

The effect of the pandemic on the behavior of junior high school students

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SUMMARY

The COVID-19 pandemic has affected people of all ages worldwide both physically and mentally. After the pandemic, we observed an increase in fights and disregard for rules among students at a junior high school in a south suburb of Chicago when it returned to in-person instruction. We wondered if the isolation caused by the pandemic might have played a part in this behavior change, as research suggests that social isolation has negative effects both physically and mentally. Thus, this study aimed to test two hypotheses. Firstly, we hypothesized that social isolation during the pandemic was positively correlated with disregard for social norms. Secondly, we hypothesized that group isolation during the pandemic was positively correlated with out-group conflicts when school returned to in-person. Three groups were surveyed (students, parents, and teachers) to measure students' social and group isolation during virtual school and behavior when in-person school returned. 149 students, 34 teachers, and 125 parents completed the survey. The results of the teacher survey showed that there was a significant increase in disregard for rules and social norms when school returned to in-person instruction. No significant correlations supported either hypothesis. However, we found that increased virtual contact was significantly correlated with increased in-person conflicts and disregard for social norms after the pandemic. These findings were supported by both the parent and student surveys. Virtual contact is very prevalent in today's world. Thus, further research into the effect of online interactions is very important.

INTRODUCTION

On December 12, 2019, a virus that would soon be known as COVID-19 was identified in Wuhan, Hubei Province, China. This seemingly small outbreak would eventually grow to become a global pandemic and governments around the world would impose strict regulations to slow its spread. While these regulations protected people from the virus, adverse effects on mental health have been reported and observed (1-3). We observed the students of a junior high school in a suburb of Chicago and noticed an increase in behavioral issues after school returned to in-person teaching. We noticed more fights between students and more students arguing with teachers than before the pandemic. Some teachers mentioned that the behavior the first year after the pandemic

compared to previous years was abhorrent. The school even conducted a formal assembly to remind students to follow the rules. It seemed that this change was not just occurring at one school. Based on conversations with students in other schools around the country, it appeared that this phenomenon was not unique to one school and had taken root in their schools as well. This personal observation was further supported by an investigative report in The Washington Post which reported increased behavioral issues and violence among the students in schools across the country (4).

A significant consequence of the pandemic and schools switching to virtual learning during the pandemic was increased social isolation (1, 5). Social isolation is defined as the objective diminished amount of social contact or connection (6). School is a place not only to learn but also to interact, to develop and maintain relationships, and to participate in communal activities. With governments shutting down schools and restricting in-person gatherings, many students lost the ability to interact with friends in-person. Studies have shown that social isolation has many negative consequences (1-3, 7-10). For example, a literature review found that social isolation has been linked to physiological responses that led to an increase in mortality and morbidity (7). Another study found that commuters who were instructed to isolate themselves during their commute found their commute a much less enjoyable experience than those who were instructed to interact with complete strangers, despite the commuters originally predicting the exact opposite (8). Individuals who have spent significant time alone may have difficulty interacting with others (9). Their perception of what goes on in interactions is distorted by their emotions and attitudes towards the conversation (9). They may be oversensitive to any negative social information, mistakes, or any comments that were not well received, and they often experience a disproportionate amount of embarrassment and anxiety (7, 9). Furthermore, isolated people might interpret words and actions in a way that supports a negative view of themselves (9). If this gets out of hand, isolation can end up causing low self-esteem, stress, hostility, anxiety, and depression (9). Most relevant to this study, individuals who spend significant amounts of time in solitude may find it challenging to control their thoughts and emotions during social interactions, which may make it difficult for the individual to respond appropriately to the situation in accordance with social norms (9). During the COVID-19 pandemic, social isolation increased as governments instituted safety measures that restricted interpersonal contact. One study surveyed 442 children, with a mean age of 11.43 years and a standard deviation of 2.59, and found that the social isolation imposed by the pandemic has an especially significant effect on older students and adolescents (1). The students are

especially sensitive to the loss of in-person contact due to the age-specific developmental task of establishing close peer relationships (1). Ty Tashiro, a psychologist and author, believed that in-person interactions are especially important for children and adolescents as they are still learning and developing their social skills, and need in-person social interactions to understand social cues and norms (9).

Another effect the pandemic could have had on students' lives is increased group isolation. Group isolation has been previously defined as an individual's "lack of contact to particular social groups" (11). In this study, group isolation was defined similarly, as the lack of contact with individuals not in the person's close friend group. With community gathering spaces such as schools or churches being closed down, many students would no longer have the chance to spend time in environments where interactions with unfamiliar people were required, and many students would have likely retreated to only speaking with their close friends. This group isolation could cause individuals within a group to grow closer to each other and to develop different "cultures" from other groups. This "group culture" is known as idioculture (12). Idioculture has been defined as a shared set of beliefs, customs, and norms that develop through the interactions within the group that can then provide reference for future interactions (12). In another study, researchers found that discussions of individuals outside of the group often lead to increased discrimination and prejudice towards the out-group, compared to individuals asked to think alone and report about their attitudes towards the out-group (13). Specifically, discussion of stereotypes of the out-group caused the most prejudice towards the out-group. Thus, group isolation could lead to very different group norms and increased prejudice towards the out-group, which could spark conflicts between individuals from different groups.

Based on the literature review discussed above, we created two hypotheses. Firstly, that social isolation would be positively correlated with disregard for social norms. Secondly, that group isolation during the pandemic would have a positive correlation with out-group conflict. After surveying teachers, parents, and students of a junior high school, no correlations were found that supported either of the hypotheses, although evidence was found that there was indeed an increase in fights and disregard for rules

after school returned to in-person instruction. There were also several significant positive correlations between online interaction while school was virtual and increased conflicts and disregard for social norms when school returned to in-person instruction. Due to the increasing prevalence of online interaction, the results of this study have important implications as they suggest the need for future research into the use and design of online communication, and how its usage affects our behavior in person.

RESULTS

Three populations (teachers, parents, and students) were surveyed to measure five variables: social isolation, group isolation, in-group conflict, out-group conflict, and disregard for social norms. Questions on the surveys had five response options: "Much less than before," "Less than before," "As before," "More than before," and "Much more than before" corresponding to 1, 2, 3, 4 and 5. In all of these responses options, "before" refers to before school went virtual due to the pandemic. There were two independent variables: social isolation and group isolation. Both were measured by two questions, one measured virtual contact and one measured in-person contact. There were three composite dependent variables, disregard for social norms, out-group conflict, and in-group conflict. Each of these variables was measured with three to six questions. After gaining parental consent, the surveys were distributed via email.

Teacher Survey

34 teachers participated in this study; 10 (29.4%) taught 6th grade, 10 (29.4%) taught 7th, and 14 (41.2%) taught 8th. The Teacher Survey had six questions which measured students' disregard for social norms and one question asking the grade the teacher primarily taught. The six questions assessed behavior such as how often students ignored teachers' requests and rules, got in arguments and fights, and received disciplinary actions. The score of the composite variable, disregard for social norms, was determined by averaging the scores of the six questions. Cronbach's alpha for this composite variable was 0.742, which was acceptable for research (14). Cronbach's alpha measures how closely related multiple questions in a composite variable are. A high Cronbach's alpha allowed multiple questions to be

Survey Questions & the Composite Variable	N	M	SD	% of teachers
1. Ignored my requests	34	3.82	0.87	70.59
2. Ignored my rules and expectations	34	3.85	0.82	70.59
3. Did not complete work	32	3.72	0.81	68.75
4. Argued with me	33	4.06	0.75	81.82
5. Got in fights	34	3.62	0.89	55.89
6. Received school discipline	34	3.56	0.66	58.82
7. Disregard for social norms†	32	3.82	0.51	N/A

Table 1. Mean (M), standard deviation (SD), and % of teachers that answered 4 or more for each question on the Teacher Survey. M and SD are also given for the composite variable. †Disregard for social norms, the composite variable, is the average of responses to questions 1-6.

grouped together into a composite variable to measure a latent construct and an alpha level of greater than or equal to 0.7 was deemed acceptable for research (14). The average score for each of the six questions on the survey that measured disregard for social norms was higher than 3, which represented the option “as before,” suggesting that there was an increase in disregard for social norms shortly after school returned to in-person instruction (Table 1). The mean for the composite variable, disregard for social norms, was 3.82, with a standard deviation of 0.51. This mean was found to be significantly greater than 3 ($p < 0.001$), indicating that teachers found students’ disregard for social norms to be greater after the pandemic. In addition, for all of the questions that made up the composite variable disregard for social norms, the majority (>50%) of the teachers answered 4 (more than before) or higher (Table 1).

Parent Survey

125 parents participated in this study; 45 (36%) had a child in 6th grade, 33 (26.4%) had a child in 7th, and 47 (37.6%) had a child in 8th grade. For the Parent Survey, students’ social isolation was measured with two questions, one assessed in-person, and one assessed virtual interactions. Disregard for social norms was measured with five questions. These questions assessed the frequency of events such as students ignoring parents’ requests, getting into arguments and fights, and receiving negative feedback from school (Table 2). The score of this composite variable was determined by averaging the scores of the five questions. Cronbach’s alpha for this composite variable was 0.803. Only one significant correlation was found in the results of the Parent Survey (Table 3). This was a positive correlation between virtual interaction with friends and disregard for social norms ($p = 0.02$). This means

that, according to the parent, the more their child interacted online with friends during virtual school, the more likely they were to show an increase in disregard for social norms when they returned to in-person school.

Student Survey

149 students participated in this study; 13 (8.7%) were in 6th, 33 (22.1%) were in 7th, and 101 (67.8%) were in 8th grade. 2 (1.3%) students did not report their grade. The Student Survey consisted of 17 questions, 2 measured contact with friends, 2 measured contact outside friend group, and 12 measured 3 composite variables (Table 4). The first composite variable was composed of four questions that measured conflicts within friend groups (in-group conflict). These questions assessed behavior such as disagreement and fights with friends. Cronbach’s alpha for this variable was 0.743. The second composite variable consisted of three questions that measured conflicts between individuals in different groups (out-group conflict). These questions assessed behaviors such as disagreement and fights with those outside one’s friend group. Cronbach’s alpha for this variable was 0.707. On the survey, there were four questions meant to measure this composite variable. However, one of the questions (When school returned to in-person fully, I found it difficult to interact with people who are not part of my friend group...) appeared to be inconsistent with the other questions (very low correlations with the other questions in the composite variable), thus lowering the Cronbach’s alpha to 0.631, which was not acceptable. A possible reason for this question’s inconsistency with the other questions in this composite variable might be that it was the longest and most complex question on the student survey, and thus might increase inaccurate or random responding by the participants.

Survey Questions & the Composite Variable	N	M	SD
1. Interacted with friends in-person	125	1.55	0.86
2. Interacted with friends virtually	125	3.64	1.23
3. Ignored my requests	124	2.94	0.79
4. Argued with me	124	2.82	0.92
5. Got into fights	122	2.62	0.85
6. Received negative comments on behavior	122	2.83	0.93
7. Received disciplinary actions	123	2.79	0.96
8. Disregard for social norms †	122	2.79	0.67

Table 2. Mean (M), standard deviation (SD) for each question on the Parent Survey. M and SD are also given for the composite variable. †Disregard for social norms, the composite variable, is the average of responses to questions 3-7.

Variable	1	2
1. Interacted with friends in-person	—	—
2. Interacted with friends virtually	0.01	—
3. Disregard for social norms †	0.03	0.21*

Table 3. Pearson product-moment correlations for the variables in the Parent Survey. Two tails test, * $p < 0.05$. †Disregard for social norms is the composite variable in Table 2.

Survey Questions & the Composite Variables	N	M	SD
1. In-person contact w/ friend group	148	2.21	1.21
2. Virtual contact w/ friend group	145	3.43	1.34
3. In-person contact outside friend group	147	2.03	1.21
4. Virtual contact outside friend group	147	2.54	1.33
5. Difficulty interacting w/ friend group	147	2.76	1.25
6. Disagreement w/ friend group	146	2.76	1.05
7. Argued w/ friend group	146	2.61	1.07
8. Fights w/ friend group	147	2.31	1.12
9. Difficulty interacting outside friend group	146	3.05	1.27
10. Disagreement outside friend group	147	3.02	1.06
11. Argued outside friend group	147	2.84	1.03
12. Fights outside friend group	147	2.31	1.04
13. Ignored teachers requests	146	2.41	1.11
14. Argued with teachers	145	2.49	1.12
15. Ignored parents requests	144	2.64	1.09
16. Argued with parents	147	2.85	1.17
17. In-group conflict†	145	2.61	0.85
18. Out-group conflict††	147	2.72	0.83
19. Disregard for social norms†††	143	2.59	0.86

Table 4. Mean (M), standard deviation (SD) for each question on the Student Survey. M and SD are also given for the composite variables. †In-group conflict is the average of responses to questions 5-8. ††Out-group conflict is the average of responses to questions 10-12. †††Disregard for social norms is the average of responses to questions 13-16.

Therefore, this question was removed to increase the reliability of the measure of the latent construct out-group conflict. The final composite variable consisted of four questions that measured disregard for rules and expectations (disregard for social norms). These questions assessed behavior such as ignored teachers' and parent(s)' requests and arguments with teachers and parent(s). Cronbach's alpha for this composite variable was 0.775.

The results of the Student Survey found 13 significant correlations (**Table 5**). There was a significant positive correlation between in-person contact outside the friend group and in-person contact with friend group ($p = 0.021$). There were five significant positive correlations that involved the variable virtual contact with friend group: with in-person contact outside friend group ($p = 0.048$); with virtual contact outside friend group ($p < 0.001$); with in-group conflict ($p = 0.016$); with out-group conflict ($p = 0.002$); and with disregard for social norms ($p = 0.039$). There were two significant positive correlations involving in-person contact outside friend group: with virtual contact outside friend group ($p = 0.004$), and with out-group conflict ($p = 0.020$). There were two significant positive correlations involving virtual contact outside friend group: with in-group conflict ($p = 0.009$) and with out-group conflict ($p = 0.007$). Two more significant positive correlations were found involving in-group conflict: with out-group conflict ($p < 0.001$), and with disregard for social norms ($p < 0.001$). Lastly, a significant positive correlation was found between

out-group conflict with disregard for social norms ($p < 0.001$).

DISCUSSION

The results showed that the two hypotheses for this study were not supported by the Student Survey or the Parent Survey data, although the Teacher Survey data did show that there was indeed an increase in disregard for social norms after school returned to in-person instructions compared to before the pandemic. The first hypothesis that social isolation would be positively correlated with a disregard for social norms was not supported by any significant correlations and was contradicted by a significant correlation in both the Parent and Student Surveys. This correlation indicated that students who had spent more time interacting with friends online during virtual school were more likely to ignore rules and social norms when school returned to in-person, according to reports by students and parents. The second hypothesis that group isolation would be correlated with increased conflicts between individuals from different groups was also not supported by the results. There was one significant correlation that by itself seemed to support it, but when taken in a larger context, the results did not support this hypothesis. This correlation was a positive correlation between virtual contact with friends during virtual school and conflicts with individuals from different groups when school returned to in-person instructions. This means that individuals who had more contact with their friends online while school

Variable	1	2	3	4	5	6
1. In-person contact w/ friend group	—					
2. Virtual contact w/ friend group	-0.10	—				
3. In-person contact outside friend group	0.19*	0.16*	—			
4. Virtual contact outside friend group	0.05	0.38**	0.24**	—		
5. In-group conflict†	-0.07	0.20*	0.15	0.22**	—	
6. Out-group conflict†	0.00	0.26**	0.19*	0.22**	0.52**	—
7. Disregard for social norms‡	-0.11	0.17*	0.05	0.14	0.51**	0.54**

Table 5. Pearson product-moment correlations for the variables in the Student Survey, two tails tests, * $p < 0.05$. ** $p < 0.01$. †In-group conflict, Out-group conflict, and Disregard for social norms are the composite variables in **Table 4**.

was virtual reported an increase in conflicts with individuals in other groups when school returned to in-person instruction. This result seemed to support the hypothesis. However, increased virtual contact with friends during virtual school was also correlated with an increase in conflicts between friends when they returned to in-person school, which directly contradicted the second hypothesis. Finally, according to the second hypothesis, in-person contact with friends should also be positively correlated with out-group conflict. However, this was not the case.

While the two hypotheses for this study were not supported, there were several significant correlations that were not predicted but as a group suggest an interesting finding. Specifically, virtual contact with a student's friend group during virtual school was positively correlated with disregard for social norms, in-group conflict, and out-group conflict when school returned to in-person instruction. Virtual contact outside a student's friend group was also positively correlated with both types of conflict. Together, these correlations suggest a most interesting finding: that virtual contact was positively correlated with both types of conflict and disregard for social norms. This pattern of correlations was supported by reports by both students and parents. This means that students who interacted more often online while school was virtual reported more conflicts with friends and others and would ignore rules and social expectations more often when school returned to in-person instruction. One possible explanation for this finding might be that there are different social norms in online interactions in comparison to in-person interactions. In online interactions, especially text-based interactions, it is impossible to communicate the many nuances present in in-person interactions. In-person interactions require the participants to pick up and show a myriad of different cues, such as body language, tone of voice, eye contact, and facial expressions. Many of these social cues are not present in virtual interactions, and

because of that, it is possible that interactions online might be less empathetic, less understanding, and more aggressive than those that happen in-person. Supporting this possibility, a technology article in the Washington Post covering the recently introduced Metaverse reported on the issue of users who were too young to be on the platform, who were doing disruptive and inappropriate things such as jumping up and waving their hands in front of other users (15). The students surveyed in this study who reported more virtual interactions might be having more conflicts and disregard for social norms because they were applying the social rules from virtual interaction to in-person interaction.

Not surprisingly, the largest correlations found from student responses were the correlations among in-group conflict, out-group conflict, and disregard for social norms. These correlations were expected because the three constructs are related, as whatever set of factors mediate one's propensity for disregard for social norms should also increase one's tendency for conflicts both in and out of one's friend group. These large and significant correlations provide some evidence for the validity of the measures of these constructs.

There were several limitations to this study that must be addressed. Firstly, there was the problem of selective sampling. The Student Survey only received 149 responses, which was approximately 20.9% of the student population of the school. The Parent Survey received 125 responses, which was approximately 18% of the parent population. Because the survey received responses from such a small percentage of the student and parent populations, it is possible that the respondents who chose to take this survey could have been students and parents of students who had little behavioral problems. The Teacher Survey received 34 responses which represented a larger proportion (58.62%) of the teacher population than those of the student and parent. However, it is still possible that teachers who experienced

more student behavioral issues were more likely to take the survey. It is also possible that some of the students may have underreported their behavioral problems. These possibilities are supported by the means of the questions and composite scores in the three surveys. The means for the questions and the composite variable on the Teacher Survey were all higher than 3, indicating an increase in behavioral issues. In contrast, the means of the Student and Parent survey were all lower than 3, except for two questions about out-group conflict, indicating that the students and parents reported fewer behavioral issues for themselves or for their child relative to pre-pandemic.

Another limitation of this study was that the data was based on the memory of the participants. Students and parents were asked to recall social interactions during virtual school and rate their own or their child's behavior after school returned to in-person instruction relative to behavior before the pandemic. Teachers were asked to rate their students' behavior relative to pre-pandemic. It is very possible that what they recalled may not reflect reality, or that some participants' recalls were more accurate than others', which would increase the noise in the data.

Finally, due to the correlational nature of this study, there are several possible explanations as to why these correlations exist. One is the one stated above, that students applied online social norms to in-person interactions. However, other possibilities exist. For example, it is possible that students who are more extroverted used online interaction more while school was virtual and interacted more in-person when school returned to in-person instruction. Increased interactions likely led to more opportunities for conflicts. Or, it is also possible that some other variables are responsible for the correlation between virtual interaction and behavior problems.

To summarize, this study found a connection between increased virtual social interaction while school was virtual and more interpersonal conflicts and rebellious behavior once school returned to in-person. These results have implications not only for students and their teachers, but for almost everyone as virtual interactions are prevalent due to social media and the recent introduction of the Metaverse. Therefore, it is important to gain a better understanding of virtual interactions, and how online interactions impact the individual and their online and in-person interactions. Future research should be directed at trying to better understand how people interact in virtual spaces, the norms of virtual interactions, how virtual interactions affect individuals such as their empathy for others, and their relationships both online and in-person.

MATERIALS AND METHODS

Measures

Three surveys were created to collect data on the pandemic's effect on students' behavior and social isolation. All questions (except questions about grade) in all three surveys were answered with a scale from 1 (a lot less than before) to 5 (a lot more than before), with 3, the median value being "as before". Participants were informed that "before" in all of the questions referred to before the school they teach at, attend, or have a child who attends ceased in-person instruction. Wording varied depending on the survey (Appendix A-C).

Teacher Survey

The Teacher Survey (Appendix A) consisted of a total of 7 questions. One question asked about the grade the teacher taught. Six other questions which started with this statement: "When school returned fully to in-person instruction..." formed a composite variable that measured disregard for social norms within the student population. A sample question: "When school returned fully to in-person instruction, my students got in fights..." (see questions 1-6 in Appendix A for all the questions that make up this composite variable). The score of the composite variable was determined by averaging the score of all six questions, with higher scores representing higher levels of disregard for social norms. 34 teachers (58.62% of the teacher population) participated in this study. However, there were two participants whose responses had incomplete data, so their responses were excluded from the composite variable, disregard for social norms, and from the one-sample *t*-test.

Parent Survey

The Parent Survey (Appendix B) consisted of eight questions, one question measured grade level and two measured in-person and virtual social isolation of the child during virtual school. The remaining five questions formed a composite variable. Except for the question regarding grade, questions in this survey began either with "While school was virtual..." or "When school returned to in-person fully...". The composite variable was designed to measure disregard for social norms, assessing behaviors such as fights, ignoring and arguing with parents, and behavioral issues in school. A sample question: "When school returned to in-person fully, my child ignored my requests..." (see questions 3-7 in Appendix B for all the questions that make up this composite variable). A total of 125 parents (approximately 18% of the parent population) completed the survey. However, three of the responses contained incomplete data, and were therefore excluded from the composite variable disregard for social norms.

Student Survey

The Student Survey (Appendix C) was pre-tested with three students: one was in eighth grade, and the other two were in seventh. These pre-tests helped catch wording problems and refine the survey. The Student Survey consisted of 17 questions and except for the question assessing grade level, questions started with either, "While school was virtual I..." or "When school returned to in-person fully, I...". Four questions measured in-person and virtual social isolation and group isolation. (e.g., "While school was virtual, I interacted with my friends in-person..." see questions 1-4 in Appendix C) One question measured grade level. The remaining 12 questions were designed to form three composite variables. The first composite variable, in-group conflict, was composed of four questions that measured conflicts within friend groups, such as, "When school returned to in-person fully, I argued with my friends..." (questions 5-8 in Appendix C). The second composite variable, out-group conflict, consisted of four questions that measured conflicts between individuals in different groups (e.g., "When school returned to in-person fully, I got into fights with people who are not part of my friend group..." see questions 9-12 in Appendix C). The third and final composite variable, disregard for social norms, consisted

of four questions that measured disregard for social norms such as ignoring and arguing with parent(s) and teachers (e.g., "When school returned to in-person fully, I argued with teachers...", see questions 13-16 in Appendix C). The score of these composite variables was determined by averaging the score of the questions within that variable. A total of 149 students (20.90% of the student population) participated in this study. In total, there were six participants who had missing data on various questions. They were excluded from the composite variable(s) if they had at least one question missing from that composite variable.

Procedures

Recruitment letters (Appendix D), which also acted as informed consent, were sent to teachers and parents by the principal of one junior high school in a Chicago suburb. The letter to parents contained a discussion about the student and parent surveys and what they entailed, and an opt-out form was linked so that parents who wished to exclude their child from participating in the study could fill it out. The principal then sent out an e-mail to the students whose parents had not excluded them from taking the survey, containing the student recruitment letter. This letter discussed the purpose of the study, the possible risks of taking the survey, the estimated time for completion, and the fact that the survey was completely voluntary and anonymous. This letter acted as informed assent. The letters to the parents and teachers contained similar discussions and stressed that the survey was optional and anonymous.

In the letters to the students, parents, and teachers, there was a link to the survey, hosted on Survey Monkey. Interested participants had the option to click the link, which would take them to the respective survey. Each of the surveys took less than three minutes to complete.

125 parents, 73 students, and 34 teachers completed the respective survey after receiving the principal's e-mails. Four days later, 76 more students completed the survey after a reminder about the survey during the school's daily morning announcements and after one science teacher encouraged students to complete the survey during their class.

Statistical Analysis

All data analyses were conducted using IBM SPSS Statistics 26. The one sample t-test was done using the "One-Sample T Test" procedure, with a test value of 3. Cronbach's Alphas were determined using the "Reliability Analysis" procedure, and the Pearson product-moment correlations were computed using the "Bivariate Correlations" procedure.

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Appendices

Appendices are provided to show the three letters used as informed consent and assent (Appendix D), as well as the three complete surveys (Appendix A, B and C). This information was not included in the materials and methods due to its length.

Appendix A

Teacher Survey

Instructions: Please answer these questions as honestly as possible. Please remember that your answers are completely anonymous. In all of the answer options, the word “before” refers to before James Hart School ceased in-person instruction in March 2020.

1. When school returned fully to in-person instruction, my students ignored my requests...

Much more than before
More than before
As before
Less than before
Much less than before

2. When school returned fully to in-person instruction, my students ignored my rules and expectations...

Much more than before
More than before
As before
Less than before
Much less than before

3. When school returned fully to in-person instruction, my students did not complete classwork or homework...

Much more than before
More than before

As before
Less than before
Much less than before

4. When school returned fully to in-person instruction, my students argued with me...

Much more than before
More than before
As before
Less than before
Much less than before

5. When school returned fully to in-person instruction, my students got in fights...

Much more than before
More than before
As before
Less than before
Much less than before

6. When school returned fully to in-person instruction, my students received school disciplinary actions...

Much more than before
More than before
As before
Less than before
Much less than before

7. What grade do you primarily teach?

6th
7th
8th

Appendix B

Parent Survey

Instructions: Please answer these questions as honestly as possible. Please remember that your answers are completely anonymous. In all of the answer options, the word “before” refers to before your child’s school stopped in-person instruction.

1. While school was virtual, my child interacted with their friends in-person...

Much more than before

More than before

As before

Less than before

Much less than before

2. While school was virtual, my child interacted with their friends virtually...

Much more than before

More than before

As before

Less than before

Much less than before

3. When school returned to in-person fully, my child ignored my requests...

Much more than before

More than before

As before

Less than before

Much less than before

4. When school returned to in-person fully, my child argued with me...

Much more than before

More than before

As before

Less than before

Much less than before

5. When school returned to in-person fully, my child got into fights...

Much more than before

More than before

As before

Less than before

Much less than before

6. When school returned to in-person fully, my child received negative comments on their behavior from teachers or other adults...

Much more than before

More than before

As before

Less than before

Much less than before

7. When school returned to in-person fully, my child received school disciplinary actions...

Much more than before

More than before

As before

Less than before

Much less than before

8. Grade:

6

7

8

Appendix C

Student Survey

Instructions: Please answer these questions as honestly as you can. Please remember that your answers are completely anonymous (no one can tell that you gave these answers). In all of the answer options, the word “before” means before your school started teaching online.

1. While school was virtual, I interacted with my friends in-person...

Much more than before

More than before

As before

Less than before

Much less than before

2. While school was virtual, I interacted with my friends virtually...

Much more than before

More than before

As before

Less than before

Much less than before

3. While school was virtual, I interacted with people who are not part of my friend group in-person...

Much more than before

More than before

As before

Less than before

Much less than before

4. While school was virtual, I interacted with people who are not part of my friend group virtually...

Much more than before
More than before
As before
Less than before
Much less than before

5. When school returned to in-person fully, I found it difficult to interact with my friends...

Much more than before
More than before
As before
Less than before
Much less than before

6. When school returned to in-person fully, I disagreed with my friends...

Much more than before
More than before
As before
Less than before
Much less than before

7. When school returned to in-person fully, I argued with my friends...

Much more than before
More than before
As before
Less than before
Much less than before

8. When school returned to in-person fully, I got into fights with my friends...

Much more than before
More than before

As before
Less than before
Much less than before

9. When school returned to in-person fully, I found it difficult to interact with people who are not part of my friend group...

Much more than before
More than before
As before
Less than before
Much less than before

10. When school returned to in-person fully, I disagreed with people who are not part of my friend group...

Much more than before
More than before
As before
Less than before
Much less than before

11. When school returned to in-person fully, I argued with people who are not part of my friend group...

Much more than before
More than before
As before
Less than before
Much less than before

12. When school returned to in-person fully, I got in fights with people who are not part of my friend group...

Much more than before
More than before

As before
Less than before
Much less than before

13. When school returned to in-person fully, I ignored teachers' requests and rules...

Much more than before
More than before
As before
Less than before
Much less than before

14. When school returned to in-person fully, I argued with teachers...

Much more than before
More than before
As before
Less than before
Much less than before

15. When school returned to in-person fully, I ignored my parent(s)' requests and rules...

Much more than before
More than before
As before
Less than before
Much less than before

16. When school returned to in-person fully, I argued with my parent(s)...

Much more than before
More than before
As before
Less than before
Much less than before

17. Grade:

6

7

8

Appendix D**Parent Letter**

Hello,

My name is Julian Kong Grisius and I am an 8th grade student at James Hart School. I am conducting a study for a science fair project. The goal of the study is to better understand how the pandemic affects junior high students. Within the next two days in their science class, your child will have the chance to participate in the study.

If you allow your child to participate in this study, they will be asked questions about how often they interacted with people during the pandemic, and some questions about their actions and interactions once school has returned to in-person instruction. There is no risk to this study. All responses are completely anonymous, and participation in this survey is voluntary. The survey will take less than 10 minutes. If you do NOT give permission for your child to participate in this study, please click this link and fill out the form.

There is another optional survey for you to take. It has similar questions about your child's actions and interactions during the pandemic. There is no risk to this study. All responses are completely anonymous. Although it is unlikely, some questions might cause slight discomfort. Please know that participation in this survey is voluntary, and you can quit the survey at any point. It will take approximately 2 minutes. If you wish to participate, please click this link.

Thank you for your help,

Julian Kong Grisius

Teacher Letter

Hello,

My name is Julian Kong Grisius and I am an 8th grade student at James Hart School. I am conducting a study for a science fair project. The goal of the study is to better understand how the pandemic affects junior high students. If you are a junior high teacher, then you are invited to participate in this study.

If you choose to participate in this study, you will be asked questions about the behavior of your students. There is no risk to this study, and all responses are completely anonymous. Although it is unlikely, some questions might cause slight discomfort. Please know that participation in this survey is voluntary, and you can quit the survey at any point. The survey will only take up to 2 minutes at most. If you want to participate in the study, please use this link. This link will take you to the survey in Survey Monkey.

Thank you for your help,

Julian Kong Grisius

Student Letter

Hello,

My name is J. K. Grisius and I am an 8th grade student at James Hart School. I am conducting a study for a science fair project. The goal of the study is to better understand how the pandemic affects junior high students. If you are a junior high student then you are invited to participate.

If you choose to participate in this study, you will be asked questions about how often you interacted with people during the pandemic, and some questions about your actions and interactions once school had returned to in-person instruction. There is no risk to this study. All responses are completely anonymous, and no one will know whose answers are whose. Although it is unlikely, some questions might cause slight discomfort. Participation in this survey is optional, don't click the link below if you do not want to participate. Know that you can quit the

survey at any point. The survey will take less than 10 minutes. If you want to participate in the study, please click this link. The link will take you to the survey in Survey Monkey.

Thank you for your help,

-JKG