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COVID-19 and Child Adjustment: The role of Coparenting Conflict and Child Temperament

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(https://osf.io/xvng4/?view_only=bd691946fdd0494a96e41304d56a9994).

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Abstract

The COVID-19 pandemic brought unprecedented challenges to the lives of families and children, affecting children's adjustment. We examined the impact COVID-19 had on families and how child-rearing disagreements might be linked to child adjustment. Furthermore, given the role that children play in evoking parent responses within the family context, we also investigated how children's temperament trait of anger/frustration might moderate the indirect pathway through child-rearing disagreements. We recruited 516 parents with a child between the ages 3 and 7 to complete an online survey measuring their perceived COVID-19 impact, and family and child functioning. Results indicate that greater COVID-19 impact, and child temperamental anger/frustration were each linked to greater child-rearing disagreements, and thereby, greater child stress. In addition, families reporting the most COVID-19 impact and having a child with high anger/frustration experienced the most child-rearing disagreements, and thereby, greater child anxiety during the pandemic. This work highlights how the COVID pandemic might have disrupted family processes, which in turn had negative consequences on the family, and suggest that less coparenting conflict might be a protective factor on the effect of the pandemic on child outcomes.

Key words: coparenting conflict, COVID-19, temperament, child adjustment, online survey

Highlights

- We surveyed parents with children between the ages of 3 and 7 and examined how the pandemic related to family functioning.
- We found that families that were more impacted by COVID-19 had more coparenting conflict.
- The effect of COVID impact was greater for families with children with high anger/frustration temperament.
- Coparenting conflict was related to child stress, and mediated the relation between COVID impact and stress.
- Coparenting conflict also mediated the relation between child temperament (anger/frustration) and stress.

COVID-19 and Child Adjustment: The role of Coparenting Conflict and Child Temperament

The outbreak of the coronavirus disease (COVID-19) brought profound changes to families and children around the world. Due to the high communicability and lethality of COVID-19, the vast majority of regions of the United States issued some form of stay-at-home or social-distancing measures to slow down the rapid transmission of the disease. Families and children faced unprecedented challenges in their day-to-day life including concerns regarding health and safety of family members and friends, potential parental unemployment and furloughs, and the resultant loss of income. Additionally, the closure of kindergartens, schools and child-care facilities led to a drastic increase in child-care burdens for parents and the loss of important social interactions and routines for both children and adults. Empirical research has provided evidence for children's mental health sequelae associated with the COVID-19 pandemic, including elevated anxiety, depression, and distress (Gassman-Pines et al., 2020; Xie et al., 2020; Patrick et al., 2020; Racine et al., 2020).

Limited research has examined how family processes during the pandemic might mediate the association between the COVID-19 pandemic and child adjustment (but see Reich et al. 2021). According to the family system theory, family processes may operate as an intermediate process through which external perturbation and stress of the COVID-19 pandemic may negatively impact the child (Minuchin, 1985). In this study, we surveyed parents about how the COVID-19 pandemic influenced family functioning, in particular child-rearing disagreement a central process within the family system (Feinberg, 2003), and child stress. In addition, as children play an active role in their family (Belsky, 1984; Feinberg, 2003), we investigated how children's temperament might moderate how the pandemic impacted family functions.

Child Adjustment During COVID-19 Pandemic

During the COVID-19 pandemic, children experienced unprecedented interruptions of their daily life that impacted their education, play, and social interactions. This was reflected in their family system, as parent-child conversations during the pandemic focused primarily on these life style changes (Menendez et al., 2021). These changes in their daily lives may have significantly influenced children's adjustment. Indeed, research has documented a greater prevalence of depressive symptoms (e.g., Xie et al., 2020), anxiety (Duan et al., 2020), worry (Gassman-Pines et al., 2020), and greater distress (Daks et al., 2020) in children during the pandemic. For instance, Gassman-Pines et al. (2020) used parental surveys to show that greater parent-reported hardships due to COVID-19 (e.g., the parent being laid off, increased caregiving burden) was associated with more child worry, and more uncooperative behavior in a dose-response pattern, such that families experiencing multiple hardships had children who worried the most compared to others. Therefore, we might expect that the negative effects of the pandemic would be greater for those families experiencing the greatest disruptions and facing the greatest hardship. However, prior work has not examined the mechanisms that underlie this association and how perturbation to the family process that came as a result of the pandemic influence children's coping.

Child-Rearing Disagreement as an Indirect Factor

One way in which COVID-19 related stress influences child adjustment might be through an increase in child-rearing disagreements (i.e., disagreement and conflict between parents over childrearing issues, also called coparenting conflict). Drawing from ecological models (e.g., Belsky, 1984), Feinberg's (2003) model of coparenting stipulates that the coparenting relationship may operate as a central process within the family system. This coparenting relationship is influenced by contextual stress, as well as characteristics of individual family

members. As such, external perturbations and stress may serve to disrupt family processes and undermine the coparenting relationship, leading to disagreements (Feinberg, 2003; Minuchin, 1985). Disruption of the coparenting relationship, in turn, may negatively influence both parent and child adjustment. Consistent with this theory, empirical research has linked a variety of external stress with elevated coparenting conflict and child-rearing disagreements (e.g., economic hardship, Schoppe & Mangelsdorf, 2013; William et al., 2015; and parental daily hassles related to work (Belsky et al., 1995; McDaniel et al., 2018). Additionally, coparenting conflict has been found to be associated with poorer child adjustment (e.g., internalizing problems; Feinberg et al., 2007; Teubert & Pinguart, 2010; Zemp et al., 2018).

Despite previous evidence showing the role of extra-familial risk factors on coparenting conflict, limited research has examined how COVID-19 may be linked to child-rearing disagreements. Yet, existing research on COVID-19 impact on parents indicates that COVID-19 related stress may be associated with elevated parental negative moods (Gassman-Pines et al., 2020), emotional exhaustion related to parenting (Marchetti et al., 2020), and parents' perceived anxiety and stress (Brown et al., 2020). These factors may all contribute to greater dispute between parents.

Child-rearing disagreements might mediate the relation between external stressors and child adjustment. Prior work outside the context of COVID-19 has shown that greater coparenting conflict may operate as an intermediate mechanism between other risk factors and child adjustment (e.g., marital relationship difficulties; Camisasca et al., 2019; O'Leary & Vidair, 2005). Work in the context of COVID-19, however, has not found this indirect effect. For example, Daks and colleagues (2020) surveyed parents and found that coparenting conflict was linked to greater child distress (e.g., anxiety and depressive symptoms), but that increased

demands (e.g., lack of childcare) due to COVID-19 pandemic were not associated with coparenting conflict. This work suggests that more research on the COVID-19 family context might be important in revealing how external stressors influence family functioning and child outcomes.

Although existing research is limited, we anticipate COVID-19 related stress may put a strain on the coparenting relationship by elevating coparenting conflict, and lead to subsequently poorer child adjustment due to the following potential reasons. First, subsequent to the closure of school and child-care facilities during the pandemic, young children were confined at homes. Meanwhile, parents encountered increased caregiving burden while having to balance between work and child-rearing responsibilities. Second, as the unemployment rate increased to a historical level, many families and parents faced job loss, furlough, and financial hardship, in addition to the uncertainty and anxiety associated with the pandemic. Third, the efforts to increase social isolation to reduce the spread of the virus may have resulted in elevated loneliness and the loss of social support. All of these factors may undermine parents' ability to function as a coordinated and harmonious team to fulfill child-rearing responsibilities together.

Moderating Role of Child Temperament

An additional goal of the present work is to investigate the moderating role of child temperament in the indirect pathway linking COVID-impact and child adjustment. As highlighted by Belsky's (1984) parenting process model and Feinberg's (2003) ecological model of coparenting, child characteristics may play a role in shaping the coparenting relationship. Notably, one such characteristic is child temperament, referring to biologically based individual differences in reactivity and self-regulation (Rothbart & Bates, 2007). In particular, child anger/frustration (i.e., children's tendency to express negative emotions such as anger,

frustration, and hostility, due to interruption of their goal or ongoing tasks; Rothbart et al., 2001), has been widely studied in previous research. Previous research has shown that child temperamental anger/frustration elicits more negative parental caregiving (e.g., Lee, Zhou, Eisenberg, & Wang, 2013) and coparenting (e.g., Laxman et al., 2013). This suggest that child anger/frustration might moderate the impact of COVID-19 on child-rearing disagreements.

A few studies have examined how child temperament may interact with more distal risk factors in shaping family processes. For example, Jacques and colleagues (2019) observed mothers' harsh discipline during parent-child interaction. They found that maternal alcohol dependence predicted greater increases in harsh discipline over a year during a joint clean-up task only when children had heightened levels of anger, frustration, and hostility. In other words, child temperamental anger/frustration may amplify other (most distal) risk factors (e.g., maternal alcohol dependence) and in turn foster less adaptive caregiving practices (e.g., harsh parenting, coparenting conflict). Parents during the COVID-19 pandemic may already be facing numerous challenges to coparenting their children as a team (e.g., loss of child-care, struggling financially to make ends meet). Having a child who is irritable and anger-prone may result in a greater possibility for interparental criticism and dispute (Feinberg, 2003). Therefore, we anticipate child temperamental anger/frustration to amplify the association between greater COVID-19 stress and elevated coparenting conflict.

Current Study

The present study aimed to examine how COVID-19 related stress may be associated with child adjustment indirectly through child-rearing disagreements. We focused on families with children between the ages of 3 and 7 as prior work highlights the important role of parent during this developmental period (Smetana, 1999). In addition, we also evaluated how the

indirect pathway described above may vary by child temperamental traits, more specifically, how anger/frustration may moderate the link between COVID-19 impact and child-rearing disagreements. We anticipated that greater parent-perceived COVID-19 impact would be associated with more coparenting conflict in the form of child-rearing disagreements, and thereby, poorer child adjustment during the pandemic. In addition, greater child anger/frustration was expected to amplify the relation between the impact of COVID-19 and child-rearing disagreements. Importantly, given parents of young children were found to experience elevated distress and difficulty during the pandemic (e.g., Patrick et al., 2020), our focus on families with younger children may help gain greater insights into the vulnerabilities of these families.

This study advances the literature in the following ways. First, existing research on COVID-19 has primarily focused on its associated child and parent sequelae (e.g., Brown et al., 2020; Gassman-Pine et al., 2020; Racine et al., 2020). Our study offers an opportunity to look more closely into the family processes involved, through which extra-familial perturbations of COVID-19 pandemic may shape child adjustment. Second, by focusing on the moderating role of child temperament, this inquiry adds to the limited literature in illuminating coparenting conflict as a multifaceted family process that may be shaped by not only the ecological context (i.e., COVID-19 pandemic), but also the child individual temperamental traits.

Method

Participants

We recruited 761 parents through Amazon's Mechanical Turk between July 29th through August 10th, 2020. Participants needed to fulfill the following criteria: (a) being at least 18 years of age; (b) living in the United States; (c) having at least one child between the ages of three and seven years. Of the initial 761 parents, 245 failed at least one of two attention checks (e.g.,

whether parents reported the same age of their child in two separate questions, one at the beginning and one later in the survey) and were thus excluded.

The final sample included 516 parents ($M_{age} = 36.07$, $SD = 7.19$, range: [18-66]), with 195 (37.8%) fathers, and 318 (61.6%) mothers (three parents did not provide this information). Most parents were White ($N = 403$, 78.1%), with smaller percentages being Black or African American ($N = 46$, 8.91%), Asian American ($N = 26$, 5.04%), Hispanic or Latinx ($N = 18$, 3.48%), bi- or multi-race ($N = 9$, 1.74%), and Native American ($N = 6$, 1.16%). Seven parents did not provide racial or ethnic information. Most parents' highest education was having a bachelor's degree ($N = 233$; 45.2%) or Master's degree ($N = 105$; 20.3%), followed by some college ($N = 68$; 13.2%), having an associate's degree ($N = 65$; 12.6%), high school ($N = 38$; 7.4%), and having a Ph.D. ($N = 6$; 1.2%) or some high school ($N = 1$; <1%). Parents reported on average of having about two children ($M = 1.9$, range: [1-7]), and the target child that parents answered the survey about ranged between age three and seven ($M_{age} = 5.14$, $SD = 1.36$), with 221 children (42.8%) being girls, and 295 (57.2%) being boys. This study was approved by the Institutional Review Board of the University of Rochester (case number: RSRB0005129, the title of the study: Parent and Child Conversations about Health and Illness). The parents read an information sheet about the study and consented to their participation prior to starting the survey. Participants were paid two dollars for completing the study.

Measures

This study was part of a larger survey on how the COVID-19 pandemic impacted families. The larger survey (available at:

https://osf.io/xvng4/?view_only=bd691946fdd0494a96e41304d56a9994) asked about how

parents talk to their children about the pandemic, the activities families were engaging in to cope with the pandemic, parental substance use, and neighborhood environment.

COVID-19 Impact

Parents completed the Coronavirus impact scale (Kaufman & Stoddard, 2020), rating the magnitude to which the Coronavirus pandemic has changed their lives in a variety of ways, including routines (e.g., work, education), family income and employment, access to food, social support, and experiences of stress and discord within their families. Responses were on a four-point Likert scale (0 = “No change”, to 3= “Severe” [e.g., “unable to meet basic needs and/or pay bills”]). We created a summary score (8 items; [sum score= mean score * 8]; Cronbach α = 0.74), with a higher score reflecting more severe and negative changes in the family.

Child-rearing Disagreement

We used the 14-item Child Rearing Disagreements Questionnaire (Jouriles et al., 1991) to assess coparenting conflict between parents, capturing the degree to which the target parent had irritating disagreement and conflict with their partners when raising the target child (e.g., “being too lenient with our child”, “not taking an equal hand in disciplining our child”). Responses were on a five-point Likert scale (1= “Never” to 5= “Always”), and we created sum score in a similar way as described above, with higher scores reflecting more frequent disagreement between parents (α = 0.95).

Child Temperamental Anger & Frustration

We used the 37-item Child Behavior Questionnaire-Very Short form (CBQ-SF; Putnam & Rothbart, 2006), and in this paper we focus on the six-item subscale measuring child temperamental anger and frustration. Parents rated their child on a seven-point Likert-scale (1= “Extremely untrue”, 4= “Neither true nor false” to 7= “Extremely true”), with a higher score

reflecting greater dispositional likelihood to get angry and irritated (e.g., “my child has temper tantrums when s/he doesn’t get what s/he wants”, “my child gets quite frustrated when prevented from doing something s/he wants to do”; $\alpha = 0.81$). Sum score serves as the indicator for temperamental anger/frustration.

Child Functioning

Parents rated child functioning on three items, measuring how much the child was (a) worried, and (b) anxious (0= “not at all” to 10= “very”), and how the child was (c) coping (0= “not at all well” to 10= “very well”) regarding the situation surrounding COVID-19 (adapted from Menendez et al., 2021). In line with Menendez et al. (2021), child worry and anxiety were highly correlated ($r = .79, p < .01$), but neither item was highly correlated with child coping (worry: $r = -0.26, p < .01$; anxiety: $r = -0.31, p < .01$). This pattern was confirmed by a fairly low standardized loading for child coping ($\beta = 0.32, p < .01$) in confirmatory factor analyses (CFA) involving all three items (note: CFA with three items is saturated, thus model fit cannot be used as an index to judge), compared to worry ($\beta = -0.81, p < .01$) and anxiety ($\beta = -0.97, p < .01$). Given this, we retained two child outcomes: (a) child coping; and (b) child anxiety by averaging child worry and anxiety items.

Data Analysis Plan

Data analyses involved testing how parent-perceived COVID-19 impact, child temperament, and their interaction might be linked to child-rearing disagreement, and thereby, to child functioning (i.e., anxiety and coping). To reduce multicollinearity (Aiken & West, 1991), we first standardized COVID-19 impact and child temperament before creating the interaction term. In addition, we controlled for additional exogenous covariates, including child age, gender, and parent education. We used Mplus 8 to perform all pathway analyses (Muthen & Muthen,

1998-2011) using the maximum likelihood estimator with robust standard error. To achieve a parsimonious model that represent the data sufficiently well, we attempted both fully saturated model and parsimonious models without nonsignificant paths and covariances. We did this by first running a saturated model, and then not including the non-significant coefficients and covariances to improve the parsimony without compromising the magnitude to which the data were represented by the model. Model fit was evaluated by the criteria advanced in Hu & Bentler (1999), such that good-fit models should have a comparative fit indices (CFI) and Tucker-Lewis index (TLI) greater than 0.95, and values of root mean error of approximation (RMSEA) and the standard root mean square residual (SRMR) lower than 0.06 and 0.08, respectively. Given similarity between the two models, we only report pathway coefficient estimates within the parsimonious models (results of the saturated model can be found in the supplemental materials). When significant COVID impact-x-temperament interaction emerged, we performed simple slope analyses to examine the pattern of the interaction at the level of *Mean +/-1SD* of the moderator (i.e., temperamental anger/frustration). Furthermore, to evaluate indirect pathways, we used RMediation via Monte Carlo simulation (Tofighi & MacKinnon, 2011), yielding accurate indirect-effect estimates that account for the non-normality of the distribution of the product (i.e., the indirect pathway). Some cases had missing data in the variables of interest: 4 cases (0.8%) for temperament anger and frustration, 3 cases (0.6%) for child-rearing disagreements, 1 case (0.2%) for COVID-impact, and 1 case (0.2%) for child anxiety. However, Little's MCAR test with EM estimation suggested that the data were missing completely at random, $\chi^2(20) = 17.00$, $p = .653$. Missing data were treated by Full information maximum likelihood (Enders & Bandalos, 2001). In addition, given parents in the current sample included both mothers and fathers, we conducted a follow-up test to compare the similarity and differences in the key

pathway coefficients between parents via multiple group analyses by treating parent gender as a grouping factor.

Transparency and Openness

We report on how the present sample size was determined, all data exclusions, manipulations, and all measures in the study, and we follow JARS (Kazak, 2018). All data, analytic files, and results are available at (https://osf.io/xvng4/?view_only=bd691946fdd0494a96e41304d56a9994). This study's design and its analysis were not pre-registered.

Results

Descriptive Statistics

Means, standard deviations, and the bivariate correlations are shown in Table 1. COVID-19 impact and greater child anger/frustration were both associated with more child-rearing disagreement between parents, and more child anxiety and poorer coping. COVID-19 impact correlated with greater child anger/frustration. In addition, greater child-rearing disagreement was associated with both greater child anxiety and poorer coping. We also examine how these factors correlated with demographic characteristics (i.e., child age, child gender, and parental education). We found that child age was negatively correlated with temperamental anger and frustration ($r = -.12, p < .01$). Parental education was positively correlated with COVID-19 impact ($r = .11, p < .01$), child-rearing disagreements ($r = .20, p < .01$), and child anxiety ($r = .20, p < .01$). Child gender was not related to any of the variables ($p > .05$).

Moderated Mediation Model

Our primary model achieved perfect fit, $\chi^2(19) = 5.80, p = .99$, RMSEA = 0.00, CFI = 1.00, TLI = 1.00, SRMR = 0.02 (for results of the initial saturated model see Table S0 in the

Supplemental materials). Turning to parameter estimates see Table 2 and Figure 1, COVID-19 impact was associated with poorer child coping, greater anxiety, and greater child-rearing disagreement between parents. Child temperamental anger/frustration was linked to poorer child coping, higher anxiety and more child-rearing disagreement between parents. Notably, the COVID-x-Temperament interaction was significantly associated with child-rearing disagreement. To probe the pattern of the interaction, we performed simple slope analyses at $\pm 1SD$ of child temperamental anger/frustration. Even though the relation between COVID-impact and child-rearing disagreement was always significant ($+1SD: B = 4.21, p < .01, -1SD: B = 1.87, p < .01$), as can be seen in Figure 2, the association was significantly stronger when the target child had higher levels of anger/frustration ($+1SD$) than lower anger/frustration (Wald test estimate = 6.32, $p = .01$). In addition, a positive association emerged between greater child-rearing disagreement and greater child anxiety. Finally, older children as well as those with greater parental education exhibited greater anxiety. Parents with higher education reported having greater child-rearing disagreement with their partner.

Given these findings, we evaluated three indirect pathways involving child-rearing disagreement and they were all significant. Greater COVID-19 impact, bootstrapped indirect effect estimate = 0.29, 95% *CI*: (0.19, 0.41), higher child temperamental anger/frustration, bootstrapped indirect effect estimate = 0.55, 95% *CI*: (0.41, 0.69) were each associated with more child-rearing disagreement, and thereby, greater child anxiety. Additionally, COVID-x-Temperament interaction, such that families with a more anger-prone child, when facing greater COVID-19 impact, exhibited greater child-rearing disagreement between parents, which then yield greater child anxiety, bootstrapped indirect effect estimate = 0.11, 95% *CI*: (0.02, 0.21).

Exploratory Analyses

We examined whether parent gender influenced the results. For this, we ran multiple-group analyses that simultaneously fitted models separately within mothers and fathers (adopting the same model specification in the primary model within each parent-gender group, then specifying new coefficients (i.e., model constraints in Mplus) that contrasted the coefficients between the two subgroups to see if the differences in coefficients were different from zero. Once again, the model we ran achieved perfect fit, $\chi^2(38) = 21.48, p = .99$, RMSEA= 0.00, CFI= 1.00, TLI= 1.00, SRMR = 0.04. Furthermore, the tests for differences between mothers and fathers showed no significant differences in the paths of interest (i.e., the ones involving COVID-impact, child temperament, and the interaction term). The only exception is that we found that the association between child anger/frustration and child-rearing disagreement was stronger for fathers than mothers ($B_{father} = 6.96, B_{mother} = 4.96; B_{difference} = -2.00, p = .02$). In other words, fathers tended to report more child-rearing disagreement than mothers when the child was reported to have higher anger/frustration. In addition, mothers tended to report stronger associations between greater child age and higher anxiety ($B_{father} = 0.02, B_{mother} = 0.33; B_{difference} = 0.32, p = .04$).

We also examined whether using parent's subjective SES rather than parental education as a predictor influence the results (see supplemental materials, Table S1). Similar to the specification of the primary model, we tried both saturated model and the more parsimonious model with non-significant paths not modeled (with the exception of the link between COVID-impact-x-Temperament interaction and child-rearing disagreement given it is a key path to be compared with the primary model), reaching satisfactory model fit in the parsimonious model, $\chi^2(18) = 6.21, p = .99$, RMSEA= 0.00, CFI= 1.00, TLI= 1.00, SRMR = 0.02, and same results. For clarity, we report findings with the parsimonious model. More specifically, the results of this

model are very similar to the ones with parental education. The only difference was that the COVID-impact-x-Temperament interaction on child-rearing disagreements was no longer significant when subjective SES replaced parental education in the analyses ($p = .12$). However, this finding should be interpreted with caution as this is not an objective measure of socioeconomic status. Finally, we examined whether the number of children in the household influenced the results by adopting the similar modeling strategy. We added the number of children in the household as a covariate to the model with parent education, and ran both saturated model and the parsimonious model with non-significant paths not specified. We found perfect model fit, $\chi^2(24) = 9.09$, $p = .99$, RMSEA = 0.00, CFI = 1.00, TLI = 1.00, SRMR = 0.02, and that the paths of interest did not change after controlling for the number of children in the household (Supplemental material, Table S2).

Discussion

The present study investigated how the challenge of COVID-19 pandemic may impact families and children. In doing so, we examined how child-rearing disagreements may operate as an indirect factor linking the impact of the pandemic on the family and child functioning. In addition, we evaluated how the child temperamental trait of anger/frustration may moderate such indirect pathway. We found that COVID-19 impact and child temperamental anger/frustration were each linked to greater coparenting conflict, and thereby, greater child anxiety. Notably, a significant interaction between COVID-19 impact and child anger/frustration emerged, such that the combination of greater COVID-19 impact and higher child anger/frustration was linked to the most child-rearing disagreement, and thereby, more child anxiety during the pandemic.

We found that parents' report of the impact the pandemic has had on their family was associated with poorer child coping and greater anxiety. These results are consistent with

previous research (Gassman-Pines, 2020; Racine et al., 2020). When families are facing more hardships in various aspects of their daily life (e.g., paying bills, having difficulty accessing food), children experience elevated stress and uncertainties within the family as well, yielding poorer psychological adjustment. We should note that these associations are small to moderate, but they persist after controlling for demographic variables such as child gender, age, and parent education. Thus, children are at elevated risks for experiencing emotional distress and difficulty when families faced greater COVID-19 impact in their lives.

We also found that coparenting conflict may operate as an indirect factor through which greater parent-perceived COVID-19 impact was linked to higher child anxiety. Parents experiencing the pandemic may face various challenges including economic hardship and uncertainties, burn-out and exhaustion due to increased child-care responsibilities, difficulty in maintaining balance between work and home-education, in addition to social isolation and loss of social support (Brown et al., 2020; Gassman-Pines, 2020; Marchetti et al., 2020). As such, coparents who are experiencing these pressures may find each other unable to fully satisfy the coparenting responsibilities or lack the time and energy to resolve any disagreement. In addition, parents working from home may spend more time parenting together than usual (i.e., before pandemic) and face new responsibilities (i.e., supervising child learning, keeping children safe, occupying children with activities), forcing them to negotiate new areas of coparenting that may generate more conflict. Therefore, consistent with prior work (Camisasca et al., 2019; Daks et al., 2020), coparenting conflict may operate as a central node of the family processes (Feinberg, 2003), which might be impacted by stressful perturbations such as the COVID-19 pandemic.

Our results also showed that children experiencing more coparenting conflict exhibited greater anxiety (i.e., anxiety, worry) during the pandemic. During this time, children were

confined at home for extended time due to stay-at-home orders and the closure of schools and child-care facilities. As such, stress within the family environment may have increased the risk for child maladjustment. The pandemic situation increased the likelihood that children might witness discord and/or negative emotions between parents during home confinement. This may be particularly true when the disagreements centered around the child themselves. These children are especially likely to experience more distress and anxiety (e.g., Jouriles et al., 1991; Teubert, & Pinquart, 2010). Surprisingly, we did not find a significant association between coparenting conflict and parent-perceived child coping despite a significant, but small bivariate correlation. Future work to examine alternative family processes (e.g., family cohesion, parent-child emotional communication) that may play a role in child coping within the context of COVID-19 pandemic.

Our results also suggest that child anger/frustration moderated the association between greater COVID-19 impact and coparenting conflict, which in turn was linked to higher child anxiety. More specifically, although greater parent-perceived COVID-19 impact seemed to be associated with more coparenting conflict for all families, those with a particularly anger-prone child were at even higher risk in developing problematic family processes. This finding was dependent on model specification, as it disappeared when controlling for parents' subjective socio-economic status. Still, this finding aligns with ecological models (Belsky, 1984; Feinberg, 2003) and previous research which revealed the role of child anger/frustration in eliciting harsh, insensitive caregiving (Lee et al., 2013), as well as more coparenting conflict (Laxman et al., 2013). Coparenting a non-compliant, anger-prone child may result in many coparenting failures that force parents to adjust their strategies and arrangement, increasing the possibility for coparenting discord. Moreover, navigating the challenges posed by the pandemic may have

depleted parents' resource (e.g., poorer sleep quality, lower daily energy, Peltz et al., 2020), leading them to be at a greater vulnerability for emotional distress and hostility (e.g., Brown et al., 2020; Marchetti et al., 2020; Lawson et al., 2020). Such vulnerability may be exaggerated by child temperamental anger/frustration leading to greater conflict within the coparenting relationship. Notably, this perspective aligns with the diathesis stress model (Zuckerman, 1999), in that two risk factors *within the family* may amplify the adverse impact of each other that yield most problematic functioning (e.g., Jacques et al., 2019).

We also found that many of these results depended on demographic variables. Parents of older children reported that their children had greater anxiety. Given that the target children were between 3 and 7 years of age, this result might be related to older children being more likely to have been attending school when the pandemic started, and thus might have experienced greater disruptions to their daily lives as a result of being at home. We also found that parents with higher levels of education reported more child-rearing disagreements. This finding is unexpected and should be followed up in future research. It is possible that parents with higher education navigated parenting during the pandemic in different ways than parents with lower education. It is also possible that parents with lower levels of education might have been less likely to work from home, and therefore had fewer instances for coparenting disagreements. Finally, we saw that fathers reported more child-rearing disagreement than mothers when the child was reported to have higher anger/frustration. This finding also requires future investigation, but this result could suggest that fathers might be more influenced by their child's temperament and thus notice more disagreements with their partner when the child is high on anger/frustration.

Practical Implications

This work highlights the importance of supporting families during major stressful events. Identifying child-rearing disagreements as a potential mediator also highlights opportunities to support. Programs that aim to relieve stress in the family system might help reduce coparenting conflict and thus help ameliorate the effects of the pandemic on children's mental health. In particular, we show that families that were more impacted by the pandemic, reported that their children had more anxiety and had more difficulties coping. Therefore, more support should be allocated to families that were at greater risk during the pandemic or any other major stress event.

Limitations

Several limitations of our research are worth mentioning. First, the cross-sectional design of the current work excluded the possibility to document any causal relation. As such, the directionality of the model paths might be reversed (e.g., parent who had more coparenting conflict perceived their children to be more temperamentally difficult). Nonetheless, the hypotheses tested in this study are guided by theories and previous research and thus are theoretically sound ones. Second, our child functioning measure was very short, comprising only three items, that has been used in prior work (Menendez et al., 2021). Given the brevity of the scale, it is likely that we are not capturing a full picture of children's lives during the pandemic. However, it is worth pointing out that this scale does correlate with other measures in expected ways (i.e., child anxiety is positively correlated with COVID-impact, and child coping is positively correlated with COVID-impact). Therefore, it might still be capturing some important aspects of children's reality. Future research should examine these issues with a more comprehensive measure of child functioning. Third, although we provided novel and timely insights into family processes during the rapidly unfolding COVID-19 pandemic, this work

solely relied on parent report for all the measures, which can be biased. Clearly, rigorous multi-informant and multi-method measures would be better to collect, but this approach was difficult to implement during the pandemic. Third, the current sample mainly consisted of White parents. Given the racial disparities in the impact of COVID-19 pandemic (Chowkwanyun & Reed, 2020), future research may benefit from having a more racially diverse sample or examine how families of a particular ethnic group were coping with the pandemic.

Conclusion

We examined the family processes in association with COVID-19 impact and child adjustment. We found that parents that reported greater impact of the pandemic on their family also reported higher coparenting conflict, which in turn, was linked to greater child worry and anxiety. In addition, we also showed that child temperament played a role in this relation, such that greater temperamental anger/frustration seemed to exacerbate the association between COVID-19 impact and child-rearing disagreements. This study, thus, sheds light into how the COVID-19 pandemic had negative impacts on young children, through a disruption of family processes.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Atlanta, GA: SAGE.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, 83-96.
<https://doi.org/10.2307/1129836>
- Belsky, J., Crnic, K., & Gable, S. (1995). The determinants of coparenting in families with toddler boys: Spousal differences and daily hassles. *Child Development*, 66(3), 629-642.
<https://doi.org/10.1111/j.1467-8624.1995.tb00894.x>
- Brown, S. M., Doom, J. R., Lechuga-Peña, S., Watamura, S. E., & Koppels, T. (2020). Stress and parenting during the global COVID-19 pandemic. *Child Abuse & Neglect*, 110, 104699. <https://doi.org/10.1016/j.chiabu.2020.104699>
- Camisasca, E., Miragoli, S., Di Blasio, P., & Feinberg, M. (2019). Co-parenting mediates the influence of marital satisfaction on child adjustment: The conditional indirect effect by parental empathy. *Journal of Child and Family Studies*, 28(2), 519-530.
<https://doi.org/10.1007/s10826-018-1271-5>
- Chowkwanyun, M., & Reed Jr, A. L. (2020). Racial health disparities and Covid-19—caution and context. *New England Journal of Medicine*. <https://doi.org/10.1056/NEJMp2012910>
- Duan, L., Shao, X., Wang, Y., Huang, Y., Miao, J., Yang, X., & Zhu, G. (2020). An investigation of mental health status of children and adolescents in china during the outbreak of COVID-19. *Journal of Affective Disorders*, 275, 112-118.
<https://doi.org/10.1016/j.jad.2020.06.029>
- Daks, J. S., Peltz, J. S., & Rogge, R. D. (2020). Psychological flexibility and inflexibility as sources of resiliency and risk during a pandemic: Modeling the cascade of COVID-19

- stress on family systems with a contextual behavioral science lens. *Journal of Contextual Behavioral Science*, 18, 16-27. <https://doi.org/10.1016/j.jcbs.2020.08.003>
- Enders, C. K., & Bandalos, D. L. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling*, 8, 430–457. http://dx.doi.org/10.1207/S15328007SEM0803_5
- Feinberg, M. E. (2003). The internal structure and ecological context of coparenting: A framework for research and intervention. *Parenting: Science and Practice*, 3(2), 95-131. https://doi.org/10.1207/S15327922PAR0302_01
- Feinberg, M. E., Kan, M. L., & Hetherington, E. M. (2007). The longitudinal influence of coparenting conflict on parental negativity and adolescent maladjustment. *Journal of Marriage and Family*, 69(3), 687-702. <https://doi.org/10.1111/j.1741-3737.2007.00400.x>
- Gassman-Pines, A., Ananat, E. O., & Fitz-Henley, J. (2020). COVID-19 and parent-child psychological well-being. *Pediatrics*, 146(4), e2020007294. <https://doi.org/10.1542/peds.2020-007294>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55. <https://doi.org/10.1080/10705519909540118>
- Kaufman, J., & Stoddard, J. (2020). The Coronavirus Impact Scale. Retrieved from https://www.phenxtoolkit.org/toolkit_content/PDF/CIS_Stoddard.pdf
- Jiao, W. Y., Wang, L. N., Liu, J., Fang, S. F., Jiao, F. Y., Pettoello-Mantovani, M., & Somekh, E. (2020). Behavioral and emotional disorders in children during the COVID-19 epidemic. *Pediatrics*, 221, 264-266. <https://dx.doi.org/10.1016%2Fj.jpeds.2020.03.013>

- Jacques, D. T., Sturge-Apple, M. L., Davies, P. T., & Cicchetti, D. (2020). Maternal alcohol dependence and harsh caregiving across parenting contexts: The moderating role of child negative emotionality. *Development and Psychopathology*, *32*(4), 1509-1523.
<https://doi.org/10.1017/S0954579419001445>
- Jouriles, E. N., Murphy, C. M., Farris, A. M., Smith, D. A., Richters, J. E., & Waters, E. (1991). Marital adjustment, parental disagreements about child rearing, and behavior problems in boys: Increasing the specificity of the marital assessment. *Child Development*, *62*, 1424–1433. <http://dx.doi.org/10.2307/1130816>
- Lawson, M., Piel, M. H., & Simon, M. (2020). Child maltreatment during the COVID-19 pandemic: Consequences of parental job loss on psychological and physical abuse towards children. *Child Abuse & Neglect*, 104709.
<https://doi.org/10.1016/j.chiabu.2020.104709>
- Laxman, D. J., Jessee, A., Mangelsdorf, S. C., Rossmiller-Giesing, W., Brown, G. L., & Schoppe-Sullivan, S. J. (2013). Stability and antecedents of coparenting quality: The role of parent personality and child temperament. *Infant Behavior and Development*, *36*(2), 210-222. <https://doi.org/10.1016/j.infbeh.2013.01.001>
- Lee, E. H., Zhou, Q., Eisenberg, N., & Wang, Y. (2013). Bidirectional relations between temperament and parenting styles in Chinese children. *International Journal of Behavioral Development*, *37*(1), 57-67. <https://doi.org/10.1177/0165025412460795>
- Menendez, D., Klapper, R. E., Golden, M. Z., Mandel, A. R., Nicholas, K. A., Schapfel, M. H., ... & Rosengren, K. S. (2021). “When will it be over?” US children’s questions and parents’ responses about the COVID-19 pandemic. *Plos one*, *16*(8), e0256692.
<https://doi.org/10.1371/journal.pone.0256692>

- Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. *Child Development, 56*, 289–302. <https://doi.org/10.2307/1129720>
- Marchetti, D., Fontanesi, L., Mazza, C., Di Giandomenico, S., Roma, P., & Verrocchio, M. C. (2020). Parenting-related exhaustion during the Italian COVID-19 lockdown. *Journal of Pediatric Psychology, 45*(10), 1114–1123. <https://doi.org/10.1093/jpepsy/jsaa093>
- McDaniel, B. T., Teti, D. M., & Feinberg, M. E. (2018). Predicting coparenting quality in daily life in mothers and fathers. *Journal of Family Psychology, 32*(7), 904 – 914. <https://doi.org/10.1037/fam0000443>.
- Muthén, L. K., & Muthén, B. O. (1998-2011). Mplus user's guide. Los Angeles, CA: Muthén & Muthén, 2017.
- O'Leary, S. G., & Vidair, H. B. (2005). Marital Adjustment, Child-Rearing Disagreements, and Overreactive Parenting: Predicting Child Behavior Problems. *Journal of Family Psychology, 19*(2), 208–216. <https://psycnet.apa.org/doi/10.1037/0893-3200.19.2.208>
- Patrick, S. W., Henkhaus, L. E., Zickafoose, J. S., Lovell, K., Halvorson, A., Loch, S., ... & Davis, M. M. (2020). Well-being of parents and children during the COVID-19 pandemic: a national survey. *Pediatrics, 146*(4), e2020016824. <https://doi.org/10.1542/peds.2020-016824>
- Peltz, J. S., Daks, J. S., & Rogge, R. D. (2020). Mediators of the association between COVID-19-related stressors and parents' psychological flexibility and inflexibility: The roles of perceived sleep quality and energy. *Journal of Contextual Behavioral Science, 17*, 168–176. <https://doi.org/10.1016/j.jcbs.2020.07.001>

- Putnam, S. P., & Rothbart, M. K. (2006). Development of short and very short forms of the Children's Behavior Questionnaire. *Journal of Personality Assessment*, 87(1), 102-112. https://doi.org/10.1207/s15327752jpa8701_09
- Racine, N., Cooke, J. L., Eirich, R., Korczak, D. J., McArthur, B., & Madigan, S. (2020). Child and adolescent mental illness during COVID-19: A rapid review. *Psychiatry research*. <https://dx.doi.org/10.1016%2Fj.psychres.2020.113307>
- Reich, S. M., Dahlin, M., Tulagan, N., Kerlow, M., Cabrera, N., Piroutek, M. J., & Heyming, T. (2021). Caregivers' experiences during the COVID-19 pandemic and their children's behavior. *Journal of Family Issues*, 0192513X211055511.
- Rothbart, M. K., & Bates, J. E. (2007). Temperament. In *Handbook of Child Psychology. Vol. 3: Social Emotional and Personality Development*, ed. W Damon, N Eisenberg, pp. 105–76. New York: Wiley
- Rothbart, M. K., Ahadi, S. A., Hershey, K. L., & Fisher, P. (2001). Investigations of temperament at three to seven years: The Children's Behavior Questionnaire. *Child Development*, 72(5), 1394-1408. <https://doi.org/10.1111/1467-8624.00355>
- Schoppe-Sullivan, S. J., & Mangelsdorf, S. C. (2013). Parent characteristics and early coparenting behavior at the transition to parenthood. *Social Development*, 22(2), 363-383. <https://doi.org/10.1111/sode.12014>
- Smetana, J. G. (1999). The role of parents in moral development: A social domain analysis. *Journal of Moral Education*, 28(3), 311-321.
- Tofighi, D., & MacKinnon, D. P. (2011). RMediation: An R package for mediation analysis confidence intervals. *Behavior Research Methods*, 43(3), 692-700. <https://doi.org/10.3758/s13428-011-0076-x>

Teubert, D., & Pinquart, M. (2010). The association between coparenting and child adjustment:

A meta-analysis. *Parenting: Science and Practice*, *10*(4), 286-307.

<https://doi.org/10.1080/15295192.2010.492040>

Williams, D. T., Cheadle, J. E., & Goosby, B. J. (2015). Hard times and heart break: Linking economic hardship and relationship distress. *Journal of Family Issues*, *36*(7), 924-950.

<https://doi.org/10.1177%2F0192513X13501666>

Xie, X., Xue, Q., Zhou, Y., Zhu, K., Liu, Q., Zhang, J., & Song, R. (2020). Mental health status among children in home confinement during the coronavirus disease 2019 outbreak in Hubei Province, China. *JAMA pediatrics*.

<https://doi.org/10.1001/jamapediatrics.2020.1619>

Zemp, M., Johnson, M. D., & Bodenmann, G. (2018). Within-family processes: Interparental and coparenting conflict and child adjustment. *Journal of Family Psychology*, *32*(3), 299-

309. <https://doi.org/10.1037/fam0000368>

Table 1*Descriptive Information for the Primary Study Variables*

	1	2	3	4	5
1. COVID-19 Impact	-				
2. Temperamental Anger& Frustration	.21**	-			
3. Child-rearing Disagreement	.36**	.51**	-		
4. Child Anxiety	.31**	.34**	.55**	-	
5. Child Coping	-.29**	-.15**	-.16**	-.30**	-
<i>N</i>	515	512	513	515	516
<i>Mean</i>	9.13	22.95	29.68	3.90	7.09
<i>SD</i>	4.02	7.58	12.55	2.75	2.13
<i>Min</i>	0.00	6.00	14.00	0.00	1.00
<i>Max</i>	20.00	42.00	65.33	10.00	10.00

*: $p < .05$ **: $p < .01$.

Table 2*Pathway Coefficient Estimates for Model Predicting Child Functioning (N = 516)*

	<i>B(SE)</i>	β	<i>Z</i>	<i>p</i>
<i>Child Coping</i>				
COVID-impact	-0.58(0.09)	-0.27	-6.46	<.01**
Temperamental Anger/Frustration	-0.23(0.09)	-0.11	-2.42	.02*
Child Age	-0.12(0.07)	-0.08	-1.84	.07
<i>Child Anxiety</i>				
COVID-impact	0.34(0.12)	0.12	2.87	<.01**
Temperamental Anger/Frustration	0.26(0.12)	0.10	2.18	.03*
Child-rearing Disagreement	0.10(0.01)	0.44	9.58	<.01**
Child Age	0.21(0.08)	0.10	2.63	<.01**
Child Gender	-0.37(0.20)	-0.07	-1.82	.07
Parent Education	0.22(0.09)	0.10	2.50	.01*
<i>Child-rearing Disagreement</i>				
COVID-impact	3.04(0.49)	0.24	6.25	<.01**
Temperamental Anger/Frustration	5.69(0.46)	0.46	12.29	<.01**
COVID-x-Temperament Interaction	1.17(0.47)	0.10	2.51	.01*
Parent Education	1.68(0.37)	0.16	4.51	<.01**

Table 3*Pathway Coefficient Estimates for Model Contrasting Mother vs. Father- Report (N = 513)*

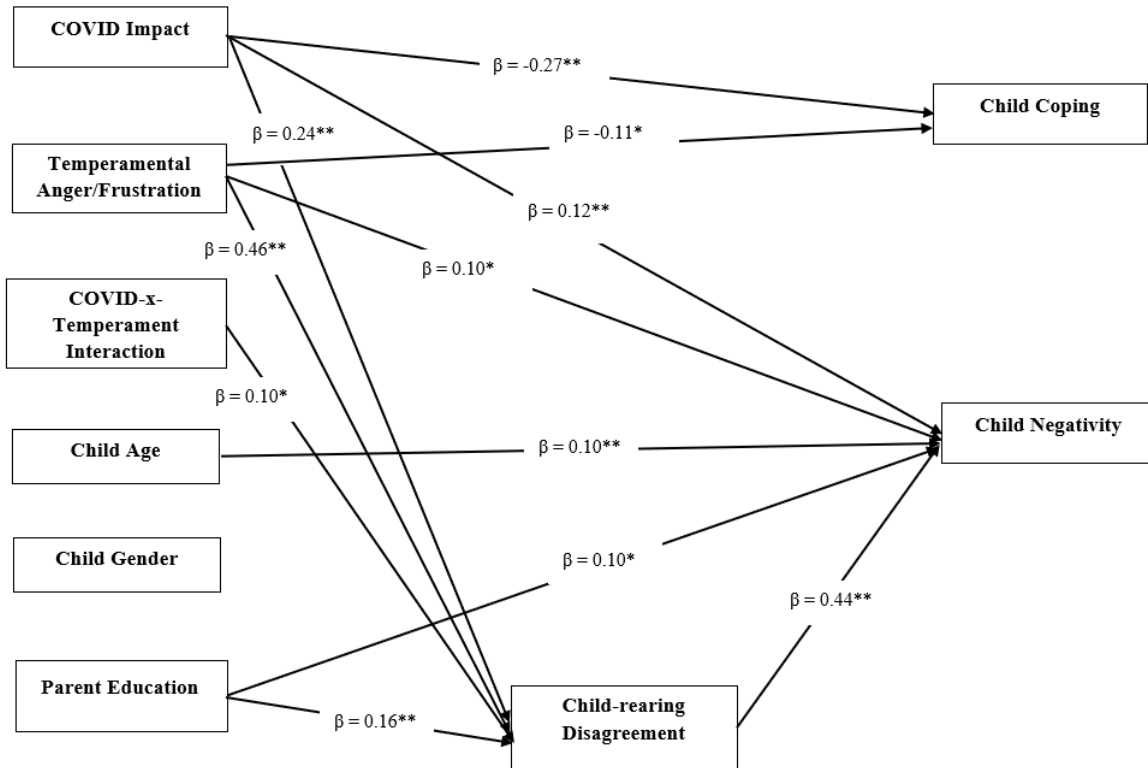
	<i>Mother</i>		<i>Father</i>		<i>Diff (Mother vs. Father)</i>	
	<i>B(SE)</i>	β	<i>B(SE)</i>	β	<i>B(SE)</i>	<i>p</i>
<i>Child Coping</i>						
COVID-impact	-0.63(0.11)	-0.30	-0.51(0.15)	-0.24	-0.12(0.18)	.53
Temperamental Anger/Frustration	-0.20(0.12)	-0.09	-0.28(0.16)	-0.13	0.08(0.20)	.67
Child Age	-0.19(0.08)	-0.12	-0.02(0.11)	-0.01	-0.18(0.14)	.20
<i>Child Anxiety</i>						
COVID-impact	0.40(0.14)	0.15	0.36(0.20)	0.13	0.04(0.25)	.88
Temperamental Anger/Frustration	0.18(0.15)	0.07	0.46(0.21)	0.17	-0.29(0.26)	.27
Child-rearing Disagreement	0.09(0.01)	0.41	0.10(0.02)	0.43	-0.01(0.02)	.70
Child Age	0.33(0.10)	0.16	0.02(0.12)	0.01	0.32(0.16)	.04*
Child Gender	-0.30(0.24)	-0.06	-0.72(0.37)	-0.12	0.42(0.44)	.34
Parent Education	0.28(0.11)	0.12	0.09(0.15)	0.04	0.19(0.19)	.32
<i>Child-rearing Disagreement</i>						
COVID-impact	3.39(0.66)	0.27	2.69(0.67)	0.22	0.70(0.94)	.46
Temperamental Anger/Frustration	4.96(0.63)	0.39	6.96(0.61)	0.57	-2.00(0.88)	.02*
COVID-x-Temperament Interaction	1.23(0.69)	0.10	1.06(0.47)	0.09	0.17(0.84)	.84
Parent Education	1.84(0.49)	0.18	1.17(0.56)	0.11	0.67(0.75)	.37

Note. Diff (Mother vs. Father): differences in the pathway coefficients between mother- vs. father-report.

The additional three missing cases (i.e., $N = 513$ in Table 3 instead of $N = 516$ in Table 2) was due to the missing information in parent-gender (i.e., three parents did not provide their gender information).

Figure 1

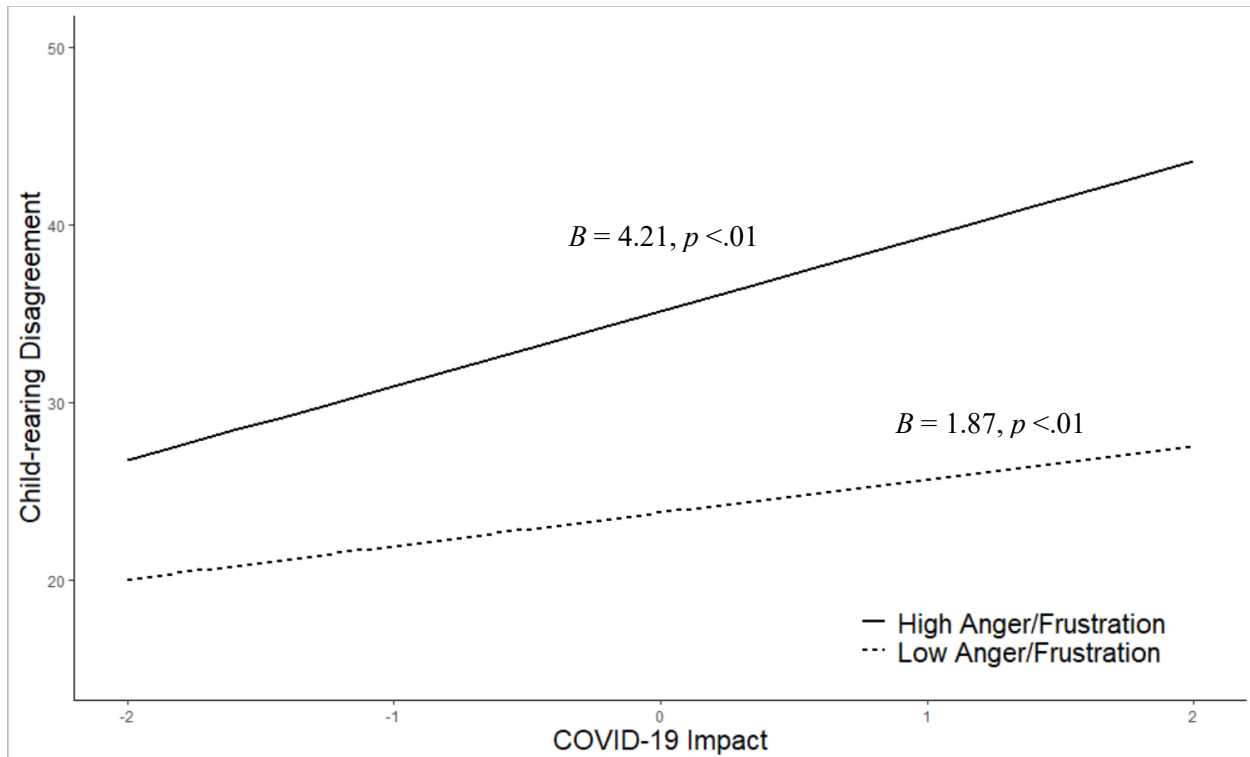
The pathway model that examined COVID-impact and child temperamental Anger/Frustration forecasting child functioning



Note. Pathway coefficients in the figure are all standardized coefficients.

Figure 2

COVID-19 Impact-x-Temperamental Anger/Frustration Interaction Predicting Child-rearing Disagreement.



Note. High Anger/Frustration: +1SD temperamental anger/frustration. Low Anger/Frustration: -1SD temperamental anger/frustration. Simple slope coefficients are unstandardized coefficients.