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How Parents and Their Children Used Social Media and Technology at the Beginning of the COVID-19 Pandemic and Associations with Anxiety

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Abstract

In this study, we examined parents' ($n = 260$) perceptions of their own and their children's use of social media and other types of communication technologies in the beginning stages of coronavirus disease 2019 (COVID-19) related sanctions (e.g., social distancing) in the United States. We also examined associations between social media and technology use and anxiety. On average, parents reported that both they and their children (especially teenagers aged 13–18) had increased technology and social media use since the beginning of social distancing. Moreover, even after controlling for demographic factors, structural equation models showed that parents and children with higher levels of anxiety (as reported by parents) were more likely to increase their technology use and use social media and phones to connect. Among parents, higher anxiety was related to using social media for both social support and information seeking. Based on these results, we advocate for the utilization of social media by public health officials for collecting, collating, and dispersing accurate crisis-related information. As social media use is widespread, and there is potential for false rumors to cause erroneous behavioral action and/or undue stress and anxiety, we also suggest that social media campaigns be thoughtfully designed to account for individual differences in developmental stages and psychological vulnerabilities.

Keywords: social media, anxiety, parents, children, crisis, technology use

Introduction

As highlighted by Wiederhold,[1] social media is used for numerous social and informational purposes, and as evidenced by increased mentions of coronavirus disease 2019 (COVID-19) on social media as the virus spread through the United States in early 2020,[2] social media reflects the concerns of the collective culture. Because of its pervasiveness, social media can also be a critical source of information and social support during crisis. As an example, social media is used by government agencies to field and dispense information to effectively manage disasters,[3] and it is a convenient forum for citizens to post or gather information, seek social support, and express anxieties associated with traumatic events.[4,5]

Notably, Li, Jiang, and Zhai[6] found that an addiction to social messaging (WeChat) had a positive effect on life satisfaction during stressful life events, which aligns with Cumiskey and Hjorth's[4] assertion that victims use social media to process trauma. However, despite these benefits, one of the downfalls of social media use during times of crisis is the potential for this use to spread misinformation and false rumors,[7] to incite fear (as it did with Ebola[8]), and to spur erroneous behavioral action,[9] such as taking incorrect medications.

In light of the potential for social media to be used to express anxiety, quell anxiety (through social support and information seeking), and even incite anxiety (especially related to false information), it is important to examine the interaction between social media use and feelings of anxiety during times of crisis. This is especially important because crisis events, such as wars or pandemics, are likely to produce additional stress and anxiety within individuals experiencing or witnessing the events.[10] Accordingly, in response to the COVID-19 pandemic, affected countries are providing additional mental health support for their citizens: China is offering specialized intervention support due to rises in

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mental health issues associated with COVID-19,[11] and Americans are accessing more mental health services since the virus hit the United States.[12]

Even in times of non-crisis, the dualistic effect of social media and its relationship with mental health has prompted exploration. For example, Escobar-Viera et al.[13] found that greater rates of passive social media use were associated with higher depression; whereas more active use was associated with lower levels of depression. Meanwhile, in terms of users' perspectives, Drouin et al.[14] found that individuals, especially those with high levels of anxiety/depression, considered social media to be a source of both stress and social support. Moreover, those with high anxiety/depression were more likely to cite friends (and less likely to cite parents and mental health care providers) as key sources of social support in times of stress.[14] As social media may be a key method by which individuals connect with friends,[15,16] those with stress or anxiety might use social media at even greater rates in times of crisis, especially crises in which individuals are prevented from having face-to-face social interactions.

Social media is not the only technological medium by which people connect during crisis. Many modern-day interactions are conducted via phones and computers, such as video chats, phone calls, and text messages. Thus, use of technology, generally, might also surge during times of crisis, and people may consider their phones critically important for staying connected.

In support of this, Pew Research surveys from early March 2020 showed that 93 percent of Americans felt that if their phone or Internet service were interrupted during this time (i.e., shelter-in-place for many communities), it would be problematic.[17] In addition, during past crises (e.g., the Orlando nightclub shooting in 2016), phones appeared to be vital to those involved. Specifically, many clubgoers secured their phones before they did anything else, using their phones to call or text loved ones and communicate with emergency responders.[4] Similarly, researchers have found that parents and children used social media to post information and convey emotional reactions during and after school shootings,[18] suggesting that social media use might be an invaluable resource for connection and information gathering for both children and parents during crises.

Although social media use has been studied during past pandemics (e.g., Ebola and H1N1), the global impact of COVID-19 pandemic and its effects on human behavior is unprecedented in recent history. In this study, our main questions were:

RQ1: From parents' perspective, has their own and their children's use of social media and technology increased during the COVID-19 pandemic and what types of social media and technology use are they engaging in (e.g., information seeking, social media use)? and

RQ2: How does anxiety relate to parents' and children's technology use to connect and cope?

As human rights organizations suggest that COVID effects are devastating for children,[19] our focus on families enables us to examine and compare the interaction between technology use and anxiety among different generations (parents and children) in the same household.

Methods

Participants and procedure

Data were from a brief online survey intended to assess individuals' experiences with the ramifications of COVID-19 (e.g., social distancing, changes in work status, anxiety, and technology use). Participants—U.S. residents at least 18 years of age—were recruited via social media announcements and sharing via e-mail listervs. We utilized data from March 20 to March 25, 2020, during which time we obtained 523 responses; this included 260 parents with a child aged 19 years or younger in their home. The research project was approved by the Parkview Health IRB.

In the analytic sample ($n = 260$), parents were on average 40.07 years old (standard deviation [SD] = 7.51; range = 22 to 62), 85 percent were female, 91 percent were living with a marital/romantic partner, 79 percent had more than one child, the average age of their youngest child was 7.69 ($SD = 5.64$; range = 0 to 19), 99 percent said they had been advised or ordered to shelter in place, 38 percent could financially sustain their household for 4 weeks or less if they lost their job or job-related income, 45 percent now worked at home/remote but used to work outside of the home whereas 30 percent had a partner who now worked remote, and 19 percent were themselves or had a spouse who was a health care worker. For a detailed breakdown of characteristics, see Table 1. In addition, parents were from the following U.S. regions: 64.6 percent Midwest, 16.2 percent South, 8.8 percent West, 3.5 percent Northeast, 0.8 percent Alaska/Hawaii, and 6.2 percent did not provide their state.

Measures

Financial preparedness

Participants were asked, ''If you received no additional pay, how many weeks could you financially sustain your household? Think carefully about the needs of your household (e.g., food, pets, utilities, toiletries, etc.)'' and they responded on a scale of 1 (0 weeks) to 5 (7 or more weeks).

COVID-related work stress

Participants responded to ''Thinking about YOU and your work situation now that social distancing, isolation, and other issues have been created by the coronavirus, please check all that apply'' and also the same item regarding ''your SPOUSE/PARTNER and their work situation.'' Response options are found in Table 1. All items checked by the participants were summed, with higher scores representing more potential COVID-related work stress.

Parent anxiety

Participants responded to two items regarding anxiety symptoms in the past 2 weeks (e.g., ''feeling nervous, anxious or on edge'') from the validated Patient Health Questionnaire-4 (PHQ-4),[20–22] by using a scale from 0 (Not at all) to 3 (Nearly every day). Items were summed to produce an overall score, with higher scores representing greater anxiety (interitem $r = 0.67$, $p < 0.001$).

Table 1. Sample Demographics

	Mean	(SD)/n	*Percent*
Parent age	40.07	(7.51)	
Gender			
Female		220	84.6
Male		31	11.9
Did not respond		9	3.5
Financial preparedness	3.96	(1.24)	
0 weeks		9	3.5
1 to 2 weeks		29	11.2
3 to 4 weeks		61	23.5
5 to 6 weeks		24	9.2
7 or more weeks		135	51.9
Did not respond		2	0.8
Married/partnered		236	90.8
Youngest child age	7.69	(5.64)	
0 to 5 years		116	44.6
6 to 12 years		83	31.9
13 to 19 years		61	23.5
More than one child		205	78.8
Staying home			
Recommend stay home		179	68.8
Shelter in place		79	30.4
School/childcare closed		209	80.4
Work stress	1.14	(0.83)	
Now work remote		118	45.4
Let go from job permanently		0	0.0
Let go from job temporarily		19	7.3
Hours reduced		25	9.6
Hours increased		9	3.5
Partner now work remote		79	30.4
Partner let go from job permanently		1	0.4
Partner let go from job temporarily		7	2.7
Partner hours reduced		20	7.7
Partner hours increased		19	7.3

SD, standard deviation.

Child anxiety

Participants responded to one item from the PHQ-4 adapted to ask about the child: ''Over the last 2 weeks, how often has YOUR CHILD (REN) felt nervous, anxious, or on edge?'' Scale was from 0 (Not at all) to 3 (Nearly every day).

Negative effect of social distancing on mental health

Participants responded to the following, ''To what extent is the social distancing and isolation (or any other current restrictions) having a negative effect on the mental health of the following?'' on three items: you, your spouse/partner, and your child(ren). Response options ranged from 1 (Not at all) to 7 (Very much). Any response higher than 1 (Not at all) indicated that the participant felt at least a small negative effect, whereas responses of 2 or higher were coded as perceiving negative effects.

Increase in technology use to connect

Participants responded to two items, one about themselves and another about their child(ren): ''Have you increased your use of technology TO CONNECT with others outside your home?'' and ''Has your child(ren) increased their use…'' Response options for parents ranged from 1 (No) to 4 (Yes, a lot). For children, a response option of (''0—Does not use technology'') was added. For the child model, the ''No'' and ''Does not use technology'' options were combined.

Parent technology use to connect or cope

Participants responded to 20 items, derived from the literature[23,24] with study-specific adaptations, related to the use of technology for connection or coping. They were asked, ''Since social distancing began, how frequently do you do the following things on technology TO…'' ''CONNECT with others outside your home?'' (9 items) and ''DEAL WITH YOUR STRESS, ANXIETY, OR EMOTIONS?'' (11 items). The scale ranged from 0 (Never) to 5 (Multiple times a day). All 20 items and factor loadings are listed in Appendix Table A2. We utilized the parallel.sps script in SPSS[25] to perform a parallel analysis. In this, we generated 1,000 random datasets with the number of participants and the number of items being the same as the current dataset. The analysis also generates mean eigenvalues across the 1,000 simulations as well as eigenvalues that represent the 95th percentile. We also performed our exploratory principal components analysis with varimax rotation.

We then compared the eigenvalues of the principal components solution with the eigenvalues in the parallel analysis. We found that four of the eigenvalues in the principal components solution were larger than the corresponding eigenvalues in the parallel analysis, indicating that four factors should be retained. Our factor analysis with four factors and varimax rotation accounted for 52 percent of the variance. These factors include (a) active social media use (five items, e.g., post on social media; alpha = 0.87), (b) check messages/news (four items, e.g., check phone for messages; search for resources or articles online; alpha = 0.78), (c) connecting via video (three items, e.g., live video a friend/family via technology; alpha = 0.78), and (d) taking time for oneself (three items, e.g., take time to be alone for a few minutes; alpha = 0.62).

An additional five items had loadings lower than 0.60 and were, therefore, not included in any scale scores (Appendix Table A1). Alphas were not necessarily expected to be high, as each of these constructs is assessing cumulative frequency/use. In other words, we conceptualized these as formative constructs, where the items contribute to the construct as opposed to the construct determining the items.[26–28]

Child technology use to connect

Participants completed 11 items in response to ''Since social distancing began, how frequently does YOUR CHILD do the following things on technology TO CONNECT with others outside your home?'' The scale ranged from 0 (Never) to 5 (Multiple times a day). A factor analysis with varimax rotation revealed two factors accounting for 66 percent of the variance, including social media/social technology use (seven items, e.g., post on personal social media, text message/chat app; alpha = 0.96) and video/phone calls (three items, e.g., live video, phone call; alpha = 0.54).

Items were averaged within each factor (except item 3, video game, was excluded due to a low factor loading; item 1, live video, was retained due to its strong conceptual

connection with sharing pre-recorded video); all items and factor loadings are reported in Appendix Table A2. Again, alphas were not necessarily expected to be high as we conceptualized each of these types of technology use as formative constructs.[26–28]

Data analysis

We first ran descriptive statistics, the factor analyses (described above), and correlations in SPSS 26. We also divided child technology use variables into developmental stage age groups based on youngest child age (preschool 0–5, middle childhood 6–12, adolescence 13–19 years) and tested for significant mean differences by group. We then examined a structural equation model (SEM) in Mplus 7, where financial preparedness, work stress, child age, marital/partner status, health care worker status, and parent anxiety were used to predict parent variables (increases in technology use to connect, active social media use, checking messages/news, connection via video, and taking time for self).

We ran a second SEM to examine these same predictor variables plus child anxiety predicting child variables (increases in technology use to connect, social media/social technology use to connect, and video/phone calls to connect). We also included a ''children in the same developmental stage'' variable as a control to better account for variance that might be due to a parent having multiple children whose ages span across development stages—1 = all children fit into the same stage (e.g., all age 5 or younger) and 0 = children span across stages (e.g., one child is 3, whereas another is 14, etc.).

Finally, children ($n = 13$) were excluded from the model if they were rated as ''does not use technology'' and also ''Never'' used any ''social media/social technology'' and ''Never'' used any ''video/phone.'' We utilized SEM to examine all model paths simultaneously while also accounting for correlations among predictor variables and among outcome variables. We judged the model to fit the data well for parents [χ^2 (13) = 16.76, $p = 0.21$; root-mean-squared error of approximation (RMSEA) = 0.03; comparative fit index (CFI) = 0.98; standardized root mean of the residual (SRMR) = 0.03] and children [χ^2 (19) = 22.62, $p = 0.25$; RMSEA = 0.03; CFI = 0.99; SRMR = 0.04].

Results

Moderate or severe anxiety symptoms were reported by 49.6 percent of parents, and 62.7 percent rated their child as experiencing anxiety symptoms on several days or more (Appendix Table A3). Meanwhile, 86.5 percent, 84.3 percent, and 86.2 percent felt that social distancing restrictions had at least a small negative effect on their own, their partner's, and their child's mental health, respectively. Moreover, 92.3 percent of parents and 82.3 percent of children had increased their technology use to connect with others (Appendix Table A4).

Mean differences revealed that children in the 0 to 5 year age range did not increase their technology use as much as older age groups, nor did they use social media/social technology or video/phone calls as frequently (Table 2). Bivariate correlations (Table 3) revealed significant positive associations between parent anxiety and parent technology use, social media use, and checking messages/news, but not connecting via video or taking time for self. Greater child anxiety was associated with greater parent anxiety, increases in child technology use, and more frequent child social media/social technology and child video/phone call use.

The SEM for parents (Table 4) revealed that those with greater anxiety were more likely to have (a) increased their technology use to connect and more frequently (b) used social media actively and (c) checked for messages/news, but not (d) connected via video or (e) taken time for self. It is important to note that those who were married/partnered or who were (or had partners who were) health care workers were less likely to check their phone or social media for messages/news or information purposes, and work stress was linked with an increase in technology use to connect, but not social media use or the other variables. Those with greater financial preparedness and older children were able to take time for themselves more frequently, and those with older children connected with others via video less frequently than those with younger children.

The SEM for children (Table 5) revealed that (after controlling for parent anxiety and family characteristics) those children with greater anxiety and older children were more likely to have (a) increased their technology to connect and more frequently (b) used social media/social technology to

Table 2. Child Technology Use to Connect by Child Age

	All child ages		*0–5 years*		*6–12 years*		*13–19 years*	
	Mean	*(SD)/ percent*	*Mean*	*(SD)/ percent*	*Mean*	*(SD)/ percent*	*Mean*	*(SD)/ percent*
Increase technology use to connect	2.63	(1.23)	2.17[a,b]	(1.31)	2.94[a]	(1.00)	3.07[b]	(1.04)
Did not respond		0.4		0.0		0.0		1.6
Does not use technology		7.7		15.5		2.4		0.0
No		9.6		12.1		4.8		11.5
Yes, but only a little bit		25.4		31.9		24.1		14.8
Yes, some		26.5		20.7		33.7		27.9
Yes, a lot		30.4		19.8		34.9		44.3
Technology use to connect								
Social media/technology use	1.56	(1.66)	0.38[a,b]	(0.77)	1.88[a,c]	(1.49)	3.51[b,c]	(1.08)
Video/phone use	2.07	(1.19)	1.69[a,b]	(1.14)	2.26[a]	(1.14)	2.57[b]	(1.14)

Superscripts (a, b, c) represent significant ($p < 0.05$) mean differences within a variable by child age group.

Table 3. Correlations Between Main Study Variables

	Continuous predictor variables					*Parent technology use/coping*					*Child technology use*		
	Financial prepare.	*Work stress*	*Child age*	*Parent anxiety*	*Child anxiety*	*Increase tech to connect*	*Active social media use*	*Check messages/ news*	*Connect via video*	*Take time for self*	*Increase tech to connect*	*Social media/ social tech to connect*	*Video/phone to connect*
Continuous predictor variables													
Financial preparedness	1	0.14*	0.04	–0.06	–0.21***	0.00	–0.13*	–0.09	0.06	0.25***	0.02	–0.11†	–0.08
Work stress		1	0.06	0.08	0.02	0.20**	–0.03	0.07	0.01	0.04	0.18**	0.04	0.04
Child age			1	–0.06	0.22***	0.00	0.02	–0.05	–0.20**	0.11†	0.33***	0.75***	0.32***
Parent anxiety				1	0.30***	0.24***	0.17**	0.36***	0.10†	–0.05	0.21**	–0.08	0.07
Child anxiety					1	0.22***	0.22***	0.24***	0.10	0.00	0.32***	0.30***	0.25***
Parent technology use/coping													
Increase tech to connect						1	0.25***	0.29***	0.32***	0.07	0.25***	0.01	0.15*
Active social media use							1	0.17**	0.33***	0.13*	0.21**	0.19**	0.22**
Check messages/news								1	0.27***	0.07	0.16**	0.02	0.23***
Connect via video									1	0.21**	0.14*	–0.08	0.30***
Take time for self										1	0.17**	0.10†	0.16**
Child technology use to connect													
Increase tech to connect											1	0.39***	0.49***
Social media/social tech to connect												1	0.50***
Video/phone to connect													1
Mean	3.96	1.14	7.69	2.73	0.92	2.96	2.68	3.71	2.51	2.88	2.63	1.56	2.07
SD	1.24	0.83	5.64	1.89	0.91	0.95	1.27	1.27	1.35	1.05	1.23	1.66	1.19

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$.

Table 4. Standardized Estimates from Model Predicting Parent Technology Use

	Increase tech use to connect	*Active social media use*	*Check messages/news*	*Connect via video*	*Take time for self*
Financial preparedness	–0.01	–0.11†	–0.04	0.09	0.24***
Work stress	0.17**	–0.02	0.06	0.01	0.02
Child age	0.01	0.02	–0.06	–0.21***	0.13*
Marital/partner status	0.06	–0.08	–0.14*	–0.07	0.09
Health care worker	–0.04	–0.03	–0.14*	–0.04	0.00
Anxiety	0.22***	0.17**	0.34***	0.09	–0.08

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$. Model fit statistics = χ^2 (13) = 16.82, $p = 0.21$; RMSEA = 0.03; CFI = 0.99; SRMR = 0.03. In the model, the seven outcome variables in the model were allowed to correlate, as were some of the predictor variables such as financial preparedness, work stress, and marital status.

CFI, comparative fit index; RMSEA, root-mean-squared error of approximation; SRMR, standardized root mean of the residual.

connect and (c) used video/phone calls to connect. Child age was strongly linked with child social media/social technology use. Moreover, in more financially prepared families, there was a trend toward children using social media/social technologies less frequently.

Discussion

In response to the COVID-19 pandemic, most parents reported that both they and their children (especially teenagers) increased their use of technology. This is unsurprising, considering the potential for social media to be used as a source of both information and social support. However, notably, almost every aspect of social media and technology, aside from connecting via video, was greatest among parents and children who were rated (by parents) as having higher anxiety. These findings have several important implications.

First, high rates of both passive and active use of social media suggest that there is potential for social media to be leveraged as a public health and safety medium in times of crisis.[29] Within our sample, parents were likely to be engaging in social media use, phone checking (e.g., scroll through social media, check for messages), and use of social media and the Internet to gather information (e.g., news about COVID-19), and teens aged 13–19 were also likely to be using social media. Although our factor analyses suggest that adults were not always information seeking when using social media, informational messages from local, state, and national governments distributed via social media would still touch wide and diverse audiences of teens and adults already using the medium.

Even when the world is not gripped by a global pandemic, social media is an inexpensive and engaging tool, ideal for widespread, collaborative public health messaging.[30] However, in preparation for future crises, public health officials should plan for targeted campaigns, addressing different needs and developmental stages of parents, teens, and young children.[31]

Second, as social media is especially likely to be used by those with higher rates of anxiety, it is imperative that messages are crafted with this in mind. Although heightened anxiety during the H1N1 crisis increased the likelihood of people engaging in protective behaviors[32,33] specifically if the worry was related to virus threat,[34] it is imperative to consider short- and long-term effects of creating additional psychological distress. As crisis- or disaster-related news is already stress-inducing, it would be prudent for governments, health care systems, and human welfare agencies to also leverage social media to advertise psychological support services to consumers.

Although we have garnered important insights, a limitation of our research is its cross-sectional nature; we are unable to determine whether increased anxiety due to COVID-19 had increased social media use or whether increased social media use had increased anxiety. However, as previous research has shown that depression predicts passive social media, but passive media use does not always predict

Table 5. Standardized Estimates from Model Predicting Child Technology Use

	Child increase tech use to connect	*Child social media/social tech to connect*	*Child video/phone to connect*
Financial preparedness	0.07	–0.08†	–0.08
Work stress	0.15*	0.01	0.01
Child age	0.30***	0.76***	0.25***
Children in same dev. stage	–0.18**	–0.12**	–0.04
Marital/partner status	–0.04	–0.01	0.03
Health care worker	0.00	–0.05	0.01
Parent anxiety	0.19**	–0.05	0.03
Child anxiety	0.18**	0.11*	0.13*

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$. Model fit statistics = χ^2 (19) = 22.62, $p = 0.25$; RMSEA = 0.03; CFI = 0.99; SRMR = 0.04. In the model, the three outcome variables in the model were allowed to correlate, as were some of the predictor variables such as financial preparedness, work stress, and marital status, and child anxiety with other predictors. Child in same dev. stage is coded as 1 = all children in the family fit into the same developmental stage (e.g., all aged 5 or younger, all aged 6 to 12, or all aged 13 to 19) and 0 = children span across developmental stages (e.g., one child is 3, whereas another is 14, etc.).

stress or depression,[35] it is likely that those who were already anxious used social media more during the pandemic, but the relationship might also be bidirectional. Future longitudinal studies should explore this more directly. Regardless of directionality, it is important for social media to be a source of accurate and helpful information so that anxiety is not exacerbated; this might be particularly important for those with pre-existing anxiety and/or stress. Alternatively, those with high levels of anxiety may want to reduce their own use of social media during times of crisis.

An additional limitation is that parents were asked to rate their child(ren)'s technology use and anxiety; thus, it is unknown which child or children parents based their responses on. To address this issue in our SEMs, we controlled for whether a family's children all fit into the same developmental stage. Moreover, even with this limitation, expected outcomes by child age appeared (e.g., in families where the youngest child was older, tech use increased more dramatically, and social media and technology use was more frequent). However, future research should address this limitation by specifically assessing each child in the family.

Delivery of accurate and helpful content via social media might be improved if organizations (especially trusted outlets) use crowdsourcing techniques (i.e., using the input of large numbers of individuals to help solve a problem or distribute information) to filter outgoing information to consumers. As an example, Conrad et al.[36] showed that they could leverage social media and crowdsourcing to promote health in times of crisis. In that case, they used a peer-vetted crowdsourcing system and Slack as a collaboration tool to provide feedback that drove relief and resource allocation efforts in response to Hurricane Harvey in Texas.[36] Although there are challenges to implementing these types of initiatives across an entire country (e.g., legal, liability, and cost issues),[37] collating resources from trusted sources might help reduce the chance of an infodemic, wherein individuals are inundated with false rumors via media (WHO, 2020).

In sum, social media is a powerful source of information and social support for those in crisis. Considering the widespread popularity and increased use of social media (and technology, generally) among both parents and children during the COVID-19 pandemic, we assert that public health and disaster-relief campaigns that are thoughtfully designed and targeted for specific age groups are promising routes for providing informational and emotional support during crisis.

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(*Appendix follows* →)

Appendix

Appendix Table A1. Rotated Factor Loadings for Parent Technology Use to Connect and Cope

Item		*Factor 1* *Active social media use*	*Factor 2* *Check messages/news*	*Factor 3* *Connect via video*	*Factor 4* *Take time for self*
Instructions: Since social distancing began, how frequently do you do the following things on technology TO CONNECT with others outside your home?					
1	Live Video (e.g., FaceTime, Skype)	0.09	0.07	**0.82**	–0.06
2	Phone call[a]	0.04	–0.05	0.54	0.12
3	Text message/Chat app[a]	0.22	0.06	0.30	0.16
4	Post on social media	**0.82**	0.06	0.10	–0.06
5	Post in social media group/page	**0.81**	0.12	0.19	0.06
6	Scroll through social media without commenting or engaging[a]	0.06	0.24	0.09	0.04
7	Comment on others' posts on social media	**0.84**	0.09	0.07	0.02
8	Send a direct message/chat on social media	**0.79**	0.05	0.14	0.07
9	Send a group message on social media	**0.68**	0.09	0.08	0.16
Instructions: Since social distancing began, how frequently do you do the following things TO DEAL WITH YOUR STRESS, ANXIETY, OR EMOTIONS?					
10	Scroll through social media	0.12	**0.82**	0.06	–0.10
11	Check your phone for messages	–0.02	**0.77**	0.10	–0.08
12	Play games on your phone[a]	0.17	0.31	–0.16	0.05
13	Read/listen/watch the news on the coronavirus	0.05	**0.83**	0.08	0.00
14	Intentionally take a break from reading/listening/watching the news[a]	0.06	0.29	0.14	0.56
15	Search for resources or articles online	0.02	**0.60**	0.09	0.19
16	Get together with friends/family via technology	0.16	0.30	**0.65**	0.23
17	Live video a friend/family via technology	0.17	0.17	**0.77**	0.02
18	Take time to be alone for a few minutes	0.12	0.09	–0.07	**0.68**
19	Exercise	–0.10	–0.10	0.14	**0.72**
20	Do a hobby you enjoy	0.14	–0.07	0.16	**0.71**

Bold indicates those items that were included on each factor.
[a]Item was excluded from any further analyses due to a factor loading below 0.60.

Appendix Table A2. Rotated Factor Loadings for Child Technology Use to Connect

Item		*Factor 1* *Social media/social tech to connect*	*Factor 2* *Video/phone to connect*
Instructions: Since social distancing began, how frequently does YOUR CHILD do the following things on technology TO CONNECT with others outside your home?			
1	Live Video (e.g., FaceTime, Skype)[a]	0.34	**0.53**
2	Share pre-recorded video (e.g., Marco Polo)	0.17	**0.66**
3	Video game[b]	0.42	0.21
4	Phone call	0.04	**0.78**
5	Text message/Chat app	**0.72**	0.28
6	Post on personal social media	**0.91**	0.16
7	Post in a social media group/page	**0.84**	0.18
8	Scroll through social media without commenting or engaging	**0.90**	0.15
9	Comment on others' posts on social media	**0.93**	0.15
10	Send a direct message/chat on social media	**0.89**	0.22
11	Send a group message on social media	**0.88**	0.20

Bold indicates those items that were included on each factor.
[a]Item 1 was retained due to its strong conceptual link with sharing videos.
[b]Item 3 was excluded from further analysis due to a low factor loading.

(*Appendix continues* →)

Appendix Table A3. Mental Health Descriptives

	Mean	(SD)/n	*Percent*
Parent anxiety (PHQ-4) (2 items)	2.73	(1.89)	
None or mild (0 to 2)		129	49.6
Moderate or severe (3 to 6)		129	49.6
Did not respond		2	0.8
Child anxiety (1 item)	0.92	(0.91)	
Not at all		95	36.5
Several days		110	42.3
More than half the days		31	11.9
Nearly every day		22	8.5
Did not respond		2	0.8
Negative effect on mental health			
You		225	86.5
Partner		199	84.3
Child(ren)		224	86.2

PHQ-4, Patient Health Questionnaire-4; *SD*, standard deviation.

Appendix Table A4. Parent Technology Use to Connect and Coping Strategies

	Mean	(SD)/n	*Percent*
Increase technology use to connect	2.96	(0.95)	
No		20	7.7
Yes, but only a little bit		63	24.2
Yes, some		85	32.7
Yes, a lot		92	35.4
Technology use to connect/cope			
Active social media use	2.68	(1.27)	
Check messages/news	3.71	(1.27)	
Connect via video	2.51	(1.35)	
Take time for self	2.68	(1.15)	