



# Disruptions and Gains: Students' Reflections on the Effects of the Pandemic

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## Introduction

In the spring of 2020, the COVID-19 pandemic brought unprecedented disruptions of education to students throughout the U.S. Many schools across the country experienced closures and a rapid shift to online learning (Anand & Bhatia, 2021). Concerns about how the pandemic might negatively affect students' learning have been raised as a result. Not surprisingly, several studies have documented high school students' academic performance decline (e.g., Allen, 2021; Kogan & Lavertu, 2022). According to data released by ACT (ACT, 2022), the national average ACT<sup>®</sup> Composite scores have continued to decline during the pandemic, and the score for the high school class of 2022 was the lowest average score in more than three decades. It is worrisome that only 22% of students from the class of 2022 met all four ACT College Readiness Benchmarks (i.e., English, mathematics, reading, science), while 42% of students did not meet any Benchmark. Moreover, the disruptions occurred not only in academic learning, but also in other aspects of students' education. They had fewer opportunities to interact with their friends in person or engage in extracurricular activities than in pre-pandemic times, and many students experienced negative effects on their mental health and social and emotional learning during the first year of the pandemic (Hamilton & Gross, 2021).

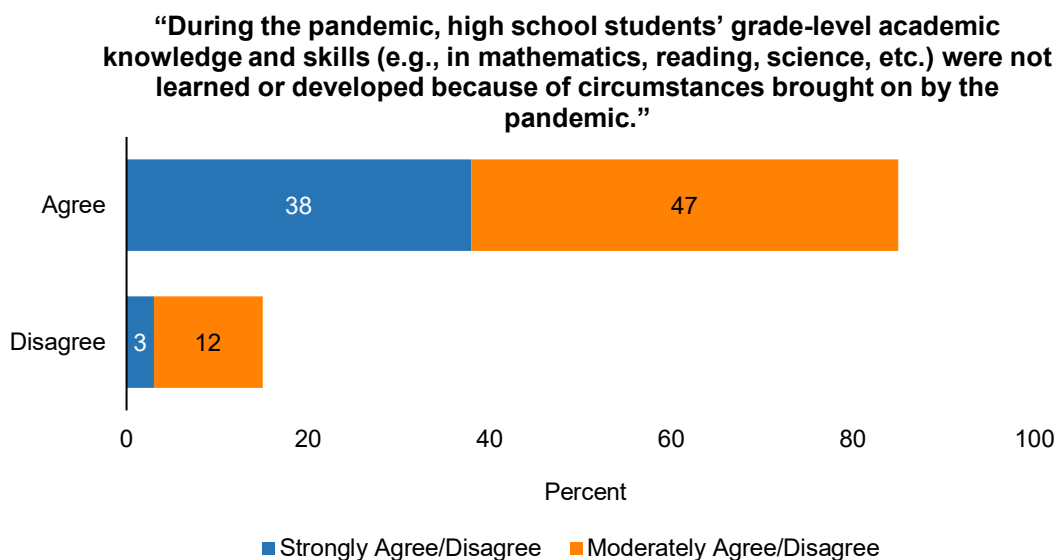
While data objectively showed the disruptions to education brought by the pandemic, what were students' subjective perceptions of the unexpected changes? If they looked back to the first year of the pandemic, what did they think of the effects of the pandemic? Did they agree there was disruption in their learning? Was there anything that they learned from the pandemic? What supports did they receive at that time and how did those supports relate to the disruptions and gains? These are all interesting questions to explore, the answers to which could provide valuable information about the changes that high school students experienced during the pandemic as well as clues for how to support these students in the future.

To understand students' perspectives of the pandemic's effects on their learning, in December 2021, a random sample of high school students who took the ACT test in December 2021 were invited to participate in a survey study (see Appendix for more details on the sample). The purpose of this study was to learn about students' perceptions of how the pandemic affected various aspects of their learning when they reflected on its first year (March 2020 to March 2021), including what was disrupted and what they had learned from their experiences during that time. This issue brief shares what was learned from 1,893 high school students' survey responses and provides insights into what educators could do to better support students as the pandemic is waning and these students are heading toward the next phase of their education and career journeys.

## Most students agreed that their academic learning was disrupted by the pandemic

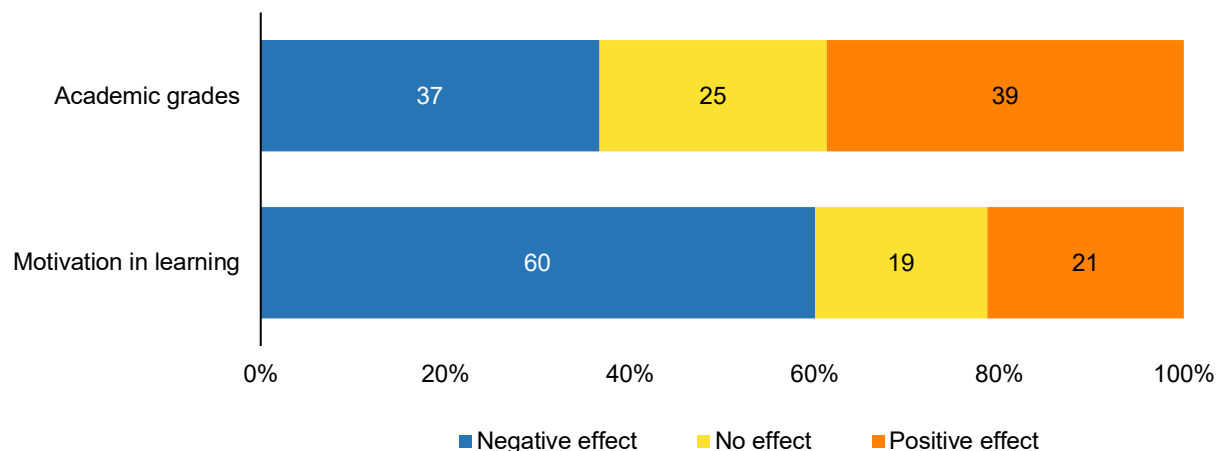
Test score data have shown students' academic performance declined during the pandemic (Moscoviz & Evans, 2022). To learn about students' perceptions of whether their learning was disrupted during the pandemic, the surveyed students were asked if they agreed with the statement "During the pandemic, high school students' grade-level academic knowledge and skills (e.g., in mathematics, reading, science, etc.) were not learned or developed because of circumstances brought on by the pandemic." Most students (85%) (Figure 1) strongly or moderately agreed with this statement, indicating they admitted that their academic learning was disrupted by the pandemic, whereas a small proportion (15%) of respondents disagreed (moderately or strongly) with the statement.

**Figure 1.** Percentages of Students Who Agreed or Disagreed With the Learning Disruption Statement



Moreover, students also rated the extent to which the pandemic had an effect on their academic grades and motivation to learn during its first year. They marked the effect using a scale from -4 to 4, with a negative score indicating a decrease or loss and a positive score indicating an increase or gain.<sup>1</sup> Many surveyed students reported a negative effect of the pandemic on their academic learning (Figure 2). For academic grades, more than one third of students (37%) indicated that they struggled with their academic grades during the first year of the pandemic. Along with the decrease in academic grades, motivation to learn was another challenge that many students faced. Motivation is an important factor that influences learning outcomes, and it is strongly correlated with students' success and engagement in online learning (Rahman, et al., 2021). In this study, a large proportion of students (60%) reported that the pandemic had a negative effect on their motivation to learn, which made them less motivated to learn compared to pre-pandemic times.

**Figure 2.** Percentages of Students Reporting the Effects of the Pandemic on Academic Grades and Motivation to Learn



*Note.* Percentages do not add up to 100% due to rounding.

Although most students implied that they struggled with their academic grades and/or motivation in learning, there was a small percentage of students who did not consider the pandemic to have had a negative effect on their academic learning. About 39% of respondents rated the effect of the pandemic on their academic grades as positive, and 21% reported that the pandemic made them more motivated to learn. It is interesting that students' ratings of the pandemic's effect on their academic learning was associated with their opinion on the learning disruption statement. Students who rated the pandemic as having had a positive effect on their academic grades were more likely to disagree with the learning disruption statement, while students who reported the pandemic had a negative effect on their academic grades were more likely to agree with the learning disruption statement.<sup>2</sup> The same was true for motivation to learn. Students who reported that the pandemic had a positive effect on their motivation to learn were more likely to disagree with the learning disruption statement, while students who rated the pandemic as having a negative effect on their motivation were more likely to agree with the learning disruption statement.<sup>3</sup>

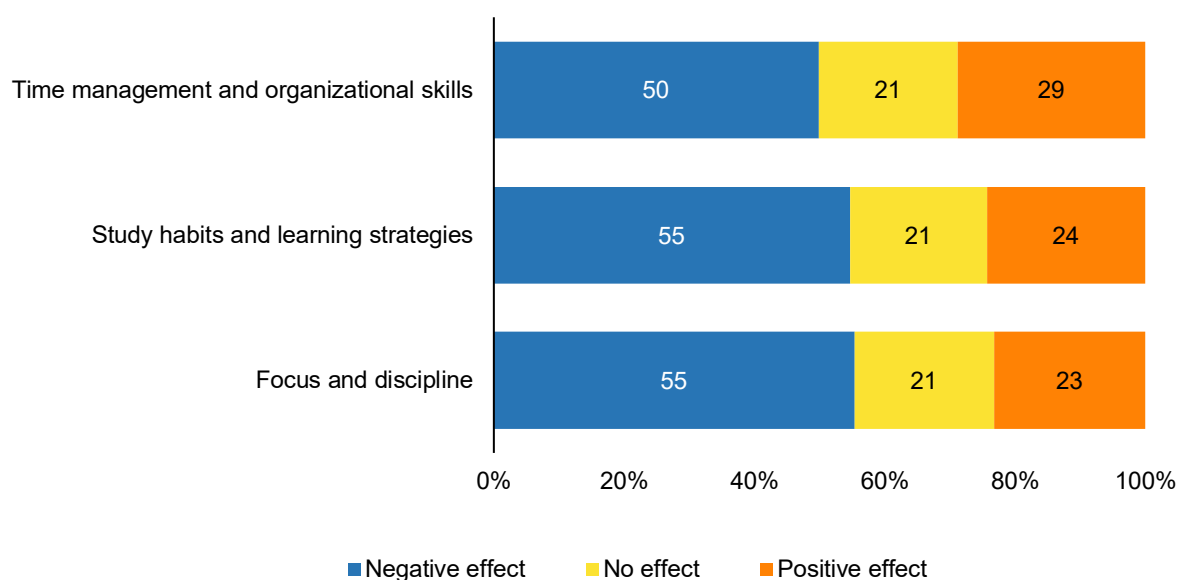
## Students' other aspects of learning were disrupted as well

In addition to academic knowledge and skills, high school is a critical time for students to learn and develop other skills, such as skills in the domains of social-emotional and career development (ASCA, 2021). This study also investigated whether students' other aspects of learning were disrupted by the pandemic. The surveyed students were provided with a list of items from various social and emotional and college/career planning aspects of education that were relevant to students' learning and development in high school. From students' responses, it was clear that their learning and development were also disrupted to some extent in the following aspects of learning.

## Self-management

Self-management skills, such as balancing multiple demands and being self-disciplined, are fundamental for students' education and career success (ASCA, 2021). With the transition to online learning during the first year of the pandemic, these skills became more important as students needed to take on more responsibilities related to managing their own learning. It is necessary to investigate whether students considered the pandemic to have a positive or negative effect on these skills and whether they made progress in developing these skills when facing changes to their education. In the survey, students were asked to rate to what degree the pandemic improved or worsened their time management and organizational skills, study habits and learning strategies, and focus and discipline, using a scale from -4 to 4.<sup>1</sup> The results showed that more than half of the students perceived the pandemic as having a negative effect on their self-management skills during its first year. Half of the students reported that the pandemic worsened their time management and organizational skills. More than half of the students (55%) indicated that their study habits and learning strategies were worsened. Also, 55% of students felt that the pandemic decreased their focus and discipline during its first year. Previous research has suggested that distractions, lack of routines, and lack of skills to manage school tasks hindered students from dealing with remote learning (Hačatrljana, 2021).

**Figure 3.** Percentages of Students Reporting the Effects of the Pandemic on Self-Management Items



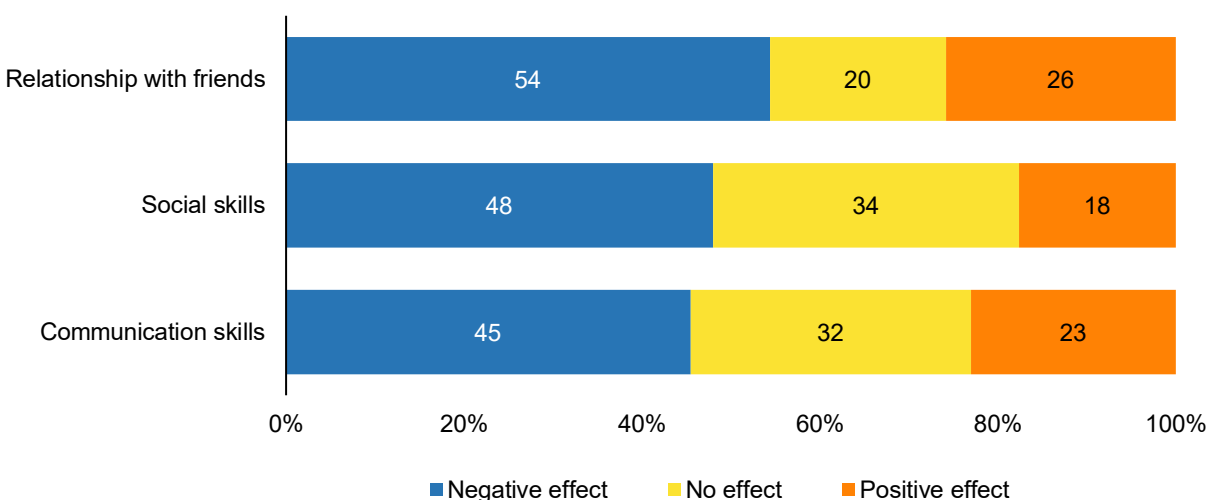
*Note.* Percentages do not add up to 100% due to rounding.

## Socializing

Due to school closures and the transition to online learning, students' socializing was affected as well. Limited in-person learning made it hard for schools to help students develop their social skills (Hamilton & Gross, 2021). In this survey, students were asked to rate the effect of the pandemic on their socializing during its first year, including whether their relationships with

friends became closer or more distant and whether their social skills and communication skills had improved or worsened. Students answered these items using a scale from -4 to 4.<sup>1</sup> More than half of the surveyed students indicated that their socializing was negatively affected by the pandemic (Figure 4). Over half (54%) reported that the pandemic had a negative effect on their relationships with friends in its first year. Also, almost half of the students rated the pandemic's effects on their social skills (48%) and communication skills (45%) as negative. This finding was consistent with the results of a previous study, in which students shared their struggles related to loss of friendship and communication with others during the first year of the pandemic (Karaman et al., 2021). In other studies involving educators, surveyed teachers also expressed their concerns that students fell behind in their social and emotional development (Hamilton & Gross, 2021).

**Figure 4.** Percentages of Students Reporting the Effects of the Pandemic on Socializing Items

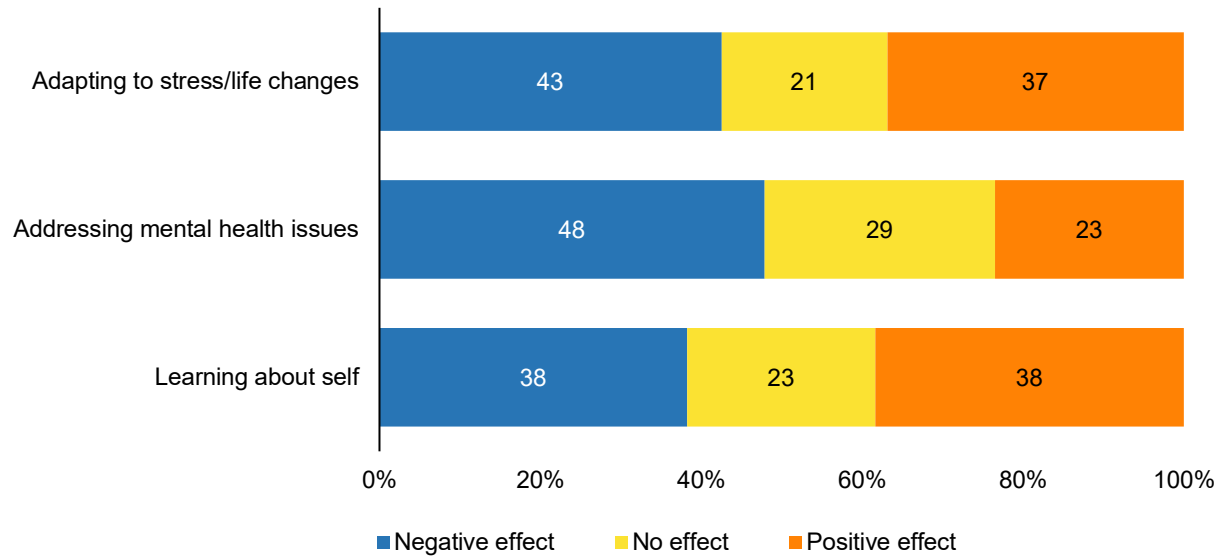


## Resilience

Even prior to the pandemic, high levels of stress were common among some high school students, including stress related to academic performance and education/career choices (Acosta-Gómez et al., 2018). One important role of high school counselors is to use comprehensive programs to promote students' abilities to function adaptively in the context of risk or stress and develop a realistic positive sense of self, also known as resilience (Caldarella et al., 2019). The unexpected changes due to the pandemic could have negative consequences on students' mental health. However, with the decreased access to school counselors due to school closures (Anand & Bhatia, 2021), students could have lost opportunities to learn and build resilience. To learn about the effects of the pandemic on students' development of resilience, they were asked to what extent they successfully or unsuccessfully adapted to stress or life changes, addressed mental health issues, and learned more about themselves or, conversely, lost themselves in the first year of the pandemic. Students responded to these items using a scale from -4 to 4.<sup>1</sup> According to their responses (Figure 5), almost half (48%) indicated the pandemic had a negative effect on their abilities to address mental health issues. Also, 43% of students reported that they were unsuccessful in adapting to stress or life changes. Over one-

third of students (38%) reported that they lost themselves to some degree in the first year of the pandemic, instead of learning more about themselves and developing a realistic positive sense of self. Many studies have documented the pandemic's negative effect on students' mental health and well-being (Hamilton & Gross, 2021). Without enough guidance on developing resilience, it would be difficult for students to adapt to the changes and deal with mental health issues.

**Figure 5.** Percentages of Students Reporting the Effects of the Pandemic on Resilience Items

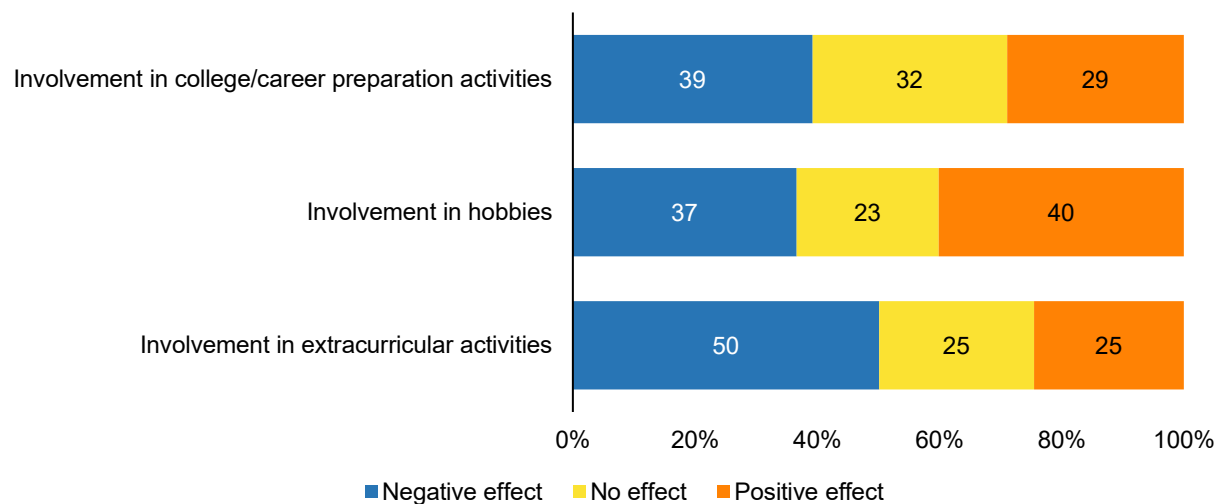


*Note.* Percentages do not add up to 100% due to rounding.

## College/career exploration

High school is a critical time for students to explore and plan for postsecondary education and/or future career. Students participate in various opportunities, such as extracurricular activities, to explore their personal attributes (e.g., interests, values) and gather information about the professional world (Denault et al., 2019). To understand how the pandemic affected students' college/career exploration during its first year, students were asked to rate to what extent they were more or less involved in college/career preparation activities, hobbies, and extracurricular activities, using a scale from -4 to 4.<sup>1</sup> Although the percentages of students who indicated the pandemic's negative effect on college/career exploration were not as high as those who reported the negative effect on social and emotional skills, there was still a big proportion of students whose education and career exploration opportunities were disrupted. Half of the students reported that they had less involvement in extracurricular activities in the first year of the pandemic. More than one-third of the students indicated that their involvement in college/career preparation activities (39%) and in hobbies (37%) was less as well. It was likely that school closures led to fewer school-based opportunities for college/career preparation and extracurricular activities, and some students might have faced additional responsibilities at home (Croft et al., 2020) so that they did not have enough time to engage in college/career exploration activities.

**Figure 6.** Percentages of Students Reporting the Effects of the Pandemic on College/Career Exploration Items



## Despite the disruptions, students reflected on their gains during the pandemic

Although most students experienced challenges and obstacles in different aspects of learning, they at the same time reported multiple gains when they reflected on their learning during the first year of the pandemic (Figure 7). First, with the transition to online learning, students had more opportunities to engage with digital/online tools in learning. It was not surprising that students perceived that they became better at using these tools. Six out of ten (61%) students indicated that their abilities to use digital/online tools for learning improved, a gain in the pandemic.

Second, learning online required students to be more independent (Kusumaningrum, et al., 2020). About 62% of students reported that they became more independent or self-reliant during the first year of the pandemic. It is interesting that although many students perceived the pandemic as having a negative effect on their self-management skills, they at the same time felt they became more independent or self-reliant. Students learned to rely more on themselves and try to fulfill their responsibilities in learning after the pandemic started, but many of them seemed to need guidance on planning and organizing their time and tasks.

Additionally, going through a tough first year of the pandemic, many students had more appreciation for their education and/or teachers. Among the surveyed students, 42% felt the pandemic had a positive effect on how much they appreciated their education. More than half (52%) reported that they had more appreciation for their teachers. In an open-ended question, students expressed appreciation for their educators. They said:

*“The educators in my school continued to do the best within their ability to further educate us despite numerous changes in the 2020–2021 school year and it makes me appreciate the hard work they are putting in to continue helping us then and now.”*



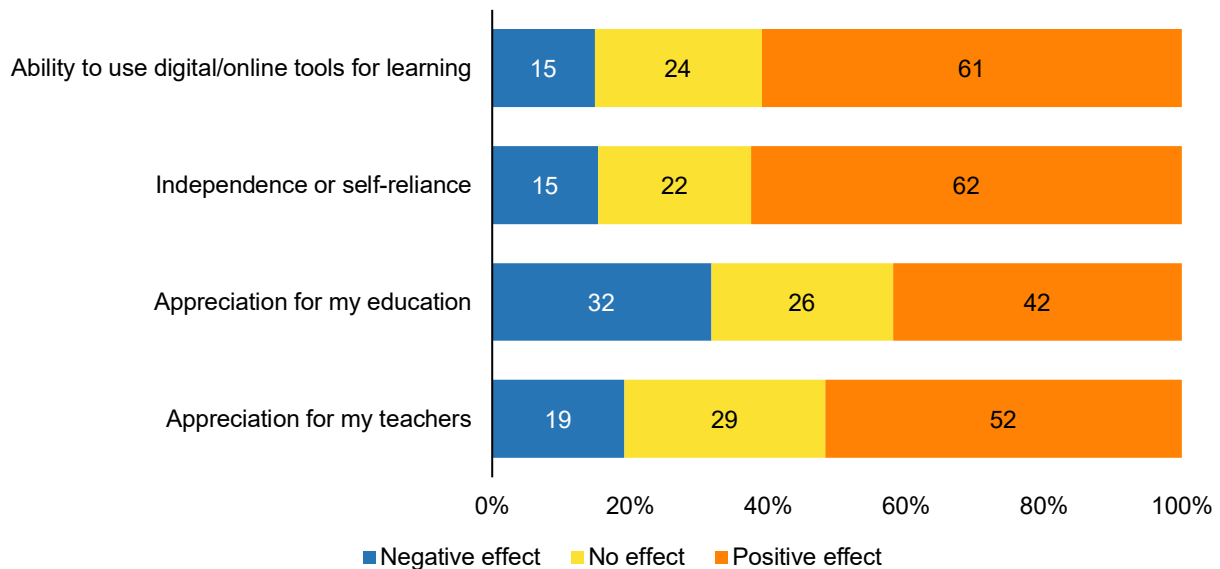
*“Even through the rough year we have all had, they try and find ways to keep the classroom in a safe, happy learning environment to keep us more motivated on schoolwork.”*

*“They have worked one-on-one with me on things I still need help with. They worked hard to make sure no one fell behind.”*

*“Our teachers have made us feel so supported and loved that it helped so much. My teachers always made it very clear that they were here to help and make things easy.”*

*“My teachers where very helpful and they were very motivating when the pandemic was going on. They insured that we were ok and that we were provided with the learning we needed to succeed.”*

**Figure 7.** Percentages of Students Reporting the Effects of the Pandemic on Ability to Use Digital Tools for Learning, Independence, and Appreciation for Education and Teachers



*Note.* Percentages do not add up to 100% due to rounding.

Even though students experienced challenges and disruptions during the pandemic, when they looked back at their experiences, they recognized that they became more independent learners with better abilities to use digital tools for learning, and they had more appreciation for their educational opportunities and their teachers.

## Key factors related to fewer learning disruptions: school-based supports and in-person learning

While most students reported a negative effect of the pandemic on academic learning, self-management, socializing, resilience, and college/career exploration, for each of the items in these aspects of learning, a small proportion of students reported that the pandemic had a positive effect on them (ranging from 18% to 40% across these items) or no effect on them (ranging from 19% to 34% across these items). To explore the potential factors that could help

distinguish students who perceived the pandemic as having a negative effect and those who perceived it as having no effect or a positive effect on their learning, a series of ordinal logistic regressions were conducted, one for each aspect of learning (i.e., academic learning, self-management, socializing, resilience, and college/career exploration).<sup>4</sup> After controlling for other factors (e.g., race/ethnicity, grade level, family income, parental education level), two elements stood out, each of which were related to some aspect of learning disruptions during the first year of pandemic.

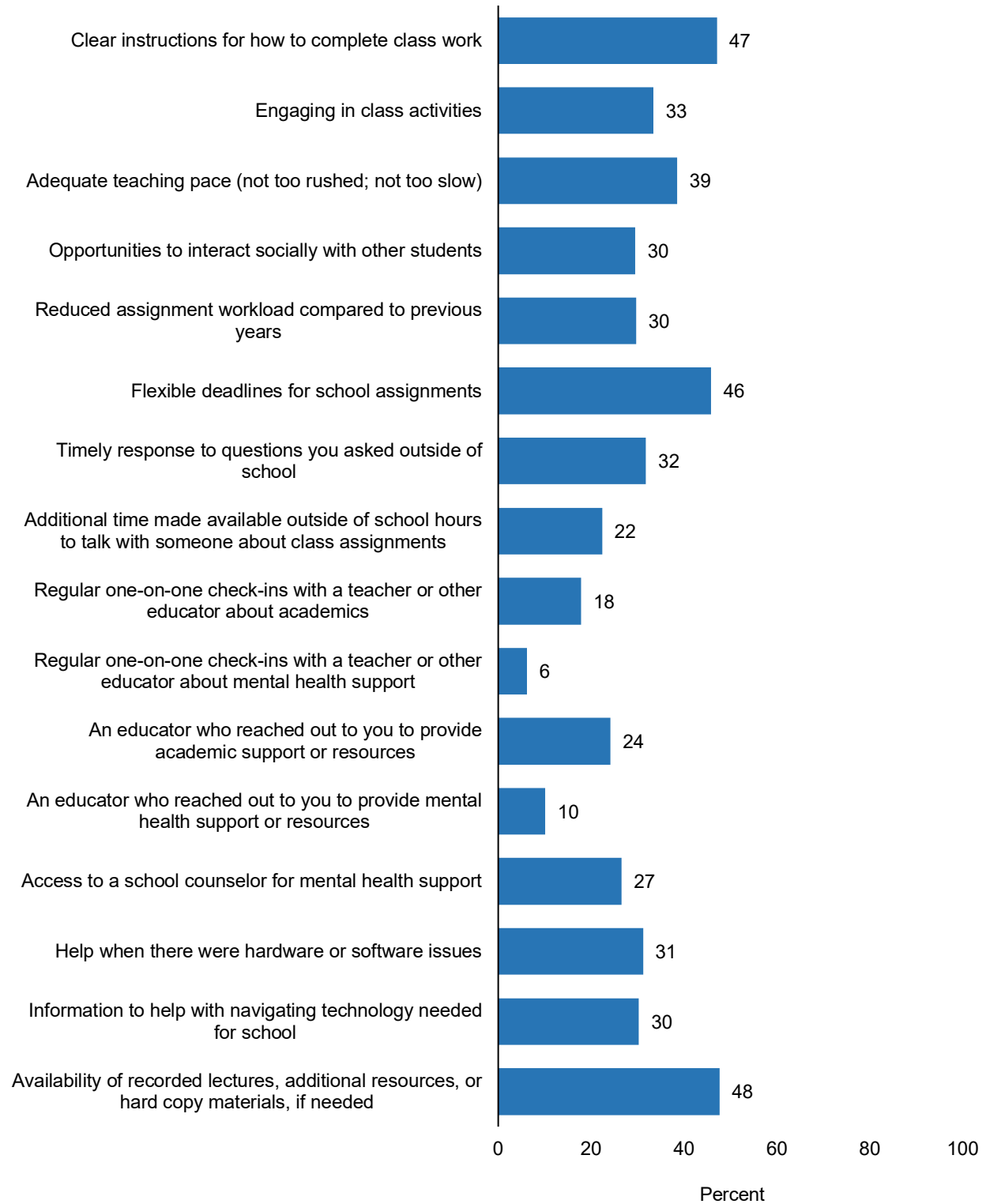
## School-based supports

The surveyed students were provided with a list of sixteen school-based supports<sup>5</sup> and were asked to indicate which ones they received during the first year of the pandemic. The responses showed that the number of supports students received varied at that time. One out of ten students (11%) indicated that they did not receive any of the listed supports from their schools during the first year of the pandemic. More than half (53%) of students received one to five supports, 28% of students received six to ten supports, and 8% of students received more than ten supports.

For each of the listed supports, less than half of students reported that they received it during the first year of the pandemic (Figure 8). Across all the supports, the three supports that were available to most students were “Availability of recorded lectures, additional resources, or hard copy materials, if needed” (48%), “Clear instructions for how to complete class work” (47%), and “Flexible deadlines for school assignments” (46%). In terms of instructional supports, about one out of four (39%) students reported that they had adequate teaching pace in class, and one third (33%) indicated they had engaging in-class activities. School-based supports outside of class time were also available to a small proportion of students, such as “Timely response to questions you asked outside of school” (32%) and “Additional time made available outside of school hours to talk with someone about class assignments” (22%). Some students had school-based supports on learning technology, including “Help when there were hardware or software issues” (31%) and “information to help with navigating technology needed for school” (30%). However, students seemed to have limited school-based supports related to mental health, as the two supports that received by fewest students were “Regular one-on-one check-ins with a teacher or other educators about mental health support” (6%) and “An educator who reached out to you to provide mental health support or resources” (10%).

Moreover, students were asked to indicate the school-based support(s) that were necessary for them to successfully learn during the first year of the pandemic using the same list. A gap existed if a student considered one support necessary but did not receive it during the pandemic. Seven out of ten students reported there was one or more school-based supports that they considered necessary for learning but did not receive at that time. The biggest gap was found in “Adequate teaching pace” (27%), “Clear instructions for how to complete class work” (23%), and “Reduced assignment workload compared to previous years” (22%).

**Figure 8.** Percentages of Students Reporting They Received School-Based Supports During the First Year of the Pandemic



*Note.* The total number of students who did not skip this question was 1,881.

School-based supports were essential for students' success in learning, especially in the online learning environment (Kauffman, 2015). The total number of school-based supports was related to whether students perceived that the pandemic had a negative effect on them or not. For all five aspects of learning (i.e., academic learning, self-management, socializing, resilience, and college/career exploration), a higher number of school-based supports was associated with a higher likelihood of students reporting the pandemic having no effect or a positive effect on them (versus a negative effect).<sup>6</sup> For every one extra support a student received, their odds of reporting the pandemic having a positive or no effect on them (versus a negative effect) was multiplied 1.10 times for academic learning, 1.08 times for self-management, 1.06 times for socializing, 1.13 times for resilience, and 1.09 times for college/career exploration, holding constant all other variables. In other words, receiving more school-based supports was related to a lower likelihood of being negatively affected by the pandemic.

Furthermore, factors that could explain the variation in the total number of school-based supports students received were investigated.<sup>7</sup> After holding other variables constant, students from low-income family backgrounds and students whose parent(s)/guardian(s) did not have any college experience were more likely to report fewer supports received during the first year of the pandemic. On the other hand, high school students from the class of 2023, who were in 9<sup>th</sup> grade during this time, were more likely to receive more supports compared to counterparts. Also, the amount of in-person learning a student received during the first year of the pandemic was positively related to the total number of school-based supports—the more in-person learning students had, the more school-based supports they received.

## In-person learning

Because of the pandemic, many surveyed students experienced an unexpected shift to online learning during its first year. A quarter of students learned only online, 16% learned mostly online, 26% had a mix of the two learning modes, 23% learned mostly in person, and 9% only learned in person during the first year of the pandemic.

As discussed before, more in-person learning was related to more school-based supports received during the first year of the pandemic.<sup>7</sup> In addition, the amount of in-person learning was also associated with whether or not students perceived the pandemic as having a negative effect on them, even when the total number of school-based supports and other variables were held constant. In three aspects of learning, including socializing, resilience, and college/career exploration, a higher amount of in-person learning was related to a higher likelihood of students reporting the pandemic as having no effect or a positive effect on them.<sup>8</sup> For every 1 unit increase in the amount of in-person learning, the odds of reporting the pandemic as having a positive or no effect on students (verse a negative effect) was multiplied 1.32 times for socializing, 1.11 times for resilience, and 1.20 times for college/career exploration. These findings indicated that more in-person learning was associated with less likelihood of a student perceiving the pandemic as having a negative effect on them. Other studies (e.g., Darling-Aduana et al., 2022; Jack et al., 2022) that focused on students' academic growth also found the positive correlation between the amount of in-person learning and students' test scores during the pandemic. Although it is too early to assume a causal relationship between learning mode and student's learning outcomes during the pandemic, it is likely that students who had more in-person learning experienced fewer disruptions in their schools. Opportunities such as

interactions with other students and participating in extracurricular activities might have allowed them to learn and develop in all aspects as they would have done without the pandemic.

## **Pandemic negatively affected some groups more than others**

To learn about whether students from specific groups were affected by the pandemic more than others, additional analyses were conducted to explore the disparities in students' ratings of the pandemic's effect. First, group factors that could help distinguish students who perceived the pandemic having a negative effect, no effect or a positive effect on their learning in the five aspects (i.e., academic learning, self-management, socializing, resilience, and college/career exploration) were investigated.<sup>4</sup> Second, group factors that could explain the variations in students' ratings in these five aspects were also explored.<sup>9</sup> Based on the results, two groups of students seemed to have more challenges: students whose parent(s)/guardian(s) had no college experience and students from the high school class of 2023.

The relationship between parental education level and student's academic achievement has been studied for a long time. Parents who have experienced higher education may be able to provide more effective involvement in their children's education than parents who have not by offering clearer assistance with schoolwork as well as communication regarding what has been taught at school (Farooq, et al., 2011). The pandemic and the consequent school closures were believed to bring more challenges to parents with lower education levels compared to their counterparts, such as financial constraints and lack of resources to support students' learning at home (Doyle, 2020). In this study, after holding other variables constant, being a student whose parents did not have any college experience was associated with a higher likelihood of being negatively affected by the pandemic in academic learning and resilience.<sup>10</sup> For students in this group, the odds of reporting the pandemic having a negative effect on their academic learning was 1.53 times that of their counterparts, and the odds of reporting the pandemic's negative effect on their resilience was 1.49 times that of their counterparts, controlling for all other variables. Furthermore, although being a student with neither parent(s)/guardian(s) having had any college experience was not a significant factor to predict whether the pandemic had a negative effect on socializing, it did help explain a significant proportion of variation in the rating of socializing.<sup>9</sup> After controlling for other variables, students in this group were more likely to have a lower average rating for socializing compared to other students. In other words, it was possible that students of all groups reported a negative effect of the pandemic on their socializing during its first year, but the degree of effect was worse for students whose parent(s)/guardian(s) had no college experience. These findings are consistent with some other studies, which also showed that the pandemic negatively affected students whose parents did not have any college education experience more than their peers (e.g., Bono, et al., 2020; Soria, et al., 2020).

Another group that seemed to have more difficulties during the first year of the pandemic was the students from the high school class of 2023. When the pandemic hit the U.S., this group was in their first year of high school. Even prior to the pandemic, the transition to high school already represented a challenging time for some students, who could experience academic struggles, uncertainty of new environments, and possible disruptions to social networks (Benner, 2011). With all the changes brought by the pandemic, the class of 2023 had to adapt more than a usual high school freshman would need to. In this study, after controlling for other variables, being a student in the class of 2023 was associated with a higher likelihood of being

negatively affected by the pandemic in self-management and resilience.<sup>11</sup> For students in the class of 2023, the odds of reporting the pandemic as having a negative effect on their self-management was 1.26 times that of students in other grade levels, and the odds of reporting the pandemic as having a negative effect on their resilience was 1.52 times that of students in other grade levels, holding constant all other variables.

## Discussion

Not surprisingly, when reflecting on their experiences during the first year of the pandemic, most high school students agreed that their academic learning was disrupted, admitting that academic knowledge and skills were not learned or developed due to the pandemic. Many of them also pointed out that they perceived their motivation to learn decreased as well during that period. In other studies, students shared similar frustrations in keeping themselves motivated after the pandemic started (Yan et al., 2021). Further, students' rating of the pandemic's effects on their motivation was related to their opinion on the learning disruption. Although the findings in the current study did not guarantee a causal relationship between motivation and perceptions of learning disruptions during the pandemic, other studies did find that motivation is an important factor that affects learning outcomes (Rahman, et al., 2021).

Another interesting point is that not as many students (37%) indicated that the pandemic had a negative effect on their academic grades compared to students reporting a negative effect on their motivation (60%). This might be due to the changes in grading policies that occurred to a large proportion of students during the pandemic (Anand & Bhatia, 2021). Examples of grading changes were changing to pass/fail and grades for completion. It is likely that without such changes, more students could have reported a negative effect on their academic grades. Also, with the evidence of grade inflation (Sanchez & Moore, 2022), the evaluation of students' academic learning disruption during the pandemic should not just be based on their grades, but also include other measures such as a standardized metric.

In addition to the disruptions in academic learning, students also perceived the disruptions of their skill building and development in other aspects, including self-management, socializing resilience, and college/career exploration. Similarities exist with other studies, in which students were found to experience disruptions in social and emotional learning and education/career planning (e.g., Hamilton & Gross, 2021; Karaman et al., 2021). With school closures, students had limited access to school services and programs, such as communication with school counselors and extracurricular activities (Anand & Bhatia, 2021). The lack of resources, guidance, and opportunities might interfere with students' learning and development in all aspects. Also, some students might shift their attention to deal with other challenges in life first, such as food insecurity and additional responsibilities at home (Croft et al., 2020).

While multiple studies have documented students' academic learning outcomes during the pandemic, more research is needed to gain precise knowledge on students' disruptions and gains related to social and emotional learning and education/career planning during the pandemic. Data that directly measured changes in these aspects would help educators and policy makers understand students' competencies, which will be the premise of designing solutions to help them close the gap if there is any.

The findings in this study suggested that school-based supports and in-person learning were related to fewer disruptions during the first year of the pandemic. Despite the resumption of in-person learning in most school districts, the listed supports in this study may still be helpful for students. Educators need to first assess students' needs and then offer personalized supports. Also, because more in-person learning was associated with more school-based supports and fewer learning disruptions, it is important for educators to learn about how much in-person learning each student received during the pandemic, especially for students who experienced transitions to high school or college. Students who had more online learning during the pandemic may need additional resources and supports if they perceived more disruptions of their learning.

Group differences existed in perceptions of learning disruptions during the pandemic. Students whose parent(s)/guardian(s) had no college experience reported more negative effects of the pandemic compared to counterparts, after controlling for other variables (i.e., race/ethnicity, family income, grade level, amount of in-person learning, ACT scores, and total number of school-based supports). When these students enter college, they will become first-generation college students. First-generation college students were found to have more challenges than their peers after the pandemic started, including financial hardships, food and housing insecurity, and mental health disorders (Soria, et al., 2020). To support this group of students moving forward, schools and educators need to expand supports and offer additional resources. Example practices include helping them find scholarship opportunities, offering career development resources, and providing accessible mental health services (Soria, et al., 2020).

Additionally, another group that reported more negative effects of the pandemic was students from the class of 2023. It is interesting that the class of 2023 was more likely to receive more school-based supports during the first year of the pandemic, but students in this class still seemed to experience more challenges than counterparts. When the pandemic started, this group of students were in their first year of high school. In addition to the adjustments that they had to make in academic learning and social-emotional wellbeing across the transition to high school (Benner, 2011), the pandemic introduced more unprecedented changes, which could have led to the negative perceptions of its effects. As the class of 2023 is about to enter college, more efforts need to be made to collect information about their concerns and address their needs in college preparation, promoting a successful transition to college.

Despite the disruptions, students in this study also shared their gains. Their abilities of using digital/online tools for learning improved, and they became more independent or self-reliant during the first year of the pandemic. Also, the challenging experiences made them more appreciative of their teachers and education. Moving forward, educators could keep students' gains in mind when designing learning activities. For example, digital/online tools, if used appropriately, could increase the effectiveness of education and engagement of students (Mağosa, 2013). As students have become more capable of using these learning technologies, it could be beneficial to include them in learning activities, even during in-person instructions. Similarly, since students perceived themselves as more independent in their learning, educators could keep encouraging them to take more responsibility in their learning and offering flexibility to motivate students.

One limitation of this study is that the data were collected in the second year of the pandemic, asking students to reflect on the effects of pandemic during its first year. As the pandemic is waning and students have returned to the classroom, the findings could have shifted. More research studies are needed to explore students' experiences during the second year of the pandemic, how students are recovering from the disruptions after they returned to school, and how educators could help them to close the gap.



## Appendix

The focus of this survey project was on high school students' perceptions and reflections on their learning disruptions and gains during the pandemic (Spring 2020 to Fall 2021). The questions for this study were developed based on a pilot survey study of high school students administered in September 2021. This report summarized the findings on students' perceptions and reflections on their learning experiences in the first year of the pandemic (Spring 2020 to Spring 2021).

The target population was 10<sup>th</sup>–12<sup>th</sup>-grade high school students who registered for the ACT national test in December 2021. The sampling frame ( $n = 113,609$ ) excluded students who opted out of ACT communications. A random sample of 31,500 students were selected from the sampling frame and invited to participate in the online survey study. The survey opened on December 11, 2021, and closed on December 24, 2021. A total of 4,296 students answered at least one of the questions in the survey. Among them, 1,893 students answered all the required questions, which was used as the analytical sample (response rate of 6.0%).

The unweighted sample respondents were 66% female, 33% male, and 1% other gender or did not report their gender. Also, 11% of respondents were in 10<sup>th</sup> grade (the class of 2024), 49% in 11<sup>th</sup> grade (the class of 2023), and 41% in 12<sup>th</sup> grade (the class of 2022) at the time of the survey administration (December 2021). Additionally, they were 19% Black; 22% Latinx; 29% White; 20% Asian; 6% Native American, Native Hawaiian/Other Pacific Islander, or two or more races/ethnicities; and 4% did not report their race/ethnicity. In terms of family income, 17% of respondents came from families with low-income backgrounds whose annual family income was less than \$36,000, and 24% did not report their annual family income. In terms of parental education level, 18% of respondents reported that neither parent(s)/guardian(s) had any college experience; 16% reported their parent(s)/guardian(s) had some college experience, but neither had earned a bachelor's degree from a four-year institution; 55% reported at least one of their parent(s)/guardian(s) had earned a bachelor's degree from a four-year institution; and 10% did not report the education level of their parent(s)/guardian(s).

Normalized weights were used to complete the analyses to compensate for the differences in sample size and over-representation of respondents from subgroups.

## References

- ACT. (2022, October 12). *Average ACT score for the high school class of 2022 declines to lowest level in more than 30 years.* <https://leadershipblog.act.org/2022/10/GradClassRelease2022.html>
- Acosta-Gómez, M. G., De la Roca-Chiapas, J. M., Zavala-Bervena, A., Cisneros, A. E. R., Pérez, V. R., Rodrigues, C. D. S., & Novack, K. (2018). Stress in high school students: A descriptive study. *Journal of Cognitive Behavioral Therapy, 1*(1), 1–10.
- Allen, J. (2021). *Have ACT scores declined during the COVID-19 pandemic? An examination of fall state and district testing data.* ACT. <https://www.act.org/content/dam/act/unsecured/documents/2021/COVID-Impact-Fall-ACT-State-and-District-2021-5.pdf>
- Anand, S., & Bhatia, T. (2021). COVID-19 pandemic: Challenges among rising high school seniors, class of 2021 and effect on stress regarding college admissions. *Journal of Student Research, 10*(1).
- American School Counselor Association. (2021). *ASCA student standards: Mindsets & behaviors for student success.* <https://www.schoolcounselor.org/getmedia/7428a787-a452-4abb-afec-d78ec77870cd/Mindsets-Behaviors.pdf>
- Benner, A. D. (2011). The transition to high school: Current knowledge, future directions. *Educational Psychology Review, 23*(3), 299–328.
- Bono, G., Reil, K., & Hescocx, J. (2020). Stress and wellbeing in college students during the COVID-19 pandemic: Can grit and gratitude help? *International Journal of Wellbeing, 10*(3), 39–57. <https://doi.org/10.3389/fpsyg.2021.647975>
- Caldarella, P., Millet, A. J., Heath, M. A., Warren, J. S., & Williams, L. (2019). School counselors use of social emotional learning in high school: A study of the strong teens curriculum. *Journal of School Counseling, 17*(19), n19.
- Croft, M., Moore, R., Guffy, G., Hayes, S., Gragnaniello, K., & Vitale, D. (2020). *High school students' experiences in March during the coronavirus pandemic.* ACT. <https://www.act.org/content/dam/act/unsecured/documents/R1841-covid-insights.pdf>
- Darling-Aduana, J., Woodyard, H. T., Sass, T. R., & Barry, S. S. (2022). Learning-mode choice, student engagement, and achievement growth during the COVID-19 pandemic. *AERA Open, 8*, 23328584221128035.
- Denault, A. S., Ratelle, C. F., Duchesne, S., & Guay, F. (2019). Extracurricular activities and career indecision: A look at the mediating role of vocational exploration. *Journal of Vocational Behavior, 110*, 43–53.

- Doyle, O. (2020). COVID-19: Exacerbating educational inequalities. *Public Policy*, 1–10.
- Farooq, M. S., Chaudhry, A. H., Shafiq, M., & Berhanu, G. (2011). Factors affecting students' quality of academic performance: a case of secondary school level. *Journal of Quality and Technology Management*, 7(2), 1–14.
- Hačatrijana, L. (2021). Ability to deal with it: Self-management and problem-solving skills, motivation and routines helped high-school students during the COVID-19 pandemic. *Human, Technologies and Quality of Education*, 125.
- Hamilton, L., & Gross, B. (2021, August). *How has the pandemic affected students' social-emotional well-being? A review of the evidence to date*. Center on Reinventing Public Education. <https://files.eric.ed.gov/fulltext/ED614131.pdf>
- Karaman, M. A., Eşici, H., Tomar, İ. H., & Aliyev, R. (2021). COVID-19: Are school counseling services ready? Students' psychological symptoms, school counselors' views, and solutions. *Frontiers in Psychology*, 12, 647740.
- Kauffman, H. (2015). A review of predictive factors of student success in and satisfaction with online learning. *Research in Learning Technology*, 23.
- Kogan, V., & Lavertu, S. (2022). *How the COVID-19 pandemic affected student learning in Ohio: Analysis of spring 2021 Ohio state tests*. Ohio State University, John Glenn College of Public Affairs. [https://glenn.osu.edu/sites/default/files/2021-10/210828\\_KL\\_OST\\_Final\\_0.pdf](https://glenn.osu.edu/sites/default/files/2021-10/210828_KL_OST_Final_0.pdf)
- Kusumaningrum, D. E., Budiarti, E. M., Triwiyanto, T., & Utari, R. (2020, October). The effect of distance learning in an online learning framework on student learning independence during the Covid-19 pandemic. In *2020 6th International Conference on Education and Technology (ICET)* (pp. 182–185). IEEE.
- Mąkosa, P. (2013). Advantages and disadvantages of digital education. *Biuletyn Edukacji Medialnej*, 2, 21–31.
- Moscoviz, L., & Evans, D. K. (2022). *Learning loss and student dropouts during the COVID-19 pandemic: A review of the evidence two years after schools shut down*. Center for Global Development. <https://www.ungei.org/sites/default/files/2022-04/learning-loss-and-student-dropouts-during-covid-19-pandemic-review-evidence-two-years.pdf>
- Rahman, M. H. A., Uddin, M. S., & Dey, A. (2021). Investigating the mediating role of online learning motivation in the COVID-19 pandemic situation in Bangladesh. *Journal of Computer Assisted Learning*, 37(6), 1513–1527.
- Sanchez, E. I., & Moore, R. (2022). *Grade inflation continues to grow in the past decade*. ACT. <https://www.act.org/content/dam/act/unsecured/documents/2022/R2134-Grade-Inflation-Continues-to-Grow-in-the-Past-Decade-Final-Accessible.pdf>

Soria, K. M., Horgos, B., Chirikov, I., & Jones-White, D. (2020). *First-generation students' experiences during the COVID-19 pandemic*. Student Experience in the Research University (SERU) Consortium. <https://hdl.handle.net/11299/214934>

Yan, L., Whitelock-Wainwright, A., Guan, Q., Wen, G., Gašević, D., & Chen, G. (2021). Students' experience of online learning during the COVID-19 pandemic: A province-wide survey study. *British Journal of Educational Technology*, 52(5), 2038–2057.

## Notes

<sup>1</sup> Students used a scale from -4 to 4 to rate the effect of the pandemic. A score of 0 means no effect, while a negative score means negative effect and a positive score means positive effect. In either the positive or negative direction, a score of 4 indicates the strongest effect and a score of 1 indicates the weakest effect.

<sup>2</sup> Non-parametric test (chi-square test of independence) was conducted and the difference between the three groups (i.e., students who rated the pandemic as having no effect, positive effect, or negative effect on their academic grades) was significant at a .05 alpha level, with  $X^2 = 54.636$ ,  $df = 2$ ,  $p$ -value  $< .01$ .

<sup>3</sup> Non-parametric test (chi-square test of independence) was conducted and the difference between the three groups (i.e., students who rated the pandemic as having no effect, positive effect, or negative effect on their academic grades) was significant at a .05 alpha level, with  $X^2 = 83.713$ ,  $df = 2$ ,  $p$ -value  $< .01$ .

<sup>4</sup> For each aspect, a mean score was calculated using scores of all the items in the aspect for each student. Figures 2-6 show the items containing in each aspect. Based on a student's mean score in an aspect, a new ordinal variable was created to show whether the pandemic was perceived as a negative effect, no effect, or a positive effect. A negative mean score was converted to the level of "negative", while a score of 0 was converted to the level of "none" and a positive mean score was converted to the level of "positive." Then an ordinal logistic regression was conducted for each aspect, with the ordinal effect variable (three levels: negative, none, positive) as the dependent variable, and race/ethnicity, family income, parental education level, grade level, amount of in-person learning, ACT scores, and total number of school-based supports received during the first year of the pandemic as the independent variables.

<sup>5</sup> The items in the list were created based on students' responses to an open-ended question in a pilot study. The open-ended question asked, "What do you wish educators at your school would have done to support your learning during the pandemic?" Thematic qualitative analysis procedures were used, and tentative categories were constructed. The school-based support items in this study were developed based on the main categories.

<sup>6</sup> Total number of school support was a significant positive factor in each ordinal logistic regression for the five aspects. The odds ratios (OR) and  $p$ -values for total number of school support in the five models were: 1) academic learning model: OR = 1.10,  $p < .01$ ; 2) self-management model: OR = 1.08,  $p < .01$ ; 3) socializing model: OR = 1.06,  $p < .01$ ; 4) resilience model: OR = 1.13,  $p < .01$ ; 5) college/career exploration model: OR = 1.09,  $p < .01$  model: OR = 1.10,  $p < .01$ .

<sup>7</sup> A multiple linear regression was conducted for the total number of school-based supports that students received during the first year of the pandemic, with race/ethnicity, family income, parental education level, grade level, amount of in-person learning during the first year of the pandemic as independent variables. Being a student from a low-income family background, being a student whose parent(s)/guardian(s) did not have any college experience, being a student in the class of 2023, and the amount of in-person learning were significant at a .05 alpha level, after controlling for other variables. Being a student from a low-income family background as well as being a student whose parent(s)/guardian(s) did not have any college experience was negatively related to the total number of supports received, while being a student in the class of 2023 and the amount of in-person learning were positively related to the total number of supports.

<sup>8</sup> Amount of in-person learning was a significant positive factor in three ordinal logistic regressions. The odds ratios (OR) and  $p$ -values for amount of in-person learning in the three models were: 1) socializing model: OR = 1.32,  $p < .01$ ; 2) resilience model: OR = 1.11,  $p < .01$ ; 3) college/career exploration model: OR = 1.09,  $p < .01$  model: OR = 1.20,  $p < .01$ .

<sup>9</sup> Five multiple linear regressions were conducted with the mean scores in each aspect as the dependent variables, and race/ethnicity, family income, parental education level, grade level, amount of in-person learning, ACT scores, and total number of school-based supports received during the first year of the pandemic as the independent variables. The reported factors explained a significant proportion of variation in the dependent variables at a .05 alpha level, after controlling the covariates.

<sup>10</sup> Being a student with neither parent(s)/guardian(s) having any college experience was a significant negative factor in the ordinal logistic regressions for academic learning and for resilience. The odds ratios (OR) and  $p$ -values for parental education level being “no college” in the two models were: 1) academic learning model: OR = 0.65,  $p < .01$ ; 2) resilience model: OR = 0.67,  $p < .05$ .

<sup>11</sup> Being a student in the class of 2023 was a significant negative factor in the ordinal logistic regressions for self-management and for resilience. The odds ratios (OR) and  $p$ -values for being a student in the class of 2023 in the two models were: 1) self-management model: OR = 0.79,  $p < .05$ ; 2) resilience model: OR = 0.66,  $p < .01$ .



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