderate alcohol users [14], only 17.4% of the sample reported moderate levels of alcohol use and none/low mental health problems. This decreased level of alcohol use is likely due to quarantine measures and reduced opportunity for drinking in social contexts for students [12, 47]. With the decline in COVID-19 infection cases and the increase in vaccination rates in the United States, many universities have resumed to pre-pandemic campus operations. Alcohol use likely will increase due to the lessening of social distance restrictions and increase in peer interactions. It will be important to follow this cohort of students longitudinally and examine how their alcohol use and mental health outcomes change over time.

Experience of COVID-19 related *stressful events* was associated with higher odds of being in the alcohol use only and the comorbid profiles, whereas COVID-19 related *worries* was associated with higher odds of being in the mental health problems only profile, relative to the well-adjusted profile. That experience of COVID-19 related *stressful events* is associated with being in the profiles involving higher levels of alcohol use is consistent with prior evidence showing that increased alcohol consumption often occurs in the context of traumatic or stressful events [48] and the tendency to drink to cope with psychiatric distress. In contrast, experience of COVID-19 related worries likely correlate with symptoms of anxiety and post-traumatic stress disorder, and thus is associated with the profile with mental health problems. These results highlight the importance of differentiating different types of COVID-19 related stressors to better understand the impact of COVID-19 on students' adjustment.

Parent–child relationship quality was associated with lower odds of being in the mental health problems only and the comorbid profiles relative to the well-adjusted profile. This finding is consistent with prior findings that high-quality parent–child relationship is a protective factor against mental health problems among college students and young adults [17]. In addition, among students who experienced low parent–child relationship quality, COVID-19 related worries were not associated with the odds of being in the comorbid profile. However, among those who experienced

high parent–child relationship quality, COVID-19 related worries were associated with lower odds of being in the comorbid profile. This interactive effect suggests that parent–child relationship serves as a context in altering the associations between COVID-19 worries and the comorbid profile. Students with high levels of COVID-19 related worries may be less likely to go out and engage in risky behaviors such as alcohol use due to concerns about the risk and potential harm of COVID-19, and thus were less likely to be in the comorbid profile, particularly when they experience strong social support from a high-quality relationship with their parents. Collectively, it appears that support and warmth from a high-quality parent–child relationship are protective for students' adjustment, particularly for mental health functioning. It is possible that other dimensions of parenting (e.g., rule setting and monitoring) would be more influential in relation to behavioral adjustments such as alcohol use.

Overall, there was no significant difference in the associations between COVID-19 related stressors and alcohol use and mental health profiles between White and Hispanic/Latinx students. Despite prior evidence that Hispanic/Latinx adults and families are more negatively impacted by COVID-19 [28], COVID-19 related stressors appeared to influence college students similarly regardless of their race/ethnicity. Notably, findings indicated that parent–child relationship quality was more strongly associated with lower odds of being in the comorbid profile among Hispanic/Latinx students than White students. This is consistent with prior research showing a stronger protective role of parent–child relationship against substance use and mental health problems among Hispanic/Latinx adolescents than White adolescents [29, 30], which may be attributed to the strong cultural emphasis on familism in Hispanic/Latinx families [49].

Current findings need to be interpreted in light of several limitations. First, the cross-sectional nature of our data precludes causal inferences. In particular, because COVID-related worries and mental health symptoms were assessed at the same time, it is possible that students who experienced more depressive and anxiety symptoms were also more worried about COVID-19. Second, our sample of students were recruited from only one university in the southwestern region of the US and comprised of primarily females; thus, the current findings may be more representative for females. Finally, all study variables were measured by student self-reports, including single-item measures for frequency and quantity of alcohol use and binge drinking, which may be biased. Despite these limitations, this study contributes to the literature by focusing on a unique sample of college students who started college during the COVID-19 pandemic and taking a person-centered approach to understand how different forms of COVID-19

related stressors, in conjunction with parent–child relationship, are associated with alcohol use and mental health functioning among White and Hispanic/Latinx students. Findings revealed substantial heterogeneity in students' adjustment and highlight the need for intervention efforts to address students' alcohol use and mental health problems, particularly among those who experience high levels of COVID-19 related stressors. Strengthening relationship between parents and college students may be an effective strategy, particularly for Hispanic/Latinx students.

Summary

Transitioning to college during the novel coronavirus disease 2019 (COVID-19) pandemic is challenging and may increase risk for alcohol use and mental health problems. However, little is known about how students differ in their adjustment during the pandemic and the impact of COVID-19 above and beyond the effect of non-COVID-19 related stressful life events. The current study addressed this knowledge gap by taking a person-center approach to examine the associations between COVID-19 related stressors, parent–child relationships, and profiles of alcohol use and mental health functioning among White and Hispanic/Latinx first-year college students. We found substantial heterogeneity in students' adjustment during the transition to college in the COVID-19 pandemic and identified four profiles: well-adjusted (53.2%), mental health problems only (21.6%), alcohol use only (17.4%), and comorbid (7.8%). COVID-19 related stressful events increased risk of being in the alcohol use only and comorbid profiles, whereas COVID-19 related worries increased risk of being in the mental health problems only profile, above and beyond the effects of non-COVID-19 related stressful life events. Parent–child relationship quality lowered risk of being in the mental health problems only and the comorbid profiles, particularly for Hispanic/Latinx students. COVID-19 related worries lowered the risk of being in the comorbid profile when parent–child relationship quality was high. Our findings suggest that interventions should target students experiencing high levels of COVID-19 related stressors, and that strengthening relationship between parents and students may be an effective strategy in promoting wellbeing.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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