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Promoting youth mental health during the COVID-19 pandemic: A longitudinal study

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Abstract

The COVID-19 pandemic has introduced novel stressors into the lives of youth. Identifying factors that protect against the onset of psychopathology in the face of these stressors is critical. We examine a wide range of factors that may protect youth from developing psychopathology during the pandemic. We assessed pandemic-related stressors, internalizing and externalizing psychopathology, and potential protective factors by combining two longitudinal samples of children and adolescents (N = 224, 7–10 and 13–15 years) assessed prior to the pandemic, during the stay-at-home orders, and six months later. We evaluated how family behaviors during the stay-at-home orders were related to changes in psychopathology during the pandemic, identified factors that moderate the association of pandemic-related stressors with psychopathology, and determined whether associations varied by age. Internalizing and externalizing psychopathology increased substantially during the pandemic. Higher exposure to pandemic-related stressors was associated with increases in internalizing and externalizing symptoms early in the pandemic and six months later. Having a structured routine, less passive screen time, lower exposure to news media about the pandemic, and to a lesser extent more time in nature and getting adequate sleep were associated with reduced psychopathology. The association between pandemic-related stressors and psychopathology was reduced for youths with limited passive screen time and was absent for children, but not adolescents, with lower news media consumption related to the pandemic. We provide insight into simple, practical steps families can take to promote resilience against mental health problems in youth during the COVID-19 pandemic and protect against psychopathology following pandemic-related stressors.

Introduction

The COVID-19 pandemic has introduced unprecedented changes in the lives of children and adolescents. These changes brought a sudden loss of structure, routine, and sense of control. Families faced unique stressors ranging from unexpected illness, sudden unemployment and

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financial stressors, difficulty accessing basic necessities, and increased caretaking responsibilities paired with the shift to remote work, among others [1, 2]. Social distancing guidelines have limited youth's contact with friends, extended family, and teachers, which may increase isolation and loneliness. Schools traditionally provide resources that may buffer youth against the negative consequences of stressors—including supportive social interactions, physical exercise, consistent meals, and a structured routine—that were unavailable to many U.S. youth for a prolonged period of time during the pandemic. These disruptions and pandemic-related stressors are likely to increase risk for depression, anxiety, and behavior problems in youth. Here, we identify factors that may protect against increases in mental health problems during the COVID-19 pandemic in a longitudinal sample assessed both prior to the pandemic and during the stay-at-home order period. We focus on simple and practical strategies that families can take in an effort to promote positive mental health outcomes in children and adolescents during the pandemic.

Exposure to stressors is strongly related to the onset of internalizing and externalizing psychopathology in children and adolescents [3–8]. The powerful association between stress and psychopathology has been replicated in longitudinal studies [7, 9, 10], including following community stressors, such as natural disasters [11, 12] and terrorist attacks [13–15]. Numerous pandemic-related experiences reflect novel stressors for youth and families, including unpredictability and daily routine disruptions [16, 17], unexpected loss of family members, friends, and loved ones [18], chronic exposure to information about threats to well-being and survival in situations that were previously safe [19], and social isolation [20]. Thus, exposure to pandemic-related stressors is likely to be associated with increases in anxiety, depression, and behavior problems in children and adolescents [1, 21, 22]. Indeed, emerging data demonstrates that youth psychopathology has increased during the COVID-19 pandemic [23].

Identifying factors that may promote youth well-being during the pandemic is a critical priority and has clear benefits for parents, pediatricians, and medical professionals. Leading theoretical models of resilience posit that factors that promote resilience exist across multiple levels including the individual, family, school, community, and broader cultural systems [24–26]. Critically, during the early period of the COVID-19 pandemic when schools were closed, stay-at-home orders were in place, and many community resources were shuttered, children were cut off from many common sources of resilience, particularly those occurring at the school and community levels. As such, home and family-level factors may have been of even greater importance than in normal circumstances. Furthermore, given the constraints faced by many families with children, we focus on a set of simple and practical strategies that are easily accessible, inexpensive, and require no specialized resources or services outside the home. We selected factors that have previously been associated with reduced child psychopathology or buffer against mental health problems following exposure to stressors, including: higher levels of physical activity [27–29]; access to nature and the outdoors [30–33]; a consistent daily routine providing structure and predictability [16, 34]; getting a sufficient amount of sleep, which is often disrupted following stressors [35–37]; and lower levels of passive screen time and news media consumption, given that higher use has been associated with elevations in child psychopathology [38], particularly following community-level stressors, like terrorist attacks [39–42]. We also assessed the degree to which youth engaged in adaptive coping strategies during times of distress (e.g., exercising, seeking support from loved ones, or practicing mindfulness or meditation) [43–45]. Finally, providing help for others in need is associated with reduced anxiety and depression [46, 47]. Here, we evaluated whether these nine simple and inexpensive strategies are (a) associated with reduced psychopathology symptoms during the pandemic and (b) buffer against the negative mental health consequences of pandemic-related stressors in children and adolescents.

We examined these questions by combining two longitudinal samples of children and adolescents whose mental health was assessed *prior* to the COVID-19 pandemic in Seattle, Washington. This aspect of this study is critical because one of the strongest predictors of psychopathology during the pandemic is likely to be psychopathology *prior* to the pandemic. By controlling for pre-pandemic psychopathology, we are able to investigate changes in psychopathology that occurred during the pandemic. We then assessed pandemic-related stressors, internalizing and externalizing symptoms, and potential protective factors during six weeks between April and May of 2020—a period when the Seattle area was particularly hard-hit by the pandemic and stay-at-home orders were in place. We also followed up with participants six months later, between late November of 2020 and early January of 2021, to assess mental health. During this second follow-up, schools in the Seattle area were still operating virtually, social distancing guidelines were still in place, and new COVID-19 cases had reached a second peak. We examined whether exposure to pandemic-related stressors were associated with increases in internalizing and externalizing psychopathology, both concurrently and prospectively, controlling for pre-pandemic symptoms. We explored whether the potential protective factors were associated with changes in psychopathology during the pandemic or moderated the association of pandemic-related stressors with changes in psychopathology both during the stay-at-home orders and six months later. Finally, we tested whether these associations varied as a function of age, to determine whether the associations of potentially protective factors with psychopathology were similar for children and adolescents both concurrently and prospectively. Given the unique context of the COVID-19 pandemic, we did not have strong hypotheses about which particular protective factors would be more beneficial to children or adolescents. However, we did hypothesize that adolescents would show a stronger association between pandemic-related stress and psychopathology given previous work that shows that adolescence is a period of particular vulnerability to mental health problems following stressful life events [6, 7, 48–50].

Methods

Participants

Participants were recruited from two ongoing longitudinal studies of children and adolescents in the greater Seattle area. A sample of 224 youth aged 7–15 (M_{age} = 12.65, SD = 2.59, range: 7.64–15.24, 47.8% female) and a caregiver completed a battery of questionnaires to assess social behaviors and experiences and pandemic-related stressors. Participants also completed assessments of symptoms of internalizing and externalizing psychopathology. Two participants did not complete these mental health assessments and therefore were excluded from analyses. Six months later, 184 of these youth (82% of the initial pandemic sample) and a caregiver again completed an assessment of internalizing and externalizing symptoms. Ten participants did not complete these mental health assessments and therefore were excluded from analyses at T2. The racial and ethnic background of participants reflected the Seattle area, with 66% of participants identifying as White, 11% as Black, 11% as Asian, 8% as Hispanic or Latino, and 3% as another race or ethnicity.

Children from the first sample were recruited from a study of younger children (N = 99) originally recruited between January 2016 and September 2017 [51, 52]. Between March 2018 and November 2018, a subset of the original sample (N = 90) participated in a follow-up assessment of mental health. All participants who participated at baseline were contacted for the current study during the period of stay-at-home orders of the pandemic. From this sample, 68 youths (68.9% of the original sample; M_{age} = 8.88, range: 7.64–10.21, 53% female) and a caregiver participated in the first time point of current study (during the stay-at-home orders) and

53 completed the six-month follow-up. Mental health assessments obtained at age 6–8 years were used to control for pre-pandemic psychopathology. Three participants did not complete the most recent assessment, and mental health assessments at age 5–6 were used to control for pre-pandemic psychopathology.

Adolescent participants were drawn from a longitudinal study of children followed from early childhood to adolescence and their mothers [53]. Participants completed the most recent assessment at age 11–12 years (N = 227) between June 2017 and October 2018. These participants were re-contacted for assessment for the current study. From this sample, 154 youths (M_{age} = 14.3, range: 13.12–15.24, 46% female) and their caregiver completed the current study (67.8% of the most recently assessed sample) and 121 completed the six-month follow-up. Mental health assessments at age 11–12 were used to control for pre-pandemic psychopathology.

These two samples came from the same general population (youth in the Seattle area from a wide range of socioeconomic backgrounds). Critically, these two samples did not differ with regards to socioeconomic status, as measured by the income-to-needs ratio, sex distribution (ps $>$ .8), or in exposure to pandemic-related stressors (p = .907).

Participants were excluded from the parent studies based on the following criteria: IQ $<$ 80, active substance dependence, psychosis, presence of pervasive developmental disorders (e.g., autism), and psychotropic medication use. Across both samples, legal guardians provided informed consent and youths provided assent via electronic signature obtained using Qualtrics (Provo, UT). All study procedures were approved by the Institutional Review Board at Harvard University. Youth and their caregivers were each paid $50 for participating in the first wave of the study and $35 for the second wave.

Procedure

Parents and youth separately completed electronic surveys. Families contacted an experimenter if youth had trouble completing the surveys on their own, and an experimenter then called via phone or video chat and read the questions aloud and recorded their responses (this experimenter was blind to all data from the previous assessments). Data were collected during a six-week period between mid-April, 2020 and May 31st, 2020 (T1), during which schools were closed and stay-at-home orders were in place. A follow-up (T2) was conducted between late November 2020 and early January 2021 in which youth mental health was assessed again.

Pandemic-related stressors

We developed a set of questions to assess pandemic-related stressors (https://osf.io/drqku/; see S1 File). The assessment included *health*, *financial*, *social*, *school*, *and physical environment stressors* that occurred within the preceding month, based on both caregiver and child report (See Table 1). Given that the COVID-19 pandemic presented a wide range of unique stressors that have not occurred in prior community-wide disruptions, it was necessary to create a novel measure to assess these types of experiences. It is standard practice in the field to do so when novel events occur for which existing stress measures do not adequately capture the full extent of specific types of stressful experiences (*e.g.*, to understand the unique hurricane-related stressors that occurred during Hurricane Katrina or experiences specific to the terrorist attacks on September 11th or the Oklahoma City bombing [12, 41, 54, 55].

We created a composite of pandemic-related stressors using a cumulative risk approach, [56] by determining the presence of each potential stressors (exposed versus not exposed), and creating a risk score reflecting a count of these stressors (18 maximum). Importantly, many previous studies demonstrate the utility and convergent validity of cumulative stress measures

Table 1. COVID-19 pandemic-related stressors and potential protective factors.

Stressor Domain	Description	Number of Items
Health Stressors	Participant contracted COVID-19; a parent, sibling or another relative contracted COVID-19; a partner or close friend contracted COVID-19; the participant knew someone who died of the virus; had a parent who was an essential worker (*e.g.* healthcare worker, grocery store worker) who was still working during the initial months of the pandemic.	7
Social	having a difficult relationship with a parent or other member of the household that had gotten worse during the last month; experiencing loneliness a few times per week or more; and experiencing racism, prejudice or discrimination related to the pandemic.	4
Financial	a parent was laid off or had other significant loss of employment; the family experienced food insecurity, assessed using previously-validated items [81, 82]; the family was evicted or otherwise were forced to leave their home because of financial reasons; the family experienced significant financial loss (*e.g.* due do loss of business, job loss, stock market losses, *etc.*).	4
School	experiencing difficulty getting schoolwork done at home; the environment where the child does schoolwork is noisy.	2
Physical Environment	crowding in the home based on the total number of people in the home divided by the approximate square footage reported by the parent [32]	1

Potential Protective Factor	Description of Measurement
Physical Activity	Total minutes of physical activity per week
Time in Nature	Days per week they spent time in natural green spaces including parks, canals, nature areas, beaches, countryside, and farmland.
Time Outdoors	Days per week participants spend time outside of their home (*e.g.* backyard or neighborhood street) for at least 30 minutes
News Consumption	Time spent watching news coverage about the pandemic on a TV, computer, iPad or other electronic device per day. Scored as a binary variable with less than 2 hours per day being scored as 0, and 2 or more hours per day being scored as 1.
Passive Screen Time	Hours per day, on average spent watching video on an electronic device, passively scrolling through social media, looking at websites and online news, watching movies and TV. Summed for total passive screen time

(*Continued*)

Table 1. (Continued)

Stressor Domain	Description	Number of Items
Sleep Quantity	Binary measure computed using CDC recommended guidelines for children in this age range (9–12 hours per night for children aged 8–10; 8–9 hours per night for adolescents [83].	
Daily Routine	Participant report on a 4-point Likert scale about the extent to which their days had a fairly consistent routine.	
Adaptive Coping Strategies	Binary measure. Participants were given a 1 if they endorsed any of the following ways of dealing with distress related to the coronavirus: talked to family or friends, exercised, meditated, or engaged in self-care activities.	
Helping in Community	Binary measure. Participants were given a 1 if they endorsed having participated in any of the following activities: volunteering time at hospitals, donating or preparing food, donating money or supplies, giving shelter to displaced people, praying for others, writing letters or contacting isolated people, cheering on health care workers, or other ways of helping.	

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in relation to health outcomes, with a greater number of stressors predicting higher levels of mental and physical health problems [56]. Here, we provide additional evidence for convergent validity by showing that the number of stressors is moderately associated with a measure of perceived stress as measured by the Perceived Stress Scale in this sample (r = 0.399). This value is similar to the correlation between stressful life events and perceived stress observed in the original validity studies used to create the Perceived Stress Scale (r = 0.24-.35) [57].

We also assessed pandemic-related stressors at T2. Importantly we only asked about stressors occurring between T1 and T2. If, for example, a participant had family member who became ill with COVID-19 in April 2020, this would be counted in the pandemic-related stressors at T1, but not at T2. We used pandemic-related stressors at T1 in all analyses (including prospective analyses) but report on pandemic-related stressors at T2 to illustrate the ongoing nature of the pandemic during the second wave of data collection.

Potential protective factors

We assessed nine potentially protective aspects of youth and family behavior during the prior month: (a) physical activity, (b) time spent in nature, (c) time spent outdoors, (d) screen time, (e) news consumption, (f) sleep quantity, (g) family routines, (h) coping strategies, and (i) helping others (https://osf.io/drqku/, Table 1).

Internalizing and externalizing psychopathology

Psychopathology was assessed prior to the pandemic by parent and child report on the Youth Self Report (YSR) and Child Behavior Checklist (CBCL) [58, 59]. The CBCL scales are widely used measures of youth emotional and behavioral problems and use normative data to generate age-standardized estimates of internalizing and externalizing psychopathology. We used the highest T-scores from the caregiver or child on the Internalizing and Externalizing symptoms subscales as measures of pre-pandemic symptoms. The children who were 6–8 years old at the pre-pandemic time point did not complete the YSR; only the CBCL was used to compute their pre-pandemic symptoms at that time point. The use of the higher caregiver or child report for psychopathology is an implementation of the standard "or" rule used in combining

caregiver and child reports of psychopathology. In this approach, if either a parent or child endorses a particular symptom it is counted with the assumption that if a symptom is reported, it is likely present. This is a standard approach in the literature on child psychopathology–for example it is how mental disorders are diagnosed in population-based studies of psychopathology in children and adolescents [60, 61].

To assess psychopathology at T1 and T2, parents and youths completed the Strengths and Difficulties Questionnaire, a widely-used assessment of youth mental health [62]. The SDQ has good reliability and validity [63, 64] and correlates strongly with the CBCL/YSR [65]. We chose to use the SDQ to reduce participant burden, as it has substantially fewer items than the CBCL/YSR. We used the highest reported value on the Internalizing and Externalizing symptoms subscales from the caregiver or child.

Family income

At T1, we asked caregivers to report their total combined family income for the 12 months prior to the onset of the pandemic in 14 bins. The median of the income bins was used except for the lowest and highest bins which were assigned $14,570 and $150,000, respectively. We then calculated the income-to-needs ratio by dividing the family's income by the federal poverty line for a family of that size in 2020, with values less than one indicating income below the poverty line. Nine caregivers did not provide information on family income and were thus excluded from analyses. Median income-to-needs ratio was 4.19 (min = 0.35, max = 8.41).

Statistical analysis

We used linear regression to investigate the questions of interest. Continuous predictors were standardized using a z-score. Analyses were performed in R using the *lme4* package and standardized coefficients are presented. Continuous age, sex, income-to-needs ratio, and pre-pandemic symptoms measured using the CBCL/YSR prior to the pandemic were included as covariates in all analyses. First, we examined the association of pandemic-related stressors with internalizing and externalizing symptoms, both concurrently and prospectively. Next, we examined the association of potential protective factors with internalizing and externalizing problems, both concurrently and prospectively. Then, we tested whether these factors moderated the association of pandemic-related stressors with psychopathology, both concurrently and prospectively. Finally, we computed interactions of each protective factor with age predicting psychopathology and the interaction of pandemic-related stressors, each potential protective factor, and age predicting psychopathology, both concurrently and prospectively. Simple slopes analysis was used to follow-up on significant interactions using the R *pequod* package. Stratification for simple slope analyses in analyses that used continuous moderators were conducted using a median split. In the case of age analyses, because there was a gap in age between the oldest children (10 years) and the youngest adolescents (13 years), stratifying by sample for these purposes was equivalent to stratifying by a median split. False discovery rate (FDR) correction was applied at the level of hypothesis such that we corrected for comparisons at T1 and T2 (*e.g.*, association between physical activity and internalizing psychopathology at T1 and T2). Listwise deletion was used to handle missing data at T2, excluding participants from analysis who did not complete the second follow-up during the pandemic.

Results

Prior to the pandemic, 71 participants (31.7% of the sample) were in the subclinical or clinical range for internalizing problems and 39 participants (17.4% of the sample) were in the subclinical or clinical range for externalizing problems. Internalizing and externalizing symptoms

increased substantially during the early phase of the pandemic. Specifically, 127 (56.7%) were in the subclinical or clinical range for internalizing problems and 126 (56.2%) were in the subclinical or clinical range for externalizing problems at the beginning of the pandemic.

See S1 File for the frequency of different domains of stressors at T1 and T2 (S1 Table in S1 File), the distribution of potential protective factors and psychopathology symptoms before and after the pandemic (S2 Table in S1 File), bivariate correlations between all study variables (S3 Table in S1 File) and associations between individual stressors and psychopathology at T1 and T2 (S4 Table in S1 File).

As expected, one of the strongest predictors of psychopathology during the pandemic was pre-pandemic psychopathology (see S3 Table in S1 File). Therefore, it is important to highlight that all analyses controlled for pre-pandemic psychopathology to assess changes in psychopathology specific to the pandemic period.

Pandemic-related stressors and psychopathology

The number of pandemic-related stressors was strongly associated with increases in both internalizing ($\beta = 0.345$, $p < .001$), and externalizing symptoms ($\beta = 0.297$, $p < .001$) symptoms during the pandemic, controlling for pre-pandemic symptoms (Fig 1). As expected, pre-pandemic symptoms were also strongly associated psychopathology during the pandemic in this model ($\beta = 0.279$, $p < .001$ and $\beta = 0.296$, $p < .001$ for internalizing and externalizing psychopathology, respectively).

Similarly, the number of pandemic-related stressors early in the pandemic was positively associated with internalizing ($\beta = 0.243$, $p = .001$) and externalizing ($\beta = 0.288$, $p < .001$) symptoms later in the pandemic, controlling for pre-pandemic symptoms (Fig 1). Again, pre-pandemic symptoms were strongly associated with internalizing and externalizing problems at T2 ($\beta = 0.260$, $p = .001$ and $\beta = 0.278$, $p < .001$, respectively).

The association of pandemic-related stressors with internalizing symptoms varied by age ($\beta = 0.\ 0.602$, $p = .043$), such that the association was stronger among adolescents (simple slope: $b = 0.437$, $p < .001$) than children (simple slope: $b = 0.220$, $p = .004$) concurrently. There were interactions between age and pandemic-related stressors in predicting externalizing symptoms concurrently or prospectively.

Potential protective factors

Associations of potential protective factors with concurrent psychopathology and interactions with stress and age are summarized in Table 2. Associations of potential protective factors with prospective psychopathology and interactions with stress and age are summarized in Table 3.

Physical activity. Physical activity was unrelated to psychopathology concurrently or prospectively.

Time spent in nature and outdoors. Greater time spent in nature was marginally associated with lower internalizing problems both concurrently and prospectively (Fig 2A and 2B), controlling for pre-pandemic symptoms. Time spent outdoors was unrelated to psychopathology. Age did not moderate any of these associations.

News consumption and passive screen time. Early in the pandemic, youths who spent less time on digital devices each day had lower externalizing symptoms (Fig 2C and 2D), controlling for pre-pandemic symptoms. Consuming <2 hours of news per day was also associated with reduced externalizing symptoms early in the pandemic (Fig 2G).

The longitudinal association between screen time and internalizing symptoms varied by age (S1 Fig in S1 File), such that children showed a positive association between screen time

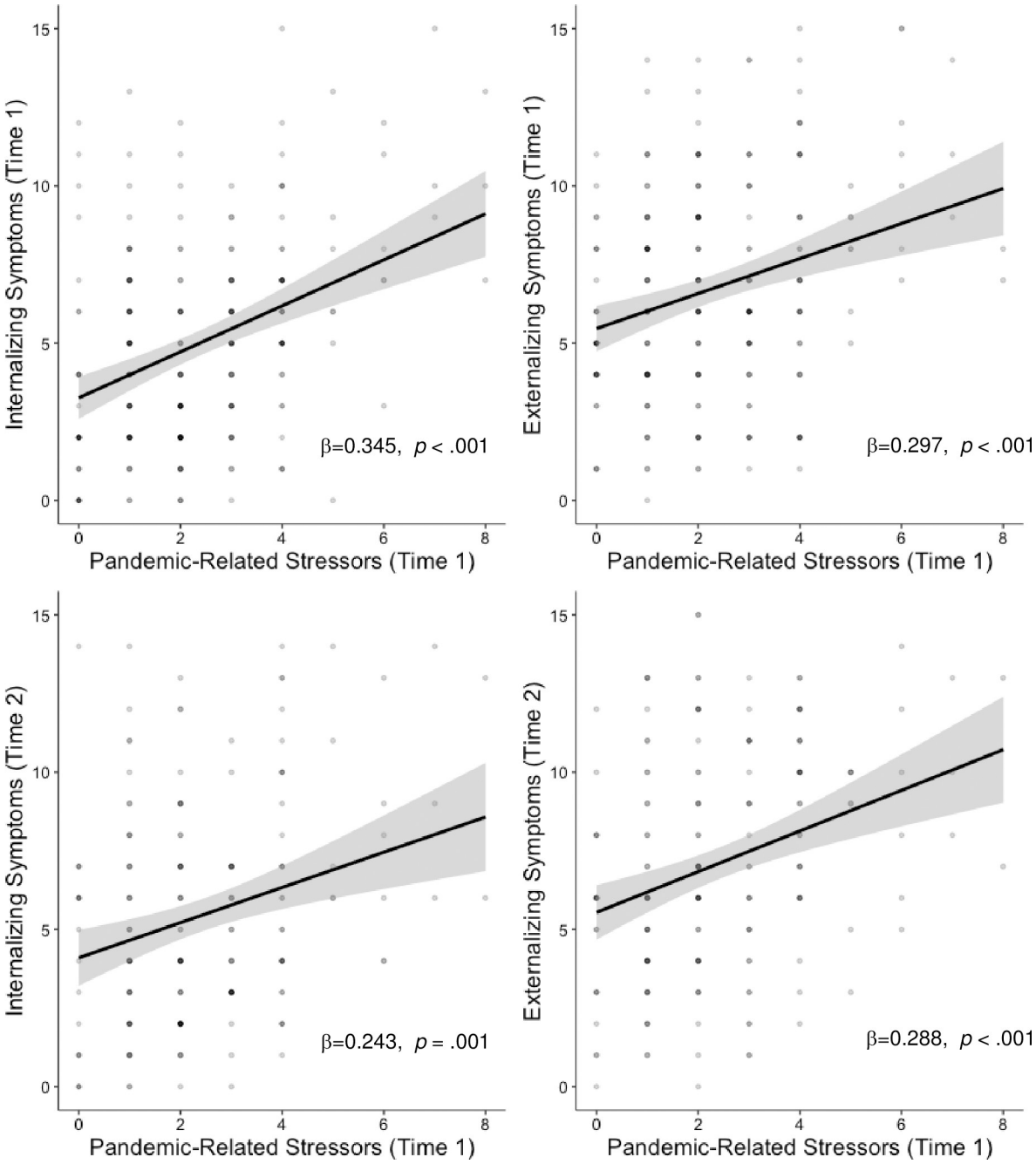

Fig 1. Main effects of pandemic-related stressors and psychopathology. All analyses control for age, sex, income-to-needs and pre-pandemic psychopathology symptoms.

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and internalizing psychopathology six months later (b = 0.572, p = .008), but adolescents did not (b = -0.074, p = .512).

Age moderated the association between news consumption and internalizing psychopathology prospectively. Specifically, while children showed a positive association between news consumption and internalizing psychopathology at T2 (b = 0.438, p = 0.015), adolescents showed a negative association between news consumption and internalizing psychopathology at T2 (b = -0.299, p = .015).

Table 2. Associations of potential protective factors with psychopathology and interactions with stress and age at T1. Significant associations are presented in BOLD and marginal associations are presented in italics.

Protective Factors		Internalizing		Externalizing		Age Internalizing Interaction		Age Externalizing Interaction	
		β	*p*	β	*p*	β	*p*	β	*p*
Physical Activity	Main effect	-0.120	0.132	-0.016	0.900	0.075	0.826	0.391	0.243
	Stress Interaction	-0.153	0.191	-0.146	0.448	0.151	0.790	0.609	0.588
Time in Nature	Main effect	*-0.124*	*0.074*	0.029	0.777	0.045	0.885	0.139	0.658
	Stress Interaction	-0.067	0.602	0.013	0.913	-0.580	0.271	0.218	0.682
Time Outdoors	Main effect	0.000	0.999	0.018	0.779	-0.455	0.144	-0.215	0.484
	Stress Interaction	-0.088	0.846	-0.238	0.112	-0.146	0.793	0.613	0.381
Passive Screen Time	Main effect	0.059	0.431	**0.272**	**0.0004**	*-1.084*	*0.074*	*-0.979*	*0.087*
	Stress Interaction	**0.561**	**0.002**	**0.329**	**0.050**	-1.399	0.368	0.729	0.531
News Consumption	Main effect	0.093	0.374	**0.193**	**0.010**	*-0.741*	*0.083*	-0.312	0.453
	Stress Interaction	*0.273*	*0.074*	0.197	0.136	**-1.474**	**0.028**	0.389	0.771
Sleep Quantity	Main effect	-0.018	0.995	-0.061	0.370	0.674	0.130	0.551	0.126
	Stress Interaction	-0.171	0.326	0.094	0.762	*-1.728*	*0.064*	-0.623	0.451
Daily Routine	Main effect	-0.022	0.736	*-0.122*	*0.058*	-0.062	0.854	-0.011	0.974
	Stress Interaction	-0.197	0.211	-0.131	0.535	0.206	0.766	0.214	0.763
Adaptive Coping	Main effect	0.061	0.688	0.124	0.102	-0.436	0.377	-0.040	0.906
	Stress Interaction	0.177	0.276	-0.083	0.488	-0.587	0.630	*1.225*	*0.078*
Helping	Main effect	0.002	0.978	0.012	0.848	0.401	0.231	0.186	0.575
	Stress Interaction	-0.059	0.623	-0.081	0.968	-0.348	0.571	0.674	0.281

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Table 3. Associations of potential protective factors with psychopathology and interactions with stress and age at T2. Significant associations are presented in BOLD and marginal associations are presented in italics.

Protective Factors		Internalizing		Externalizing		Age Internalizing Interaction		Age Externalizing Interaction	
		β	*p*	β	*p*	β	*p*	β	*p*
Physical Activity	Main effect	-0.049	0.515	0.009	0.900	-0.126	0.826	0.534	0.243
	Stress Interaction	-0.241	0.179	0.028	0.816	0.712	0.686	-0.182	0.802
Time in Nature	Main effect	*-0.136*	*0.074*	-0.021	0.777	-0.264	0.885	0.371	0.516
	Stress Interaction	0.077	0.602	0.069	0.913	-0.706	0.271	-0.869	0.300
Time Outdoors	Main effect	-0.048	0.999	0.066	0.750	-0.566	0.144	-0.351	0.484
	Stress Interaction	0.029	0.846	-0.163	0.254	0.543	0.793	0.568	0.381
Passive Screen Time	Main effect	0.097	0.431	*0.157*	*0.076*	**-1.953**	**0.030**	*-1.264*	*0.087*
	Stress Interaction	**0.401**	**0.049**	**0.606**	**0.003**	-1.243	0.368	1.158	0.531
News Consumption	Main effect	-0.040	0.627	0.114	0.152	**-1.743**	**0.004**	-0.932	0.170
	Stress Interaction	0.034	0.829	0.223	0.136	**-2.199**	**0.018**	0.238	0.771
Sleep Quantity	Main effect	0.000	0.995	*-0.158*	*0.080*	0.299	0.479	*0.682*	*0.126*
	Stress Interaction	0.045	0.761	0.043	0.762	*-1.685*	*0.089*	-1.562	0.184
Daily Routine	Main effect	0.034	0.736	**-0.164**	**0.049**	-0.129	0.854	0.589	0.238
	Stress Interaction	-0.191	0.221	0.092	0.535	-0.648	0.766	-0.865	0.666
Adaptive Coping	Main effect	-0.015	0.845	0.103	0.156	-0.353	0.377	-0.152	0.906
	Stress Interaction	0.099	0.506	0.153	0.488	-0.149	0.849	0.218	0.767
Helping	Main effect	0.036	0.978	0.026	0.848	*0.835*	*0.064*	-0.237	0.575
	Stress Interaction	-0.088	0.623	-0.005	0.968	1.296	0.186	1.054	0.281

https://doi.org/10.1371/journal.pone.0255294.t003

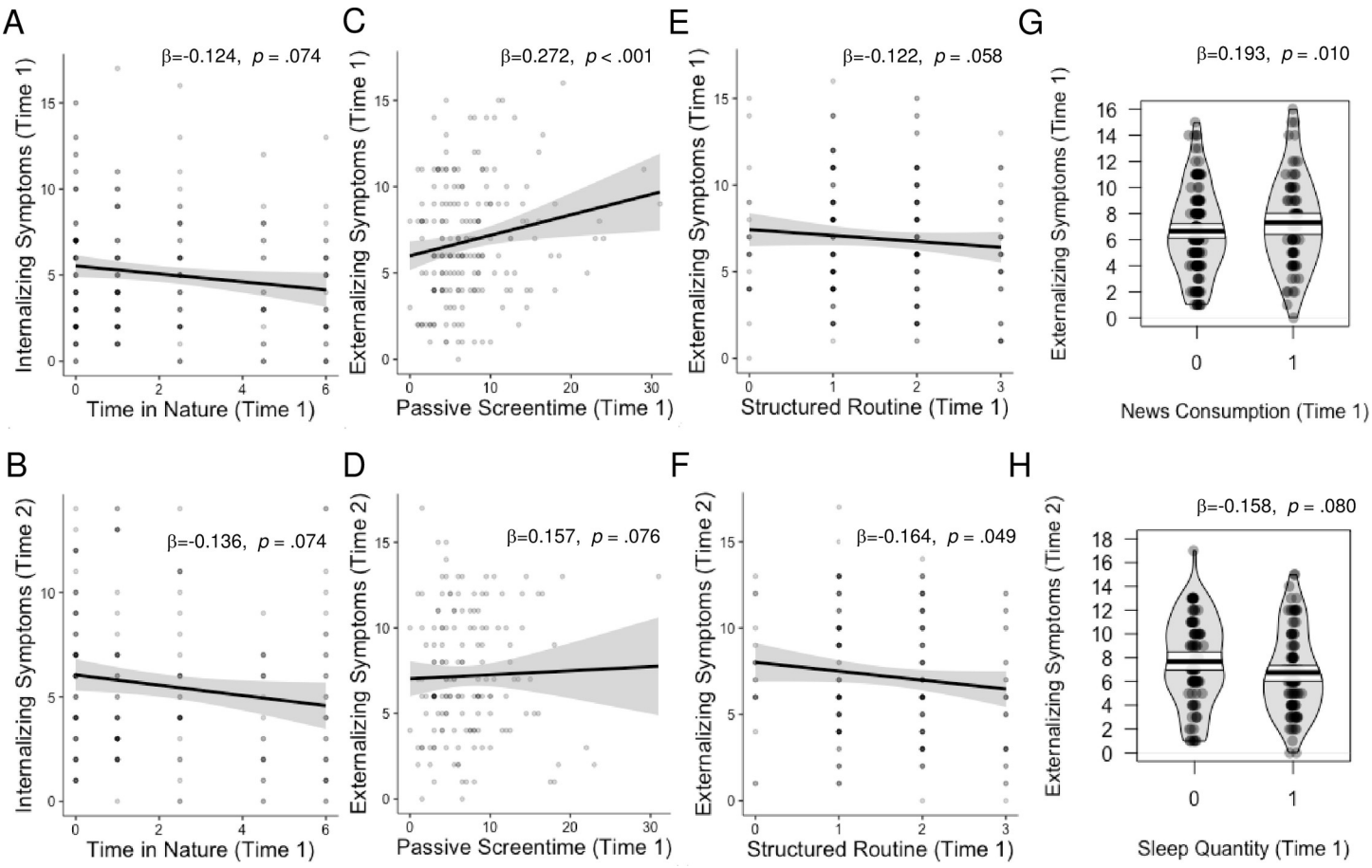

Fig 2. Main effects of protective factors on psychopathology. All analyses controlled for age, sex, income-to-needs, and pre-pandemic psychopathology symptoms.

https://doi.org/10.1371/journal.pone.0255294.g002

Screen time moderated the association of pandemic-related stressors with internalizing and externalizing psychopathology concurrently and prospectively (Fig 3). Specifically, youths who spent more time on screens showed a strong positive association of pandemic-related stressors with concurrent (b = 0.513, $p < .001$) and prospective (b = .335, $p < .001$) internalizing symptoms as well as both concurrent (b = 0.285, $p < .001$) and prospective (b = .383, $p < .001$) externalizing problems that was absent for youths who spent less time on screens at both time points (b = 0.020–0.061, $p = .445$-.935).

A three-way interaction was observed between news consumption, age, and pandemic-related stressors in predicting internalizing symptoms both concurrently and prospectively (Fig 4). Pandemic-related stressors were unrelated to internalizing problems concurrently (b = -.087, $p = .502$) or prospectively (b = -0.036, $p = .808$) among children who consumed <2 hours of news media per day, but were strongly associated with internalizing psychopathology both concurrently (b = 0.39 2, $p < .001$) and prospectively (b = 0.328, $p = .026$) among children with >2 hours daily news consumption. Among adolescents, pandemic-related stressors were strongly associated with internalizing problems concurrently (b = 0.409–0.452, $p < .001$), regardless of news consumption. Adolescents who consumed low levels of news during the stay-at-home orders showed a positive association between pandemic-related stressors and internalizing psychopathology six months later (b = 0.509, $p = .002$), while adolescents who consumed more news did not (b = 0.113, $p = .346$).

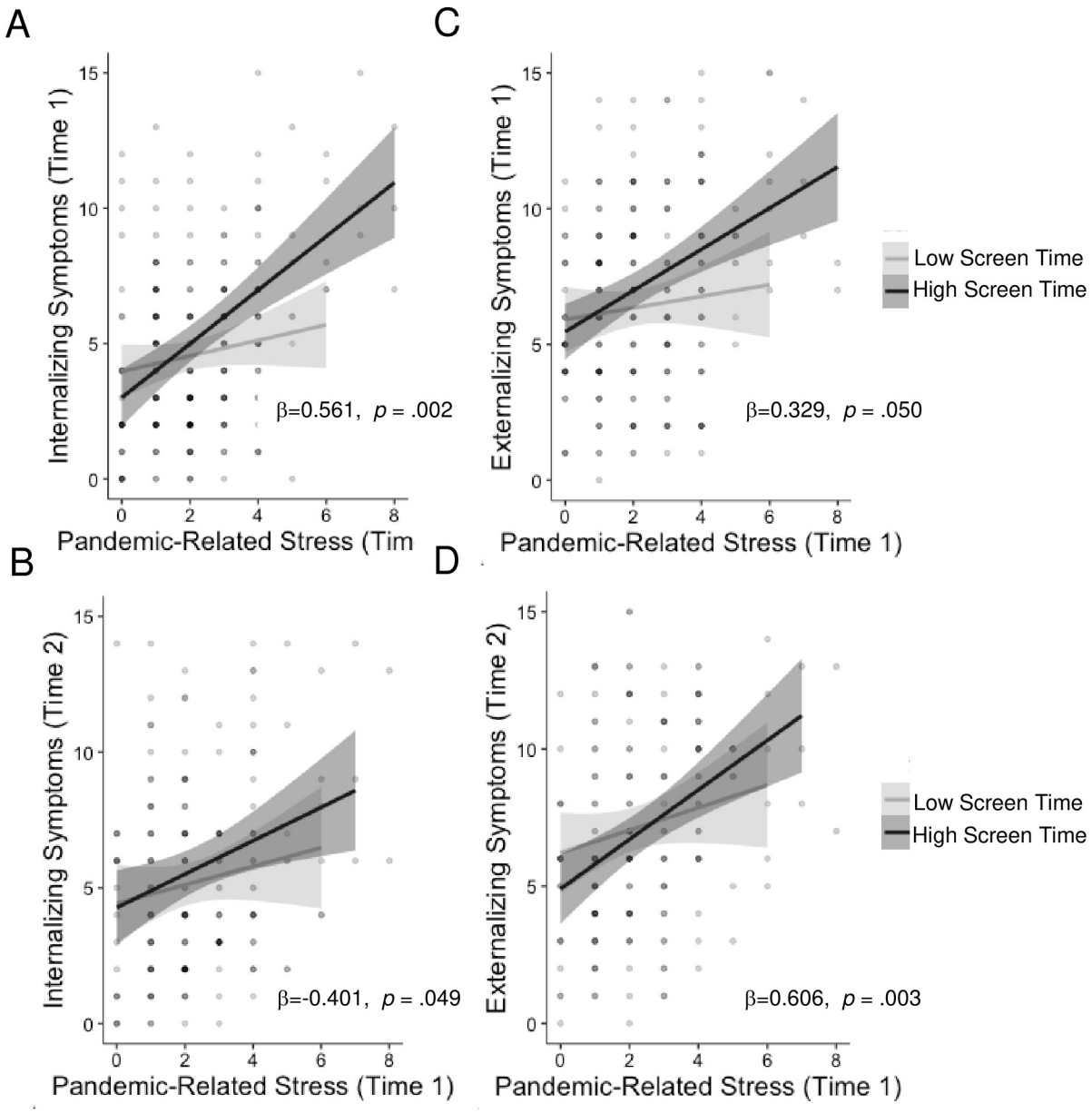

Fig 3. Passive screen time x stress interaction. Low screen time use buffers against pandemic-related increases in internalizing and externalizing psychopathology. All analyses control for age, sex, income-to-needs ratio, and pre-pandemic psychopathology symptoms.

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Sleep quantity. Getting the recommended number of hours of sleep was unrelated to psychopathology concurrently. However, getting the recommended amount of sleep during the stay-at-home orders was marginally associated with lower levels of externalizing psychopathology six months later, controlling for pre-pandemic symptoms (Fig 2H). These associations did not vary by age.

Routine. Youths with a more structured daily routine had lower externalizing (Fig 2E and 2F) six months later. No associations of a structured routine were found with internalizing symptoms, and no interactions with age or stress emerged.

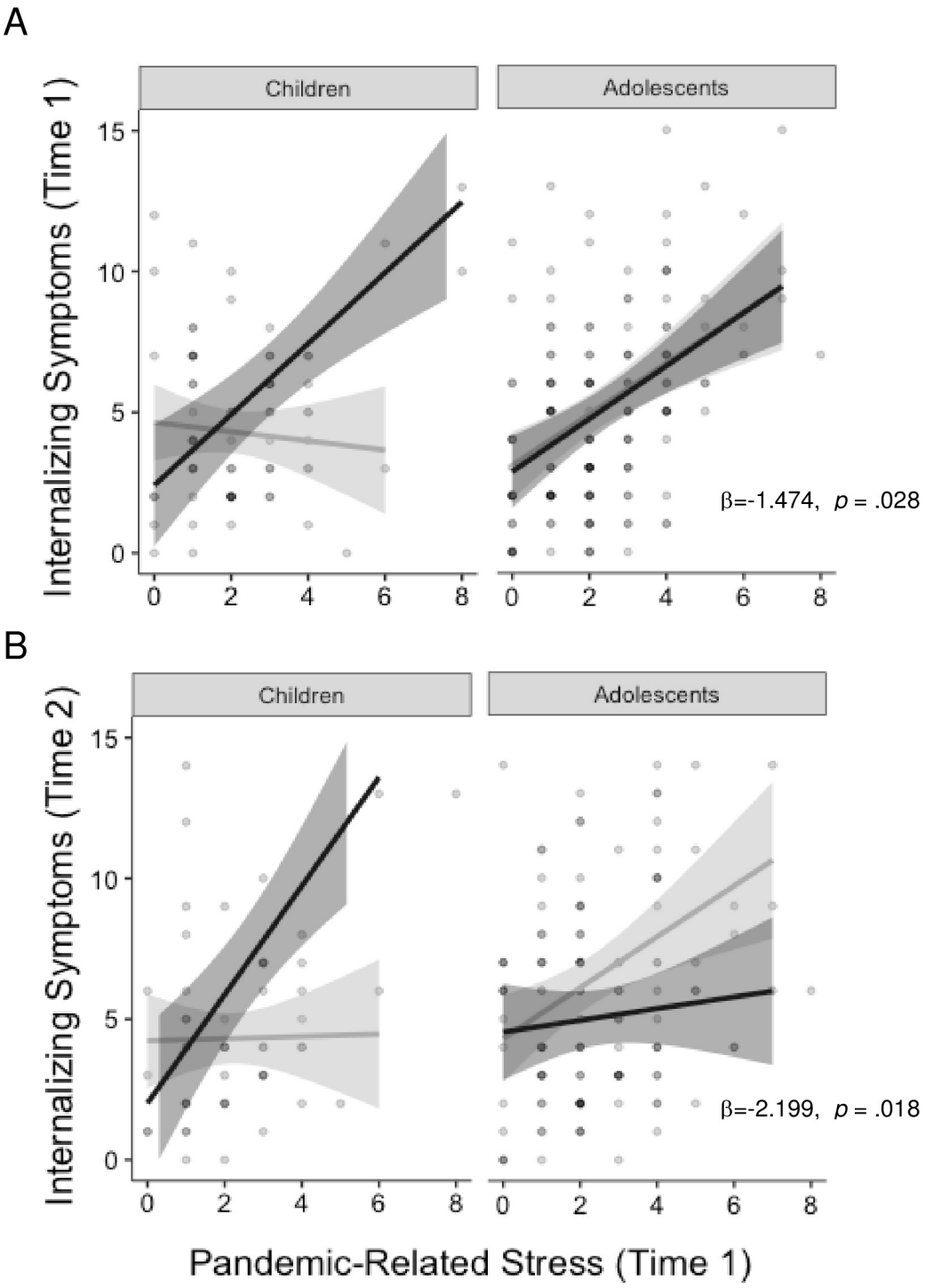

Fig 4. Age x stress x news interaction. Low news consumption buffers children, but not adolescents, against pandemic-related increases in internalizing psychopathology concurrently (A) and prospectively (B). All analyses control for age, sex, income-to-needs ratio, and pre-pandemic psychopathology symptoms.

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Coping strategies. There was no significant association between engaging in adaptive coping strategies with psychopathology concurrently or prospectively.

Helping others. Helping in one's community was unrelated to psychopathology concurrently or prospectively.

Discussion

The present study identifies simple and practical behaviors that are associated with well-being among children and adolescents during the COVID-19 pandemic. Critically, this study involved a longitudinal sample of children and adolescents for which mental health had been assessed prior to the pandemic, during the stay-at-home orders, and six months later allowing us to investigate psychopathology during the pandemic while controlling for pre-pandemic symptoms. As expected, we found that youths who experienced greater pandemic-related stressors had higher levels of internalizing and externalizing psychopathology. Importantly, greater pandemic-related stressors during the stay-at-home orders were also prospectively associated with higher levels of both internalizing and externalizing psychopathology six months later. Critically, we identified several factors—including a structured daily routine, low passive screen time use, low news media consumption about the pandemic, and to a lesser extent spending more time spent in nature and getting the recommended amount of sleep—that are associated with better mental health outcomes in youth during the pandemic. We additionally demonstrate that the strong association between pandemic-related stressors and psychopathology is absent among children with lower amounts of screen time and news media consumption.

Youth who had a structured and predictable daily routine were less likely to experience increases in externalizing problems during the pandemic than youth with less structured routines. A sudden loss of routine has occurred for many families during the pandemic related to school closures, changes in parental work arrangements, and loss of access to activities outside the home for youth and adolescents. These disruptions in daily routine are associated with increased risk for behavior problems in youth during the pandemic, consistent with prior work suggesting that lack of predictability is strongly linked to youth psychopathology [16, 34, 66, 67]. Moreover, a recent paper during the pandemic showed that preschoolers in families that maintained a structured routine during the pandemic showed lower rates of depression and externalizing problems, over and above the effect of food insecurity, socioeconomic status, dual-parent status, maternal depression, and stress [68]. Our current findings extend this work by demonstrating that a structured routine may also be important for older children and adolescents. Although maintaining routine and structure is challenging as school closures continue and many aspects of daily life remain unpredictable, creating a structured daily routine for children and adolescents may promote better mental health during the pandemic.

Greater passive screen time use was associated with higher levels of externalizing psychopathology early in the pandemic, and greater passive screen time use was associated with higher internalizing psychopathology later in the pandemic for children but not adolescents. Additionally, the strong association of pandemic-related stressors with internalizing and externalizing psychopathology both concurrently and prospectively was reduced in children and adolescents with low passive screen time use. Previous studies have argued that the increases in screen time use over the last decade may be responsible for rising levels of anxiety and depression among children and adolescents [38]. However, others have suggested that greater screen time use may not have negative impacts [69, 70] and that psychopathology and digital device use have a reciprocal association with one another [71]. During the pandemic, youths were encouraged to use digital devices more than ever for school and social connection, which are likely to be beneficial for their development. Here, we measured *passive use* of digital devices, including watching videos on an electronic device, passively scrolling through social

media, looking at websites and online news, and watching movies and TV—excluding more active uses of digital devices for schooling and social communication. Greater research is needed to determine whether the amount of passive screen time itself has negative effects on youth mental health or whether this association simply reflects that greater time on digital devices takes time away from other important behaviors such as exercise, sleep, or connecting with friends or family. Indeed, in the present study, screen time was inversely related with sleep quantity (S3 Table in S1 File). Therefore, one reason that youths with lower screen time use may be buffered against pandemic-related increases in psychopathology is because they are engaging in other behaviors that promote well-being such as getting sufficient sleep, among others. Together, these findings suggest some potential benefits associated with limiting *passive* screen time among youth during the pandemic.

Our findings also suggest that limiting news consumption about the pandemic may be beneficial, particularly for younger children. Greater news media consumption about the pandemic was associated with higher levels of externalizing problem early in the pandemic. Moreover, the strong association between pandemic-related stressors and internalizing psychopathology was absent in children who consumed lower levels of news media, although pandemic-related stressors were positively associated with internalizing symptoms in adolescents regardless of news consumption concurrently. This finding is broadly consistent with previous studies observing strong associations between media exposure about community-level stressors, including terrorist attacks and natural disasters, and higher rates of psychopathology in children and adolescents [41, 42, 72–74]. Interestingly, the same pattern persisted for children six months into the pandemic, while for adolescents who consumed more news during the stay-at-home orders showed a weaker association between stress and internalizing psychopathology six months later than those who consumed less news. Therefore, it is possible that for adolescents, having more knowledge about the pandemic early on may have been beneficial over time. Together these findings suggest that limiting certain types of news media exposure may protect against pandemic-related increases in internalizing problems, especially among young children. Importantly, this does not imply that parents should refrain from discussing the pandemic or hide the realities from their children. In fact, previous studies have found that honest conversations between parents and children provide an important protection against the development of psychopathology in the wake of natural disasters [75]. Therefore, we suggest limiting sensational news media consumption, in favor of talking to children about what is happening, listening to their concerns, and answering their questions in an age-appropriate manner.

Additionally, we found weaker and only marginally significant associations between time spent in nature and getting the recommended amount of sleep with youth psychopathology during the pandemic. We briefly discuss these findings here, as they highlight additional strategies that could be beneficial to families when considering how to support the mental health of their children during the pandemic. Greater time spent in nature was marginally associated with lower increases in internalizing symptoms relative to pre-pandemic symptoms both concurrently and prospectively. These findings are broadly consistent with prior evidence that spending at least two hours in nature per week is associated with greater well-being in adults [31] and better mental health in children [76]. Additionally, the association of stressors with well-being is reduced among children with greater access to nature [77]. Encouraging youths to spend time in nature may also be beneficial for mental health during the pandemic. In addition, children and adolescents who got the recommended amount of sleep at the beginning of the pandemic showed marginally lower levels of externalizing psychopathology six months later. These findings highlight the importance of encouraging youths to get an adequate amount sleep. Given the negative association between screen time and sleep duration both

here and in prior work [78], reducing access to digital devices prior to bedtime may be one simple strategy parents can use to make it easier for their children to get an adequate amount of sleep.

Limitations

The present study has several limitations which should be acknowledged. First, we relied on self-report measures of behavior, which can be inaccurate due to recall bias. Future studies may benefit from using actigraphy to assess physical activity and sleep, geolocation to measure time spent in nature and outdoors, and direct reports of screen time use and news media consumption from digital devices for more accurate measures of potential protective factors. Second, while the longitudinal nature of the present study is a strength, it only included two snapshots of youth behavior and mental health during the pandemic. It will be important to continue to follow youths throughout the pandemic to determine factors that promote long-term risk and resilience. Third, we used a different measure of psychopathology prior to the pandemic (CBCL/YSR) than after the onset of the pandemic (SDQ). While it would have been ideal to have the same measure at all time points, the CBCL/YSR is much longer than the SDQ and we were focused on minimizing participant burden during a period of time when families were facing numerous stressors and loss of access to typical childcare options. Thus, we chose to use a shorter questionnaire that is strongly correlated with the CBCL/YSR [62, 65, 79, 80]. Relatedly, we asked questions about potential protective factors in our COVID Experiences Survey, rather than using longer validated scales for each of the factors (*e.g.* Pittsburgh Sleep Quality Index, Physical Activity Questionnaire for Children, Media Parenting Practices, Family Routines Inventory, German Coping Questionnaire for 'Children and Adolescents, etc.). This choice was made to maximize the information gained about each family, while minimizing participant burden and thus maximizing our sample size. Fourth, we combined data from two separate samples of children (aged 7–10 and 13–15 at T1). Both samples were recruited using similar methods from the same target population, and we had identical measures of pre-pandemic psychopathology on both samples. Moreover, the samples did not differ in demographics, SES, or exposure to pandemic-related stressors. However, using two samples with a gap in age limited our ability to understand age effects across the entire spectrum of childhood and adolescence. Fifth, we demonstrate the predictive validity of the pandemic-related stress measure via moderate associations with psychopathology at both waves as well as a measure of perceived stress. However, this cumulative risk approach is limited in that it weights stressors equally that could have variable impacts. Future work should investigate whether specific stressors have been more strongly linked to changes in mental health during the pandemic (see S4 Table in S1 File for associations of specific stressors and psychopathology at T1 and T2). Finally, the present study is correlational and we are therefore limited in our ability to make causal inferences about the factors that promote well-being during the pandemic. However, given the extensive literature about the links between these factors and youth mental health, there is little reason to expect downsides to encouraging families to engage in these types of protective behaviors with their children and adolescents during the pandemic.

Conclusions and practical implications

We identify practical and easily accessible strategies that may promote greater well-being for children and adolescents during the COVID-19 pandemic. Based on these findings, we suggest that parents encourage youth to develop a structured daily routine, limit passive screen time use, limit exposure to news media—particularly for young children, and to a lesser extent spend more time in nature, and encourage youth to get the recommended amount of sleep.

Supporting information

S1 File. Please see the S1 File for frequencies of exposures to pandemic-related stressors by domain (S1 Table), distribution of potential protective factors and psychopathology symptoms (S2 Table), bivariate correlation table of all study variables (S3 Table), associations between individual stressors and psychopathology symptoms (S4 Table), age by screen time interaction predicting internalizing symptoms (S1 Fig), and the full COVID experiences surveys (caregiver and child).
(DOCX)

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S1 File

S1 Table. Frequency of exposure to pandemic-related stressors (by domain).

Pandemic-Related Stressors			
Stressor Domain	**Number of Stressors**	**Frequency (%) at T1**	**Frequency (%) at T2**
Health	0	107 (48.2%)	74 (40.2%)
	1	71 (32.0%)	57 (31.0%)
	2	33 (14.9%)	36 (19.6%)
	3	8 (3.6%)	12 (6.5%)
	4	6 (2.7%)	4 (2.2%)
	5	0 (0%)	1 (0.5%)
	6	0 (0%)	0 (0%)
	7	0 (0%)	0 (0%)
Financial	0	145 (65.3%)	133 (7.23%)
	1	55 (24.8%)	35 (19.0%)
	2	19 (8.6%)	15 (8.2%)
	3	6 (2.7%)	1 (0.5%)
	4	0 (0%)	0 (0%)
Social	0	165 (74.3%)	162 (88.0%)
	1	46 (20.7%)	15 (8.2%)
	2	12 (5.4%)	7 (3.8%)
	3	2 (0.9%)	0 (0%)
	4	0 (0%)	0 (0%)
School	0	130 (58.6%)	126 (68.5%)
	1	84 (37.8%)	58 (31.5%)
	2	11 (5.0%)	0 (0%)
Physical Environment	0	202 (91.0%)	159(86.4%)
	1	23 (10.4%)	25 (13.6%)

A composite of pandemic-related stressors at T1 was used in all analyses. We include the number of pandemic-related stressors at T2 to illustrate the ongoing nature of the pandemic at T2.

S2 Table. Distribution of potential protective factors and psychopathology symptoms.

Potential Protective Factor (continuous variables)	**Mean (Standard Deviation)**
Physical Activity (mins / week)	*M* = 195.34 (159.09)
Time in Nature (days / week)	*M* = 2.02 (2.12)
Days Outdoors (days / week)	*M* = 2.97 (2.29)
Screen Time (hours)	*M* = 7.288 (4.95)
Routine (continuous scale 1-4)	*M* = 1.59 (0.87)
Potential Protective Factor (binary variables)	**Percentage of Participants**
Consuming Less than 2 hours of News per Day	66.67%
Getting Recommended Amount of Sleep per Night	50.9%
Adaptive Coping Strategies	52.2%
Helping	56.2%
Psychopathology	**Mean (Standard Deviation)**
Baseline Internalizing (CBCL)	*M* = 54.49 (9.89)
Baseline Externalizing (CBCL)	*M* = 52.05 (8.60)
Internalizing T1 (SDQ)	*M* = 5.35 (3.51)
Externalizing T1 (SDQ)	*M* = 6.95 (3.49)
Internalizing T2 (SDQ)	*M* = 5.51 (3.60)
Externalizing T2 (SDQ)	*M* = 7.20 (3.61)

S3 Table. Bivariate correlations between all study variables.

	Stress	AGE	SES	INT Base	EXT Base	INT T1	EXT T1	INT T2	EXT T2	Phys	Nature	Outdoor	Screen	News	Sleep	Routine	Coping
Stress																	
AGE	0.003																
SES	-0.161*	0.037															
INT Base	0.165*	0.341**	-0.184*														
EXT Base	0.156*	0.095	-0.298**	0.466**													
INT T1	0.413**	0.039	-0.126	0.281**	0.197*												
EXT T1	0.329**	-0.162*	-0.139*	0.146*	0.321**	0.39**											
INT T2	0.308**	0.104	0.031	0.261**	0.139	0.615**	0.282**										
EXT T2	0.322**	-0.169*	-0.092	0.179*	0.303**	0.284**	0.659**	0.43**									
Phys	-0.103	-0.06	0.121	-0.041	-0.052	-0.163*	0.019	-0.077	0.001								
Nature	0.047	-0.156*	0.053	-0.055	-0.05	-0.141*	0.059	-0.149	0.002	0.364**							
Outdoor	-0.03	-0.248**	0.044	-0.111	-0.018	-0.062	0.081	-0.085	0.101	0.392**	0.161*						
Screen	0.049	0.375**	-0.062	0.073	0.143*	0.093	0.18	0.125	0.032	-0.03	-0.024	-0.058					
News	0.156*	0.234**	-0.028	-0.002	-0.039	0.091*	0.092	-0.008	0.024	0.011	0.083	0.01	0.55**				
Sleep	-0.06	-0.338**	0.102	-0.153*	-0.12	-0.023	-0.044	-0.02	-0.13	0.081	0.099	0.075	-0.252**	-0.15*			
Routine	-0.102	-0.037	0.024	-0.009	0.027	-0.072	-0.085	-0.006	-0.123	0.104	0.034	-0.046	-0.049	-0.136	0.119		
Coping	0.057	0.074	0.063	-0.105	-0.14*	0.023	0.067	-0.031	0.042	0.247**	0.044	0.182*	0.073	0.203*	0.021	-0.109	
Helping	-0.098	0.07	0.101	-0.015	-0.008	0.017	-0.026	0.081	0.014	0.051	-0.006	0.1	0.035	0.05	0.126	0.001	0.2*

* denotes p < .05, ** denotes p < .01

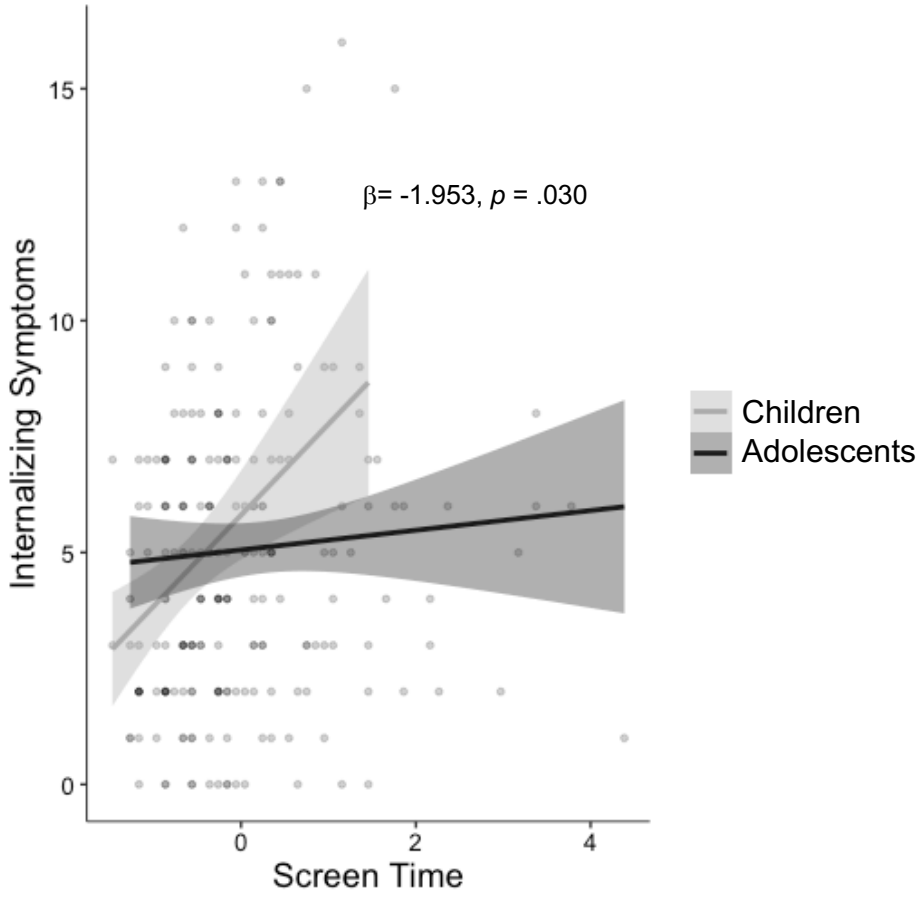
S4 Table: Associations between individual stressors and psychopathology at T1 and T2, correcting for continuous age, sex, income-to-needs ratio, and psychopathology prior to the pandemic.

Stressor	Internalizing T1		Internalizing T2		Externalizing T1		Externalizing T2	
	β	*p*	β	*p*	β	*p*	β	*p*
Got sick with COVID-19	**0.279**	**<.001**	**0.194**	**.008**	0.097	.124	.085	.238
Had a parent or sibling get sick with COVID-19	**0.160**	**.013**	-0.026	.727	0.003	.964	-0.014	.844
Had another relative get sick with COVID-19	-0.014	.833	-0.049	.516	0.032	.613	0.064	.382
Had a partner or close friend get sick with COVID-19	0.030	.634	-0.073	.326	0.027	.670	-0.001	.988
Knew someone who died as a result of COVID-19	0.024	.708	-0.073	.328	**0.192**	**.002**	**0.180**	**.012**
Parent is a frontline worker (healthcare)	0.048	.456	-0.038	.611	-0.007	.918	-0.065	.373
Parent is frontline worker (e.g. grocery)	0.025	.700	0.089	. 229	0.067	.288	0.039	.593
Felt lonely often	**0.357**	**<.001**	**0.297**	**<.001**	**0.263**	**<.001**	**0.220**	**.003**
Experienced discrimination related to the pandemic	0.103	.104	*0.136*	*.068*	0.034	.593	0.068	.346
Difficult relationship with a parent that has gotten worse during the pandemic	**0.199**	**.002**	**0.184**	**.015**	**0.167**	**.009**	0.098	.179
Difficult relationship with someone else in the	**0.160**	**.012**	0.086	.251	**0.165**	**.009**	0.037	.603

home that has gotten worse								
Experienced food insecurity during the pandemic	-0.019	.783	0.073	.381	-0.087	.206	0.113	.161
Parent lost a job during the pandemic	0.075	.258	0.014	.862	0.043	.502	0.066	.372
Significant financial losses due to the pandemic	0.068	.302	0.067	.381	0.052	.423	**0.077**	**0.014**
Difficulty doing school work remotely	**0.274**	**<.001**	**0.158**	**.033**	**0.383**	**<.001**	**0.269**	**.001**
Noisy school work environment	-0.005	.935	0.116	.125	0.038	.560	-0.001	.992
Crowding in the home	0.014	.838	0.100	.194	-0.018	.788	*0.124*	*0.098*

Significant associations are in bold and marginal associations are in italics

S1 Fig. Age x Screen time interaction predicting internalizing symptoms.



A binary variable for children (7-10 years) and adolescents (13-15 years) was used for the simple slopes analysis and for visualization purposes. All analyses control for age, sex, and pre-pandemic psychopathology symptoms.

The COVID-19 Experience Survey

Thank you for agreeing to participate in this research. This survey asks about your experiences related to the COVID-19 outbreak during the period of March 2020 and the resulting shelter-in-place orders that may have occurred in your community. Questions ask about how you and those close to you have been impacted in the areas of health, finances, and social and emotional functioning.

YOUR ANSWERS WILL BE KEPT STRICTLY CONFIDENTIAL.

The survey takes about 60 minutes. You may skip any questions you prefer not to answer. To thank you for your time, you will receive $50 via your choice of Venmo, Paypal or Gift Card when you are finished.

We are conducting this research to better understand how stressful experiences impact families. There are no direct benefits to you from participating in this research and there are few foreseeable risks associated with completing the survey. Your participation in this survey is completely voluntary. You do not need to complete the survey if you do not want to. Your choice whether or not to participate will not affect your current or future dealings with University of Washington or Harvard University. If you choose to complete the survey, you are free to stop the survey at any time.

First, we're going to ask you some questions about how things were ***before*** the coronavirus:

1. Before the outbreak, were you employed?
    a. Yes
    b. No
2. [If 1a]: What was your occupation?
    a. [Fill]
3. Before the outbreak, did you live with a partner?
    a. Yes
    b. No
4. [If 3a]: Was your partner employed?
    a. Yes
    b. No
5. [If 4a]: What was their occupation?
    a. [Fill]
6. Which of these categories best describes your total combined family income for the 12 months ***before*** the outbreak? This should include income (before taxes) from all sources, wages, rents from properties, social security, disability and/or veteran's

benefits, unemployment benefits, workman's compensation, help from relatives (including child payments and alimony), and so on.

   a. $14,570 or less
   b. $14,571 – $18,310
   c. $18,311 – $22,050
   d. $22,051 – $25,790
   e. $25,791 – $29,530
   f. $29,531 – $33,270
   g. $33,271 – $37,010
   h. $37,011 – $39,200
   i. $39,201 – $48,200
   j. $48,201 – $58,400
   k. $58,401 – $75,000
   l. $75,001 – $100,000
   m. $100,001 – $150,000
   n. $150,000 or greater
   o. N/A or Prefer Not to Answer

7. Before the outbreak, were you ever hungry but did not eat because you could not afford to buy food?
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
8. Did you ever eat less than you felt you should because you didn't have money to buy food?
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
9. How often did you not have enough money to buy food?
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
10. How often could you not afford to eat balanced meals?
   a. Never
   b. Rarely
   c. Sometimes
   d. Often
11. How often could you not afford to pay your rent or mortgage?

    a. Never
    b. Rarely
    c. Sometimes
    d. Often
12. How often could you not afford to pay for your utilities?
    a. Never
    b. Rarely
    c. Sometimes
    d. Often
13. Before the outbreak, how many individuals were living with you in your home?
    a. Number of adults: [Fill]
    b. Number of children: [Fill]
14. Before the outbreak, how many hours a day did you typically spend passively scrolling through social media?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
15. How many hours a day did you typically spend passively browsing other non-news websites?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
16. How many hours a day did you typically spend watching movies or shows for leisure?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
17. How many hours a day did you typically spend reading books or magazines for leisure?
    a. None
    b. 1 hour or less

c. 1-2 hours
d. 2-4 hours
e. 4-6 hours
f. 6 or more hours

18. Before the coronavirus outbreak, how many hours a day did you typically spend actively socializing with people ***not*** in your household?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
19. [If 18b-f]: Rank most commonly used methods of communication:
    a. Social media apps
    b. Texting
    c. Phone calls
    d. Video-chatting
    e. In-person
20. How many hours a day did you typically spend socializing with people ***who were*** in your household?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
21. [If 20b-f]: Rank most commonly used methods of communication:
    a. Social media apps
    b. Texting
    c. Phone calls
    d. Video-chatting
    e. In-person
22. Before the coronavirus outbreak, were you a primary caretaker of individuals in your home?
    a. Yes
    b. No
23. [If 22a]: What is their relationship to you?
    a. Parent
    b. Child(ren)
    c. Partner

    d. Other [Fill]
24. Before the coronavirus outbreak, what did you typically do for physical exercise?
    a. Biking
    b. Running
    c. Dance
    d. Organized sport
    e. Swimming
    f. Yoga or pilates
    g. Aerobics or other cardio
    h. Other: [Fill in]
    i. I did not engage in physical exercise
25. [If selected 24a-h]: On average, how often did you exercise?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
26. [If selected 24a-h]: On average, how long did you typically exercise for?
    a. Less than 30 minutes
    b. 30-60 minutes
    c. 60-90 minutes
    d. 90+ minutes
27. Before the coronavirus outbreak, how often did you spend time in outdoors green spaces (e.g., open spaces including parks, canals, nature areas, coastal or beach front, countryside, farmland)?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
28. How often did you spend time outside your home for at least 30 minutes not including outdoor green spaces listed above (e.g., back yard, neighborhood street)?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
29. On an average night, how well did you sleep before the coronavirus outbreak? My sleep quality was:
    a. Not good

b. Somewhat good
c. Mostly good
d. Very good

30. On an average night, how many hours did you sleep?
    a. [fill] hours
31. If you experienced trouble sleeping, was it because of: (check all that apply or leave blank if no trouble sleeping):
    a. Trouble falling asleep
    b. Waking up during the night
    c. Waking up earlier than you wanted to

32. Before the coronavirus outbreak, did your days have a fairly consistent routine?
    a. Not at all, every day was different
    b. Somewhat, I did some things at the same time every day
    c. Mostly, I did most things at the same time every day
    d. Very much, I did everything at the same time every day
33. Did family members really help and support each other?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
34. Was there was a feeling of togetherness in your family?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
35. Did family members rarely criticize each other?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much

Now we're going to ask you some questions about how things have been ***since*** the coronavirus pandemic started. **Specifically, we are interested in how things have been going in the past month**.

36. Do you believe you got sick with the coronavirus?
    a. No
    b. Possibly
    c. Yes
37. [If 36 b-c]: Did you get tested for the coronavirus?
    a. Did not want to get tested

b. Wanted to get tested, but was unable
c. Took a test and was positive
d. Took a test and was negative

38. [If 36 b-c]: Did you experience symptoms?
    a. Yes
    b. No
39. [If 38 a]: For how long did you experience symptoms?
    a. 1-2 days
    b. 2-4 days
    c. 4-7 days
    d. 1-2 weeks
    e. More than 2 weeks
40. [If 36b-c]: Were you quarantined as a result?
    a. Yes
    b. No
41. [If 40 a]: For how long were you quarantined?
    a. 1-2 days
    b. 2-4 days
    c. 4-7 days
    d. 1-2 weeks
    e. More than 2 weeks
42. [If 36b-c]: Were you hospitalized? If so, for how long?
    a. Yes
    b. No
43. [If 42a]: For how long were you hospitalized?
    a. 1-2 days
    b. 2-4 days
    c. 4-7 days
    d. 1-2 weeks
    e. More than 2 weeks
44. Do you know anybody who has gotten sick with the coronavirus? If so, who? (Check all that apply)
    a. No one I know has gotten the coronavirus
    b. Child
    c. Parent
    d. Sibling
    e. Other relative (describe)
    f. Boyfriend/girlfriend/partner
    g. Close friend
    h. Coworker

    i. Acquaintance
    j. Other (describe)

45. [If 44b]: How serious was it for your child?
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
46. [If 44c]: How serious was it for your parent?
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
47. [If 44d]: How serious was it for your sibling? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
48. [If 44e]: How serious was it for your other relative? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
49. [If 44f]: How serious was it for your boyfriend/girlfriend/partner?
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
50. [If 44g]: How serious was it for your close friend? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
51. [If 44h]: How serious was it for your coworker? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)

    d. Severe symptoms (required hospitalization)

52. [If 44i]: How serious was it for your acquaintance? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
53. [If 44j]: How serious was it for your [other fill in]? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
54. [If 44b-j]: Do you know anybody who has died as a result of the coronavirus? If so, what is this person's relationship to you? (Check all that apply)
    a. No
    b. Child
    c. Parent
    d. Sibling
    e. Other relative (describe)
    f. Boyfriend/girlfriend/partner
    g. Close friend
    h. Coworker
    i. Acquaintance
    j. Other (describe)
55. Has your employment status changed?
    a. Yes
    b. No
56. [If 55 a]: How has your employment status changed?
    a. Gained employment
    b. Laid off
    c. Reduced hours
    d. Remote work
    e. Went out of business
    f. Other: [FILL IN]
57. [If 55 a] How long have you been experiencing any of the above changes in employment? [For each 56a-f selected above]:
    a. Less than 1 week
    b. 1-2 weeks
    c. 2-3 weeks

d. 3-4 weeks
e. 1-2 months
f. 2-3 months
g. 3 or more months

58. Are you able to work from home?
    a. Yes
    b. No
59. Are you currently living with a partner?
    a. Yes
    b. No
60. Did their employment status change?
    a. Yes
    b. No
61. [If 60a]: How has their employment status changed?
    a. Gained employment
    b. Laid off
    c. Reduced hours
    d. Remote work
    e. Went out of business
    f. Other: [FILL IN]
62. [If 60a] How long have you been experiencing any of the above changes in employment? [For each 61a-f selected above]:
    a. Less than 1 week
    b. 1-2 weeks
    c. 2-3 weeks
    d. 3-4 weeks
    e. 1-2 months
    f. 2-3 months
    g. 3 or more months
63. Is your partner able to work from home?
    a. Yes
    b. No
64. Did you and/or your partner experience significant financial losses as a result of the outbreak and surrounding events?
    a. Yes
    b. No
65. [If 64 a]: How extensive were these losses?
    a. Minimal (will not require any adjustment in lifestyle or future planning and goals)

b. Moderate (will require major lifestyle changes and some minor adjustments in future planning and goals)
c. Severe (will require major lifestyle changes, future planning and goals are at risk)
d. Devastating (complete loss of financial assets, will require continued or soliciting dependence on others or government)

66. [If 64 a]: What were these financial losses due to (check all that apply)?
    a. Stock market losses
    b. Loss of business
    c. Work hours reduced
    d. Loss of employment
    e. Other: [fill in]
67. Have you had to terminate an employee either at work or in your home (e.g., nanny, housekeeper) as a result of financial losses due to the coronavirus?
    a. Yes
    b. No
68. In the last month, have you been evicted or otherwise forced to leave your home because of financial reasons?
    a. Yes
    b. No
69. Please provide the following information about your ***current*** home:
    a. Number of bedrooms [FILL IN]
    b. Number of bathrooms [FILL IN]
    c. Square-footage (approximate) [FILL IN]
70. In the last month, how many individuals were living with you in your home?
    a. Number of adults: [Fill]
    b. Number of children: [Fill]
71. In the past month, have you been a primary caretaker of individuals in your home?
    a. Yes
    b. No
72. [If 71a]: What is their relationship to you?
    a. Parent
    b. Child(ren)
    c. Partner
    d. Other [Fill]

73. Do you have a serious physical or mental illness?
    a. Physical
    b. Mental
    c. No
74. [If 74a-b]: Have there been disruptions in needed medical care due to the outbreak?

a. Yes
b. No

75. Does someone else in the household have a serious physical or mental illness?
    a. Physical
    b. Mental
    c. No
76. [If 75a-b]: Have there been disruptions in needed medical care for that person due to the outbreak?
    a. Yes
    b. No
77. Do you have reliable internet access?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
78. Which of these categories best describes your anticipated total combined family income for the 12 months ***after the outbreak***? This should include income (before taxes) from all sources, wages, rents from properties, social security, disability and/or veteran's benefits, unemployment benefits, workman's compensation, help from relatives (including child payments and alimony), and so on.
    a. $14,570 or less
    b. $14,571 – $18,310
    c. $18,311 – $22,050
    d. $22,051 – $25,790
    e. $25,791 – $29,530
    f. $29,531 – $33,270
    g. $33,271 – $37,010
    h. $37,011 – $39,200
    i. $39,201 – $48,200
    j. $48,201 – $58,400
    k. $58,401 – $75,000
    l. $75,001 – $100,000
    m. $100,001 – $150,000
    n. $150,000 or greater
    o. N/A or Prefer Not to Answer
79. In the last month, were you ever hungry but did not eat because you could not afford to buy food?
    a. Never
    b. Rarely
    c. Sometimes

    d. Often

80. Did you ever eat less than you felt you should because you didn't have money to buy food?
    a. Never
    b. Rarely
    c. Sometimes
    d. Often
81. How often did you not have enough money to buy food?
    a. Never
    b. Rarely
    c. Sometimes
    d. Often
82. How often could you not afford to eat balanced meals?
    a. Never
    b. Rarely
    c. Sometimes
    d. Often
83. How often could you not afford to pay your rent or mortgage?
    a. Never
    b. Rarely
    c. Sometimes
    d. Often
84. How often could you not afford to pay for your utilities?
    a. Never
    b. Rarely
    c. Sometimes
    d. Often
85. Are you or your partner a healthcare provider?
    a. Yes
    b. No, neither myself nor my partner are healthcare providers.
86. [If 85 a]: Have you or your partner continued to go to work since the beginning of the outbreak?
    a. Work has continued and I have continued to go to work.
    b. Work has continued and I have ***not*** continued to go to work.
    c. Work has not continued.
87. Do you or your partner work in a grocery store, pharmacy, or other retail establishment?
    a. Yes
    b. No

88. [If 87 a]: Have you or your partner continued to go to work since the beginning of the outbreak?
    a. Work has continued and I have continued to go to work.
    b. Work has continued and I have ***not*** continued to go to work.
    c. Work has not continued.
89. Is anyone in your household immunocompromised (e.g., weakened immune system due to other medical conditions)?
    a. Yes
    b. No
90. [If 89 a]: What is your relationship to that person?
    a. Me
    b. My partner
    c. My child(ren)
    d. My parent(s)
    e. Other: [fill in].
91. Have you been social distancing (e.g., putting at least 6 feet of physical distance between yourself and other people who do not live in your household)?
    a. Yes
    b. No
92. [If 91a]: For how long have you been social distancing?
    a. 1-2 days
    b. 2-4 days
    c. 4-7 days
    d. 1-2 weeks
    e. More than 2 weeks
93. On average, how much have you and your family followed social distancing recommendations?
    a. We have made no changes to our behavior.
    b. We have made minor changes to reduce social contact (e.g., going out less, seeing fewer friends)
    c. We have made major changes to reduce physical social contact (e.g., not going to school / work, limiting contact with people outside our home)
    d. Completely changed (e.g., staying inside almost all the time, only going out for necessities, and keeping my physical distance from other people when we do)
94. On average, how much have members of your community followed social distancing recommendations?
    a. They have made no changes to their behavior.
    b. They have made minor changes to reduce social contact (e.g., going out less, seeing fewer friends)

    c. They have made major changes to reduce physical social contact (e.g., not going to school / work, limiting contact with people outside their home)
    d. Completely changed (e.g., staying inside almost all the time, only going out for necessities, and keeping their physical distance from other people when they do)

95. Is your child staying home from school?
    a. Yes: school closed
    b. Yes: school remained open, but I'm keeping my child home
    c. No
96. When did your children begin staying home from school?
    a. [DATE]
97. Do you assist your child on academic activities? May vary based on age-appropriateness.
    a. Yes
    b. No
98. [If 97a]: How many hours a day do you typically spend on academic activities with your child?
    a. Hours [FILL]
99. [If 97a] Where did you obtain sources for academic instruction or guidance?
    a. I made the materials myself
    b. Child's school
    c. Family or friends
    d. Organization: [Fill]
100. Does your child need to use the internet to do their school work?
    a. Yes
    b. No
101. Does your child have their own computer or tablet to do their schoolwork on? If so, how did they get this device?
    a. Yes, they had it before the outbreak
    b. Yes, we bought it after the outbreak
    c. Yes, the school provided it after the outbreak
    d. Yes, someone donated it after the outbreak
    e. No
102. In the last month, approximately how much of the day do you typically spend watching or reading the news coverage about the outbreak through formal news sources (e.g., news channel on TV, news source webpage)?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours

e. 4-6 hours
f. 6 or more hours

103. In the last month, approximately how much of the day do you typically spend watching or reading the news coverage about the outbreak through informal news sources (e.g., social media posts, blogs, talk shows; does not include links from social media to actual news source articles)?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
104. In the last month, how many hours a day do you typically spend passively scrolling through social media?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
105. How many hours a day do you typically spend passively browsing other non-news websites?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
106. How many hours a day do you typically spend watching movies or shows for leisure?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
107. How many hours a day do you typically spend reading books or magazines for leisure?
    a. None
    b. 1 hour or less

c. 1-2 hours
d. 2-4 hours
e. 4-6 hours
f. 6 or more hours

108. In the last month, how many hours a day have you been spending actively socializing either in person or digitally with people ***not*** in your household?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
109. [If 104b-f:] Rank most commonly used methods of communication:
    a. Social media apps
    b. Texting
    c. Phone calls
    d. Video-chatting
    e. In-person
110. In the last month, how many hours a day have you been spending actively socializing either in person or digitally with people ***who are*** in your household?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
111. [If 106b-f]: Rank most commonly used methods of communication:
    a. Social media apps
    b. Texting
    c. Phone calls
    d. Video-chatting
    e. In-person
112. In the last month, do you feel more or less connected to the following people:
    a. Close Friends
        i. Much less connected
        ii. A little less connected
        iii. The same
        iv. A little more connected
        v. Much more connected
    b. Other friends

i. Much less connected
ii. A little less connected
iii. The same
iv. A little more connected
v. Much more connected

c. Family in household
    i. Much less connected
    ii. A little less connected
    iii. The same
    iv. A little more connected
    v. Much more connected
d. Family not in household
    i. Much less connected
    ii. A little less connected
    iii. The same
    iv. A little more connected
    v. Much more connected
e. Your community
    i. Much less connected
    ii. A little less connected
    iii. The same
    iv. A little more connected
    v. Much more connected

113. In the last month, how much have you missed being with people ***who do not live with you:***

a. Close Friends
    i. Not at all
    ii. A little
    iii. Somewhat
    iv. Very
b. Other friends
    i. Not at all
    ii. A little
    iii. Somewhat
    iv. Very
c. Family
    i. Not at all
    ii. A little
    iii. Somewhat
    iv. Very

    d. Coworkers
        i. Not at all
        ii. A little
        iii. Somewhat
        iv. Very
    e. Community
        i. Not at all
        ii. A little
        iii. Somewhat
        iv. Very

114. In the last month, how often have you felt lonely?
    a. Never
    b. Once
    c. Several Times
    d. A few times a week
    e. Nearly every day

115. In the last month, what have you typically been doing for physical exercise?
    a. Biking
    b. Running
    c. Dance
    d. Organized sport
    e. Swimming
    f. Yoga or pilates
    g. Aerobics or other cardio
    h. Other: [Fill in]
    i. I have not engaged in physical exercise

116. [If selected 115a-h]: On average, how often have you exercised?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day

117. [If selected 115a-h]: On average, how long have you typically exercised for?
    a. Less than 30 minutes
    b. 30-60 minutes
    c. 60-90 minutes
    d. 90+ minutes

118. In the last month, how often have you spent time in outdoors green spaces (e.g., open spaces including parks, canals, nature areas, coastal or beach front, countryside, farmland)?

a. Less than 1 day a week
b. At least 1 day a week
c. 2-3 days a week
d. 4-5 days a week
e. Every day or nearly every day

119. How often have you spent time outside your home for at least 30 minutes not including outdoor green spaces listed above (e.g., back yard, neighborhood street)?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
120. In the past month, how well have you been sleeping? My sleep quality was:
    a. Not good
    b. Somewhat good
    c. Mostly good
    d. Very good
121. On an average night, how many hours do you sleep?
    a. [fill] hours
122. If you experienced trouble sleeping, was it because of (check all that apply or leave blank if no trouble sleeping):
    a. Trouble falling asleep
    b. Waking up during the night
    c. Waking up earlier than you wanted to

123. In the last month, have your days had a fairly consistent routine?
    a. Not at all, every day was different
    b. Somewhat, I did some things at the same time every day
    c. Mostly, I did most things at the same time every day
    d. Very much, I did everything at the same time every day
124. Have family members really helped and supported each other?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
125. Has there been a feeling of togetherness in your family?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
126. Have family members rarely criticized each other?

a. Not at all
b. Somewhat
c. Mostly
d. Very much

127. Have you had a discussion about the coronavirus with your child?
    a. Yes
    b. No
128. [If 127a]: How difficult did you find this conversation?
    a. Not at all difficult
    b. A little difficult
    c. Somewhat difficult
    d. Very difficult
129. Do you have a difficult relationship with someone who lives in your home? If so, who? Check all that apply.
    a. Yes- Partner
    b. Yes- Child
    c. Yes- Other [fill in]
    d. No
130. [If 129a-c]: Has being at home with this person more changed things in your relationship? [logic, appears for each relationship selected]
    a. Yes gotten worse
    b. Yes gotten better
    c. No stayed about the same
131. [If 129a-c]: How upsetting is it to be at home more often with this person?
    a. Not at all upsetting
    b. A little upsetting
    c. Somewhat upsetting
    d. Very upsetting
132. Have you or anyone in your household experienced any racism, prejudice, or discrimination (i.e., being treated unfairly because of some aspect of your identity) related to the coronavirus outbreak?
    a. No
    b. Yes
        i. [if b selected] Racial slur
        ii. [if b selected] Avoided because of my/their race or ethnicity
        iii. [if b selected] Attacked because of my/their race or ethnicity
        iv. [if b selected] Explain [Fill in]
133. How have your community leaders been discussing the coronavirus outbreak (government, religious, or otherwise)?
    a. Not at all seriously, they say it's not a big deal

b. A little seriously, they say we just have to be a little more careful
c. Somewhat seriously, they say we we should change a lot of our behavior
d. Very seriously, they say that it's very dangerous and it's important to change our behavior

134. Do you trust the government or leaders of your community to take the appropriate steps to manage your safety?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very

135. How well do you feel like you understand the current pandemic and the reasoning behind social distancing?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very

136. For each item below, indicate ***the most worried you have felt in the last month*** using the sliding scale from 'not at all worried' to 'extremely worried.'

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
You would become seriously ill or die										
One of your children would become seriously ill or die										
Someone else you care about would be become seriously ill or die										
You would be unable to access care if you were sick										

Someone you care about would be unable to access care if they got sick										
Infected items would be brought into your home										
Need to disinfect items brought into your home										
Your family wouldn't be able to pay bills										
Your family wouldn't have enough money for basic needs like food and shelter										
Your family would lose their housing										
You would lose your job										
Your partner would lose their job										
Your family wouldn't be able to get enough food										
Your family wouldn't be able to get other necessities like										

toilet paper and cleaning supplies										
Your family wouldn't be able to get medicine										
Someone else that you care about wouldn't be able to pay bills										
Someone else that you care about wouldn't have enough money for basic needs like food and shelter										
Someone else that you care about would lose their housing										
Someone else that you care about would lose their job(s)										
Someone else that you care about wouldn't be able to get enough food										
Someone else that you care about wouldn't be able to get other necessities like toilet paper and cleaning										

supplies										
Someone else that you care about wouldn't be able to get medicine										
Something bad would happen if you went outside										
That you wouldn't be able to perform well at work										
That you made someone else sick with the coronavirus										
That you or someone you know would be the victim of racism or discrimination										

137. In the last month, how have you dealt with any stress or anxiety related to the coronavirus (check all that apply)?
    a. Watched/read news
    b. Tried to distract yourself
    c. Thought about all the details of the problem
    d. Talked to family or friends
    e. Exercised
    f. Meditated

    g. Sought counseling from a therapist or religious leader
    h. Self-care activities
        i. Explain [Fill in]
    i. Other
        i. Explain [Fill in]

138. Have you done any of the following since the outbreak?
    a. Volunteered time at hospitals
    b. Donated/prepared food
    c. Donated money/supplies
    d. Gave shelter to displaced people
    e. Prayed/prayer group/prayer vigil
    f. Wrote letters or contacted isolated older people?
    g. Cheered on health care workers
    h. Other way of helping (specify _____)
139. Taking everything into consideration, what was the most stressful part of the coronavirus outbreak and subsequent social distancing/quarantine for you personally?
    a. [Fill in]
140. Is there anything we should know about the psychological effects of the outbreak that was not covered in this survey? If no, leave blank.
    a. [Fill in]

The COVID-19 Experience Survey

Thank you for agreeing to participate in this research. This survey asks about your experiences related to the COVID-19 outbreak during the period of March 2020 and the resulting shelter-in-place orders that may have occurred in your community. Questions ask about how you and those close to you have been impacted in the areas of health and finances, as well as social, and emotional functioning.

YOUR ANSWERS WILL BE KEPT STRICTLY CONFIDENTIAL.

The survey takes about 60 minutes. You may skip any questions you prefer not to answer. To thank you for your time, you will receive $50 via your choice of Venmo, Paypal or Gift Card when you are finished.

We are conducting this research to better understand how stressful experiences impact families. There are no direct benefits to you from participating in this research and there are few foreseeable risks associated with completing the survey. Your participation in this survey is completely voluntary. You do not need to complete the survey if you do not want to. Your choice whether or not to participate will not affect your current or future dealings with University of Washington or Harvard University. If you choose to complete the survey, you are free to stop the survey at any time.

First, we're going to ask you some questions about how things were ***before*** the coronavirus:

1. What types of regular, organized group activities did you participate in during or outside of school? (Check all that apply)
    a. School clubs
    b. Sports / athletic activity (e.g., soccer, dance, running)
    c. Musical or artistic activities
    d. Other: [Fill]
    e. I did not participate in any
2. [If 1a]: How many days a week did you participate in school clubs?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
3. [If 1b]: How many days a week did you participate in sports / athletic activity?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
4. [If 1c]: How many days a week did you participate in musical or artistic activities?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week

    e. Every day or nearly every day
5. [If 1d]: How many days a week did you participate in [other filled]?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
6. Before the coronavirus outbreak, how often did you typically see your friends (aside from in class)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
7. How often did you typically talk to friends on the phone?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
8. How often did you typically text with friends?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
9. How often did you typically talk to your friends on other messaging apps (WhatsApp, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
10. How often did you typically talk to your friends on social media (SnapChat, Instagram, Facebook, etc.)?
    a. Never
    b. Less than once a week

c. Once a week
d. 2-3 times a week
e. Once a day
f. Multiple times a day

11. Before the coronavirus outbreak, how often did you typically see your parents?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
12. How often did you typically talk to your parents on the phone?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
13. How often did you typically text with your parents?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
14. How often did you typically talk to your parents on other messaging apps (WhatsApp, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
15. How often did you typically talk to your parents on social media (SnapChat, Instagram, Facebook, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day

16. Before the coronavirus outbreak, how often did your peers leave you out of an ***online*** group activity or conversation that you really wanted to be included in (group chat, group photo, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
17. How often did a peer threaten to hurt you or beat you up using an ***online*** medium (texting, social media app, photo caption, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
18. How often did a peer tease you in a mean way saying rude things or calling you bad names using an ***online*** medium (texting, social media app, photo caption, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
19. How often did a peer try to damage your social reputation using an ***online*** medium (texting, social media app, photo caption, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
20. How often did a peer stop responding to you on an ***online*** medium (texting, social media app, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day

f. Multiple times a day

21. How often did a peer block you using an ***online*** medium (texting, social media app, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
22. Before the coronavirus outbreak, how many hours a day did you typically spend passively scrolling through social media?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
23. How many hours a day did you typically spend passively browsing other non-news websites?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
24. How many hours a day did you typically spend watching movies or shows for leisure?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
25. How many hours a day did you typically spend reading books or magazines for leisure?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
26. Before the coronavirus outbreak, did you have an adult in your life you could turn to for emotional support?
    a. Yes

b. No

27. [If 26a]: What's their relationship to you? (Check all that apply)
    a. Parent
    b. Other family member
    c. Family friend
    d. Neighbor
    e. Coach
    f. Teacher
    g. Other mentor: [Fill]
28. [If 26a]: Think about the person you'd turn to the most for emotional support, how often did you talk to them?
    a. Every few months
    b. Every few weeks
    c. At least once a week
    d. Multiple times a week
29. Before the coronavirus outbreak, how many hours a day did you typically spend actively socializing either in person or digitally with people ***not*** in your household?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
30. [If 29b-f]: Rank most commonly used methods of communication:
    a. Social media apps
    b. Texting
    c. Phone calls
    d. Video-chatting
    e. In-person
31. How many hours a day did you typically spend actively socializing either in person or digitally with people ***who are*** in your household?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
32. [If 31b-f]: Rank most commonly used methods of communication:
    a. Social media apps
    b. Texting

c. Phone calls
d. Video-chatting
e. In-person

33. Before the coronavirus, what did you typically do for physical exercise?
    a. Biking
    b. Running
    c. Dance
    d. Organized sport
    e. Swimming
    f. Yoga or pilates
    g. Aerobics or other cardio
    h. Other: [Fill in]
    i. I did not engage in physical exercise
34. [If selected 33a-h]: On average, how often did you exercise?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
35. [If selected 33a-h]: On average, how long did you typically exercise for?
    a. Less than 30 minutes
    b. 30-60 minutes
    c. 60-90 minutes
    d. 90+ minutes
36. Before the coronavirus outbreak, how often did you spend time in outdoors green spaces (e.g., open spaces including parks, canals, nature areas, coastal or beach front, countryside, farmland)?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
37. How often did you spend time outside your home for at least 30 minutes not including outdoor green spaces listed above (e.g., back yard, neighborhood street)?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day

38. On an average night, how well did you sleep before the coronavirus outbreak? My sleep quality was:
    a. Not good
    b. Somewhat good
    c. Mostly good
    d. Very good
39. On an average night, how many hours did you sleep?
    a. [fill] hours
40. If you experienced trouble sleeping, was it because of (check all that apply):
    a. Trouble falling asleep
    b. Waking up during the night
    c. Waking up earlier than you wanted to
    d. I have no trouble sleeping

41. Before the coronavirus outbreak, did your days have a fairly consistent routine?
    a. No at all, every day was different
    b. Somewhat, I did some things at the same time every day
    c. Mostly, I did most things at the same time every day
    d. Very much, I did everything at the same time every day
42. Did family members really help and support each other?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
43. Was there was a feeling of togetherness in your family?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
44. Did family members rarely criticize each other?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much

Now we're going to ask you some questions about how things have been ***since*** the coronavirus pandemic started. **Specifically, we are interested in how things have been going over the past month**.

45. Do you believe you got sick with the coronavirus?
    a. No

b. Possibly
c. Yes

46. [If 45 b-c]: Did you get tested for the coronavirus?
    i. Did not want to get tested
    ii. Wanted to get tested, but was unable
    iii. Took a test and was positive
    iv. Took a test and was negative
47. [If 45 b-c]: Did you experience symptoms?
    a. Yes
    b. No
48. [If 47 a]: For how long did you experience symptoms?
    a. 1-2 days
    b. 2-4 days
    c. 4-7 days
    d. 1-2 weeks
    e. More than 2 weeks
49. [If 45b-c]: Were you quarantined as a result?
    a. Yes
    b. No
50. [If 49 a]: For how long were you quarantined?
    a. 1-2 days
    b. 2-4 days
    c. 4-7 days
    d. 1-2 weeks
    e. More than 2 weeks
51. [If 45b-c]: Were you hospitalized?
    a. Yes
    b. No
52. [If 51a]: For how long were you hospitalized?
    a. 1-2 days
    b. 2-4 days
    c. 4-7 days
    d. 1-2 weeks
    e. More than 2 weeks
53. Do you know anybody who has gotten sick with the coronavirus? If so, who? (Check all that apply)
    a. No one I know has gotten the coronavirus
    b. Parent
    c. Sibling
    d. Other relative (describe)

e. Boyfriend/girlfriend/partner
f. Close friend
g. Classmate
h. Acquaintance
i. Teacher
j. Other (describe)

54. [If 53b]: How serious was it for your parent?
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
55. [If 53c]: How serious was it for your sibling? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
56. [If 53d]: How serious was it for your other relative? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
57. [If 53e]: How serious was it for your boyfriend/girlfriend/partner?
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
58. [If 53f]: How serious was it for your close friend? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
59. [If 53g]: How serious was it for your classmate? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
60. [If 53h]: How serious was it for your acquaintance? If more than one, describe the most serious.

a. Not serious (almost no symptoms)
b. Mild symptoms (low fever, mild cough)
c. Moderate symptoms (high fever, difficulty breathing)
d. Severe symptoms (required hospitalization)

61. [If 53i]: How serious was it for your teacher? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
62. [If 53j]: How serious was it for your [other fill in]? If more than one, describe the most serious.
    a. Not serious (almost no symptoms)
    b. Mild symptoms (low fever, mild cough)
    c. Moderate symptoms (high fever, difficulty breathing)
    d. Severe symptoms (required hospitalization)
63. [If 53b-j]: Do you know anybody who has died as a result of the coronavirus? If so, what is this person's relationship to you? (Check all that apply)
    a. No
    b. Parent
    c. Sibling
    d. Other relative (describe)
    e. Boyfriend/girlfriend/partner
    f. Close friend
    g. Classmate
    h. Acquaintance
    i. Teacher
    j. Other (describe)
64. In the last month, approximately how much of the day do you typically spend watching or reading the news coverage about the outbreak through formal news sources (e.g., news channel on TV, news source webpage)?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
65. In the last month, approximately how much of the day do you typically spend watching or reading the news coverage about the outbreak through informal news sources (e.g., social media posts, blogs, talk shows; does not include links from social media to actual news source articles)?

a. None
b. 1 hour or less
c. 1-2 hours
d. 2-4 hours
e. 4-6 hours
f. 6 or more hours

66. Was your school closed as a result of the coronavirus?
    a. Yes
    b. No
67. [If 66a]: Approximate date:
68. [If 66a]: Are you continuing with your school work while you're at home?
    a. Yes
    b. No
69. [If 68a]: How are you continuing to do your school work?
    a. My parent is homeschooling me
    b. My teachers sent home work
    c. I'm doing my classes online
70. [If 68a]: What is the environment like when you are doing your school work?
    a. Very quiet
    b. Somewhat quiet
    c. Somewhat noisy
    d. Very noisy
71. [If 68a]: How difficult is it to get school work done?
    a. Not at all difficult
    b. A little difficult
    c. Somewhat difficulty
    d. Very difficult
72. Have you been social distancing (e.g., putting at least 6 feet of physical distance between yourself and other people who do not live in your household)?
    a. Yes
    b. No
73. [If 72a]: For how long have you been social distancing?
    a. 1-2 days
    b. 2-4 days
    c. 4-7 days
    d. 1-2 weeks
    e. More than 2 weeks
74. On average, how much have you and your family followed social distancing recommendations?
    a. We have made no changes to our behavior.

b. We have made minor changes to reduce physical social contact (e.g., going out less, seeing fewer friends)
c. We have made major changes to reduce physical social contact (e.g., not going to school / work, limiting contact with people outside our home)
d. Completely changed (e.g., staying inside almost all the time, only going out for necessities, and keeping my physical distance from other people when we do)

75. On average, how much have your peers followed social distancing recommendations?
    a. They have made no changes to their behavior.
    b. They have made minor changes to reduce physical social contact (e.g., going out less, seeing fewer friends)
    c. They have made major changes to reduce physical social contact (e.g., not going to school / work, limiting contact with people outside our home)
    d. Completely changed (e.g., staying inside almost all the time, only going out for necessities, and keeping their physical distance from other people when they do)
76. In the last month, what types of regular, organized group activities have you been participating in during or outside of school, ***even if remotely***? (Check all that apply)
    a. School clubs
    b. Sports / athletic activity (e.g., soccer, dance, running)
    c. Musical or artistic activities
    d. Other: [Fill]
    e. I do not participate in any
77. [If 76a]: How many days a week have you been participating in school clubs?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
78. [If 76b]: How many days a week have you been participating in sports / athletic activity?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
79. [If 76c]: How many days a week have you been participating in musical or artistic activities?
    a. Less than 1 day a week
    b. At least 1 day a week
    c. 2-3 days a week
    d. 4-5 days a week
    e. Every day or nearly every day
80. [If 76d]: How many days a week have you been participating in [other filled]?

a. Less than 1 day a week
b. At least 1 day a week
c. 2-3 days a week
d. 4-5 days a week
e. Every day or nearly every day

81. How much do you miss participating in your normal activities?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
82. In the last month, how often have you seen your friends?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
83. How often have you been talking to friends on the phone?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
84. How often have you been texting friends?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
85. How often have you been talking to friends on other messaging apps (WhatsApp, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
86. How often have you been talking to friends on social media (SnapChat, Instagram, Facebook, etc.)?

a. Never
b. Less than once a week
c. Once a week
d. 2-3 times a week
e. Once a day
f. Multiple times a day

87. In the last month, how often have you been seeing your parents?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
88. How often have you been talking to your parents on the phone?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
89. How often have you been texting with your parents?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
90. How often have you been talking to your parents on other messaging apps (WhatsApp, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
91. How often have you been talking to your parents on social media (SnapChat, Instagram, Facebook, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week

e. Once a day
f. Multiple times a day

92. In the last month, how often did a peer leave you out of an ***online/digital*** group activity or conversation that you really wanted to be included in (e.g., group chat, group photo, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
93. How often did a peer threaten to hurt you or beat you up using an ***online/digital*** platform (texting, social media app, photo caption, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
94. How often did a peer tease you in a mean way saying rude things or calling you bad names using an ***online/digital*** platform (texting, social media app, photo caption, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
95. How often did a peer try to damage your social reputation using an ***online/digital*** platform (texting, social media app, photo caption, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
96. How often did a peer stop talking to you through an ***online/digital*** platform (texting, social media app, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week

e. Once a day
f. Multiple times a day

97. How often did a peer block you using ***online/digital*** platform (texting, social media app, etc.)?
    a. Never
    b. Less than once a week
    c. Once a week
    d. 2-3 times a week
    e. Once a day
    f. Multiple times a day
98. How many hours a day do you typically spend passively scrolling through social media?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
99. How many hours a day do you typically spend passively browsing other non-news websites?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
100. How many hours a day do you typically spend watching leisure movies or shows?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
101. How many hours a day do you typically spend reading books or magazines for leisure?
    a. None
    b. 1 hour or less
    c. 1-2 hours
    d. 2-4 hours
    e. 4-6 hours
    f. 6 or more hours
102. In the last month, have you felt that you have an adult in your life you could turn to for emotional support?

a. Yes
b. No

103. [If 102a]: What's their relationship to you (check all that apply)?
a. Parent
b. Other family member
c. Family friend
d. Neighbor
e. Coach
f. Teacher
g. Other mentor: [Fill]

104. [If 102a]: Think about the person you'd turn to the most for emotional support, how often have you talked to them in the last month?
a. Not at all
b. Every few weeks
c. At least once a week
d. Multiple times a week

105. In the last month, how many hours a day have you been spending actively socializing either in person or digitally with people ***not*** in your household?
a. None
b. 1 hour or less
c. 1-2 hours
d. 2-4 hours
e. 4-6 hours
f. 6 or more hours

106. [If 105b-f]: Rank most commonly used methods of communication:
a. Social media apps
b. Texting
c. Phone calls
d. Video-chatting
e. In-person

107. In the last month, how many hours a day have you been spending actively socializing either in person or digitally with people ***who are*** in your household?
a. None
b. 1 hour or less
c. 1-2 hours
d. 2-4 hours
e. 4-6 hours
f. 6 or more hours

108. [If 107b-f]: Rank most commonly used methods of communication:
a. Social media apps

b. Texting
c. Phone calls
d. Video-chatting
e. In-person

109. In the last month, do you feel more or less connected to the following people:
    a. Close Friends
        i. Much less connected
        ii. A little less connected
        iii. The same
        iv. A little more connected
        v. Much more connected
    b. Other friends
        i. Much less connected
        ii. A little less connected
        iii. The same
        iv. A little more connected
        v. Much more connected
    c. Family in household
        i. Much less connected
        ii. A little less connected
        iii. The same
        iv. A little more connected
        v. Much more connected
    d. Family not in household
        i. Much less connected
        ii. A little less connected
        iii. The same
        iv. A little more connected
        v. Much more connected
    e. Other adult mentors
        i. Much less connected
        ii. A little less connected
        iii. The same
        iv. A little more connected
        v. Much more connected
        vi.
    f. Your community
        i. Much less connected
        ii. A little less connected
        iii. The same

iv. A little more connected
v. Much more connected

110. In the last month, how much have you missed being with people ***who do not live with you:***

a. Close Friends
   i. Not at all
   ii. A little
   iii. Somewhat
   iv. Very
b. Other friends
   i. Not at all
   ii. A little
   iii. Somewhat
   iv. Very
c. Family
   i. Not at all
   ii. A little
   iii. Somewhat
   iv. Very
d. Teachers
   i. Not at all
   ii. A little
   iii. Somewhat
   iv. Very
e. Community
   i. Not at all
   ii. A little
   iii. Somewhat
   iv. Very

111. In the last month, how often have you felt lonely?
   a. Never
   b. Once
   c. Several Times
   d. A few times a week
   e. Nearly every day

112. In the last month, what have you typically been doing for physical exercise?
   a. Biking
   b. Running
   c. Dance
   d. Organized sport

e. Swimming
f. Yoga or pilates
g. Aerobics or other cardio
h. Other: [Fill in]
i. I have not engaged in physical exercise

113. [If selected 112a-h]: On average, how often have you exercised?
a. Less than 1 day a week
b. At least 1 day a week
c. 2-3 days a week
d. 4-5 days a week
e. Every day or nearly every day

114. [If selected 112a-h]: On average, how long have you typically exercised for?
a. Less than 30 minutes
b. 30-60 minutes
c. 60-90 minutes
d. 90+ minutes

115. In the last month, how often have you spent time in outdoors green spaces (e.g., open spaces including parks, canals, nature areas, coastal or beach front, countryside, farmland)?
a. Less than 1 day a week
b. At least 1 day a week
c. 2-3 days a week
d. 4-5 days a week
e. Every day or nearly every day

116. How often have you spent time outside your home for at least 30 minutes not including outdoor green spaces listed above (e.g., back yard, neighborhood street)?
a. Less than 1 day a week
b. At least 1 day a week
c. 2-3 days a week
d. 4-5 days a week
e. Every day or nearly every day

117. In the last month, how well have you been sleeping? My sleep quality has been:
a. Not good
b. Somewhat good
c. Mostly good
d. Very good

118. On an average night, how many hours did you sleep?
a. [fill] hours

119. If you experienced trouble sleeping, was it because of (check all that apply or leave blank if no trouble sleeping):
a. Trouble falling asleep

b. Waking up during the night
c. Waking up earlier than you wanted to

120. In the last month, have your days had a fairly consistent routine?
    a. Not at all, every day was different
    b. Somewhat, I did some things at the same time every day
    c. Mostly, I did most things at the same time every day
    d. Very much, I did everything at the same time every day
121. Have family members really helped and supported each other?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
122. Has there been a feeling of togetherness in your family?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
123. Have family members rarely criticized each other?
    a. Not at all
    b. Somewhat
    c. Mostly
    d. Very much
124. How have your parents been discussing the coronavirus outbreak?
    a. Not at all seriously (e.g., they say it's not a big deal)
    b. A little seriously (e.g., they say we just have to be a little more careful)
    c. Somewhat seriously (e.g., they say we should change a lot of our behavior)
    d. Very seriously (e.g., they say that it's very dangerous and it's important to change our behavior)
125. Do you have a difficult relationship with someone who lives in your home? If so, who? Check all that apply.
    a. Yes- Parent
    b. Yes- Sibling
    c. Yes- Other [fill in]
    d. No
126. [If 125a-c]: Has being at home with this person more changed things in your relationship? [logic, appears for each relationship selected]
    a. Yes, gotten worse
    b. Yes, gotten better
    c. No, stayed about the same
127. [If 125a-c]: How upsetting is it to be at home more often with this person?

a. Not at all upsetting
b. A little upsetting
c. Somewhat upsetting
d. Very upsetting

128. Have you or anyone in your household experienced any racism, prejudice, or discrimination (i.e., being treated unfairly because of some aspect of your identity) related to the coronavirus outbreak?
    a. No
    b. Yes
        i. [if b selected] Racial slur
        ii. [if b selected] Avoided because of my/their race or ethnicity
        iii. [if b selected] Attacked because of my/their race or ethnicity
        iv. [if b selected] Explain [Fill in]

129. Do you trust the government or leaders of your community to take the appropriate steps to manage your safety?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very

130. How well do you feel like you understand the current pandemic and the reasoning behind social distancing?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very

131. For each item below, indicate ***the most worried you have felt in the last month*** using the sliding scale from 'not at all worried' to 'extremely worried.'

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
You would become seriously ill or die										
One or both of your parents would become seriously ill or die										

Someone else you care about would be become seriously ill or die										
You would be unable to access care if you were sick										
Someone you care about would be unable to access care if they got sick										
Infected items would be brought into your home										
Need to disinfect items brought into your home										
Your family wouldn't be able to pay bills										
Your family wouldn't have enough money for basic needs like food and shelter										
Your family would lose their housing										
Your parent(s) would lose their job(s)										

Your family wouldn't be able to get enough food										
Your family wouldn't be able to get other necessities like toilet paper and cleaning supplies										
Your family wouldn't be able to get medicine										
Someone else that you care about wouldn't be able to pay bills										
Someone else that you care about wouldn't have enough money for basic needs like food and shelter										
Someone else that you care about would lose their housing										
Someone else that you care about would lose their job(s)										
Someone else that you care about wouldn't be able to get										

enough food										
Someone else that you care about wouldn't be able to get other necessities like toilet paper and cleaning supplies										
Someone else that you care about wouldn't be able to get medicine										
Something bad would happen if you went outside										
That you wouldn't do well in school										
That you made someone else sick with the coronavirus										
That you or someone you know would be the victim of racism or discrimination										

132. In the last month, how have you dealt with any stress or anxiety related to the coronavirus? (Check all that apply)
    a. Watched/read news

b. Tried to distract yourself
c. Thought about all the details of the problem
d. Talked to family or friends
e. Exercised
f. Meditated
g. Sought counseling from a therapist or religious leader
h. Self-care activities
    i. Explain [Fill in]
i. Other
    i. Explain [Fill in]

133. Have you done any of the following since the beginning of the outbreak?
    a. Volunteered time at hospitals
    b. Donated/prepared food
    c. Donated money/supplies
    d. Gave shelter to displaced people
    e. Prayed/prayer group/prayer vigil
    f. Wrote letters or contacted isolated older people
    g. Cheered on health care workers
    h. Other way of helping (specify _____)
134. Taking everything into consideration, what was the most stressful part of the coronavirus outbreak and subsequent social distancing/quarantine for you personally?
    a. [Fill in]
135. Is there anything we should know about the psychological effects of the outbreak that was not covered in this survey? If no, leave blank.
    a. [Fill in]