Anxiety about COVID-19 and Future Expectations among High School Students

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ABSTRACT: COVID has had a profound impact on mental health among high school students. This study examines the overall level of anxiety related to COVID-19 among high school students. The paper explores gender and racial differences in anxiety related to COVID-19. Furthermore, I investigated the link between concerns related to COVID-19 and future expectations and savings intentions. High school students in the U.S. were given an online survey with questions about their worries about COVID-19, future expectations, and savings intentions. Findings from several linear regressions indicate that high school students' anxiety and concern about COVID-19 are linked with negative future expectations. That is, high school students with higher fear were likely to report lower expectations about their family, work, and future health. In addition, their worry and concern about COVID predicted their perceptions about future finances and savings intentions. The findings suggest that mental health resulting from COVID-19 could have implications on future life and financial consumption expectations. The implications for understanding the impact of mental health issues are discussed, and future research directions are offered. This study provides important contributions to literature by demonstrating the pervasive effect of anxiety on future expectations and perceptions and savings intention.

KEYWORDS: Behavioral and Social Science COVID-19; Future Expectation; Mental Health; Financial Expectation; Saving Intentions.

Introduction

COVID-19 has brought several mental health challenges worldwide. These rising mental health issues were termed the "second pandemic" for children and adolescents. Subsequently, COVID-19 has left the younger generation with increased worries and anxiety, negatively impacting students. Furthermore, as the global spread of COVID-19 continued, it disproportionately affected individuals from lower socioeconomic status or sexual/racial minorities.[1] Again, the widespread increase in pandemic-related worry may have other cascading consequences. For example, the uncertainty and anxiety about the future due to COVID-19 may affect how youth see their future beyond the pandemic.

Thus, the current investigation aims to understand the unequal effect of anxiety about COVID-19 by examining gender and racial differences. Further, I examine the impact of the COVID-19 pandemic-related fear among adolescents on their future expectations and perceptions of financial future and saving intentions. Finally, the study will help us to understand the impact of mental health resulting from COVID-19 and the need to develop interventions and policies to address this issue.

Racial and Gender Differences in Worry about COVID-19:

All studies consistently identified a clear relationship between mental health and the onset of the COVID-19 pandemic. Although worsened mental health has been documented across the lifespan, several studies have found that young adults are experiencing the greatest deterioration in mental health.[2,3] Due to this unprecedented pandemic and the following economic consequences, adolescents may worry about not having adequate academic or financial resources, which could result in feelings of anxiety. Mental health issues may also arise from other social consequences, such as losing social opportunities and their parents' employment change. Similar psychological effects have been found from wars and previous disease outbreaks after the SARS and economic recession in 2008.[4] Several longitudinal studies examined the association between psychological well-being and economic pressures.[5-7] These studies showed that young adults with higher levels of depressive mood and anxiety reported higher economic pressures and concerns about their future. Subsequently, it is expected that an unstable economic situation after the breakout of COVID-19 could lead to severe financial and emotional problems.

However, some populations are more vulnerable to COVID-19.[8] As the pandemic has caused many social changes, such as school closures and social isolation, adverse mental health outcomes may be elevated among female or minority students. Campbell *et al.*[9] found that female students report higher anxiety and depressive symptoms than male students after COVID-19. Scholars speculated that it could be due to their higher prevalence of the internalizing disorder or lack of social support and contacts, which are crucial for the psychological well-being of female students.[10] As most studies have utilized general anxiety measures to assess mental health outcomes among adolescents, the current study would test the gender differences using the measure of worry specific to COVID-19.[11]

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In addition, recent surveys show that minority students were more severely impacted by COVID-19.[12] Due to the stigma and discrimination associated with the coronavirus, Asian students in the States reported higher anxiety and concern about the impact of COVID-19.[10] Again, other studies with similar designs have used other general anxiety measures; this study employs anxiety measures specific to COVID-19 rather than general anxiety.

Impact of Worry about COVID-19 on Future Expectations and Economic Outlook:

Although recent studies examined the anxiety about COVID-19 on health behaviors or health outcomes, few studies addressed the impact of anxiety on future expectations in adolescence.[13] However, given its impact on our society, the pandemic and its induced anxiety can disrupt the future aspiration among adolescents. This is critical because adolescence is a crucial period in developing future orientation.

In 2008, when the economic recession hit the U.S., parents experienced higher stress levels, leading to increased stress levels for the children.[14] Drawing on the long-lasting effect of economic recession on mental health outcomes and behavioral outcomes of young adults, it is reasonable to expect a similar impact during and post-pandemic: a negative impact of the macroeconomic situation on anxiety among adolescents, which, in turn, affects their expectations and future aspirations. Thus, this paper will examine the effect of fear of COVID-19 on adolescents' future work, family, and health expectations.

Economic outlook and perceptions about the future financial situation are crucial for adolescents because they may make a difference between reaching career goals or educational attainment. Researchers found that optimistic financial and economic expectations may motivate adolescents to work harder and pursue job opportunities.[15]

Previously, studies have shown the relationship between sociodemographic factors and perceptions of the financial future. For example, Schmitt-Wilson [16] found that economic expectations are usually influenced by their parents' education and social advantage. However, it is also possible that the economic outlook could be influenced by uncertainty and anxiety, as observed after the economic recession in 2008.[14] To address this question, I examined the association between anxiety about COVID-19 and perceptions about the future financial situation and controlled sociodemographic factors.

Finally, attitudes about the saving of adolescents predict financial behavior and planning in young adulthood. Saving-oriented attitudes include avoiding buying, cutting spending, and savings for future events.[17] As saving-oriented attitudes often predict financial security and well-being in adulthood, it is important to consider assessing this orientation among adolescents who will be future consumers and labor force workers.

Less is known about the relationship between anxiety about COVID-19 and financial behavior or intentions. However, previous studies indicated that students who exhibited higher anxiety were less likely to revolve a balance on credit cards.[18] It was also found that those with lower anxiety levels tend to engage in more recommended financial management behaviors (e.g., savings and financial goal setting). In addition, results from the survey with college students, Sages *et al.*[19] found that higher anxiety levels were related to financial management behaviors such as spending more than earnings and less saving among young adults. Based on these reports, this paper explores further the relationship between worry about COVID-19 and saving attitudes.

■ Methods

This cross-sectional study uses an anonymous questionnaire with multiple choices questions and convenience snowball sampling across the States.

Hypothesis:

The current study explores the association between anxiety about COVID-19 and mental health well-being among high school students. Given the evidence that COVID-19 has adverse mental health effects on high school students, the first hypothesis is that female and sexual minority high school students will report higher anxiety about COVID-19 (Hypothesis 1a). In addition, it is expected that Asian students would report higher levels of anxiety compared to other races (Hypothesis 1b). Second, there will be a negative association between anxiety about COVID-19 and future expectations about work, family, and health among high school students (Hypothesis 2). The third hypothesis is that anxiety about COVID-19 is negatively associated with perceptions of their financial futures (Hypothesis 3). The final hypothesis was to predict whether more profound concern about COVID-19 would predict lower levels of future savings intention among high school students experiencing COVID-19 (Hypothesis 4). Additionally, I control various demographic factors such as race, gender, health status, and work status.

Sample:

The study sample of high school students (N = 380; see Table 1) was obtained through a Qualtrics survey. First, I searched relevant literature to find the survey items that have been validated and used in prior research. Then, I distributed the survey to several high schools across the States using social networks and the national high school registry. Participants completed the eligibility questions before accessing the full survey measure.

Table 1: Univariate descriptions of study variables (N=380)

Variable	%	Mean	*SD*	Range
Age		17.5	.942	15-19
Gender (Female)	45.8			
Race				
White	54.2			
Asian	6.8			
African American	18.4			
Hispanic	12.6			
Others	7.9			
Worry about COVID-19		80.27	24.11	19-182
Future Expectations				
Family		17.23	5.13	4-28
Work		35.61	5.03	10-70
Health		16.55	5.46	4-28
Financial Perceptions		9.64	2.34	4-15
Consumption Attitudes				
Savings		12.44	2.97	4-20

*Note. *S.D.* stands for standardized deviation.

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The inclusion criteria for the study were that participants: (a) are currently high school students and (b) reside in the USA territory. They were recruited through a convenience/snowball sampling method. Participants were allowed to discontinue the survey and skip questions if they were uncomfortable answering. Data were collected over two months period from July 2021 to September 2021. Participants were told that the purpose of the survey was to understand better if their COVID-19 experiences are related to their current and future perceptions of their work and family. Participants in the study remained anonymous.

Measures:

Pandemic-Related Worries Questionnaire (PRWQ). Participants completed the initial 30-item PRWQ questionnaire, which measured various concerns about the pandemic. To cover the full breadth of potential anxiety that could be experienced, the items were generated for areas that consistently emerge as common topics, as previously identified in the Worry Domains Questionnaire.[20] This measure identifies anxiety across five key domains, including anxiety about social relationships, academic and occupational performance, financial concerns, disrupted or aimless future goals, and lack of confidence. As several domains of concern were included, this measure represented pandemic-related worries rather than focusing on the direct worry or anxiety trait of participants. The response to each item was along a Likert Scale ranging from 'Not Distressed' (1) to 'Extremely Distressed'(10) for how they felt over the past month. All twenty items were summed to create the scores representing anxiety about COVID-19 so that higher scores indicate higher anxiety about COVID-19. The internal consistency was generally good (*a*=.82). The full PRWQ-20 scale is listed in Appendix A.

Future Expectation Scale for Adolescents (FESA) The FESA is a 25-item measure developed by McWhirter and McWhirter[15] to assess the degree to which the respondent believes a series of statements about their future. Among 25 items, I have selected three dimensions with 18 items: Work/Educational attainment, Family and Marriage, and Health. Participants rated from 1 (I do not believe this at all) to 7 (I certainly think this). Sum scores for each category were calculated, such that higher scores mean higher future expectations about their future. The internal consistency coefficient was good (*a*=.81). The items of the scale are included in Appendix A.

Perceptions of Financial Future Participants were asked to rate their perceptions of future financial situations from 'Very Bad' (1) to 'Very good' (5). This measure was originally from Financial Well-being Scale for Emerging Adults (MS-FWBS, Sorgente & Lanz, 2019). However, for the purpose of this study, I revised three questions that were asked about their current perception of the future financial situation after COVID-19. Internal consistency was good (*a*=.80). Sum scores were created so that higher scores mean optimistic views about their financial future.

Attitudes toward Saving. Participants were presented with nine statements concerning attitudes toward consumption (see Appendix A). Scholars who developed this scale found several domains in the survey.[13] Out of three domains, I used one dimension, attitudes toward saving. Participants evaluated each statement on a five-point Likert scale, with values ranging from 1 ("Never") to 5 ("Often"). Thus, four items related to saving were summed to create the score. Higher scores indicate higher intentions to save in their consumption behavior.

Demographic Information Participating high school students completed a brief demographic survey concerning their gender, self-rated health (from 1=very bad, 5=very good), race (1=White, 2=Black, 3=Hispanic, 4=Asian, 5=other), number of siblings, mother's education (1=no school completed, 8=Master's, professional or doctoral degree), and work status (employed=1, not employed =0).

Statistical analyses:

The data were analyzed using the Statistical Package for Social Sciences software (SPSS), version 26. Before the main analysis, descriptive analyses were conducted to describe the demographic characteristics of high school students who participated in the online survey. Second, a one-way ANOVA was performed to compare gender and racial differences in the worry about COVID-19 to test the first hypothesis. Finally, I used a linear regression model to examine the effect of apprehension and concern about COVID-19 on high school students' expectations about the future, financial future, and saving intentions (Hypothesis 2-4). Each hypothesis was tested using a two-tailed analysis at *a*=.05 level of statistical significance.

Results and Discussion

Table 1 presents 380 respondents of the survey's demographics, including their age, self-identified gender, race, and mother's education. Respondents included 164 female and 194 male high school students. Twenty-two students did not wish to answer or skip the gender questions. In terms of race, the majority of participants (N=206, 54.2%) were White. For Hypothesis 1, Race category (1=White, 2=Black, 3=Hispanic, 4=Asian, 5= Other) had recoded them into two categories (1=Asian, 2=other race). In other analyses, race was included as a covariate. Given that the sample did not have enough participants per racial category and most students were White (54.2%), race was dichotomized as White and minority (0= White, 1= Minority). As hypotheses 2-4, race was not the main predictor and covariate.

Results from the ANOVA tests are in Figures 1-2. As can be seen, a one-way ANOVA revealed that there was a statistically significant difference in worry between the two groups ($F(1,378) = [6.894]$, $p= [.008]$). Furthermore, female students had higher levels of anxiety ($M=83.87$, $SD=31.42$) than male students ($M=74.5$, $SD=31.42$), supporting Hypothesis 1a. In terms of race (Hypothesis 1b), there was a significant difference between Asian and other race students ($F(1,378) = [4.16]$, $p=.042$). As the size of each group was different, I checked the variance and normality of each race. The test of homogeneity of variances was non-significant, indicating similar variances between groups.

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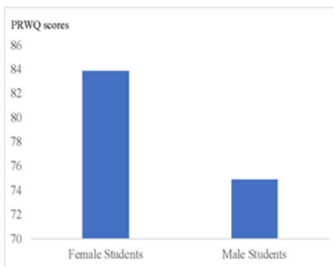

Figure 1: Gender differences in PRWQ

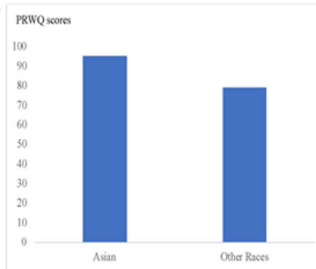

Figure 2: Racial differences in PRWQ

To examine hypotheses 2-4, I conducted multiple regression to determine if anxiety about COVID-19 predicted the future expectation about their family, work, health, financial future, and savings intentions. The tested models and predictors for future expectations and financial perceptions are seen in Table 2, where each column represents a different regression. In all the regression models, possible demographic covariates, including gender, race, health, and work status, were included.

The second hypothesis on the future expectation was supported. Table 2 shows that anxiety about COVID-19 significantly predicted future expectations about work, family, and health while controlling several demographic variables. In particular, students who reported more profound concern about COVID-19 reported lower levels of future expectations about family (β=-.115, p<.01), work (β=-.141, p<.01), and health (β=-.155, p<.01). In terms of control variables, race was negatively associated with future expectations about the family (β=-.190, p<.001), indicating the influence of social disadvantage on the projection of their family situation in the future. In addition, self-rated health was also associated with future expectations of health (β=-.257, p<.001). This suggests that current health status is also related to their future expectations about their health. Interestingly, I found no significant association between gender and future expectations.

Table 2: Predicting Future Expectations and Saving Intentions with COVID-19 Worries

Variables	Future expectations about work	Future expectations about family	Future expectations about health	Perception of financial Future	Saving Intention
	β	β	β	β	β
Gender	.023	-.029	-.020	-.069	-.019
Race	-.016	-.190***	-.064	-.112*	-.176**
Self-rated health	-.216	-.161	-.257***	-.124*	.014
Work Status	-.144	-.062	-.058	.020	.027
Worry	-.115**	-.141**	-.155**	-.018*	-.318***
Adjusted R^2	.12	.28	.32	.52	.68
N	380	380	380	375	369

Note. *p<.05, **p<.01, ***p<.001. N= sample size

Similar results were noted for perceptions of the future financial situation (Hypothesis 3). As seen in Table 2, the third hypothesis was also supported. The linear regression results suggest a significant negative relationship between anxiety about COVID-19 and perceptions about the future financial situation (β=-.018, p<.05) while controlling demographic variables. Students who reported higher COVID-19 reported lower perceptions of their financial future. For covariates, I found a significant relationship between race/self-rated health and perception of financial future (β=-.112, -.124, p<.05). That is, minority participants reported lower perceptions of financial future (β=-.112, p<.05) -and participants reporting lower self-rated health also reported lower perceptions of their financial future (β=-.124, p<.05).

Finally, I found support for the final hypothesis (Hypothesis 4). Results showed that anxiety about COVID-19 was negatively associated with their future savings intention (β=-.318, p<.001). Furthermore, students with higher COVID-19-related concerns reported lower levels of saving intention in the future. Furthermore, regarding control variables, race was negatively associated with future intentions about saving (β=-.176, p<.001). That is, minority adolescents reported lower intentions to save in the future than their White counterparts.

Overall, all of our hypotheses were supported. Furthermore, these findings indicate that worry about COVID-19 tends to be associated with overall negative expectations about the future in several domains, including family, health, work, and economic situation.

Discussion

This study aimed to determine whether COVID-19-related concerns are related to future expectations and consumption behaviors among high school students amid COVID-19. Using a convenience sample of 380 high school students in the U.S., this study provides insight into the adverse mental health resulting from the pandemic, predicting future expectations across several life domains.

First, our results reveal that high school students were generally worried about COVID-19 and its impact, with approximately 35% reporting moderate to severe concern about COVID-19 over the last six months. This finding is consistent with previous studies demonstrating poor mental health during the COVID-19 pandemic among young adults.

Consistent with the hypothesis on gender and racial differences, female students reported higher anxiety levels than male students. As female students tend to report higher anxiety symptoms in general, anxiety about COVID-19 may have emerged as an emotional response among female students more than male students. This finding suggests that sociodemographic factors such as gender may be additional sources of disparities in how the pandemic affected adolescents' mental health outcomes. Our results align with the recent studies demonstrating widening gender gaps in mental health during the pandemic.[21, 22]

Consistent with recent studies, the findings showed that Asian students were more worried about COVID-19 than other races.[23] The growing discrimination against the Asian community, combined with pressure from COVID-19, appears to make Asian students more vulnerable to mental health problems. Scholars speculated that Asians tend to use social media for COVID-19-related information, which ex

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poses them to discrimination-related news. Thus, this finding has implications for Asian Americans who may continue to have this prejudice against them. Future policies or programs should support the population heavily impacted by the pandemic. Given the small size of this group, however, this study needs to be replicated with bigger samples.

As expected, it was shown that greater anxiety about COVID-19 was related to lower levels of future expectations in many domains, such as family, work, and health, even after controlling the sociodemographic factors. This finding has an important implication for young adults' mental and physical health in the long run. In addition, Kim and Kim[24] found that adolescents' orientation toward the future affects their health-related behaviors and, consequently, their health status in adulthood. Finally, following up on adolescents to adulthood, Ashby & Schoon[25] also found that future expectations would play a more significant role than educational expectations in predicting physical health in adulthood.

Our findings concerning the perceptions of future financial situations and savings intentions also highlight the negative implication of anxiety about COVID-19. This finding relates to previous studies on the effects of stressful life events and mental health issues in early life on pessimistic perceptions about the financial future.[26] In line with prior studies on the effect of anxiety on the lower intention to save[18], this study provides strong evidence that pandemic-related anxiety is associated with financial well-being. However, the current study did not include any data on parental job loss, unemployment, or recent family financial situation change, such as significant loss of savings. Thus, anxiety about COVID-19 could reflect the perception of the economic situation resulting from the pandemic. Therefore, additional research on how these other circumstances affect their anxiety, future expectations, and perception of their financial situation is needed.

In sum, the current study findings highlight the potential adverse consequences that the COVID-19 pandemic has on future expectations and financial intentions among adolescents. The adverse effects of COVID-19 may be long-lasting and negatively affect young students far beyond the duration of the pandemic. To mitigate this, developing and implementing public health interventions or programs should be planned and implemented to buffer these adverse effects for adolescents facing challenges. Based on these findings, it is also necessary to monitor the mental health of high school students. In addition, as the pandemic slows down, implementing interventions, programs, and education about economic situations in school should be carried out to improve the psychological well-being of high school students.

The current study has several limitations. First, the present study was limited to the United States of America. Therefore, caution regarding generalization to other countries needs to be acknowledged. Second, our study relied on a cross-sectional correlational design, so I cannot rule out the reverse pattern. Relatedly, the connection between Pandemic related anxiety and future expectations may depend on factors not included in this study, such as parents' job insecurity or unemployment due to COVID-19. It is known that students with lower SES were more affected by the impact of COVID-19. Although our results including covariates were not significant, it is still possible that sociodemographic factors may have directly influenced their anxiety and concern about COVID-19.[23] Finally, there could be a reporting bias such that high school students with mental health issues would report lower expectations about the future and financial situation. Thus, future studies should consider separating worry about COVID-19 from the personality or general tendency to write future expectations negatively.

Conclusion

COVID-19 brought a significant challenge that forced young adolescents to adjust their lifestyles. While COVID-19 has impacted everyone, our studies show that these challenges impacted some high school students more than others. The current study's findings could help us understand how concern about COVID-19 affects teenagers' future aspirations and economic outlook. Given that future expectations play a key role in the motivations of people and the actions that follow, this is a critical issue. If adolescents can no longer expect a positive future for themselves, they will lack the motivation to pursue goals. As a result, we could see subsequent negative impacts cascading from worry and anxiety to adverse health and education outcomes in young adulthood.

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