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Applying a family stress model to understand U.S. families' patterns of stress, media use, and child behavior during the COVID-19 pandemic

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ABSTRACT

The COVID-19 pandemic has greatly altered family life, and research among adults and families has found increases in financial stress, mental health problems, screen time, parental conflict, and child behavior problems. Given these patterns, we sought to replicate these findings with a younger and largely non-white sample. Using the Family Stress Model, we consider how these constructs might relate to each other during the pandemic. From surveys of 247 predominately Latine mothers and fathers of children under 4 years of age in the U.S., we found that financial strain was related to children's media exposure and use, largely through impacts on parents' mental health and coparenting relationship. Interestingly, only use of television in the background and during mealtimes were associated with increases in parents' perception of increases in children's behavior problems. Such findings better capture how stress may operate in a family system and offer a way to counsel parents about healthier media habits for young children.

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Media; screen time; family stress model; coparenting; COVID-19; young children; background television; digital babysitter


IMPACT SUMMARY


Prior State of Knowledge: The COVID-19 pandemic increased families' feelings of financial and emotional strain as well as screen time, though most research is with affluent families and those with older children.

Novel Contributions: Among economically and ethnically diverse families with young children, we found relationships between financial strain, parental mental health, coparenting relationship quality, and parenting around media. Of children's media use, only background TV is associated with increases in behavior problems.

Practical Implications: The findings underscore the importance of supporting parents through pandemic-related stressors and consideration of how passive media viewing might relate to problematic behaviors for young children.

Media use, in a range of forms, is commonplace for young children (Auxier et al., 2020). Though the types of devices to access media have diversified, very young children still

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consume more television-type content than any other media (e.g., TV/movies, streaming sites, and YouTube videos: Auxier et al., [2020](#); Rideout & Robb, [2020](#)). Parents provide media to their young children for a range of reasons, including to occupy their children's time, provide educational content (Rideout & Robb, [2020](#)), complete home and work

Family stress during COVID-19

The COVID-19 pandemic has greatly disrupted social structures that typically support parents and their children, with increased financial strain and worse mental health for adults (Hertz-Palmor et al., 2021;

2022). Given that non-white parents, families with low incomes, and parents of young children experienced high levels of stress during the pandemic (Adams et al., 2021; Brown et al., 2020; Grieth, 2022), we applied the FSM to see how these stressors connected to media exposure and use and child behavior in predominately non-white, low-income families with children under four years.

Current study

Using the FSM as a framework, we explore how diverse mothers' and fathers' feelings of stress, in the forms of increased financial strain, sadness, anxiety, parenting stress, and role overload, relate to their parenting around media, coparenting problems, and perceived changes in their young child's behavior during COVID-19 social distancing policies. Unique to our study are the focus on young children's media use as a parenting practice and the expansion of existing work with affluent families and older children to include two-parent, low-to-moderate income, and predominantly Latine families.

Mediational models are optimally tested with longitudinal data, but we apply one to available cross-sectional data. Though this prohibits causal conclusions, it can still provide insights into possible mechanisms for data uniquely available during social distancing policies of summer 2020, when childcare settings had not reopened and many were unemployed or working from home. Thus, potential stressors and associations with media use may be elevated and more detectable. Cross-sectional mediational models have utility for "well-founded theories that describe the causal direction of the processes, and for which the interpretation of the cross-sectional measures is informative about the temporal process" (Shrout, 2011, p. 857). Given the robustness of the FSM (used in about 100 publications per year), we apply it with these data from diverse and often understudied families. This provides insights into covariation between these variables with implications of possible mechanisms.

Method

Data come from an NIH-funded, bilingual (English, Spanish) parenting intervention targeting first-time mothers and fathers. Low-to-moderate-income, two-parent families were recruited when their child was 9 months and followed over 8 waves of data collection (see Reich & Díaz, 2020 for details). During the summer of 2020, we added an additional wave looking specifically at how families were being affected by the pandemic (see He et al., 2021 for details). Unlike other

(84%) were a couple (mother and father completed) and 41 were the only parent in their family to participate.

Comparisons between those who participated or not found that mothers ($\chi^2[1] = 10.05, p = .002, \text{Cramér's } V = .17$) and parents with less education ($t[347] = -3.84, p < .001, \text{Cohen's } d = -.46$) were more likely to participate. The

Conflict subscale included ratings of agreement (1=*Strongly disagree* to 4=*Strongly agree*): "We fight a lot," "We sometimes get so angry that we throw things," "We often criticize each other," and "We sometimes hit each other" and the coparenting problems used ratings (0=*Not true of us* to 6=*Very true of us*): "My partner likes to play with our child and then leave the dirty work to me," "My partner and I have different ideas about how to raise our child," "My partner tries to show that she or he is better than me at caring for our child," "My partner does not carry his or her fair share of the parenting



Figure 2. Latent structural equation model of family stress testing the associations between increased financial strain, parental mental health, interparental relationship problems, media use, and children's problem behavior changes. $N = 247$. Estimates adjusted for child-level covariates, including parent education, nativity, gender, English proficiency, and child age. Covariates not shown for simplicity. $\chi^2(41) = 55.939$, $p = .060$, RMSEA[90% CI] = .038 [.000; .062], CFI = .965, TLI = .919, SRMR = .038. Upper labels refer to Figure 1 categories derived from Masarik and Conger (2017). * $p < .05$. ** $p < .01$. *** $p < .001$.

First, we estimated direct paths from financial strain to a latent variable of parental mental health with indicators for (a) stress, (b) anxiety/depression, and (c) overload. Second, we estimated direct paths from parental mental health to a latent variable of interparental relationship problems with indicators for (a) interparental conflict and (b) coparenting problems. Third, we estimated direct paths from parental mental health and interparental problems to three dimensions of children's media use (i.e., TV as background noise, screens as behavioral management, and total unsupervised screen time), estimating covariances across dimensions of children's media use. Finally, we included direct paths from parental mental health and interparental problems to changes in children's problem behaviors.

We included family income, parents' education, nativity status, English proficiency, and gender as covariates predicting each focal variable, as well as children's age as a covariate predicting children's media use and perceived increase in problem behaviors. To retain the most parsimonious model, we estimated an initial, full model with all covariates. Then, we re-estimated the model, omitting covariates not predictive of any of the main study variables. To account for non-independence due to nesting of parents per child, we clustered our data within households and estimated robust standard errors. We also conducted three alternative models (reverse model, a fully reciprocal model, and a model with child behaviors as reciprocal), but none fit the data better than the FSM and all lacked the theoretical support of the FSM (see Appendix for details).

To better understand mechanisms of strain on the family system, we examined the total indirect effects from family financial strain to children's media use and problem

behaviors using the MODEL INDIRECT command on *Mplus* 8.3 with bias-corrected bootstrapping to estimate 95% confidence intervals of these effects (Hayes, 2018; Muthén & Muthén, 2007).

Results

Missing data

Of the sample ($n = 247$), 85% ($n = 209$) had complete data, and 15% ($n = 38$) were missing 1–2 data points. Participants with complete data were more likely to be born in the U.S. ($\chi^2[1] = 4.27, p < .05$, Cramér's $V = .13$), but did not differ on education, children's age, family income ($t's[235-245] = -.92-1.11, p's > .269$, Cohen's $d = -.16-.20$), English proficiency, or parent or child gender ($\chi^2[1] = .07-1.08, p > .300$, Cramér's $V = -.02-.06$). We estimated our models using full information maximum likelihood in order to account for missing data (Ender, 2010).

Descriptive and correlational statistics

Descriptive and correlational statistics are in Table 1. On average, parents reported slight increases in financial strain ($M = 1.26, SD = 1.19$, range = 0–3) and low levels of stress ($M = .70, SD = .72$, range = 0–3), anxiety/depression ($M = .64, SD = .59$, range = 0–3), and overload ($M = 2.63, SD = .92$, range = 1–5). Parents also experienced low interparental conflict ($M = 1.38, SD = .54$, range = 1–4) and coparenting problems ($M = 1.49, SD = 1.19$, range = 0–6). Regarding media use, on average parents reported occasional use of TV as background noise ($M = 1.48, SD = 1.01$, range = 0–4) and screens for behavioral management ($M = 1.07, SD = .75$, range = 0–4), and that their child used screen media alone less than 1 hour a day ($M = .79, SD = .82$, range = 0–6 hours). Parents reported few increases in behavioral problems ($M = 1.20, SD = 1.37$, range = 0–4). With some exceptions, the focal variables were significantly correlated (Table 1).

Pandemic-induced family stress

For our initial pandemic-induced FSM estimation, we tested pathways from COVID-19-related financial strain increases to children's media use and problem behaviors through parents' mental health and interparental relationship problems. We present the standardized results in Figure 2. Family income did not significantly predict any of the study variables and was subsequently omitted. Our final model evidenced good to excellent fit, $\chi^2(114) = 114.00, RMSEA = .047, CFI = .963, SRMR = .033$. Moreover, indicators for parental mental health and interparental relationship problems loaded strongly high on their respective latent variables (.544 and .544).

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Table 1. Descriptive and correlational statistics of study variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Increased financial strain	—												
2. Stress	.26***	—											
3. Anxiety/depression	.25***	.58***	—										
4. Overload	.03	.42***	.49***	—									
5. Interparental conflict	.06	.19**	.19**	.23***	—								
6. Co-parenting problems	.05	.19**	.20**	.31***	.43***	—							
7. TV as background noise	-.01	.16**	.07	.16*	.18*	.21**	—						
8. Screens as behavior management	.07	.16*	.12	.18**	.16*	.25***	.41***	—					
9. Total unsupervised screen hours	-.03	.11	.18**	.10	.17*	.15*	.38***	.37***	—				
10. Increased child prob behaviors	.08	.29***	.27***	.31***	.23***	.12	.29***	.18**	.17*	—			
11. Parent education	-.23***	.06	.01	.23***	-.04	-.06	.06	-.12	.00	.08	—		
12. Family income	-.18**	-.01	-.16*	.03	.00	-.06	-.02	-.15*	-.20**	.05	.18**	—	
13. Child age (in months)	.05	.10	.05	.05	.10	.01	.09	.13*	.14*	.06	.02	-.03	—
Mean	1.26	.70	.64	2.63	1.38	1.49	1.48	1.07	.79	1.20	3.21	39.65	33.00
SD	1.19	.72	.59	.92	.54	1.19	1.01	.75	.82	1.37	1.34	25.64	6.36
Range	0-3	0-3	0-3	1-5	1-4	0-6	0-4	0-4	0-6	0-4	1-5	0-130	20-47
Reliability	.74 ^a	.62 ^b	.73 ^b	.83 ^b	.78 ^b	.71 ^b	.68 ^b	.72 ^b	—	.75 ^a	b @79 = FM6M	fd31***	—

*

Table 2. Indirect effects of increased financial strain on media use and children's problem behaviors change.

Indirect paths		95% CI
Increased financial strain to TV as background noise		
Total indirect	.05^a	[.006; .09]
via mental health	.01	[-.05; .06]
via mental health and interparental problem	.04^a	[.01; .08]
Increased financial strain to screens as behavioral		

experience more conflict with their partners ($\beta = .45, SE = .09, p < .001$) and report more problematic behaviors ($\beta = .31, SE = .08, p < .001$). However, parental mental health problems did not directly predict any dimension of media use (β 's = .02–.08, SE 's = .09–.10, p 's = .389–.833). Third, parents with higher interparental relationship problems were more likely to use TV as background noise ($\beta = .28, SE = .10, p < .01$) and screens for behavioral management ($\beta = .27, SE = .13, p < .05$), and have children with greater total unsupervised screen time ($\beta = .23, SE = .11, p < .05$). Finally, using TV as background noise predicted increased problem behaviors ($\beta = .19, SE = .06, p < .01$). However, parents' use of screens for behavioral management and total unsupervised screen time did not significantly predict increases in children's problem behaviors (β 's = .01–.03, SE 's = .06–.08, p 's = .678–.907).

Indirect effects

We found significant indirect effects from increased financial strain to media use and to changes in children's problem behaviors (Table 2). First, increased financial

strain was indirectly associated with media use through parental mental health and interparental problems. That is, increased financial strain was associated with worse mental health, which was related to more self-reported interparental problems; which in turn, were associated with the

et al., 2021; Stienwandt et al., 2020). We similarly found parental mental health, increased financial strain, and interparental problems to be related to total unsupervised screen time, using screens for behavior management, and simply having the TV on, at mealtime and even when no one is watching. This may be concerning given the young age of these children and the potential that screens could displace meaningful opportunities for motor, linguistic, social-emotional, and cognitive development. For instance, studies find that background television reduces the amount of language adults direct towards children (Masur et al., 2016; Pempek et al., 2014) and also reduces young children's production of language and play activities (Pempek & Kirkorian, 2020; Schmidt et al., 2008). Further, use of these devices to calm children may displace opportunities for children to cultivate self-regulation skills (Cline et al., 2018).

Our measure of background television included TV use during mealtimes. Research finds that homes that leave the television on during meals tend to have children who eat less healthy foods, regardless of whether the TV is being watched or not (Trofholz et al., 2017). Media during mealtime is also related to all family members being distracted (Saltzman et al., 2019), which is unfortunate given that family meals are important for communication, exposure to diverse vocabulary, positive emotional interactions, and family cohesion (Fiese & Schwartz, 2008; Fruh et al., 2011). When the television is on, opportunities might be missed for rich social-emotional interactions and language development (Fiese & Schwartz, 2008; Trofholz et al., 2017).

Our study looked specifically at parental reports of changes in problematic behaviors since the pandemic began and found background television to be associated with increases. One possible explanation could be the ways in which background television might influence children's cognition. Experimental studies have demonstrated that background television can inhibit cognitive processes (Armstrong & Greenberg, 1990), reduce focus, and increase distractibility (O'toole & Kannass, 2021); cognitive skills that are associated with behavior and emotion regulation (Gollwaitzer & Bargh, 1996). Along these lines, evidence exists that cumulative television use, including background television, is related to lower executive functioning skills in young children (Nathanson et al., 2014).

The influence of background television on behavior could be related to sleep disruptions (Paavonen et al., 2006), which are associated with young children's behavior problems (Lavigne et al., 1999). Though we asked parents whether they perceived differences in their child's sleep during the pandemic, we did not assess whether children's sleep may have been disrupted, especially in relation to background TV and for children who still benefit from daytime naps.

Finally, it is feasible that children that are disruptive or not coping well during the pandemic have parents that are more likely leave the television on as a way to minimize outbursts, offer environmental distraction, or provide a "digital babysitter" (Beyens & Eggermont, 2014). In such cases, there is likely a reciprocal interaction between children's problem behavior and television use, especially for parents experiencing higher stress and needing more supports for distracting, coping, and keeping children occupied (Bank et al., 2012; Beyens et al., 2016; Shin et al., 2021). Though a recursive model was tested (see Appendix), longitudinal data are needed to evaluate continued temporal relationships, including testing the reciprocal relations between children's behaviors and their media diet.

Limitations

These data are limited in our measurement of what aspects of the environment and behaviors had changed during the pandemic. Future research should explore other domains of development, such as language, sleep, executive function, and social skills, as well as more detail about media use, such as adult versus child programming, use of media

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