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# School-Age Children's Wellbeing and School-Related Needs During the COVID-19 Pandemic



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# **A**BSTRACT

**BACKGROUND AND OBJECTIVES:** The COVID-19 pandemic and related school closures may have disrupted school-related supports and services important to children's wellbeing. However, we lack national data about US children's wellbeing and family priorities for school-related services. We sought to determine 1) children's social-emotional wellbeing and 2) needs and priorities for school-based services in the 2021 –2022 school year among a US sample of parents of schoolaged children.

**METHODS:** In June 2021, we surveyed 1504 parents of children enrolling in grades K-12 in the 2021–2022 school year participating in the Understanding America Study, a nationally representative probability-based Internet panel of families completing regular internet-based surveys (Response rate to this survey was 79.2%). Parents completed the Strengths and Difficulties Questionnaire and reported their needs for school-related services regarding "support getting healthcare", "mental wellness support", "food, housing, legal or transportation support", and "learning supports and enrichment."

Weighted regressions examined associations among wellbeing, needs, and sociodemographic characteristics.

**RESULTS:** Approximately one-quarter of children had deficits in hyperactivity (26.1%), one-third in peer problems (32.6%), and 40% in prosocial areas. Most parents (83.5%) reported a school-related need, with 77% reporting learning supports and enrichment needs and 57% reporting mental wellness needs. The highest priority needs were for tutoring, socialization, increased instructional time, coping with stress, and physical activity.

**CONCLUSIONS:** US school children have high social-emotional and school-related needs. Investments in schools are urgently needed, particularly for learning supports and mental wellness, to meet the high demand for services and parents' priorities to support child health and wellbeing.

**KEYWORDS:** COVID-19 pandemic; schools; wellbeing

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# WHAT'S NEW

In this nationally representative sample, we found deficits in children's wellbeing across sociodemographic groups and high levels of school-related needs. Findings suggest investing in schools may be critical to meet the high demand for services supporting child health and wellbeing.

SCHOOL CLOSURES AND distance learning due to the COVID-19 pandemic have had an enormous impact on children's learning and social-emotional development, including widening educational inequities. Many students, particularly those from minoritized racial and ethnic groups, may have lost more than a year of learning. A

Education is a powerful social determinant of future health and life-expectancy and the impact of this loss may have long-lasting health implications.<sup>4</sup>

In addition, the disruption of school-related social supports and access to services, including free/reduced price meals, developmental support services, and school-based physical and mental healthcare are likely to have direct and immediate negative impacts on children's health. 5–7 Many low-income families rely on schools to meet these critical basic needs, which support students' academic achievement as well as their health and wellbeing. Further, increased stress and isolation coupled with limited opportunities to form and strengthen supportive relationships due to school closures, may have especially impacted children's mental health and social-emotional

wellbeing. The negative impact of school closures on student education, mental and physical health is disproportionately concentrated among low-income and Black and Latinx children. These same groups of children experienced pre-existing inequities in education and health. However, there is little data on the state of children's social-emotional wellbeing following the very challenging 2020–2021 pandemic-related school year.

Given this context, it is critical to identify and address children's current needs with respect to school function, health, and wellbeing. 12 Schools, parents and child health advocates are seeking to address potentially increased health, academic, and social needs of school-aged children now and in the coming years of pandemic recovery. Identifying the needs and priorities of school age children and their families, as well as how needs differ across sociodemographic groups, can help guide future investments. Parents have a unique perspective on children's needs, and their voice should be included when policy-makers and school leaders decide how to direct school funding, particularly in marginalized communities. However, there are no national studies documenting the current state of school-aged children's social-emotional wellbeing and parent opinions regarding their needs and priorities for specific school-related academic, social, and health care services.

To address this gap, we conducted a national survey of parents of school-aged children to determine 1) children's current level of social-emotional wellbeing and 2) parents' perceived needs and priorities for school-based services in the upcoming school year.

## **METHODS**

## **DATA COLLECTION AND POPULATION**

We surveyed parents participating in the Understanding America Study (UAS), a nationally representative probability-based internet panel of approximately 9000 noninstitutionalized US adults recruited using address-based sampling. Respondents without a prior internet connection are provided with a computer tablet and broadband internet. 13,14 From March 2020 to July 2021, UAS panelists were invited to participate in a longitudinal tracking survey about the COVID-19 pandemic. Approximately 90% of UAS panelists participated. Data for this analysis were drawn from a survey administered online June 30, 2021-August 22, 2021 to UAS participants who are the parent of a child enrolling in school in grades K-12 for the 2021–2022 school year. Respondents were eligible to participate in our survey if they had, in the COVID tracking survey, identified at least one household member entering grades K-11 in the fall of 2020. Eligible respondents receive email and postcard invitations to log onto their personal UAS web-page and complete the online survey. In our survey, these respondents were asked about the same child as in the COVID tracking survey if the selected child was eligible for or entering grades K-12 for the 2021–2022 school year. If the selected child was not eligible for or entering grades K-12 for the 2021–2022 school year, a different child from the household was selected or the respondent was dropped from the survey. All UAS surveys are available in English or Spanish.

#### **MEASURES**

#### SOCIAL-EMOTIONAL WELLBEING

Parents completed the validated, 25-item Strengths and Difficulties Questionnaire, assessing well-being across domains of emotional problems, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior. 15 Prosocial items assess the degree to which children are considerate of other's feelings, helpful, and kind. The first 4 subscales are summed to create a total difficulties score ranging from 0 to 40 with higher scores corresponding to more difficulties. Population norm cut-offs identify responses as normal, elevated, high, and very high for the total difficulties, emotional problems, conduct problems, hyperactivity problems and peer problems scales and normal, slightly low, low, and very low for the prosocial scale. These cut-offs were established such that, for a typical population, 80% of children score in the normal range, 10% in the elevated/ slightly low range, 5% in the high/low range, and 5% in the very high/very low range. 16 Finally, parents are asked to report whether they think their child has difficulties in any of the following areas: emotions, concentration, behavior or being able to get along with other people, with response options of "no," "yes, minor difficulties", "yes, definite difficulties," and "yes, severe difficulties."

## CHILD HEALTH STATUS

Parents were asked to rate their child's health in general as excellent, very good, good, fair, or poor, using a validated measure of overall child health status.<sup>17</sup>

# SCHOOL-RELATED NEEDS AND PRIORITIES

Parents were asked, "In thinking about your child's needs and your family's needs right now, which of the following would you like your child's school to offer?" and were able to select all that apply from the following categories: "support getting healthcare", "mental wellness support", "food, housing, legal or transportation support", and "learning supports and enrichment." Parents who selected a category of need were then presented with a more detailed list of potential services within that category. Finally, a list of the specific services each parent selected was displayed, and parents were asked to prioritize their most important, second most important and third most important need. These items were developed based on iterative rounds of feedback with public health and school system partners, as well as on informal pilot testing for construct and content validity with parents of schoolaged children. To create an overall priority ranking, we used a point system, where first, second and third choice 1370 DUDOVITZ ET AL ACADEMIC PEDIATRICS

items were given three, two, and one point respectively. Total points for each item were summed, and items were ranked highest to lowest.

#### SOCIODEMOGRAPHIC CHARACTERISTICS

Parents reported the grade their child was entering in the 2021–2022 school year. We categorized grade level according to those traditionally served by elementary schools (K-5th grades), middle schools (6th–8th grades), and high schools (9th–12th grades), as school services might be deployed differently across these configurations. In addition, self-reported parent and child characteristics were obtained from the previously administered UAS Household Survey to examine disparities in children's wellbeing and school-related needs by race, ethnicity, parental employment, household income, and gender. Participants update the Household Survey every 3 months.

#### DATA ANALYSES

Weighted means and proportions described sample characteristic and outcomes. Weighted linear regressions examined demographic factors associated with the total difficulties and prosocial scores, and weighted Poisson regressions tested whether school-related needs were associated with demographic factors. Adjusted beta coefficients and risk ratios with model-robust 95% confidence intervals were used to summarize these associations. All analyses were conducted in SAS v. 9.4 (SAS Institute Inc., Cary, NC). Missing data represents <1% for all variables, so complete cases were used in this analysis with post-stratification weights adjusting for non-response. This study was reviewed and approved by the University of Southern California Institutional Review Board.

# RESULTS

Overall 1743 of the 2201 eligible parents of a schoolaged child enrolling in K-12th grade school for the 2021 -2022 school year responded to the survey for a response rate of 79.2%. Our weighted analytic sample was limited to the 1504 respondents with a valid survey weight. The excluded observations were due to the presence of special sample of young mothers that is not nationally representative and hence those participants do not have a sample weight and were excluded from this analysis. As seen in Table 1, the sample is demographically and regionally diverse. A substantial minority of parents (36.7%) report not currently working, 24.8% earn less than \$30,000 a year, and 13.4% were born outside the United States. About 47% of parents responded regarding a child in grades K-5, 24% regarding a child in grades 6 to 8, and 29% regarding a child in grades 9 to 12. Finally, 84.2% of parents reported that their child's health was excellent or very good.

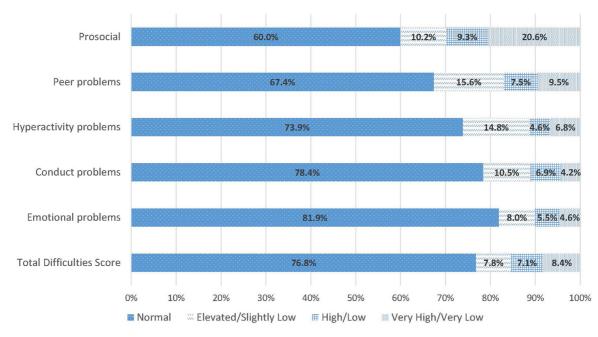
Figure 1 and Appendix Table 1 show the percent of the sample scoring in each category on the strengths and difficulties questionnaire subscales. Just over 23% of children scored outside the normal range on total difficulties, with over one-quarter (26.1%) scoring outside the normal

**Table 1.** Sample Characteristics (N = 1504)

	N/Mean	%/SD
Parent age in years	48.4	14.5
Parent gender		
Male	739	49.1
Female	765	50.9
Parent race and ethnicity	. 55	00.0
Asian	80	5.3
Black	173	11.5
Latinx	266	17.7
White	931	61.9
Other	55	3.7
Parent employment		
Not currently working	550	36.7
Currently working	951	63.4
Household income		
Less than \$30,000	373	24.8
\$30,000-\$59,999	382	25.4
\$60,000-\$99,999	353	23.5
\$100,000 or more	396	26.4
Parent country of origin		
Other	202	13.4
United States	1302	86.6
Region		
Northeast	254	16.9
South	581	38.6
Midwest	303	20.2
West	366	24.3
Child gender		
Male	782	52.1
Female	714	47.5
Other/non-binary	5	0.4
Child's grade		
K-5th grade	708	47.2
6th-8th grade	357	23.8
9th-12th grade	435	29.0
General health now:		
Excellent	759	50.7
Very good	501	33.5
Good	210	14.0
Fair	24	1.6
Poor	2	0.2

range on the hyperactivity subscale and about one-third (32.6%) scoring outside the normal range on the peer problems subscale. In addition, 40% of children scored below the normal range on prosocial strengths. Finally, 32.1% of parents reported that their child had minor difficulties and 13.4% reported definite or severe difficulties.

A large proportion of the sample (83.5%) reported having at least one school-related need with most (80.1%) reporting 3 or more needs. Overall, 77% reported learning supports and enrichment needs, 57% reported mental wellness needs, and 33% reported needs related to support getting healthcare and food, housing legal, or transportation support, respectively. As seen in Table 2, the highest priority need was tutoring, which was reported by over half the sample, followed by help building social relationship (reported by 61%), increased instructional time (46%), helping your child cope with stress or anxiety (47%), and physical fitness and sports (64%). Of note, a need for continued virtual learning was cited by 37% of parents.



**Figure 1.** Percent of school-aged children scoring in each category on the Strengths and Difficulties Questionnaire. For the total difficulties, emotional problems, conduct problems, hyperactivity problems and peer problems scales, categories displayed are Normal, Elevated, High, and Very High. For the prosocial scale, categories displayed are Normal, Slightly Low, Low, and Very Low. Prior studies have found that in a typical population, 80% of children are expected to score in the normal range, 10% in the elevated/slightly low range, 5% in the high/low range, and 5% in the very high/very low range. <sup>16</sup>

Appendix Table 2 shows the sociodemographic characteristics of those reporting one of the top 5 highest priority needs. A need for tutoring was cited most often by parents

of Black children (71%), compared to other racial or ethnic groups (range 48.5%-61.1%), and parents with lower income (63.2% among those earning less than \$30,000/

**Table 2.** Prevalence and Priority Ranking of School-Related Needs (N = 1504)

School-Related Need	%	N	Priority Ranking
Tutoring	55%	828	1
Helping your child socialize and build healthy relationships	61%	916	2
Increased instructional time	46%	684	3
Helping your child cope with stress or anxiety	47%	704	4
Physical fitness and sports	64%	967	5
Academic enrichment for high achieving students	60%	902	6
Therapists or mental health counselors at school	44%	667	7
Additional special education services (eg, speech therapy, occupational therapy, more special education teachers)	34%	503	8
Arts (music, painting, drawing, photography)	66%	993	9
Transportation to and from school (by school bus or public bus)	48%	717	10
School nurses on campus	31%	466	11
Before and after school programs	55%	821	12
Continued virtual learning or hybrid (part virtual, part in person)	37%	553	13
A computer or tablet for your child	49%	736	14
Healthcare at a clinic on school grounds	23%	352	15
Summer school programs	49%	740	16
Vaccination	21%	309	17
Help for you to support children learning at home	48%	727	18
Processing grief	29%	434	19
Providing family meals for pick up	21%	312	20
Finding a therapist or mental health counselor near your home	31%	472	21
Finding substance abuse treatment programs at school or in your community	20%	294	22
High-speed internet access (such as wifi) for your home	44%	666	23
Access to free transportation	23%	350	24
Helping you cope with stress or anxiety	28%	413	25
Providing free or low-cost legal help (free lawyers)	21%	313	26
Signing up for food programs in your community	19%	290	27
Signing up for health insurance	17%	250	27
Finding a health clinic or doctor near your home	18%	277	27
Signing up for housing or homelessness programs	15%	232	27

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year) compared to higher income parents (47.6% among those earning \$100,000 or more). Help with child socialization was cited more often by parents of elementary and middle school children (65.3% and 66.9%, respectively) than parents of children in high school (49.4%). A similar pattern is noted with regards to increased instructional time, which was reported by 47.2% of elementary school and 52.4% of middle school parents, but only 37.4% of high school parents. A larger percentage of working parents (48.4%) cited a need to help their child cope with stress and anxiety than those not currently working (43.8%). Notably, the majority of parents in every sociodemographic group cited a need for physical fitness and sports.

Table 3 shows the results from multivariate regressions examining differences in child wellbeing and school-related needs across sociodemographic groups. We found few differences in total difficulties or prosocial scores across groups. Lower total difficulties score was associated with female gender and better health status, while higher prosocial score was associated with higher income, female gender, and better health status. In contrast, entering 9th to 12th grade was associated with a lower prosocial score.

With regards to school-related needs, increased parental age was associated with greater likelihood of reporting a healthcare, mental wellness, or learning need. Compared to white parents, identifying as Asian or Latinx was associated with higher likelihood of reporting a health care need. However, race and ethnicity were not associated with other types of school-related needs. Parental employment was associated with lower likelihood of having a healthcare need but higher likelihood of reporting a mental wellness need, while higher income was associated with a lower likelihood of reporting a food, housing, legal, or transportation need, in a dose-response fashion. Income was not significantly associated with reporting a mental wellness or learning need. Female gender was associated with higher likelihood of reporting a healthcare related need. Though representing a small number of participants (n = 5, 0.4%) of the sample, non-binary child gender was associated with increased likelihood of reporting a need in all categories. Finally, overall health status was associated with greater likelihood of reporting health care, mental wellness, and learning school-related needs. There were no differences in school-related needs across grade levels.

# **D**ISCUSSION

In this national sample of parents of school-aged children, we found low rates of parent-reported child social-emotional wellbeing and very high levels of school-related needs at a time when the children are entering a new school year. In particular, results suggest the greatest deficits in child wellbeing related to peer problems and prosocial skills and large numbers of children with needs related to learning supports and mental wellness across sociodemographic groups. These findings are consistent with recent reports suggesting increases in internalizing and externalizing symptoms for school-aged children following school closures and stay-at-home orders. <sup>18,19</sup> Our

study is the first, to our knowledge, to characterize children's social-emotional wellbeing more than one-and-a half years after the start of the pandemic and the first to describe school-related needs.

The percent of parents reporting difficulties in children's social-emotional wellbeing is substantially higher than was reported in national samples before the pandemic. In the 2018 National Health Interview Survey, for example, parents completed the Short Strengths and Difficulties Questionnaire and 5.6% of parents reported definite or severe difficulties, versus more than 13% in our sample, and 18.1% reported minor difficulties, versus more than 30% in our sample. 20,21 Similarly, compared to the 2018-2019 National Survey of Children's Health, where 90.1% of 6 to 11 year olds and 87.4% of 12 to 17 year olds were rated in excellent or very good health, we found worse overall health status in the current study. 17 Together, these findings reinforce the notion that, although school-aged children have largely experienced low morbidity and mortality related to COVID-19 infection,<sup>22</sup> their overall health and wellbeing may be significantly impacted by the pandemic.

Although the level of school-related needs before the pandemic is unknown, the large number of parents across sociodemographic groups reporting a current schoolrelated need might be driven, in part, by negative impacts of the pandemic and school closures on children's wellbeing, particularly with regards to learning and mental wellness. Indeed, the absence of significant associations between reporting a mental wellness and learning need and sociodemographic characteristics suggests these needs are widespread. However, we also found greater deficits in social-emotional wellbeing associated with race/ethnicity and income. This is consistent with concerns that the pandemic may have exacerbated health disparities.<sup>23</sup> Race, ethnicity, and income were also associated with some school-related needs more than others, which lends further support to the notion that families have experienced differential pandemic impacts, depending on their resources.

Notably, many of the specific needs prioritized by parents are highly addressable and likely to support both academic achievement and health. Further, approximately one-third of parents cited needs related to social determinants of health and health disparities, 24 such as food and housing. Investments in school and community resources to support these basic needs for the current generation of students may have long-term impacts on public health. Additionally, pediatricians can play an important role in addressing social determinants of health, by screening for and intervening on social determinants in the clinical setting.<sup>25</sup> Pediatricians can also play a crucial role in identifying and managing mental health needs, which were widespread in this sample.<sup>26</sup> The AAP's Mental Health Toolkit (https://toolkits.solutions.aap.org/mental-health/ home) offers important resources for this, and pediatricians can continue to advocate for accessible mental health care through integration with schools and primary care.<sup>27</sup> Finally, though a small group, the high level of

Table 3. Multivariate Associations of Child and Family Demographics With Child Social-Emotional Wellbeing and School-Related Needs

	Social-Emotional Wellbeing Beta (95%CI)		School-Related Needs Adjusted Risk Ratio (95%CI)			
	Total Difficulties Score	Prosocial Score	Support Getting Healthcare	Mental Wellness Support	Food, Housing, Legal, or Transportation	Learning Supports & Enrichment
Parent age in years	-0.02 (-0.06, 0.02)	0.01 (-0.01, 0.02)	1.01 (1.00, 1.02)	1.00 (1.00, 1.01)	1.00 (0.99, 1.01)	1.00 (1.00, 1.01)
Parent gender	,	, ,	, , ,	, ,	, ,	, , ,
Male	- REF -	- REF -				
Female	-0.27 (-1.34, 0.79)	0.05 (-0.29, 0.39)	0.97 (0.76, 1.23)	1.10 (0.95, 1.27)	0.96 (0.76, 1.22)	1.08 (0.99, 1.18)
Parent race/ethnicity	- ( - ,,		- (, -,	,	,	(,,
White	- REF -	- REF -				
Asian	-1.77 (-3.96, 0.41)	-0.60 (-1.55, 0.36)	2.67 (1.56, 4.55)	1.10 (0.76, 1.59)	1.47 (0.85, 2.54)	0.95 (0.76, 1.18)
Black	-1.63 (-3.27, 0.01)	-0.09 (-0.65, 0.47)	1.24 (0.90, 1.70)	1.09 (0.88, 1.36)	1.22 (0.90, 1.65)	1.03 (0.90, 1.19)
Latinx	0.41 (-1.17, 1.98)	-0.58 (-1.13, -0.03)	1.50 (1.08, 2.08)	1.12 (0.92, 1.37)	1.23 (0.87, 1.75)	0.90 (0.79, 1.04)
Other	-1.63 (-3.95, 0.69)	0.44 (-0.27, 1.15)	0.97 (0.54, 1.76)	1.03 (0.71, 1.50)	0.67 (0.32, 1.39)	0.86 (0.65, 1.14)
Parent employment		0( 0.2.,0)	0.01 (0.01, 1110)	(0.1. 1, 1.100)	0.07 (0.02, 1.00)	0.00 (0.00,)
Not currently working	- REF -	- BEF -				
Currently working	-0.38 (-1.71, 0.94)	0.13 (-0.29, 0.55)	0.78 (0.61, 0.99)	1.21 (1.02, 1.43)	0.93 (0.72, 1.19)	1.04 (0.94, 1.16)
Household income	0.00 (, 0.0 .)	0.10 ( 0.20, 0.00)	0.10 (0.01, 0.00)	(,	0.00 (0.1.2, 11.0)	
Less than \$30,000	- REF -	- REF -				
\$30,000-\$59,999	-0.54 (-2.15, 1.06)	0.52 (0.00, 1.04)	0.97 (0.74, 1.27)	0.94 (0.77, 1.15)	0.61 (0.46, 0.81)	1.08 (0.96, 1.22)
\$60,000-\$99,999	-1.13 (-2.79, 0.52)	0.40 (-0.15, 0.95)	0.77 (0.56, 1.06)	0.96 (0.78, 1.19)	0.56 (0.41, 0.76)	1.03 (0.90, 1.19)
\$100,000 or more	-1.31 (-2.86, 0.24)	0.28 (-0.27, 0.82)	0.45 (0.31, 0.66)	0.91 (0.73, 1.13)	0.30 (0.20, 0.45)	1.09 (0.95, 1.25)
Parent country of origin	1.01 ( 2.00, 0.2.1)	0.20 ( 0.27, 0.02)	01.10 (010.1, 0100)	0.01 (0.70, 1.10)	0.00 (0.20, 0.10)	1.00 (0.00, 1.20)
USA	- REF -	- BEF -				
Other	-0.07 (-1.51, 1.37)	-0.41 (-1.05, 0.23)	Other	-0.07 (-1.51, 1.37)	-0.41 (-1.05, 0.23)	Other
Region	0.07 ( 1.01, 1.07)	0.11 ( 1.00, 0.20)	Guioi	0.07 ( 1.01, 1.07)	0.11 ( 1.00, 0.20)	Othor
Northeast	- REF -	- REF -				
South	-0.54 (-2.11, 1.02)	-0.43 (-0.93, 0.08)	1.09 (0.77, 1.55)	1.07 (0.85, 1.35)	0.97 (0.66, 1.42)	1.05 (0.91, 1.20)
Midwest	0.36 (-1.42, 2.13)	-0.52 (-1.05, 0.01)	0.89 (0.59, 1.34)	1.10 (0.86, 1.41)	0.96 (0.64, 1.46)	1.03 (0.89, 1.19)
West	-0.18 (-1.84, 1.47)	-0.40 (-0.96, 0.17)	0.94 (0.64, 1.39)	1.15 (0.91, 1.45)	0.96 (0.64, 1.45)	1.12 (0.97, 1.30)
Child gender	0.10 ( 1.01, 1.17)	0.10 ( 0.00, 0.17)	0.01 (0.01, 1.00)	11.10 (0.01, 1.10)	0.00 (0.01, 1.10)	1.12 (0.07, 1.00)
Male	- REF -	- REF -				
Female	-1.19 (-2.15, -0.23)	0.41 (0.08, 0.74)	1.39 (1.10, 1.75)	1.06 (0.92, 1.22)	1.21 (0.97, 1.50)	1.04 (0.96, 1.13)
Other/non-binary	-1.71 (-6.35, 2.93)	0.27 (-0.58, 1.12)	2.27 (1.49, 3.47)	1.71 (1.23, 2.36)	2.09 (1.43, 3.06)	1.25 (1.11, 1.42)
Child's grade	1.71 ( 0.00, 2.00)	0.27 ( 0.00, 1.12)	2.27 (1.40, 0.47)	1171 (1.20, 2.00)	2.03 (1.40, 0.00)	1120 (1111, 1142)
K-5th grade	- REF -	- REF -				
6th-8th grade	0.61 (-0.69, 1.91)	-0.41 (-0.86, 0.05)	0.97 (0.74, 1.27)	1.10 (0.93, 1.31)	0.94 (0.72, 1.22)	1.01 (0.91, 1.11)
9th-12th grade	0.35 (-0.80, 1.51)	-0.49 (-0.87, -0.11)	0.91 (0.69, 1.20)	1.08 (0.92, 1.26)	0.82 (0.61, 1.09)	0.92 (0.83, 1.02)
Child's health status	0.03 (-0.00, 1.31)	-0.43 (-0.07, -0.11)	0.51 (0.05, 1.20)	1.00 (0.02, 1.20)	0.02 (0.01, 1.03)	0.02 (0.00, 1.02)
Excellent	- REF -	- REF -				
Very good	2.11 (1.05, 3.17)	-0.39 (-0.76, -0.03)	1.24 (0.96, 1.59)	1.20 (1.02, 1.40)	1.10 (0.87, 1.39)	1.07 (0.98, 1.17)
Good	5.01 (3.13, 6.89)	-0.39 (-0.76, -0.03) -1.29 (-1.88, -0.69)	1.47 (1.09, 1.99)	1.34 (1.12, 1.61)	0.95 (0.68, 1.31)	1.03 (0.90, 1.18)
Fair	5.66 (1.72, 9.60)	-1.29 (-1.86, -0.89) -1.90 (-2.93, -0.86)	3.71 (2.63, 5.23)	1.88 (1.57, 2.26)	1.83 (0.88, 3.82)	1.13 (0.90, 1.43)
Poor	17.12 (10.41, 23.83)	-6.12 (-8.67, -3.58)	2.48 (1.13, 5.47)	1.86 (1.34, 2.60)	1.20 (0.32, 4.46)	1.41 (1.17, 1.70)
1 001	17.12 (10.41, 23.03)	-0.12 (-0.07, -3.56)	2.40 (1.13, 3.47)	1.00 (1.34, 2.00)	1.20 (0.32, 4.40)	1.41 (1.17, 1.70)

Statistically significant associations are presented in bold.

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need cited by parents of children whose gender identity is non-binary suggest this may constitute a population that warrants special attention and support.

Although strength of this study is the use of a nationally representative probability-based sample, including many participants from minoritized populations, our study has a number of limitations. The cross-sectional nature of our study design limits our ability to draw causal inferences. In addition, items assessing school-related needs are not validated and results reflect one point in time, prior to the start of the 2021–2022 school year for most participants. Hence, we cannot comment on how child wellbeing or school-related needs may have changed over time. We are limited by the demographic information available in the UAS Study, which does not include federal poverty level. We also present analyses across multiple outcomes, which increases our chances of committing a type II error. However, the consistent pattern of findings makes this less likely.

#### CONCLUSIONS

Despite these limitations, findings have important implications for schools, parents, pediatricians, and child health advocates regarding how to direct current and future school and health-related investments to support children's social-emotional wellbeing. Schools might consider investing in greater learning supports and enrichment and mental wellness, as a majority of parents report needs related to these domains. Schools serving a high proportion of children in poverty might also be prioritized for services related to health care and social needs, which are more commonly reported for low-income families, and are critical determinants of child health and academic performance. Enhanced school funding and partnerships with community-based organizations might help build the capacity of schools to meet the needs of children and families during the ongoing pandemic and recovery.

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# SUPPLEMENTARY DATA

Supplementary data related to this article can be found online at https://doi.org/10.1016/j.acap.2022.01.015.

# REFERENCES

- Fraiman YS, Litt JS, Davis JM, et al. Racial and ethnic disparities in adult COVID-19 and the future impact on child health. *Pediatr Res*. 2021;89:1052–1054.
- 2. Kuhfield M, Tarasawa B. The COVID-19 Slide: What Summer Learning Loss Can Tell Us About the Potential Impact of School

- Closures on Student Academic Achievement. Brief. Portland, Ore: NWEA; 2020.
- Kaffenberger M. Modelling the long-run learning impact of the Covid-19 learning shock: actions to (more than) mitigate loss. *Int J Educ Dev.* 2021;81:102326.
- Christakis DA, Van Cleve W, Zimmerman FJ. Estimation of US children's educational attainment and years of life lost associated with primary school closures during the coronavirus disease 2019 pandemic. *JAMA Network Open*. 2020;3:e2028786.
- Van Lancker W, Parolin Z. COVID-19, school closures, and child poverty: a social crisis in the making. *Lancet Public Health*. 2020;5: e243–e244
- Colao A, Piscitelli P, Pulimeno M, et al. Rethinking the role of the school after COVID-19. Lancet Public Health. 2020;5:e370.
- Lee J. Mental health effects of school closures during COVID-19. Lancet Child Adolesc Health. 2020;4:421.
- Hawrilenko M, Kroshus E, Tandon P, et al. The association between school closures and child mental health during COVID-19. *JAMA Network Open*. 2021;4. e2124092.
- Masonbrink AR, Hurley E. Advocating for children during the COVID-19 school closures. *Pediatrics*. 2020;146:e20201440.
- Perrin JM, Duncan G, Diaz A, et al. Principles and policies to strengthen child and adolescent health and well-being. *Health affairs (Project Hope)*. 2020;39:1677–1683.
- Parolin Z. What the COVID-19 pandemic reveals about racial differences in child welfare and child well-being: an introduction to the special issue. *Race Soc Probl.* 2021;13:1–5.
- Dudovitz RN, Russ S, Berghaus M, et al. COVID-19 and children's well-being: a rapid research agenda. Matern Child Health J. 2021:1–15.
- 13. Szilagyi PG, Thomas K, Shah MD, et al. National trends in the US public's likelihood of getting a COVID-19 vaccine-April 1 to December 8, 2020. *JAMA*. 2020;325:396–398.
- 14. Angrisani M, Finley B, Kapteyn A. Can internet match high-quality traditional surveys? Comparing the health and retirement study and its online version. *The Econometrics of Complex Survey Data*. Bingley, United Kingdom: Emerald Publishing Limited; 2019:3–33. Vol 39.
- Kovacs S, Sharp C. Criterion validity of the strengths and difficulties questionnaire (SDQ) with inpatient adolescents. *Psychiatry Res*. 2014;219:651–657.
- Bourdon KH, Goodman R, Rae DS, et al. The Strengths and Difficulties Questionnaire: U.S. normative data and psychometric properties. J Am Acad Child Adolesc Psychiatry, 2005;44:557–564.
- 17. National Survey of Children's Health 2018. 2018.
- Rosen ML, Rodman AM, Kasparek SW, et al. Promoting youth mental health during the COVID-19 pandemic: a longitudinal study. PLoS One. 2021;16: e0255294.
- Steimle S, Gassman-Pines A, Johnson AD, et al. Understanding patterns of food insecurity and family well-being amid the COVID-19 pandemic using daily surveys. *Child Dev.* 2021;92:e781–e797.
- Child FIFo, Studies F. America's children: key national indicators of well-being, 2020: government printing office; 2020.
- National Center for Health Statistics. National Health Interview Survey, 2018. Public-use data file and documentation 2019.
- O'Driscoll M, Ribeiro Dos Santos G, Wang L, et al. Age-specific mortality and immunity patterns of SARS-CoV-2. *Nature*. 2021;590:140–145.
- Ambrose AJH. Inequities during COVID-19. *Pediatrics*. 2020;146: e20201501. https://doi.org/10.1542/peds.2020-1501.
- 24. Adler NE, Glymour M, Fielding J. Addressing social determinants of health and health inequalities. *JAMA*. 2016;316:1641–1642.
- 25. Andermann A. Screening for social determinants of health in clinical care: moving from the margins to the mainstream. *Public Health Rev.* 2018;39:19.
- Foy JM, Green CM, Earls MF, Committee on Psychosocial Aspects of Child and Family Health, Mental Health Leadership Work Group. Mental health competencies for pediatric practice. *Pediatrics*. 2019;144: e20192757.
- Hodgkinson S, Godoy L, Beers LS, et al. Improving mental health access for low-income children and families in the primary care setting. *Pediatrics*. 2017;139.