Exploring the Impact of Negative Experiences on High School Students' Educational Outcomes

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Introduction

For many years, ACT has studied the relationships between high school students' educational experiences and successful educational outcomes, such as college persistence and graduation. Successful outcomes have been linked to several important factors, including such cognitive skills as the ability to think critically and study effectively, core academic skills developed through coursework, and behavioral skills (e.g., acting honestly, keeping an open mind, sustaining effort; Camara, O'Connor, Mattern, & Hanson, 2019). As ACT continues this work, we have opportunities to learn about students' other experiences as well, including negative ones that could hinder academic performance. For example, it could be important to know if high school students who encounter problems or challenges with bullying, microaggression, and/or discrimination have, as a result, experienced negative impacts to their academic performance and timely graduation from high school.

This study was intended to give insight into several potential problems and challenges that high school students might experience and to assess how those are connected, if at all, to academic performance. Such information could help educators and policymakers improve the many ways they help students to attain educational goals and prepare for college and beyond.

To gather data on high school students' experiences, a large sample of students was surveyed in April 2021 and asked whether or not they had experienced each of nine potential problems or challenges in the last 12 months.[1] For each issue affirmed as a problem or challenge, students were asked about the extent to which the issue caused them distress and affected their academic performance. Students were also asked about the overall level of stress they had experienced within the last 30 days. A total of 3,913 students responded, representing 12% of all students who were invited to participate.

Findings

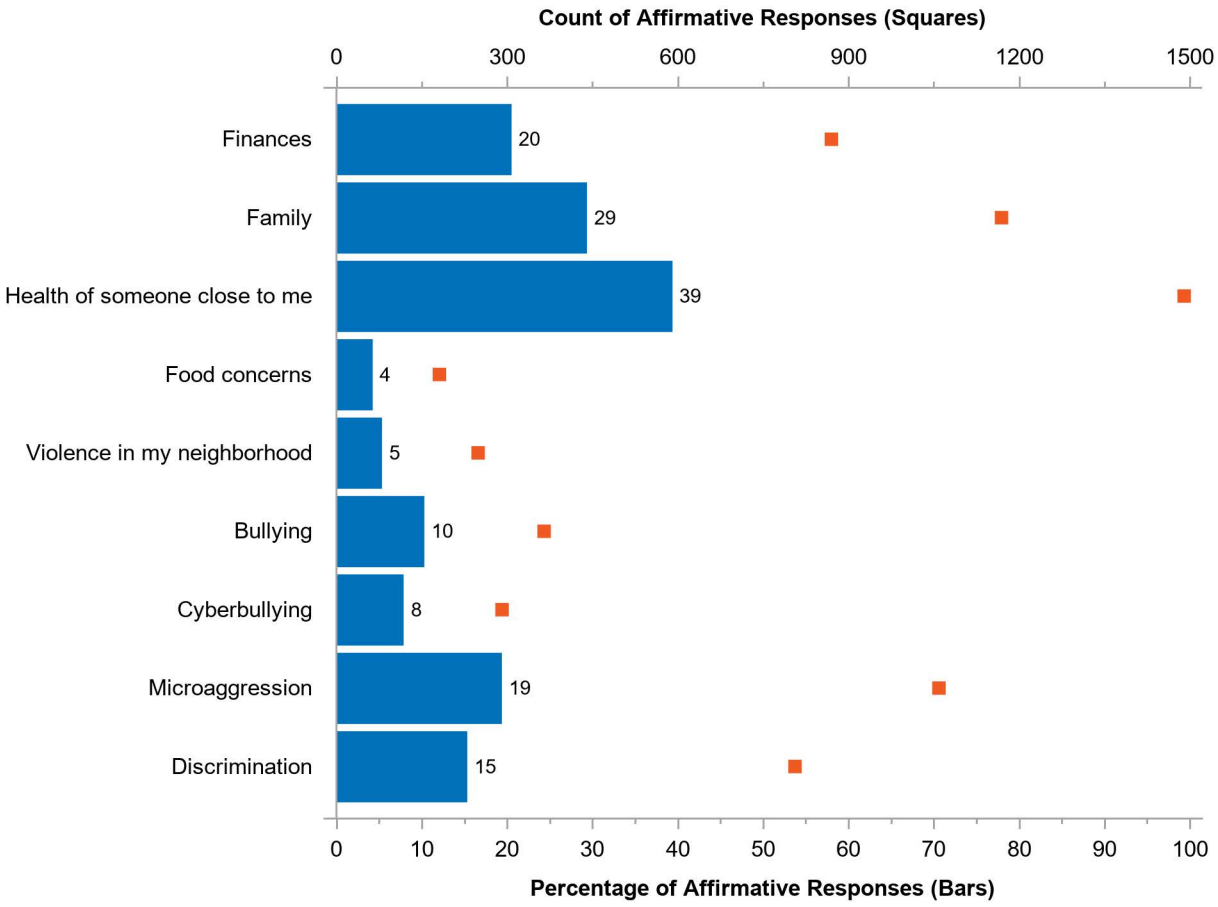
Frequency of Problems and Challenges

Overall

Problems and challenges were surprisingly frequent for high school students during this 12-month period. Over one-half (57%) of students affirmed at least one problem or challenge, and three-quarters of those students affirmed between one and three problems or challenges, but few (7%) affirmed more than five.[2]

The top five problems and challenges experienced by students pertained to the health of someone close to them (39%), family (29%), finances (20%), microaggression (19%), and discrimination (15%; as denoted by the blue bars in Figure 1). Problems and challenges with bullying (10%), cyberbullying (8%), neighborhood violence (5%), and food concerns (4%) were experienced less frequently but nonetheless affected noticeable proportions of students.

Figure 1. Problems and Challenges Experienced Within the Last 12 Months



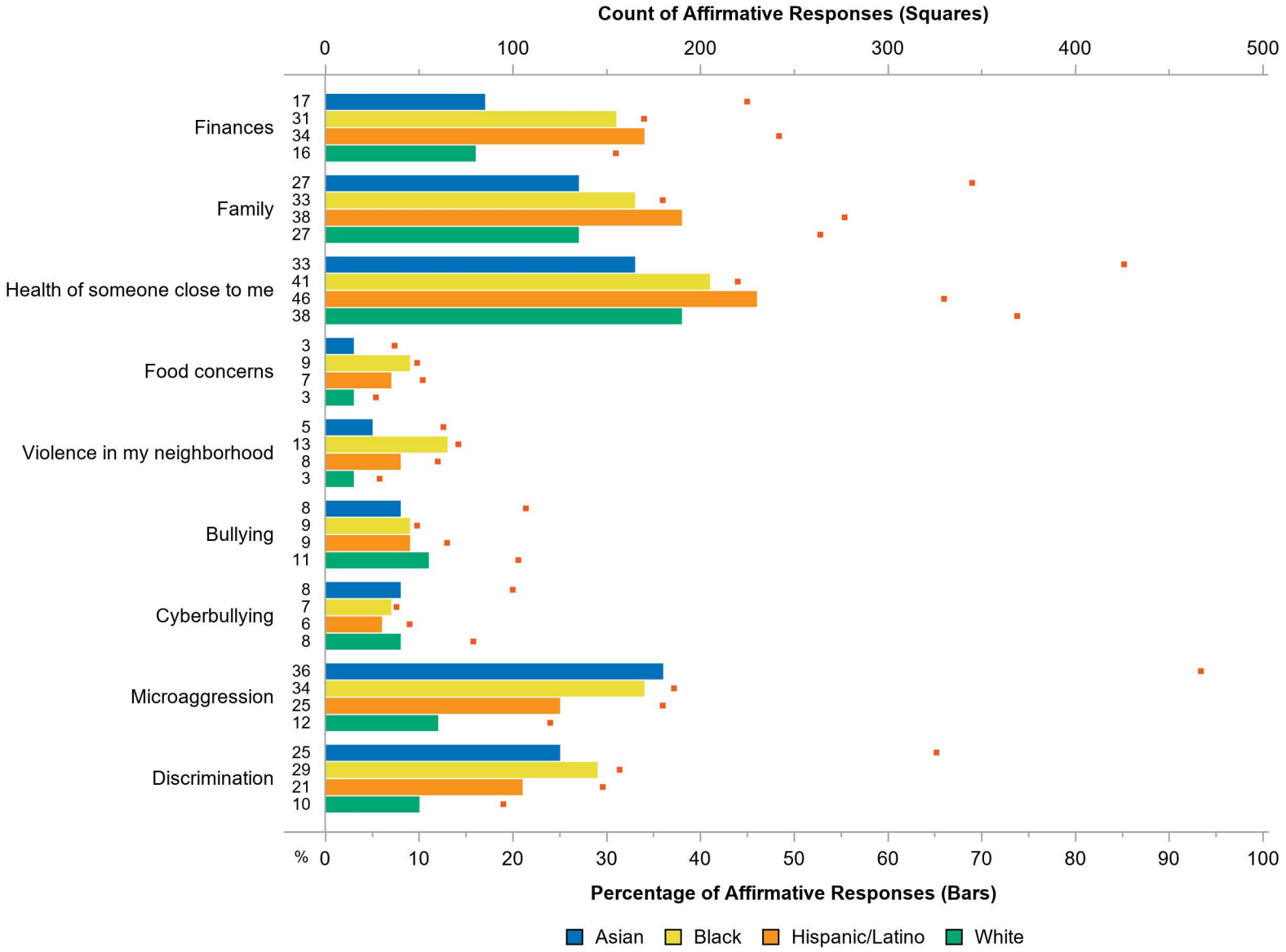
Note: Students could affirm more than one problem or challenge. The sum of the percentages in this figure will therefore exceed 100%.

By Race/Ethnicity and Gender

When the data were examined by race/ethnicity,[3] it was found that Hispanic/Latino students, Black students, and Asian students were more likely than White students to affirm at least one problem or challenge (69%, 67%, and 59%, respectively, vs. 52%). Females were more likely than males to make this affirmation (60% vs. 49%, respectively).[4]

Hispanic/Latino students were more likely to report experiencing problems or challenges, relative to students of the other three racial/ethnic groups, for three of the top five issues: health of someone close (46%), family[5] (38%), and finances (34%; see Figure 2). Hispanic/Latino students were statistically significantly more likely to affirm problems with the health of someone close than were Asian students (33%; $Q = 7.89$, $p < .0001$, ES = 0.26).[6] Similar results were observed when comparing reported family problems for Hispanic/Latino students and Asian students (27%; $Q = 7.59$, $p < .0001$, ES = 0.25) and for Hispanic/Latino students and White students (27%; $Q = 6.96$ $p < .0001$, ES = 0.24). As for problems with finances, the proportion of Hispanic/Latino students reporting such problems was significantly higher than that of either White students (16%; $Q = 12.09$, $p < .0001$, ES = 0.42) or Asian students (17%; $Q = 11.49$, $p < .0001$, ES = 0.38). Like Hispanic/Latino students, Black students were significantly more likely to affirm problems with finances than were either White students (31% vs. 16%; $Q = 9.61$, $p < .0001$, ES = 0.36) or Asian students (31% vs. 17%; $Q = 8.94$, $p < .0001$, ES = 0.32).

Figure 2. Problems and Challenges Experienced Within the Last 12 Months, by Race/Ethnicity



Over one-third (36%) of Asian students experienced problems with microaggression. This proportion was significantly larger than the proportions of either White students (12%; Q = 19.03, p < .0001, ES = 0.57) or Hispanic/Latino students (25%; Q = 7.39, p < .0001, ES = 0.24) who reported problems with microaggression. Like Asian students, Black students affirmed significantly more problems with microaggression than did either White students (34% vs. 12%; Q = 13.96, p < .0001, ES = 0.53) or Hispanic/Latino students (34% vs. 25%; Q = 4.92, p < .05, ES = 0.20). Over one-quarter (29%) of Black students experienced problems with discrimination, which significantly exceeded the proportion of White students experiencing such problems (10%; Q = 13.12, p < .0001, ES = 0.50). Asian students' affirmed problems with discrimination also significantly exceeded those of White students (25% vs. 10%; Q = 13.95, p < .0001, ES = 0.42).

Thirteen percent of Black students reported problems or challenges with neighborhood violence, which was significantly larger than the percentages of either Asian students (5%; Q = 8.11, p < .0001, ES = 0.29) or White students (3%; Q = 10.33, p < .0001, ES = 0.39) who reported such problems or challenges. Similarly, 9% of Black students reported problems or challenges with food concerns. This percentage was significantly larger than the percentages of either Asian students (3%) or White students (3%) who reported food concern problems (Q = 7.39 and 7.25, respectively; p < .0001 and ES = 0.27 for both comparisons).

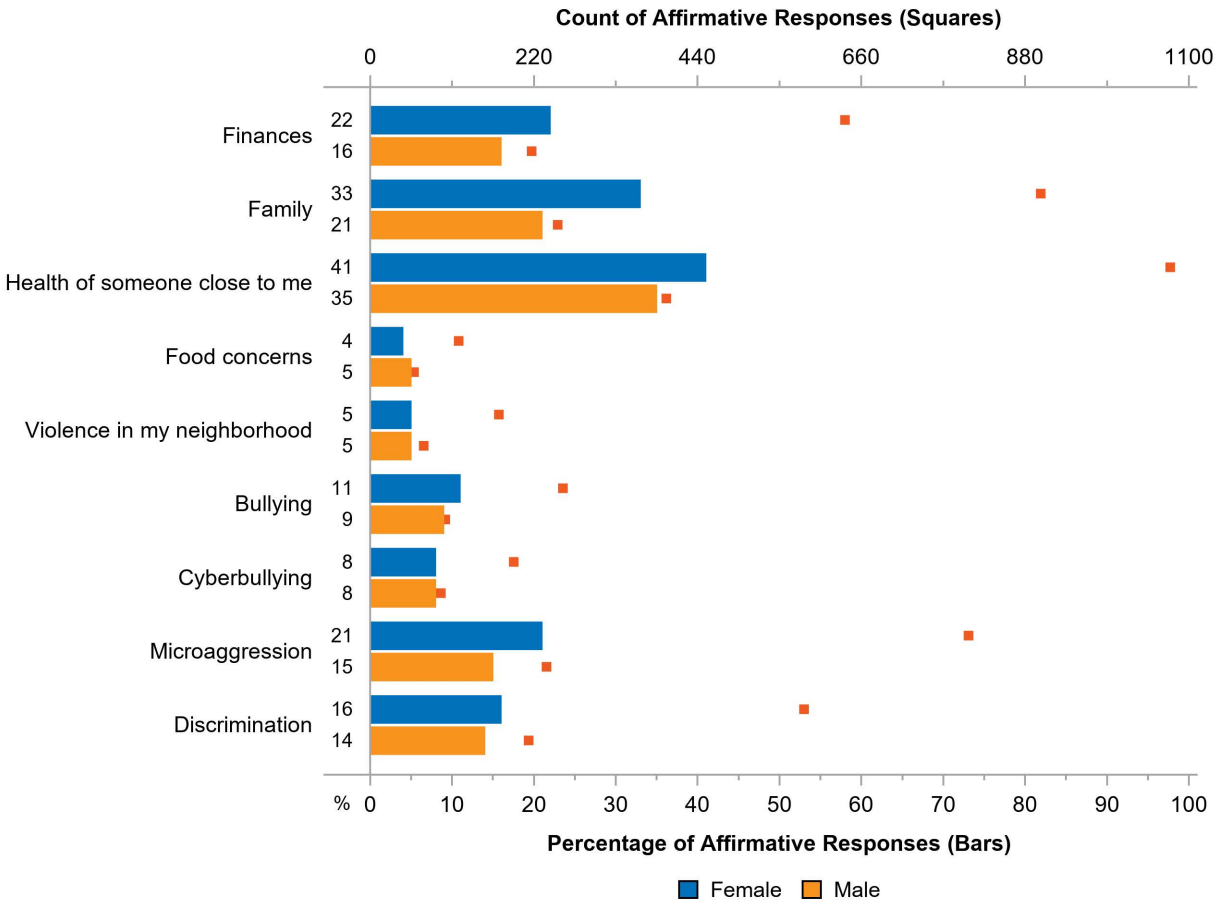
Compared with Black students' experiences, Hispanic/Latino students reported somewhat fewer problems with neighborhood violence (13% vs. 8%, respectively; Q = 3.73, p < .05, ES = 0.15). Similar to the findings for Black students, the percentages of Hispanic/Latino students experiencing problems with food concerns was noticeably larger than the percentages of either Asian students (7% vs. 3%; Q = 6.21, p < .0001, ES = 0.21) or White students (7% vs. 3%; Q = 6.04, p < .001, ES = 0.21) experiencing these problems. As for neighborhood violence, Hispanic/Latino students experienced noticeably more problems and challenges with this issue than did White students (8% vs. 3%; Q = 6.93, p < .0001, ES = 0.24).

Bullying and cyberbullying were slightly more often affirmed as problems by White students, relative to students of other races/ethnicities (11% and 8%, respectively). The differences between the proportions of White students affirming these problems were not, however, statistically significantly different from the proportions of students of color affirming these problems.

Females were more likely than males to experience problems and challenges with finances (22% vs. 16%, respectively), family (33% vs. 21%), health of someone close (41% vs. 35%), bullying (11% vs. 9%), microaggression (21% vs. 15%), and discrimination (16% vs. 14%; see Figure 3). Food concerns were slightly more often experienced as problems by males, and cyberbullying and neighborhood violence were experienced equally by females and males (8% and 5%, respectively). Several of the differences between the percentages of females and males experiencing these problems were statistically significant (finances, X^2 = 20.17, p <

.0001, ES = 0.16; family, X^2 = 54.95, p < .0001, ES = 0.27; health, X^2 = 14.86, p < .0001, ES = 0.14; and microaggression, X^2 = 14.51, p < .0001, ES = 0.14).

Figure 3. Problems and Challenges Experienced Within the Last 12 Months, by Gender

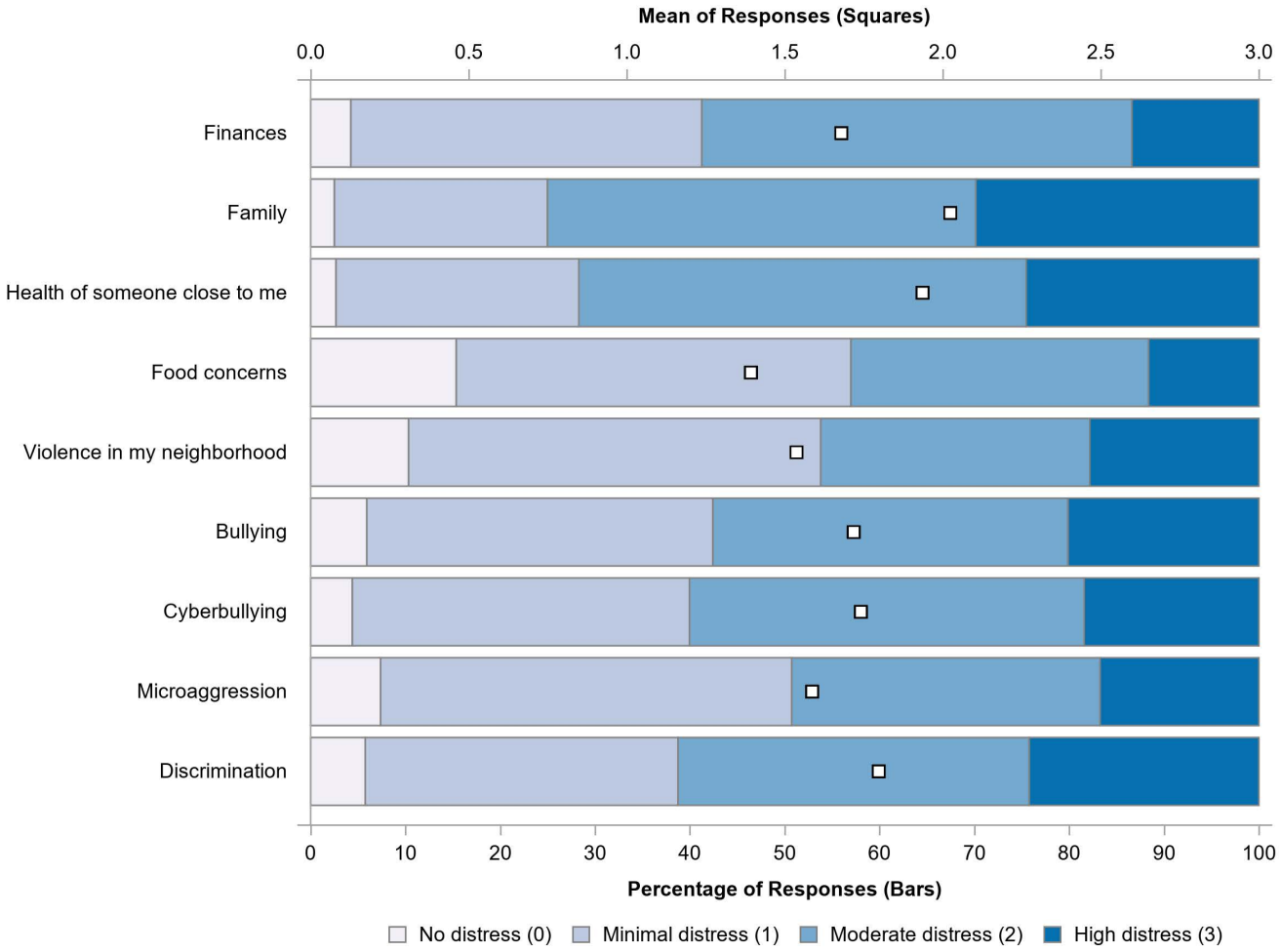


Extent of Distress Caused by Problems and Challenges

Overall

Students were asked, in a follow-up question, to what extent each problem or challenge they experienced had caused them distress. Problems with family (mean = 2.02 on a scale ranging from 0 to 3), health of someone close (1.94), and discrimination (1.80) were leading sources of distress, followed closely by cyberbullying and bullying (1.74 and 1.72, respectively; see Figure 4).

Figure 4. Extent of Distress Caused by Problems and Challenges



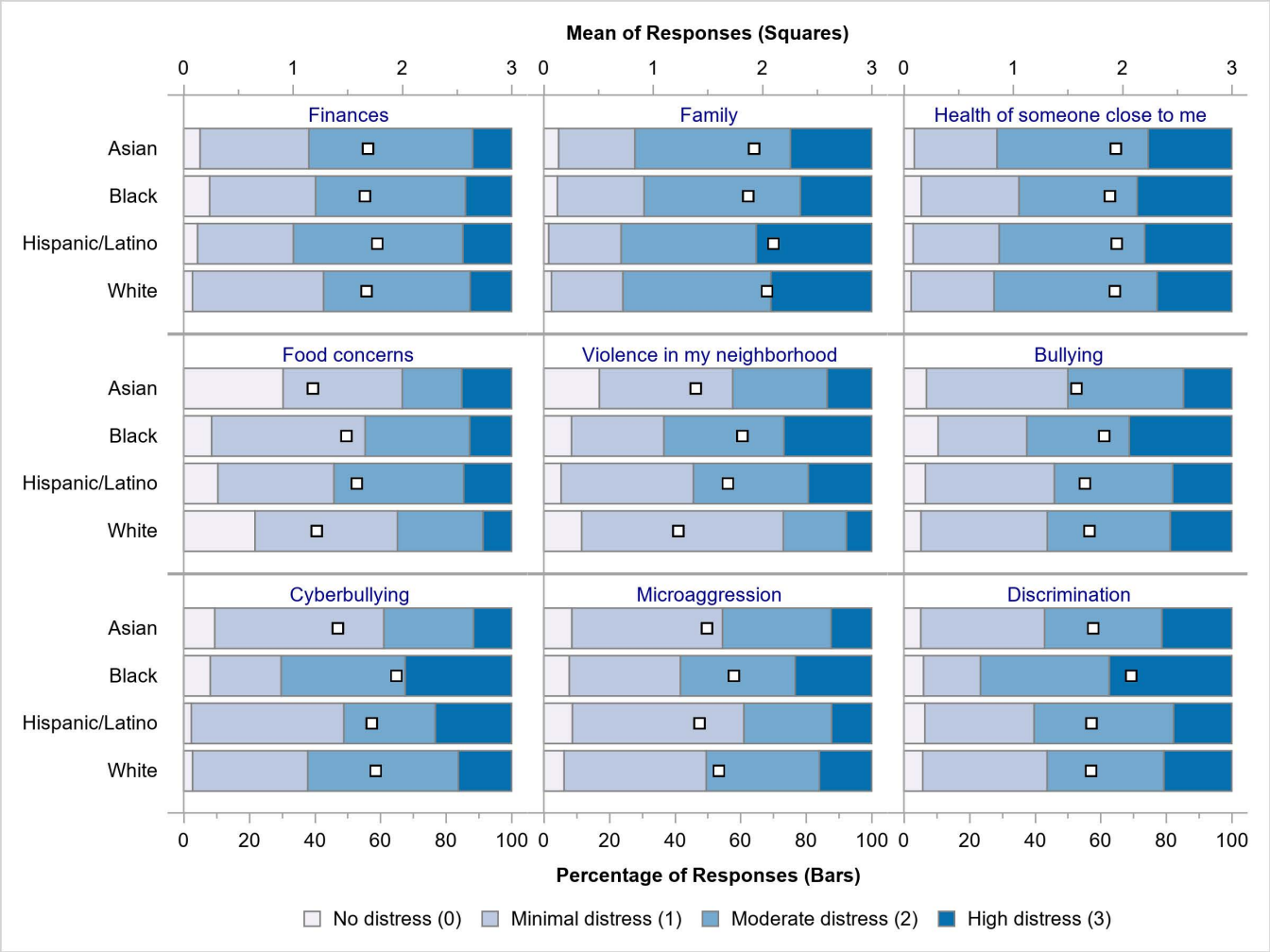
It is interesting that although finances were a problem or challenge for 20% of students, this issue was reported to cause relatively low distress. Findings for microaggression were similar. Discrimination, bullying, and cyberbullying, in contrast, were problematic for fewer students but caused relatively high distress.

By Race/Ethnicity and Gender

Black students reported higher levels of distress than did students of other racial/ethnic groups for problems with neighborhood violence, bullying, cyberbullying, microaggression, and discrimination, with means ranging from 1.74 (microaggression) to 2.08 (discrimination; see Figure 5). Further examination revealed that Black students' levels of distress were statistically significantly higher for several problems and challenges: They were significantly more distressed over problems with neighborhood violence than were Asian students (t = 2.72, p < .05, ES = 0.46) or White students (t = 2.87, p < .05, ES = 0.66)[7], and they were significantly more distressed over problems with discrimination than were either Asian

students (t = 4.08 p < .001, ES = 0.41), Hispanic/Latino students (t = 3.62, p < .05, ES = 0.42), or White students (t = 3.18, p < .05, ES = 0.42).

Figure 5. Extent of Distress Caused by Problems and Challenges, by Race/Ethnicity



Similarly, Black students' levels of distress over problems with microaggression were statistically significantly higher than those of either Asian students (t = 3.32, p < .05, ES = 0.30) or Hispanic/Latino students (t = 3.52, p < .05, ES = 0.37). Problems with cyberbullying were significantly more stressful for Black students than for Asian students (t = 3.34, p < .05, ES = 0.63) and for White students than for Asian students (t = 2.70, p < .05, ES = 0.40).

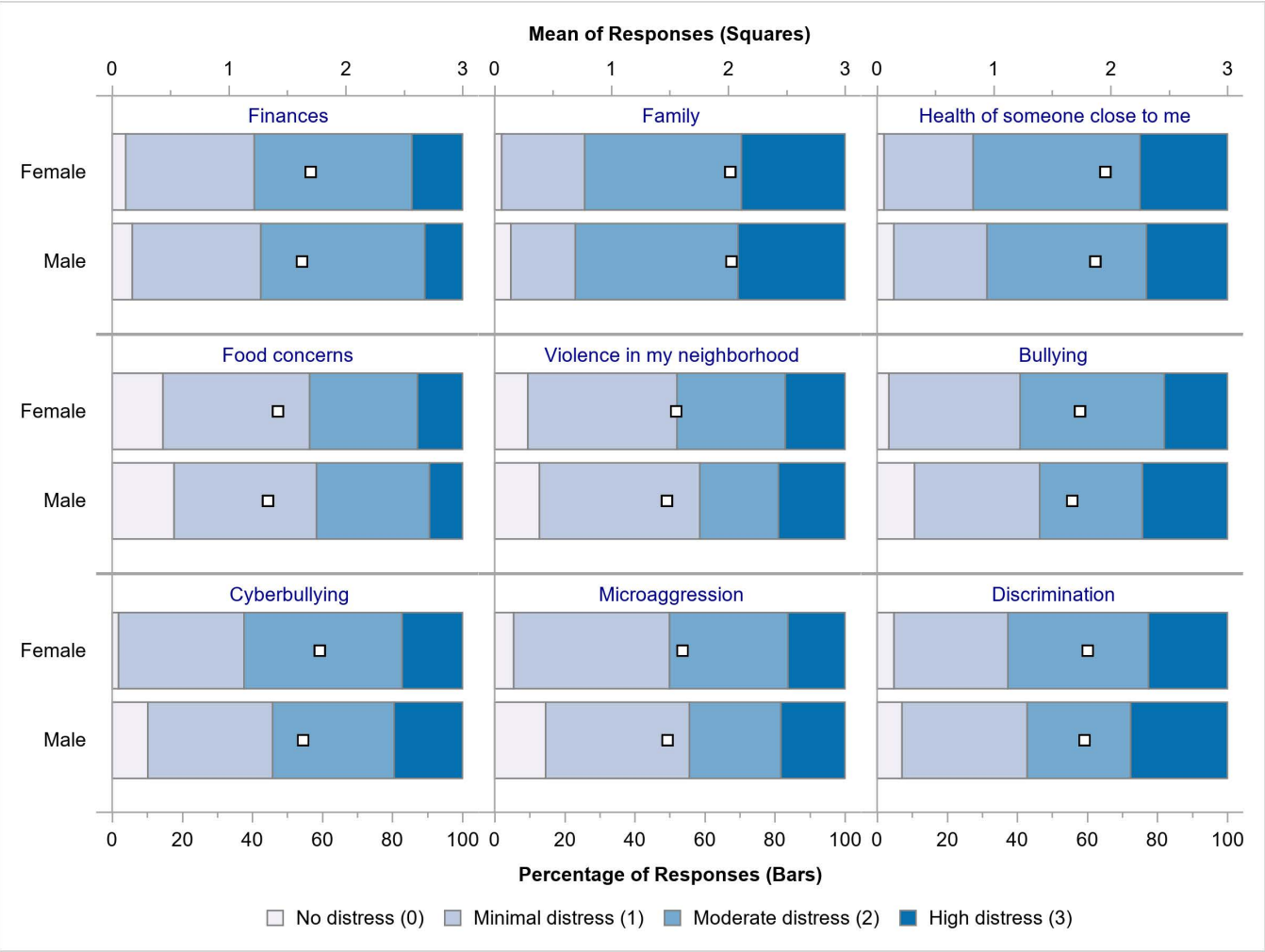
Hispanic/Latino students reported higher levels of distress for problems with finances (1.77), family (2.10), and food concerns (1.58). Their levels of distress were statistically significantly higher for problems with family than were those of Asian students (t = 2.69, p < .05, ES = 0.22) or Black students (t = 2.95, p < .05, ES = 0.29).

Problems with the health of someone close caused relatively high distress for all racial/ethnic groups, with mean distress levels ranging from 1.88 (Black) to 1.95 (Hispanic/Latino). Although problems with food concerns yielded relatively large differences

between mean distress levels for racial/ethnic groups, the differences were not statistically significant.

Females reported somewhat higher levels of distress than did males for all problems except those pertaining to family (mean = 2.0 for both genders; see Figure 6). Statistically significant differences in distress levels for females and males were observed only for problems with microaggression (t = 2.00, p < .05, ES = 0.18).

Figure 6. Extent of Distress Caused by Problems and Challenges, by Gender



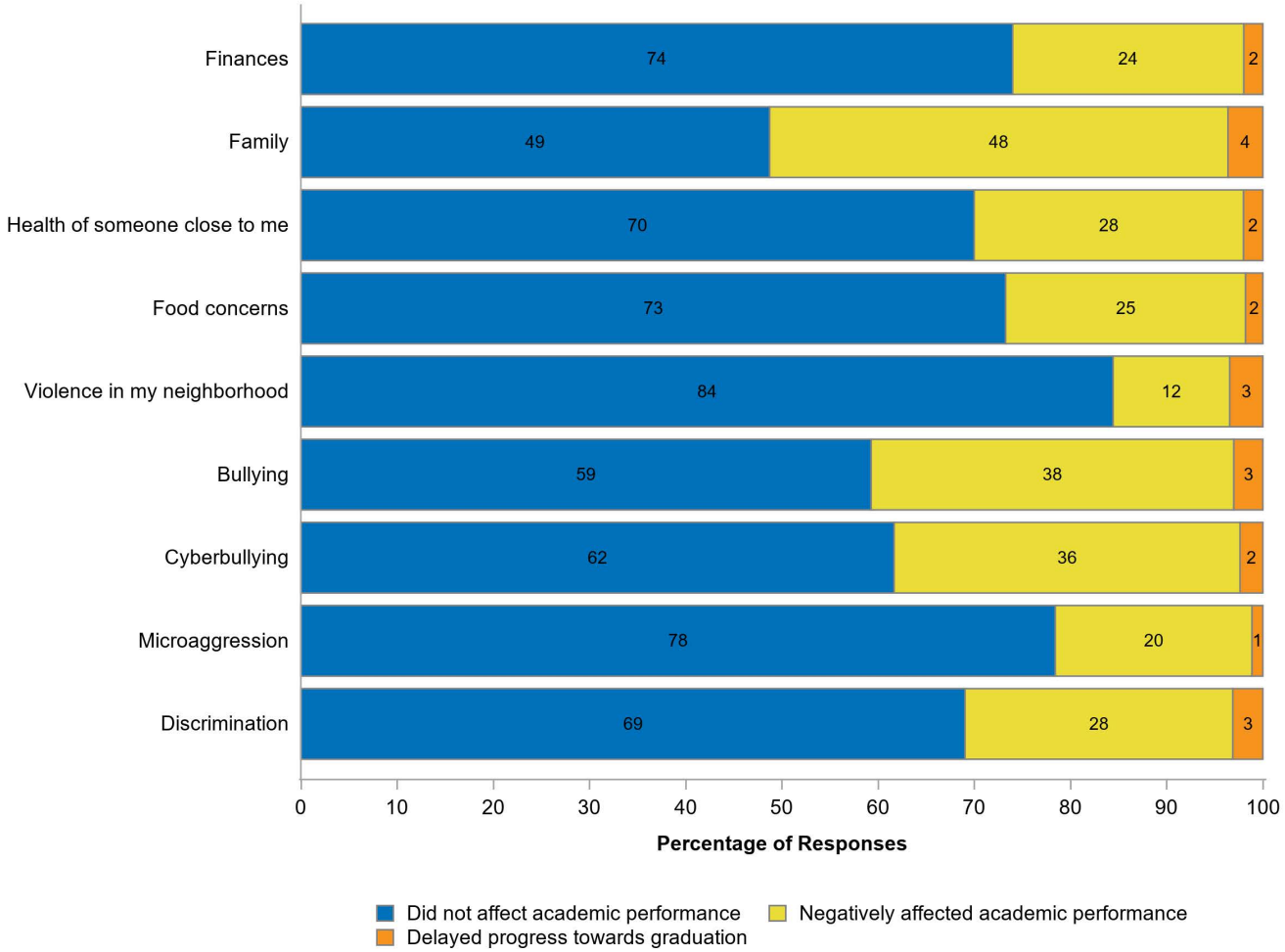
Negative Effects of Problems and Challenges on Academic Performance

Overall

Students were asked to what extent each affirmed problem or challenge negatively affected their academic performance. For eight of the nine issues, the majority of students (over 59%) reported that their academic performance was unaffected by problems or challenges; however, a sizable percentage reported that experiencing a problem or

challenge impacted their academic performance or delayed progress towards graduation. Problems with family had the greatest impact, with 51% of students reporting that such problems either negatively affected their academic performance or delayed progress toward graduation (Figure 7). Bullying, cyberbullying, and discrimination, although being reported relatively infrequently as problems, were noticeably detrimental to academic performance and graduation (41%, 38%, and 31%, respectively).

Figure 7. Negative Effects of Problems and Challenges on Academic Performance



The data indicated that the effect of problems and challenges on academic performance was not cumulative. That is, increasing numbers of problems and challenges were not necessarily associated with increased impacts on academic performance. When the impact on academic performance was examined according to the total number of affirmed problems and challenges, it was found that the impact generally varied as the number of problems and challenges increased.

For example, 65% of students who affirmed only one problem, with finances, reported that this problem negatively affected their academic performance. In comparison, 51% of students who affirmed a total of two problems reported that the problem with finances

negatively affected their academic performance. For students affirming three problems, this percentage was 29%, and for students affirming four or more problems, it was 44%.

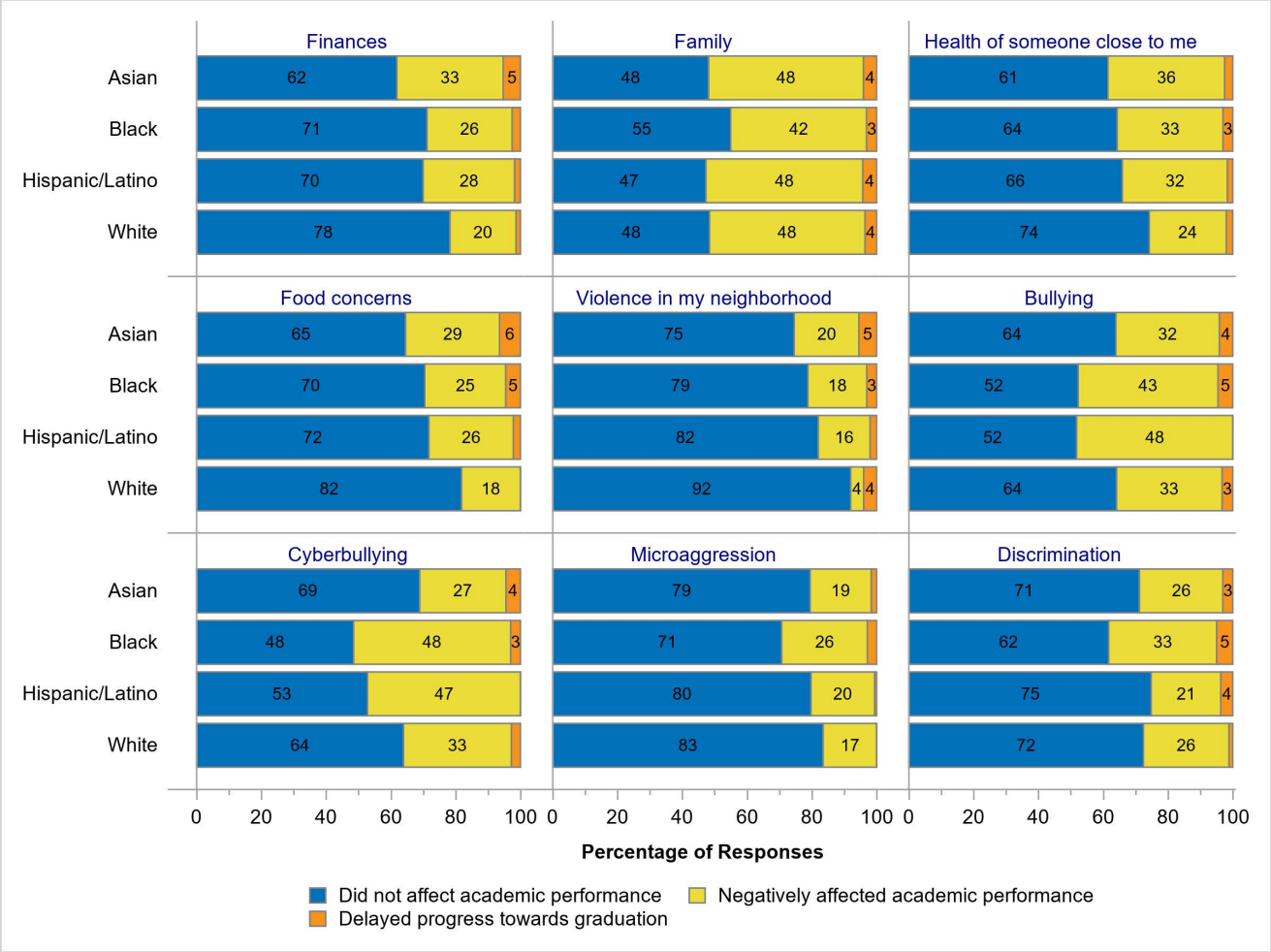
Similar patterns were observed for problems and challenges with family, bullying, microaggression, and discrimination. For the other issues, except health of someone close, the data for combinations of number of problems by academic performance impact rating were too sparse for analysis. Surprisingly, the percentages of students who reported that the health of someone close negatively affected their academic performance **decreased** as the total number of affirmed problems increased.

These findings, although somewhat puzzling, are probably related to the differential impact of problems and challenges and how they are perceived by students. For example, it seems possible that a single, major problem with family could have a greater impact on academic performance than could somewhat minor problems with both finances and cyberbullying.

By Race/Ethnicity and Gender

Compared with students of other races/ethnicities, Asian students reported greater impacts on academic performance for problems with finances, the health of someone close, food concerns, and neighborhood violence (percentages reporting a negative effect on academic performance or delayed progress toward graduation ranged from 26% to 39% over these four problems; see Figure 8). Problems with finances and the health of someone close affected academic performance statistically significantly more for Asian students than for White students (finances, $Q = 4.70$, $p < .05$, ES = 0.36; health, $Q = 5.30$, $p < .05$, ES = 0.27).

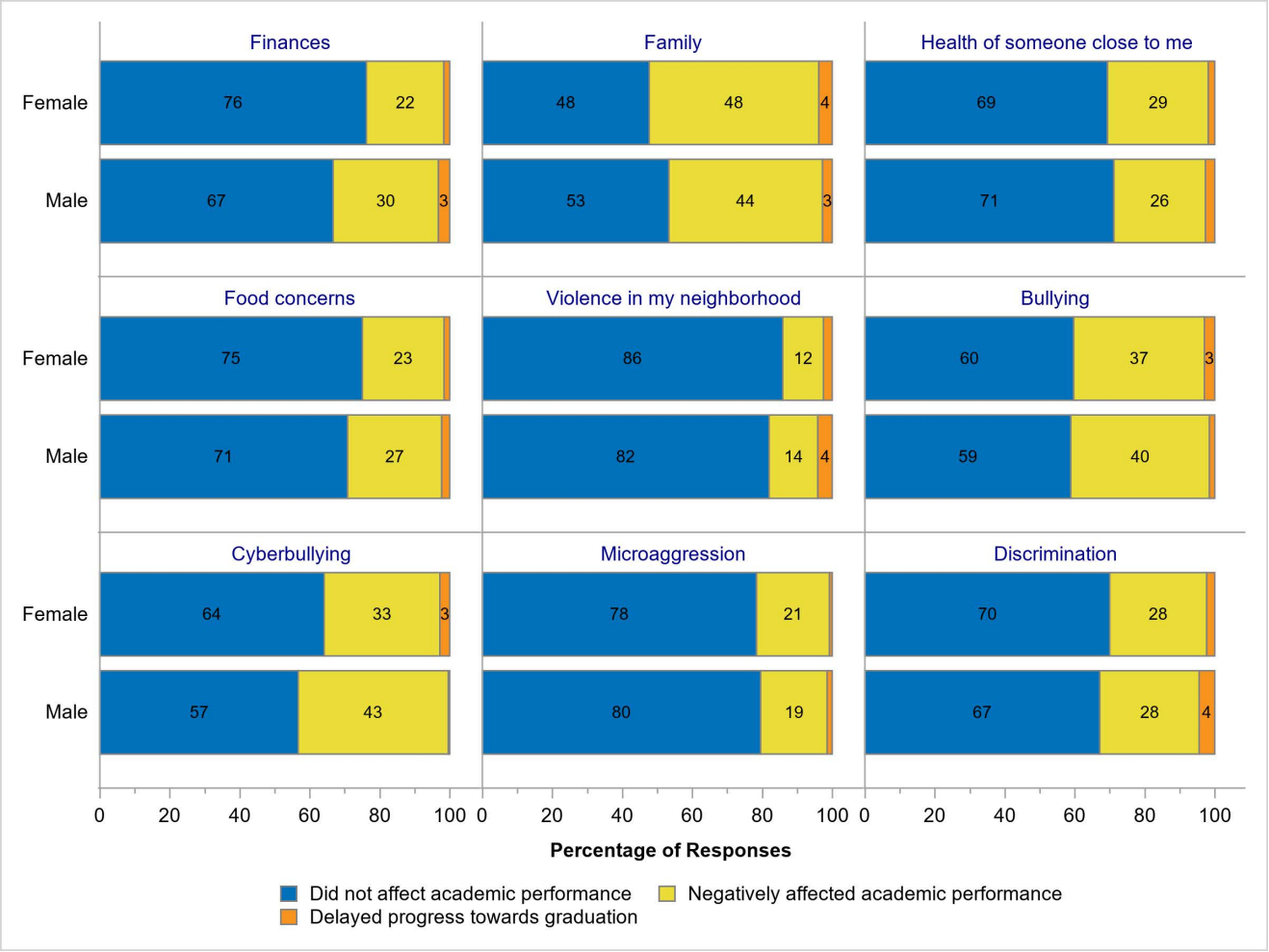
Figure 8. Negative Effects of Problems and Challenges on Academic Performance, by Race/Ethnicity



Black students' academic performance and progress towards graduation were noticeably affected by problems or challenges with bullying, cyberbullying, microaggression, and discrimination (48%, 52%, 29%, and 38%, respectively). This finding aligns with the earlier observation that the levels of stress caused by these four issues were higher for Black students than for students of other races/ethnicities.

Females' academic performance and progress toward graduation were affected more than that of males by problems with family (percentages reporting a negative effect on academic performance or delayed progress toward graduation were 52% and 47%, respectively; see Figure 9). Males reported greater effects on academic performance than did females for problems with finances (33% vs. 24%; $Q = 5.90$, $p < .05$, ES = 0.21),[8] food concerns (29% vs. 25%), neighborhood violence (18% vs. 14%), cyberbullying (43% vs. 36%), and discrimination (33% vs. 30%). The academic performance of females and males was affected about the same by problems with the health of someone close (31% vs. 29%), bullying (40% vs. 41%), and microaggression (22% vs. 21%).

Figure 9. Negative Effects of Problems and Challenges on Academic Performance, by Gender

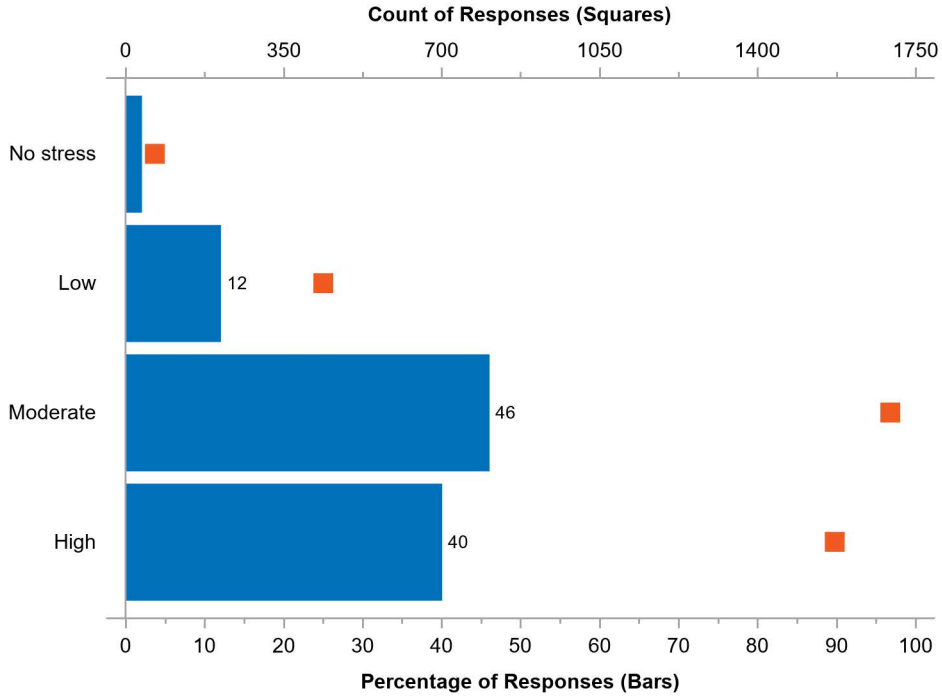


Overall Level of Stress Within the Last 30 Days

Overall

Students were also asked to rate the overall level of stress they had experienced within the last 30 days. A large proportion of students (86%) reported moderate or high stress levels, and nearly all of them (98%) reported some stress (Figure 10). There was a small, but statistically significant, correlation between the total number of problems and challenges affirmed and the overall level of stress ($r = 0.19$, $p < .0001$). Some problems and challenges could have occurred during the last 12 months and been resolved prior to the 30-day period students were asked to use for rating their overall stress level. Perhaps the correlation between total problems and overall stress would have been different if reporting of both had been confined to the same period.

Figure 10. Overall Level of Stress Within the Last 30 Days

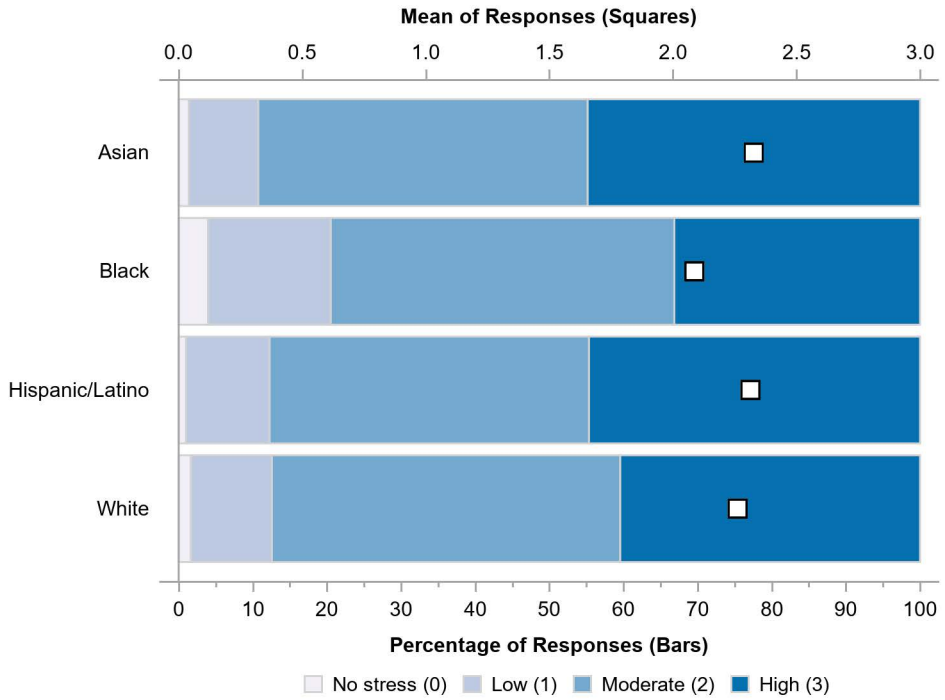


Note: The percentages in this figure are rounded and therefore do not sum to 100%.

By Race/Ethnicity and Gender

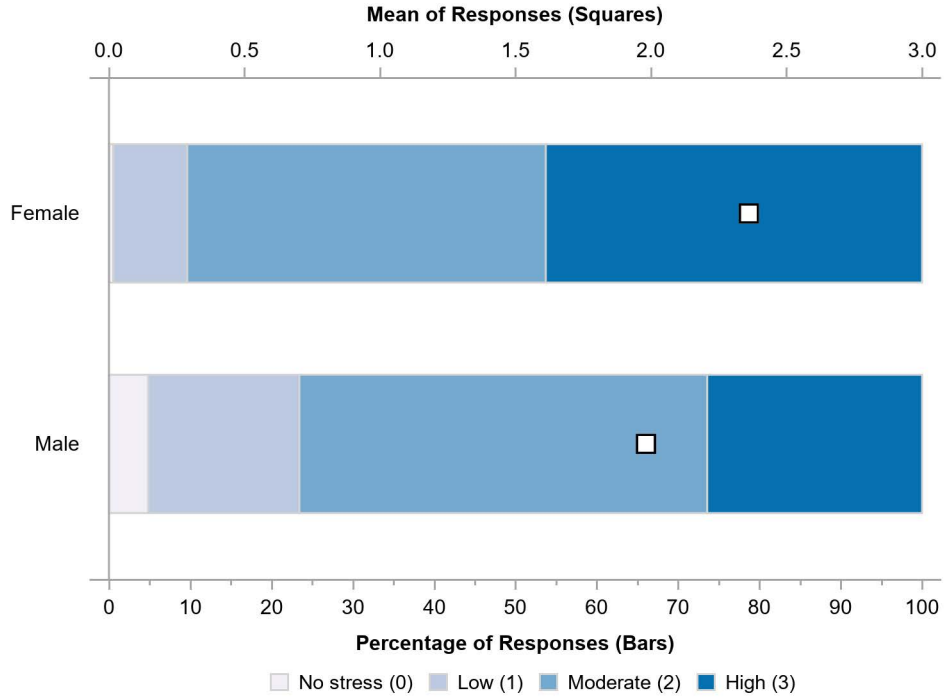
Asian students reported somewhat higher levels of stress than did students of other races/ethnicities, with 89% of them reporting either moderate or high distress (mean of 2.33 on a scale ranging from 0 to 3; see Figure 11). Hispanic/Latino students and White students reported somewhat similar stress levels (88%, 2.31; and 87%, 2.26, respectively). Black students' mean reported 30-day stress level (2.09) was statistically significantly lower than those of students of other races/ethnicities (Black vs. Asian, t = -6.43, p < .0001, ES = 0.33; Black vs. Hispanic/Latino, t = -5.47, p < .0001, ES = -0.29; Black vs. White, t = -4.53, p < .0001, ES = -0.23).[9]

Figure 11. Overall Level of Stress Within the Last 30 Days, by Race/Ethnicity



A noticeably larger percentage of females (90%) than males (77%; see Figure 12) reported moderate or high levels of stress over the last 30 days. The difference between overall stress levels of females and males was statistically significant (female mean = 2.36, male mean = 1.98; $t = 14.86$, $p < .0001$, ES = 0.53). This finding might be related to known gender differences in neuroticism (Chapman, Duberstein Sörensen, & Lyness, 2007).

Figure 12. Overall Level of Stress Within the Last 30 Days, by Gender



Are Problems and Challenges Related to ACT® Test Scores?

Because problems and challenges affirmed by students were reported to have negatively affected academic performance and/or delayed progress towards graduation, it seems possible that these same problems and challenges could also be associated with decreased ACT test performance. Further support for this possibility is provided by a recent article that described the connection between stress exposures from school, home, and neighborhood factors; changes in the functioning of the body's biological stress systems; and effects on adolescents' ability to learn new material and respond to "acute cognitive challenges," such as taking a standardized test (Heissel, Levy, & Adam, 2017). Its authors theorized that such stress exposures are associated with changes to stress biology, which affects learning before a standardized test and the ability to be cognitively ready for the testing experience, which in turn affect test performance.

To investigate the relationship between ACT test performance and affirmed problems and challenges, multiple linear regression models were developed in which ACT Composite score was modeled as a function of an affirmed problem or challenge and several student background characteristics.[10] In addition, ACT Composite score was modeled using student background characteristics and an independent variable that represented the total number of affirmed problems and challenges.

For eight of the issues that could be affirmed as problems and challenges, their respective regression coefficients were not statistically significant, indicating that these problems and challenges were not related to ACT Composite score. A similar result occurred for the variable that represented the total number of affirmed problems and challenges.

The regression coefficient for microaggression, in contrast, was statistically significant (b = 0.99, t = 4.35, p < .0001). Surprisingly, it was positive. Research on racial microaggressions suggests that this relationship would be negative; that is, more occurrences of racial microaggressions would, on average, be related to lower ACT test performance.[11] A possible explanation for this finding is provided in the discussion section.

ACT Composite score was also modeled as a function of overall level of stress over the last 30 days and student background characteristics. A significant statistical relationship between Composite score and overall stress level could not be established.

Because ACT Composite score and high school GPA are measures of academic performance, the inclusion of high school GPA as a predictor in the models might diminish the relationship of a particular problem or challenge with ACT Composite score. To determine whether this was occurring, additional regression models were developed that excluded high school GPA. The results were unaffected by this change; only the regression coefficient for microaggression remained statistically significant.

Students' affirmed problems and challenges might be related to high school GPA. To investigate this, high school GPA was modeled as a function of a problem or challenge and student background characteristics.[12] None of the regression coefficients for problems and challenges were statistically significant in the high school GPA models.

Discussion

During the last year, the high school students who provided data for this study, like their peers, probably experienced typical problems and challenges related to their coursework[13] and planning for college. Moreover, they experienced the unavoidable problems and challenges of the recent pandemic and its effects on both the school environment (e.g., school closures, virtual learning) and society (e.g., increasing identity-based harassment; U.S. Department of Education, Office for Civil Rights, 2021). It is almost certain that such school and societal factors have amplified both the prevalence and impact of students' affirmed problems and challenges. To confirm this, it would be valuable to collect additional data in the future, when pandemic concerns are not relevant, and compare it to the present data.

Pandemic-related factors aside, it is troubling to learn from students' survey responses that many of them experienced problems and challenges, including those pertaining to the health of someone close to them, family, finances, microaggression, and discrimination. Such problems caused considerable distress and were reported by some students to have negatively affected their academic performance, including progress towards graduation. Even problems and challenges that were reported less often by students, such as bullying and cyberbullying, had noticeably negative impacts on academic performance and progress towards graduation for many.

Most students in this study reported either moderate (46%) or high (40%) overall levels of stress in the last 30 days. Affirmed problems and challenges, the extent of their impact on academic performance, and overall stress levels could, perhaps, have been elevated by end-of-school-year preparations and the fact that students had recently taken the ACT test.

Nevertheless, the findings of this study highlight the importance of all students being able to get assistance with coping with stress, perhaps by having access to mental health services.

Different problems and challenges affected different racial/ethnic groups disproportionately. For example, Hispanic/Latino students reported more problems with health of someone close, family, and finances, relative to students of other racial/ethnic groups. Asian students experienced relatively more problems with microaggression, and Black students experienced relatively more problems with discrimination. It is possible that current societal factors, such as the rise of anti-Asian attacks and abuse stemming from the recent pandemic and increases in hate crimes against Black people, are related to these findings.[14] Such findings emphasize the importance of educators, parents, policymakers, and others working together to find ways to make the educational experience fairer and more effective for all students.

Students of different races/ethnicities were found to have different reactions to the same problems and challenges. For example, Black students were significantly more distressed over problems of neighborhood violence than were Asian students or White students, and they were significantly more distressed over problems with discrimination than were either Asian students, Hispanic/Latino students, or White students. If high school counselors, teachers, administrators, and mental health providers were aware of the potential occurrence of such differences, they might be better able to assist students and continue to ensure their educational success.

Female students experienced significantly more problems and challenges than did male students with finances, family, health of someone close, and microaggression. The direction of these findings (females experiencing more problems than males) matches the direction of by-gender findings reported by The American College Health Association for their fall 2020 National College Health Assessment (American College Health Association, 2021), which is administered to undergraduates and is the instrument from which many of the survey questions in this study were borrowed.

Overall, the National College Health Assessment yielded similar findings to those reported here for one of the issues, health of someone close (39% of high school students in this study affirmed this as a problem or challenge, vs. 37% of undergraduates in the ACHA report).[15] Percentages of students affirming problems and challenges were higher in this study for bullying, cyberbullying, microaggression, and discrimination, with the largest percentage-point difference occurring for discrimination (15% in this study vs. 9% in the ACHA report). Percentages were noticeably lower in this study for problems and challenges with finances and family (20% vs. 47% and 29% vs. 38%, respectively). With one exception (finances), the percentages of students reporting moderate or high distress as a result of a problem were higher for high school students in this study than for undergraduates in the ACHA report, with percentage-point differences ranging from 4 (health of someone close, bullying) to 10 (cyberbullying). Overall 30-day stress levels reported by students were somewhat higher in this study (86% moderate or high levels vs. 82% in the ACHA report).

For some of the nine issues examined, comparisons of this study's findings to those of additional studies are available. For example, microaggression was more often affirmed as a problem by students of color than by White students in this study. Researchers who examined racial/ethnic microaggression among college students reported a similar finding in their study (Forrest-Bank & Jenson, 2015a). The findings reported here for cyberbullying are somewhat similar to those of another study, in which nearly one-third of youthful respondents reported that cyberbullying affected them at school (Patchin & Hinduja, 2006).

The percentage of students affirming problems or challenges with violence in their neighborhoods was low, relative to other issues. This is encouraging, given that potential psychological trauma symptoms, such as anxiety and depression, are associated with exposure to recurring community violence (Rosenthal, 2000).

ACT Test Performance and Problems and Challenges

Even though students reported negative impacts on academic performance and progress towards graduation resulting from their affirmed problems and challenges, there was not an appreciable statistical relationship between students' ACT Composite scores and their affirmed problems and challenges, with one exception, which is discussed below. These findings occurred while controlling for student background characteristics—including race/ethnicity; grade level; gender; expected educational attainment; high school GPA; having taken math courses beyond Algebra II; having taken biology, chemistry, and physics; highest level of parental education; and geographical area of the student's school (e.g., urban, rural)—and they held true whether or not the problems and challenges were examined individually or collectively.

The ACT test measures academic skills and knowledge acquired over a long period. Therefore, performance on this test might typically be unaffected by problems and challenges that occur infrequently and have a brief duration, unless of course they happen to occur on or very near the date on which the test is taken. It seems more likely that test performance could be affected by chronic, long-term problems and challenges. Perhaps many of the students in this study experienced short-term, rather than long-term problems and challenges, and this is why ACT test performance was in general not found to be related to those experiences.

Microaggression was the one exception. The regression coefficient for this variable differed from those of the other problems and challenges in that is was statistically significant. Moreover, it had an unexpected positive relationship with ACT test performance, suggesting that, on average, students who experienced microaggressions earned somewhat higher ACT Composite scores, irrespective of their background characteristics. Research on racial microaggression experienced by college students has shown a negative relationship between microaggression and academic self-efficacy (Forrest-Bank, & Jenson, 2015b), and other research has indicated that educational contexts in which microaggressions are prevalent negatively affect college students' academic achievement (Keels et al., 2017). It therefore seems plausible that similar relationships would be found for high school students, and that counter to what this study's findings show, more frequent occurrences of microaggressions would be related to lower ACT test performance.

Perhaps the positive association between microaggression and ACT test performance can be explained, in part, by student resilience; that is, students who experience microaggressions have developed techniques of coping with and managing those negative experiences that help them to succeed academically.[16] When interpreting the findings pertaining to microaggression, it is worth considering that the microaggressions affirmed by students in this study are not necessarily only racial in nature. The definition of microaggression provided in the survey instrument was broad and intended to capture other forms of microaggression. In addition, we must keep in mind that this study has not provided any evidence of a causal microaggression and ACT Composite score relationship. Oddly enough, there was no association between microaggression and high school GPA.

It is, of course, possible that unobserved variables could be related to ACT test performance and affirmed problem and challenges and that such variables could account for some of the findings observed in this study. Additional data that expand the scope of problems and challenges beyond those studied here and provide detailed information about their duration would probably assist in understanding possible relationships between ACT test performance and students' problems and challenges.

Limitations

Like many online surveys, the survey in this study had a sizable nonresponse rate. We do not know whether the nonresponding students experienced problems or, if they did, to what extent those problems caused distress and affected academic performance. It is possible that some students chose not to respond because they had not recently experienced problems or challenges with any of the nine issues and therefore believed they would have little to contribute. Or, perhaps some students were unable to respond because of time demands resulting from challenges beyond ordinary schoolwork and family life. Whatever the reason for nonresponse, it is important to keep in mind that if these students had responded, the results of this study might be different. For purposes of comparison, this survey's response rate (12%) is similar to the median response rate over institutions for the fall 2020 National College Health Assessment (11%).

Appendix

Table A1. Comparison Statistics, by Survey Question and Race/Ethnicity

		Asian (1)			Black (2)			Hispanic/Latino (3)			White (4)			Test Statistic[1]						Effect Size[2]					
Survey Question	Issue	N	Pct	Mean	N	Pct	Mean	N	Pct	Mean	N	Pct	Mean	1 vs. 2	1 vs. 3	1 vs. 4	2 vs. 3	2 vs. 4	3 vs. 4	1 vs. 2	1 vs. 3	1 vs. 4	2 vs. 3	2 vs. 4	3 vs. 4
Frequency of problems and challenges	Finances	225	17.4	-	170	31.1	-	242	34.0	-	155	16.0	-	8.94***	11.49***	1.36	1.49	9.61***	12.09***	-0.32	-0.38			0.36	0.42
	Family	343	26.7	-	180	32.9	-	277	38.4	-	264	27.1	-	3.76*	7.59***	0.27	2.83	3.37	6.96***	-0.14	-0.25				0.24
	Health of someone close	426	33.2	-	220	41.0	-	330	45.8	-	368	38.0	-	4.47*	7.89***	3.35	2.41	1.62	4.54*	-0.16	-0.26				0.16
	Food concerns	37	2.9	-	49	9.0	-	52	7.3	-	27	2.8	-	7.39***	6.21***	0.16	1.56	7.25***	6.04**	-0.27	-0.21			0.27	0.21
	Violence in neighborhood	63	4.9	-	71	13.1	-	60	8.4	-	29	3.0	-	8.11***	4.32*	3.28	3.73*	10.33***	6.93***	-0.29	-0.14		0.15	0.39	0.24
	Bullying	107	8.4	-	49	9.0	-	65	9.1	-	103	10.6	-	0.67	0.83	2.57	0.08	1.40	1.42						
	Cyberbullying	100	7.8	-	38	7.0	-	45	6.3	-	79	8.1	-	0.79	1.67	0.45	0.67	1.12	1.98						
	Microaggression	467	36.2	-	186	34.1	-	180	25.1	-	120	12.4	-	1.25	7.39***	19.03***	4.92*	13.96***	9.42***		0.24	0.57	0.20	0.53	0.33
	Discrimination	326	25.4	-	157	28.8	-	147	20.6	-	95	9.8	-	2.11	3.46	13.95***	4.72*	13.12***	8.75***			0.42	0.19	0.50	0.31
Extent of distress caused by problems and challenges	Finances	220	-	1.69	164	-	1.66	236	-	1.77	150	-	1.67	0.36	-1.19	0.16	-1.46	-0.17	1.24						
	Family	331	-	1.92	170	-	1.87	267	-	2.10	257	-	2.04	0.72	-2.69*	-1.79	-2.95*	-2.18	0.84		-0.22		-0.29		
	Health of someone close	412	-	1.94	208	-	1.88	320	-	1.95	360	-	1.93	0.80	-0.13	0.15	-0.87	-0.66	0.27						
	Food concerns	33	-	1.18	47	-	1.49	48	-	1.58	23	-	1.22	-1.50	-1.96	-0.14	-0.51	1.18	1.60						
	Violence in neighborhood	59	-	1.39	71	-	1.82	57	-	1.68	26	-	1.23	-2.72*	-1.78	0.76	0.84	2.87*	2.15	-0.46				0.66	
	Bullying	102	-	1.58	48	-	1.83	61	-	1.66	96	-	1.70	-1.69	-0.55	-0.97	1.07	0.89	-0.30						
	Cyberbullying	95	-	1.41	37	-	1.95	43	-	1.72	74	-	1.76	-3.34*	-2.04	-2.70*	1.21	1.14	-0.23	-0.63		-0.40			
	Microaggression	444	-	1.49	180	-	1.74	172	-	1.42	113	-	1.60	-3.32*	0.91	-1.23	3.52*	1.36	-1.75	-0.30			0.37		
	Discrimination	310	-	1.73	150	-	2.08	141	-	1.72	87	-	1.71	-4.08**	0.18	0.19	3.62*	3.18*	0.03	-0.41			0.42	0.42	
Negative Effects of Problems and Challenges on Academic Performance[3]	Finances	79	38.2	-	45	28.9	-	67	30.0	-	32	21.8	-	2.63	2.51	4.70*	0.34	1.99	2.49			0.36			
	Family	166	51.9	-	73	45.1	-	136	52.7	-	130	51.6	-	1.99	0.28	0.10	2.15	1.83	0.36						
	Health of someone close	153	38.5	-	71	35.7	-	105	34.1	-	92	25.8	-	0.95	1.71	5.30*	0.53	3.45	3.31			0.27			
	Food concerns	11	35.5	-	13	29.5	-	13	28.3	-	4	18.2	-	0.77	0.95	1.90	0.19	1.33	1.19						
	Violence in neighborhood	14	25.5	-	14	21.2	-	9	18.0	-	2	8.0	-	0.78	1.27	2.60	0.57	2.06	1.54						
	Bullying	35	36.1	-	21	47.7	-	27	48.2	-	33	35.9	-	1.84	2.06	0.04	0.07	1.85	2.08						
	Cyberbullying	28	31.1	-	17	51.5	-	17	47.2	-	26	36.1	-	2.88	2.37	0.95	0.49	2.08	1.56						
	Microaggression	88	20.5	-	51	29.3	-	33	20.2	-	18	16.5	-	3.23	0.06	1.28	2.72	3.50	1.06						
	Discrimination	85	28.8	-	54	38.3	-	34	25.2	-	24	27.6	-	2.79	1.08	0.27	3.31	2.34	0.58						
Overall Level of Stress	N/A	1,238	-	2.33	531	-	2.09	701	-	2.31	962	-	2.26	6.43***	0.41	2.07	-5.47***	-4.53***	1.40	0.33			-0.29	-0.23	

Notes:

1. For multiple comparisons involving proportions, studentized range statistics (Q) are provided. For comparisons involving means, t statistics are provided. Statistical significance is denoted as *$p < .05$, **$p < .001$, or ***$p < .0001$.
2. Effect sizes are provided only for statistically significant comparisons.
3. Counts for the response categories of "negatively affected my academic performance" and "delayed my progress towards graduation" were summed to compute the percentages for this question.

Table A2. Comparison Statistics, by Survey Question and Gender

		Female			Male				
Survey Question	**Issue**	**N[1]**	**Pct**	**Mean**	**N**	**Pct**	**Mean**	**Test Statistic[2]**	**Effect Size[3]**
Frequency of problems and challenges	Finances	638	22.3	-	217	15.8	-	20.17***	0.16
	Family	901	32.8	-	252	20.8	-	54.95***	0.27
	Health of someone close to me	1,075	41.3	-	398	34.6	-	14.86***	0.14
	Food concerns	119	3.9	-	59	4.9	-	1.97	
	Violence in my neighborhood	173	5.2	-	72	5.3	-	0.01	
	Bullying	259	10.6	-	101	9.3	-	1.59	
	Cyberbullying	193	7.7	-	95	8.3	-	0.40	
	Microaggression	804	20.6	-	237	15.3	-	14.51**	0.14
	Discrimination	581	15.7	-	213	13.9	-	2.04	
Extent of distress caused by problems and challenges	Finances	619	-	1.70	209	-	1.63	1.17	
	Family	865	-	2.02	240	-	2.03	-0.17	
	Health of someone close to me	1,040	-	1.96	382	-	1.87	1.82	
	Food concerns	110	-	1.42	54	-	1.33	0.58	
	Violence in my neighborhood	165	-	1.55	69	-	1.48	0.61	
	Bullying	248	-	1.74	94	-	1.67	0.65	
	Cyberbullying	185	-	1.78	89	-	1.64	1.36	
	Microaggression	773	-	1.61	222	-	1.48	2.00*	0.18
	Discrimination	557	-	1.80	199	-	1.78	0.38	
Negative Effects of Problems and Challenges on Academic Performance	Finances	158	23.8	-	79	33.3	-	5.90*	-0.21
	Family	428	52.3	-	115	46.7	-	2.18	
	Health of someone close to me	340	30.7	-	130	28.8	-	0.43	
	Food concerns	26	24.9	-	20	29.2	-	0.29	
	Violence in my neighborhood	25	14.1	-	16	18.0	-	0.43	
	Bullying	95	40.3	-	39	41.1	-	0.02	
	Cyberbullying	60	35.9	-	36	43.3	-	1.35	
	Microaggression	159	21.6	-	51	20.5	-	0.10	
	Discrimination	157	30.0	-	63	32.9	-	0.39	
Overall Level of Stress	N/A	2,577	-	2.36	1,147	-	1.98	14.86***	0.53

Notes:

1. N-counts in this table are unweighted. Percentages and means are weighted to reflect the sampling design.
2. For comparisons involving proportions, chi-square statistics are provided. For comparisons involving means, *t* statistics are provided. Statistical significance is denoted as *$p < .05$, **$p < .001$, or ***$p < .0001$.
3. Effect sizes are provided only for statistically significant comparisons.

About the Author

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Jeff Schiel, a lead research scientist on ACT's applied research team, specializes in the design and methodology of surveys and survey sampling. He has held several positions at ACT, one of which was director of survey research. Prior to that, he led survey-related work at the University of Colorado Boulder.

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Notes

[1] A stratified, random sample of 33,000 students nationwide who had recently registered for the April 2021 National ACT test was used for this study. Asian students, Black students, and Hispanic/Latino students were oversampled to ensure sufficient numbers of respondents for racial/ethnic group analyses. The sample contained mostly 11th-grade students (63%) but contained 10th- and 12th-grade students as well (10% and 28%, respectively; percentages are rounded).

Many of the survey questions asked of students were used with the permission of the American College Health Association, which annually administers such questions to college students in their National College Health Assessment instrument. Five of the issues described in the questions had definitions or examples provided to help ensure interpretive consistency across respondents. These issues and their definitions or examples are listed below.

Food concerns: worrying that my food would run out before I got money to buy more.

Bullying: making threats, spreading rumors, physical or verbal attacks, or excluding someone from a group.

Cyberbullying: use of technology to harass, threaten, embarrass, or target another person.

Microaggression: a subtle but offensive comment or action directed at a minority or other non-dominant group, whether intentional or unintentional, that reinforces a stereotype.

Discrimination: the unjust or prejudicial treatment of a person based on the group, class, or category to which the person is perceived to belong.

The other four issues (finances, family, health of someone close to me, and violence in my neighborhood) did not include definitions or examples. Students could affirm and briefly describe another issue, of their choosing, in addition to the nine listed on the survey instrument. Sixty-seven students elected to do this, and half of them described an issue related to mental health (e.g., anxiety, depression, stress). Some of the other issues that students described pertained to the recent pandemic and/or its byproducts (hybrid learning, remote learning, mask wearing), preparing for the ACT test, and physical health.

[2] Where appropriate, statistics are weighted to reflect the study's sampling design.

[3] Data were analyzed separately for students from four racial/ethnic groups: Asian, Black, Hispanic/Latino, and White. Too few students of other races/ethnicities responded to the survey to permit separate analyses for them.

[4] When student gender is collected at the time of registering for the ACT test, the response options include "another gender" and "prefer not to respond." Too few of the students who responded to the survey chose either of these options to allow further disaggregation of the results.

[5] This finding is somewhat similar to one observed in another study, in which Hispanic/Latino students reported significantly higher rates for family stressors than did White students (de Anda, Baroni, Boskin, Buchwald, Morgan, Ow, Siegel Gold, & Weiss, 2000).

[6] For multiple comparisons involving proportions, either studentized range statistics (Q, for comparisons by race/ethnicity) or chi-square statistics (X^2, for comparisons by gender) are provided. Generally accepted guidelines for interpreting effect sizes (ES) for differences between proportions are: An effect size (in absolute value) of 0.20 or less is small, 0.21-0.49 is small-to-medium, 0.5-0.79 is medium-to-large, and 0.80 or more is large. In general, only statistically significant comparisons are described in the body of this brief. For statistics on all comparisons, see Tables A1 and A2 in the appendix.

[7] The generally accepted guidelines for interpreting effect sizes for differences between means are similar to those for effect sizes for differences between proportions: An effect size (in absolute value) of 0.20 or less is small, 0.21-0.49 is small-to-medium, 0.5-0.79 is medium-to-large, and 0.80 or more is large.

[8] Only the difference for finances was statistically significant.

[9] White students reported a significantly greater degree of stress than did Black students in another study (de Anda et al., 2000).

[10] Most of the students who participated in this study (95%) took the ACT test in April 2021, and their survey responses were matched to their ACT test records. Student background characteristics included race/ethnicity; grade level; gender; expected educational attainment; high school GPA; having taken math courses beyond Algebra II; having taken biology, chemistry, and physics; highest level of parental education; and geographical area of the student's school (e.g., urban, rural). All these characteristics, except school geographical area, were self-reported. Additional variables were examined (e.g., family income level, public vs. private school, level of affluence of the school), but they did not meet criteria for being included in the models. Standard statistical methods for imputing missing data were used to ensure that data from all 3,720 ACT-tested students were included in the analysis.

[11] See, for example, Forrest-Bank and Jenson (2015b). These authors observed an inverse relationship between racial microaggressions and academic self-efficacy in college students. Other research (Keels, Durkee, & Hope, 2017) showed that educational contexts in which microaggressions are prevalent negatively affect college students' academic achievement. Although not supported by the findings of the present study, it seems plausible that a similar relationship could exist for high school students and that more frequent occurrences of microaggressions would be related to lower ACT test performance.

[12] Student background characteristics in the high school GPA models included race/ethnicity; grade level; gender; expected educational attainment; having taken math courses beyond geometry or having taken biology, chemistry, and physics; and highest level of parental education.

[13] One study of adolescents' stressors found that those reported to be experienced most often were connected with the school environment, either directly or indirectly (de Anda et al., 2000).

[14] For examples of articles describing increases in abuse and hate crimes see Cabral (2021) and McDevitt (2021).

[15] Of the nine issues presented to students in the survey, seven overlap with those in the National College Health Assessment III.

[16] For an example of a study that describes how Black students developed strategies to manage racial microaggressions and achieve academic success, see Carter Andrews (2012).