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Child Flourishing, School Engagement, Physical Activity and Screen Time During the COVID-19 Pandemic in 2020

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Abstract

Objectives: To examine changes in flourishing, school engagement, physical activity, and recreational screen time among school-aged children in the United States during the COVID-19 pandemic in 2020.

Methods: In this cross-sectional study, data come from the 2018-2020 National Survey of Children's Health for 68,203 children aged 6-17 years. Flourishing is always/usually curious to learn, resilient and having self-regulation. School engagement is always/usually completing homework and having interest in doing well in school. Other outcomes are daily 60+ minute physical activity or number of such days, and daily recreational screen time or 2+ hours/day. Weighted regression models compare 2020 to 2019 and 2019 to 2018 adjusting for child/household covariates and state indicators.

Results: Among children age 6-17 years in 2020, there was a decline in flourishing (OR=0.69; 95% CI=0.63,0.75), school engagement (OR=0.71; 95% CI=0.64,0.79), physically active days (0.26 days, 95% CI=0.17,0.35), and daily 60+ minute activity (OR=0.91; 95% CI=0.83, 1.00), and increase in daily recreational screen time (0.29 hours; 95% CI=0.25, 0.34) and 2+ hours/day (OR=1.65; 95% CI, 1.49 to 1.83) compared to 2019. These differences were observed across all evaluated demographic and socioeconomic subgroups. There were no significant differences between 2019 and 2018, indicating that the 2020-2019 differences were related to the pandemic rather than a continuation of pre-pandemic trends.

Conclusions: Children's flourishing, school engagement, and physical activity declined while recreational screen time increased during the COVID-19 pandemic in 2020. Monitoring these outcomes in the long-run is important to assessing needs and promoting children's learning and development.

Introduction

The Coronavirus Disease 2019 (COVID-19) pandemic has virtually affected every aspect of children's lives in the United States and worldwide. Social, economic, and learning disruptions from the pandemic and related mitigation policies have posed broad and long-lasting challenges in multiple domains of children's lives and functioning. Of particular concern is how the pandemic affected children's flourishing, which is achieving the cognitive, socioemotional, and physical development and wellbeing expected at the child's age.¹⁻³ Key aspects of children's flourishing that this study focuses on are curiosity and engagement in learning, self-regulation, and resilience.

There is emerging evidence that the COVID-19 pandemic has affected children's mental health, psychosocial functioning, physical health outcomes, school engagement, learning interests, and family social and economic resources,⁴⁻⁶ all of which are connected with children's flourishing.^{1,7,8} Therefore, it is important to understand these effects using nationally representative data given their short- and long-term implications for children.

We expect that school closures which began early during the pandemic may have adversely affected children's flourishing. More than 55 million children in 124,000 public and private schools across the United States experienced these closures.⁹ School closures could directly interrupt children's learning routines, playing, school-based extracurricular activities, and social interactions with peers and teachers.¹⁰⁻¹² Therefore, these disruptions likely had negative impacts on children's interest in learning, academic performance, mental health, and cognitive and social development.¹¹⁻¹³ Recent studies have found that children were more likely to be bored, lonely, and irritable during the COVID-19 pandemic, particularly because of home confinement and school closures.¹⁴ And even though most schools were reopened during the fall

of 2020, over half of school districts offered remote or hybrid instruction,¹⁵ which continued social distancing, isolation, and limits on school-based activities for many students.

School closures have also limited children's access to school-based health services. Before the COVID-19 pandemic, over 6 million students, representing nearly 16% of all youth in the United States, received primary care, mental/behavioral health care, or dental care at 2,500+ school-based health centers across the nation.¹⁶ Restricted access to school-based health services, an important input for physical and mental health of many children, could therefore have adversely affected the health and socioemotional wellbeing of children who needed these services.¹⁶⁻¹⁸ In addition, nearly two-thirds of school-aged children relied on school-based breakfast and lunch meals for having sufficient food and nutrition.¹⁹ Even though many schools continued to offer free/reduced cost meals during closures,²⁰ fewer children received these meals; school served lunches declined by 33% in fiscal year 2020 compared to 2019.^{19,21,22} Many children without access to free/reduced cost school meals may not have adequate access to healthy food at home.²³ Also, there was an increase in food insecurity in families that lost jobs and income during the pandemic.^{24,25} Food insecurity and inadequate nutrition are associated with poor cognitive and social-emotional skills,²⁶ mental health problems^{27,28} and lower health status^{29,30} among school-aged children, all of which could adversely affect children's flourishing. One study also found that insufficient food is associated with less flourishing of children aged 0-5 years.³¹

In addition to school closures, other restrictions such as stay-at-home orders, business closures, gathering bans, and people's fear of COVID-19 also affect children's activities. Collectively, these restrictions limited children's social interactions, visits to museums, libraries, theaters, and public parks, and sports participation. Such activities benefit children's social,

cognitive, and motor development and overall health status.³² Some studies in the US and other countries have reported that during the pandemic, children experienced less physical activity, more sedentary lifestyle (e.g., spending more time in front of a screen), and greater consumption of unhealthy food.³³ More physical activity and less screen time use are associated with improved children's flourishing.^{1,7,34}

This study examines changes in school-aged children's flourishing, school engagement, physical activity, and recreational screen time during the COVID-19 pandemic in 2020 in the United States using nationally representative data. We hypothesize that the COVID-19 pandemic has adversely affected these outcomes universally for school-aged children regardless of their demographic and socioeconomic characteristics. At the same time, because of differences in outcomes by demographic and socioeconomic characteristics before the pandemic, we examine potential heterogeneities in the pandemic effects across demographic/socioeconomic subgroups.

Methods

Study Data and Sample

The study data come from the 2018, 2019, and 2020 waves of the National Survey of Children's Health (NSCH), which is funded by the Maternal and Child Health Bureau and implemented by the United States Census Bureau. The NSCH is a nationally representative cross-sectional survey that uses address-based random sampling of households from all 50 states and the District of Columbia and implemented in two phases. In the first phase, selected households receive an invitation by mail with detailed information about the NSCH and are asked to complete a screening questionnaire about the presence of children, basic demographic characteristics and special care needs. After completing the screening, one of the first four children from the household is randomly selected considering the child's age, presence of special

care needs, and number of children in household. Next, a caregiver completes an age-specific topical questionnaire for the selected child. This survey questionnaire collects information on different aspects of the child's health including physical health, mental/behavioral health, development, daily and school activities, and health care use. Both the screening and topic questionnaires are self-administered and completed online or by mail. Email and toll-free telephone assistance are available if respondents have questions and need help. The survey documents explain to potential respondents that participation is voluntary and that data are protected under the US Census Bureau requirements. The surveys are primarily completed by parents (91% of respondents) with small proportion completed by other caregivers (9%).

For the three NSCH years included in this study, all survey questionnaires were completed in the second half of each year from June or July to January of the following year. This is particularly important to our study because all interviews in 2020 were completed at least three months after the onset of the COVID-19 pandemic in the United States and after the initial widespread lockdowns and the school and business closures were implemented between late March and May of 2020. Therefore, there were several months of exposure to these closures and other pandemic-related social and economic shocks before the study outcomes were measured. Participants who had missing data on a certain outcome or explanatory variable (about 9% of the initial sample) are excluded from the analytical sample for that outcome. Therefore, the number of observations in the analytical sample varies slightly between outcomes. The analytical sample includes a maximum of 68,203 children aged 6-17 years old; 20,405, 19,821, and 27,977 children are from the 2018, 2019, and 2020 NSCH waves, respectively. Institutional Review Board review is not required since this study uses de-identified and publicly available data.

Outcomes

We measure children's flourishing using a composite measure of three questions answered by the parent/caregiver about how often the child does the following: 1- "shows interests and curiosity in learning new things"; 2- "works to finish tasks they start"; and 3- "stays calm and in control when faced with a challenge".^{1,7,8,34} For each question, the responses are never, sometimes, usually, and always. Following prior studies, a child is considered to be flourishing if the responses to all three questions are "always" or "usually".^{1,7} We also examine each of the three flourishing items separately with binary indicators for "always" or "usually". .

Children's school engagement is evaluated by a composite measure based on two questions answered by the parent/caregiver about how often the child "cares about doing well in school" and "does all required homework". The responses to both questions are never, sometimes, usually, and always. Similar to flourishing, the composite measure for school engagement is a binary indicator for responses of "always" or "usually" to both items. We also evaluate these questions separately with a binary indicator for "always" or "usually" for each.

We evaluate two outcomes for physical activity. The first is the number of days over the past week the child engaged in physical activity (for example, playing sports or participating in physical activity) for at least 60 minutes. The response options to this question are 0 days, 1-3 days, 4-6 days, or every day, so we use midpoints for the 1-3 and 4-6-days responses. Because clinical guidelines recommend that children engage daily in ~ 60 minutes physical activity,³⁵ we include another binary indicator for an "every day" response to this question.

Finally, we also include two outcomes for recreational screen time. The first is the number of hours per day (recorded as less than an hour, 1 hour, 2 hours, 3 hours, and 4 or more hours) the child spends on most weekdays watching programs, playing games, and using social media in front of digital devices such as a TV, computer, cellphone, and other digital devices.

For this question, the NSCH questionnaire specifically excluded time spent in front of a screen because of school-related work. We use 0.5 hours for the “less than an hour” response, and midpoints for the “1-3” and “4-6” days responses. Because the American Academy of Pediatrics (AAP) recommends that children spend no more than 2 hours per day in front of a screen for recreational purposes,³⁶, we also include a binary indicator for whether recreational time is 2 hours per day.

Statistical Analysis

In this repeated cross-sectional study, we compare children’s flourishing, school engagement, physical activity, and recreational screen time between 2020 and 2019. Specifically, each outcome is regressed on a binary indicator for year 2020 (with 2019 as the reference category) adjusting for several conceptually relevant child, family, and state-level covariates. For binary outcomes, we employ a logistic regression specified as follows:

$$\text{Logit}[\text{Pr}(Y_{ist} = 1)] = \alpha + \beta * Y2020 + \mathbf{X}_{ist}\boldsymbol{\Gamma} + \boldsymbol{\theta}_s$$

Y_{ist} represents one of the binary outcomes described above for child i in state s in survey year t . $Y2020$ is a binary indicator for year 2020 (versus 2019) and the parameter β captures the difference in the log of outcome odds between 2020 and 2019. \mathbf{X}_{ist} includes child’s age (binary indicators for each age in years), sex, and race/ethnicity, highest education of caregivers, number of children, parental/caregiver marital status, whether anyone in the family is employed, and family income as percentage of federal poverty level (FPL).^{1,7,8,31} The regression also adjusts for binary indicators of states ($\boldsymbol{\theta}_s$) to account for time-invariant differences in outcomes between states. To examine if outcomes were changing before the pandemic (i.e., if there were pre-pandemic time trends) that would bias the comparison between 2020 and 2019 to represent the pandemic effect, a similar regression is estimated to compare outcomes between 2019 and 2018.

From the logistic regressions, we report the odd ratios (ORs) and 95% confidence intervals (CI). Alternatively, we derive the prevalence rate ratios (PRR).³⁷ For the two numeric outcomes (the number of days engaged in physical activities of at least 60 minutes a day and the number of recreational screen hours per day), we estimate the regressions using ordinary least squares adjusting for similar covariates to those described above. All regressions are weighted by the NSCH sampling weights to obtain nationally representative estimates and adjust for non-response bias. To check for the influence of covariates on the estimates, we also estimate regression models that do not adjust for any covariates for comparison.

We estimate the regression models first for the total sample including all children aged 6-17 years. Additional models are estimated for demographic and socioeconomic subgroups to evaluate potential heterogeneities in the pandemic effects. In those stratified analyses, the regression models are estimated separately by child's age (age 6-11, and 12-17 years), sex, race/ethnicity (non-Hispanic White versus Hispanic or non-White), family income (<200%, 200-399%, and 400% FPL), and insurance status (publicly insured versus privately insured). Each subgroup regression also controls for all the other covariates as described above; the regressions stratified by age group also control for the age differences within each subgroup. All analyses are conducted using Stata/SE 16.1 version.

Results

Children's Flourishing

Descriptive statistics for the main sample are presented in Appendix Table 1. Figure 1 reports the adjusted ORs and their 95% CIs from the full logistic regression model described above for the composite measure of children's flourishing and the separate items. Children were less likely (OR=0.69; 95% CI=0.63, 0.75) to flourish in 2020 than in 2019. This difference was

equivalent to a 12% (PRR=0.88; 95% CI=0.86, 0.91) reduction in the flourishing rate or approximately 3.9 million fewer flourishing children in 2020 than 2019. The unadjusted estimates (Appendix Figure 1) were comparable to those from the adjusted regressions. There were noticeable declines in 2020 in each of the three flourishing items: showing interest and curiosity in learning new things (OR=0.51; 95% CI=0.45, 0.59), working to finish started tasks (OR=0.76; 95% CI=0.68, 0.84), and staying calm and in control when facing a challenge (OR=0.45; 95% CI=0.39, 0.52). In contrast, there were no differences in the composite and single-item flourishing measures between 2019 and 2018, suggesting that the observed differences between 2020 and 2019 are related to the pandemic rather than a continuation of pre-pandemic trends.

Appendix Figure 1 presents estimates for the composite flourishing measure for subgroups by age, race/ethnicity, gender, income, and public health insurance status. The decline in flourishing in 2020 was observed across most subgroups, with estimates pointing to larger declines for privately insured children and those with family income above 400% FPL. These subgroups had a higher proportion of flourishing children in 2019 before the COVID-19 pandemic compared to their counterparts (Appendix Table 2), which might partially explain the larger decline.

Children's School Engagement

Figure 2 reports the adjusted ORs for the composite school engagement measure and the separate items. Compared 2019, children in 2020 were less likely to be engaged in school (OR=0.71; 95% CI=0.64,0.79). This difference was equivalent to a 5% (PRR=0.95; 95% CI=0.93,0.97) decrease in the proportion of (or nearly 2.1 million fewer) school-engaged children in 2020. The adjusted estimates were comparable to the unadjusted estimates (Appendix

Figure 3). There was also a decline in 2020 in both items of school engagement: caring about doing well in school (OR=0.68; 95% CI=0.60,0.77) and doing all required homework (OR=0.83; 95% CI=0.74, 0.94) in 2020. There were no differences in school engagement between 2019 and 2018, suggesting that the 2020-2019 differences were related to the pandemic and not representing pre-pandemic trends. In the subgroup analysis, there was a decrease in school engagement in 2020 for all subgroups, with overall small differences between subgroups (Appendix Figure 4); the outcome means across subgroups are shown in Appendix Table 3.

Physical Activity

Table 1 shows the adjusted differences in the number of days with ≥ 60 minutes physical activity over the past week between years. There was a decline in this outcome in 2020 compared to 2019 by 0.26 days on average (95% CI= -0.35, -0.17), but no difference between 2019 and 2018. The adjusted estimates were overall similar to unadjusted estimates (Appendix Table 4). Moreover, the decline was observed across all subgroups, with estimates pointing to larger declines among Hispanic or non-White, female, and lower income (below 200% FPL) children (Appendix Table 5); the outcome means across subgroups are shown in Appendix Table 6.

The adjusted ORs for the binary outcome of daily physical activity of ≥ 60 minutes are reported in Figure 3. There was a decline in the likelihood of this outcome in 2020 although the estimate was not statistically significant (OR=0.91; 95% CI=0.83, 1.00). In contrast, the unadjusted estimate in Appendix Figure 5 was statistically significant (OR=0.94; 95% CI, 0.90 to 0.98). There were overall similar declines in this outcome across subgroups (Appendix Figure 6); outcome rates across subgroups are in Appendix Table 7.

Recreational Screen Time

Table 1 also shows the adjusted differences in the daily recreational screen time (hours/day) between years. There was an increase in this outcome in 2020 versus 2019 by 0.29 hours a day (95% CI=0.25,0.34) but no difference between 2019 and 2018; and the unadjusted estimates showed overall similar results (Appendix Table 4). All subgroups showed an increase in recreational screen time (Appendix Table 6) especially children aged 6-11 years, privately insured, and those with higher family income ($\geq 400\%$ FPL); outcome means across subgroups are in Appendix Table 9.

The adjusted ORs for the binary outcome of daily recreational screen time ≥ 2 hours are reported in Figure 3, and the unadjusted ORs presented in Appendix Figure 5 shows overall similar estimates. There was an increase in this outcome in 2020 (OR=1.65; 95% CI=1.49, 1.83) compared to 2019. This represented a 9% (PRR=1.09; 95% CI=1.07,1.12) increase in the proportion of (or approximately 4.4 million more) children spending ≥ 2 hours of recreational screen time. All subgroups estimated reported in Appendix Figure 7 showed an increase in this outcome, with a more pronounced increase among children aged 6-11 years, publicly insured, and with low family income ($< 200\%$ FPL); outcome rates are in Appendix Table 10.

Discussion

This study examines differences in children's flourishing, school engagement, physical activity, and recreational screen time between 2020 during the COVID-19 pandemic and 2019 in the United States. We find evidence of a decline in flourishing, school engagement, and physical activity and an increase in recreational screen time in 2020 compared to 2019. These differences were observed across a range of demographic and socioeconomic subgroups. In contrast, there was overall no evidence of such differences between 2019 and 2018, suggesting that the changes

observed in 2020 are related to the COVID-19 pandemic rather than a continuation of pre-pandemic trends in these outcomes.

Collectively, the findings suggest large and widespread differences in children's learning interests and skills, behavior, and time use in the first few months following the pandemic. Even though these differences were observed within a relatively short period following the pandemic, effects on children's learning, achievement, and cognitive and psychosocial development can be long lasting. Interest, curiosity, task completion, self-control in the face of a challenge, and school engagement are key attributes for successful learning and healthy emotional development.³⁸ The differences in outcomes between 2020 and 2019 are sizeable and alarming. Other evidence suggests that children had a poorer academic performance during the COVID-19 pandemic, and that children from disadvantaged family backgrounds or with special care needs were more adversely affected.³⁹ Continuing to monitor these outcomes over time is important given the pandemic continuation in 2021 and 2022, although with much fewer school closures, more in-person learning, and fewer social and activity restrictions. Comparing these outcomes over the different phases of the pandemic would help in understanding their associations with school closures and social distancing requirements. Furthermore, understanding their long-term effects and mechanisms is also important for identifying and addressing gaps. The study estimates indicate that 30% of school-aged children in the United States were not flourishing in 2018-2019 before the pandemic, and that this rate increased to nearly 40% during the first year of the COVID-19 pandemic (Appendix Table 1), highlighting the need to understand and address this change.

The increase in recreational screen time is consistent with other studies.^{5,40} Children's excessive screen time has been associated with reduced flourishing and worse mental health

outcomes.^{1,7,41} The decline in physical activity time is also consistent with other studies.^{5,42,43}

Evaluating children's time use and physical activity in subsequent years is also important to understand if the differences observed in 2020 were temporary or habit forming.

Limitations and Strengths

The strengths of this study include using data from a large, nationally representative sample collected in a similar way before and during the COVID-19 pandemic. Moreover, the study includes key child development and activity outcomes. One limitation is the possibility of measurement error in parent/caregiver answers to the outcome questions. In ordinary times, such measurement error would unlikely change between consecutive survey waves, in which case it would not bias the outcome differences between survey years but would increase the variance of estimates (leading to wider confidence intervals). However, parents might have had more time to observe their children during the early phase of the pandemic because of school and business closures and children spending more time at home. This may affect parental reports of their children's activities in 2020, although how much it could account for the observed differences in outcomes between 2019 and 2020 is unclear. It is unclear a priori whether parents would report more or fewer concerns about their children's flourishing, school engagement, and the other outcomes with more observation time. Also, with children being observed less by their teachers and other school staff during the school closure times, parents might also have less information about their children's flourishing and school engagement from school professionals. Examining how parental reporting of these outcomes may differ because of the time they observe their children during the pandemic is an important question for future research. Finally, the flourishing questions focus on learning and self-control, which are key domains of flourishing but do not represent all aspects of cognitive and psychosocial development.

Conclusions

This study shows widespread declines in flourishing, school engagement, and physical activity and an increase in recreational screen time among school-aged children in the United States in 2020 following the COVID-19 pandemic compared to 2019. These findings highlight the importance of monitoring these outcomes throughout the pandemic and assessing their long-term effects to better understand needs and inform policies to promote children's flourishing, learning, and healthy activities.

What's New

Using nationally representative data, we find a decline in children's flourishing (learning interest, task completion, and self-control), school engagement (interest in doing well and homework completion), and physical activity but more recreational screen time during the COVID-19 pandemic in 2020.

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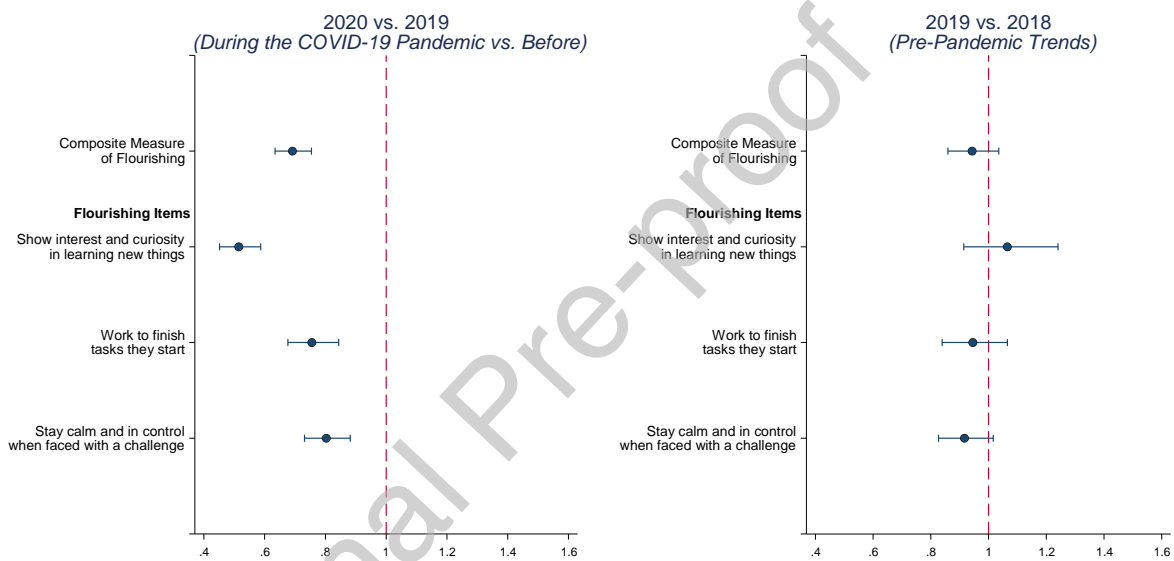
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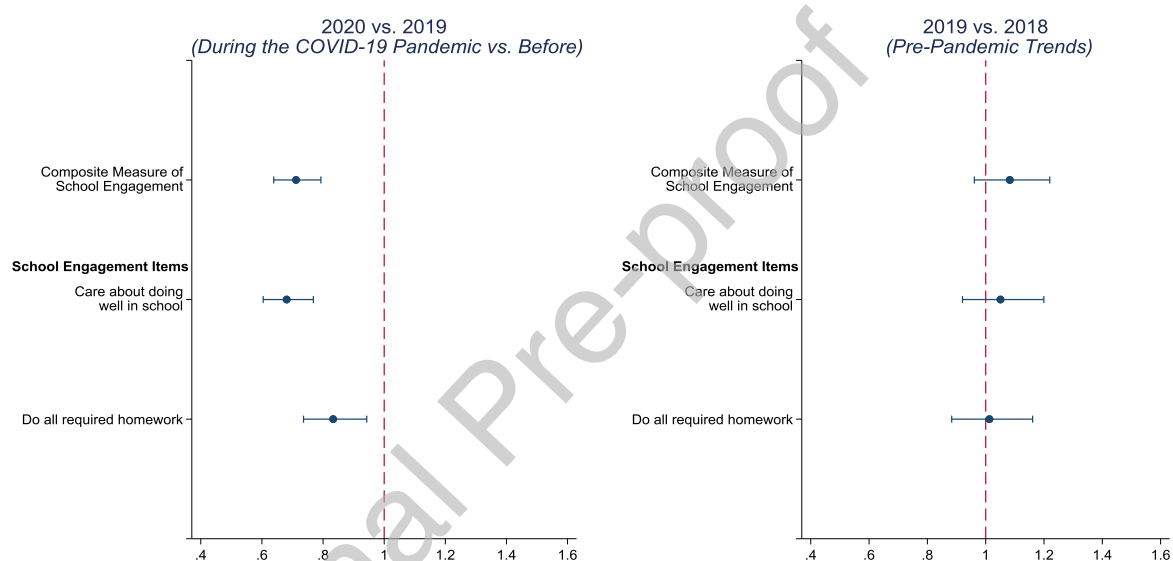
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Figure 1. Differences (Adjusted Odds Ratios and 95% Confidence Intervals) between 2019 and 2020 and between 2019 and 2018 in Flourishing of Children Aged 6-17 Years in the United States



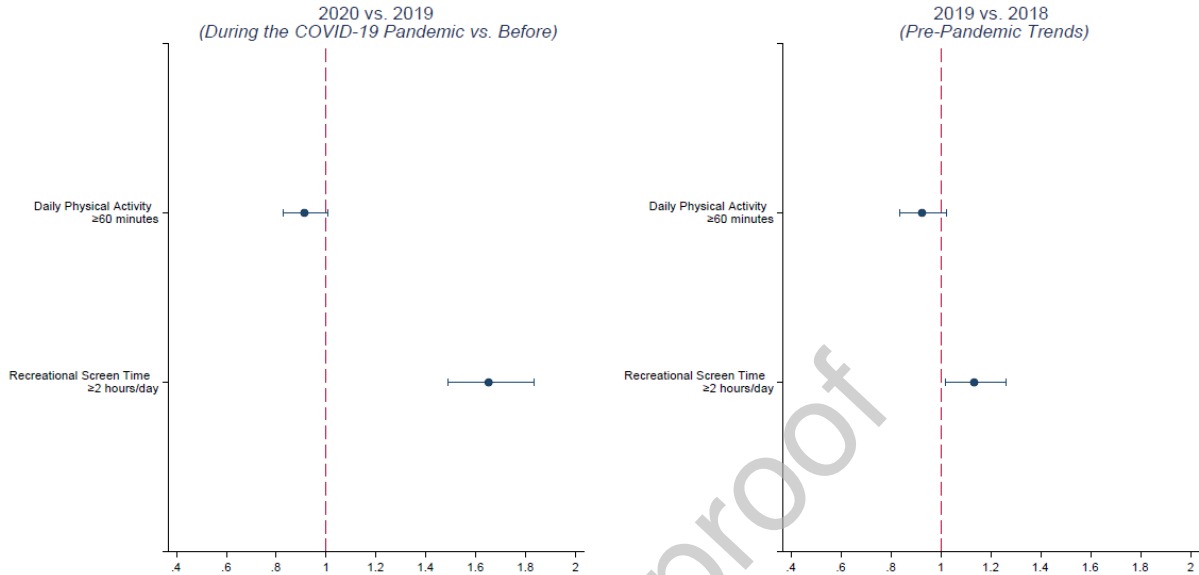
Notes: The odds ratios and 95% confidence intervals are obtained from logistic regressions comparing 2020 to 2019 and 2019 to 2018. Separate regressions are estimated for the 2020 to 2019 comparisons and 2019 to 2018 comparisons. The models include data from the 2018-2020 waves of National Survey of Children's Health (NSCH). Covariates include child's age (binary indicators for each year), gender, and race/ethnicity, highest education of parents, number of children, parental marital status, any employment in the household, and household income as a percentage of the federal poverty level. The models also control for binary indicators of states to account for time-invariant differences in outcomes between states. The models are weighted by the NSCH sampling weights to obtain nationally representative estimates. Depending on the outcome, the sample size ranges from 47,462 to 47,820 when comparing 2020 to 2019 and from 39,608 to 40,252 when comparing 2019 to 2018.

Figure 2. Differences (Adjusted Odds Ratios and 95% Confidence Intervals) between 2020 and 2019 and between 2019 and 2018 in School Engagement of Children Aged 6-17 Years in the United States



Notes: The odds ratios and 95% confidence intervals are obtained from logistic regressions comparing 2020 to 2019 and 2019 to 2018. Separate regressions are estimated for the 2020 to 2019 comparisons and 2019 to 2018 comparisons. The models include data from the 2018-2020 waves of National Survey of Children's Health (NSCH). Covariates include child's age (binary indicators for each year), gender, and race/ethnicity, highest education of parents, number of children, parental marital status, any employment in the household, and household income as a percentage of the federal poverty level. The models also controlled for binary indicators of states to account for time-invariant differences in outcomes between states. The models are weighted by the NSCH sampling weights to obtain nationally representative estimates. Depending on the outcome, the sample size ranges from 47,407 to 47,522 when comparing 2020 to 2019 and from 39,829 to 39,974 when comparing 2019 to 2018.

Figure 3. Differences (Adjusted Odds Ratios and 95% Confidence Intervals) between 2020 and 2019 and between 2019 and 2018 in Daily Physical Activity ≥ 60 Minutes and Recreational Screen Time ≥ 2 Hours per Day of Children Aged 6-17 Years in the United States



Notes: The odds ratios and 95% confidence intervals are obtained from logistic regressions comparing 2020 to 2019 and 2019 to 2018. The models include data from the 2018-2020 waves of National Survey of Children's Health (NSCH). Covariates include child's age (binary indicators for each year), gender, and race/ethnicity, highest education of parents, number of children, parental marital status, any employment in the household, and household income as a percentage of the federal poverty level. The models also controlled for binary indicators of states to account for time-invariant differences in outcomes between states. The models are weighted by the NSCH sampling weights to obtain nationally representative estimates. Depending on the outcome, the sample size ranges from 47,620 to 47,798 when comparing 2020 to 2019 and from 40,103 to 40,226 when comparing 2019 to 2018.

Table 1. Differences between 2020 and 2019 and between 2019 and 2018 in Number of Days with ≥ 60 minutes Physical Activity Physical Exercise and Recreational Screen Time (hours/day) of Children Aged 6-17 Years in the United States

	2020 vs. 2019 (During the COVID-19 Pandemic vs. Before)			2019 vs. 2018 (Pre-Pandemic Trends)		
	N	Coef.	95% CI	N	Coef.	95% CI
Number of Days with 60 minutes Physical Activity	47620	-0.26***	[-0.346, -0.168]	40103	-0.07	[-0.168, 0.024]
Recreational Screen Time (hours/day)	47798	0.29***	[0.249, 0.337]	40226	0.04	[0.008, 0.089]

Notes: The coefficients and 95% confidence intervals in brackets were obtained from OLS regressions comparing 2020 to 2019 and comparing 2019 to 2018. Separate regressions are estimated for the 2020 to 2019 comparisons and 2019 to 2018 comparisons. Covariates include child's age (binary indicators for each year), gender, and race/ethnicity, highest education of parents, number of children, parental marital status, any employment in the household, and household income as a percentage of the federal poverty level. The models also control for binary indicators of states to account for time-invariant differences in outcomes between states. The models are weighted by the NSCH sampling weights to obtain nationally representative estimates. The model was weighted by the NSCH sampling weights to yield national representative estimates.

*Significant at 10 percent level; **significant at 5 percent level; ***significant at 1 percent level.