

**Psychological impacts of COVID-19 on parenting and child behavior in Brazilian families: mediation effects of parental positive mental health****Impactos psicológicos de la COVID-19 en la parentalidad y el comportamiento infantil en familias brasileñas: efectos de mediación de la salud mental positiva de los padres****Impactos psicológicos do COVID-19 na parentalidade e comportamento da criança em famílias brasileiras: efeitos de mediação da saúde mental dos pais**Carolina Duarte de Souza<sup>1</sup>, ORCID 0000-0003-3555-1120Beatriz Pires Coltro<sup>2</sup>, ORCID 0000-0002-8471-3141Larissa Paraventi<sup>3</sup>, ORCID 0000-0003-0825-8770Stefany Lunkes<sup>4</sup>, ORCID 0000-0003-4167-9729Maria Eduarda Garcia<sup>5</sup>, ORCID 0000-0002-9927-4110Mauro Luís Vieira<sup>6</sup>, ORCID 0000-0003-0541-4133<sup>1</sup> *Universidade Federal de Santa Catarina, Brazil*<sup>2</sup> *Universidade Federal de Santa Catarina, Brazil*<sup>3</sup> *Universidade Federal de Santa Catarina, Brazil*<sup>4</sup> *Universidade Federal de Santa Catarina, Brazil*<sup>5</sup> *Universidade Federal de Santa Catarina, Brazil*<sup>6</sup> *Universidade Federal de Santa Catarina, Brazil***Abstract**

This study aimed to investigate the psychological impacts of the COVID-19 pandemic on parental positive mental health, parenting and child's behavior. Participants were 150 parents, mostly women (82.0 %), with a mean age of 38 years ( $SD = 5.4$ ), mothers of children varying between 3 and 11 years of age ( $M = 6.1$ ;  $SD = 2.5$ ). Our path analysis model presented a good fit considering the indirect impacts of COVID-19 on parenting and child behaviors through the direct effect on parental mental health. The psychological impacts of the COVID-19 pandemic had a mediated effect through the parents' mental health on the child's behavior; however, it had no significant effect on parenting. Our results confirm some expectations reported by Brazilian and international researchers, who predicted impairments in the daily lives of families and the behavior of children during the period of social isolation.

**Keywords:** parenting; child behavior; mental health; COVID-19; pandemic

**Resumen**

Este estudio tuvo como objetivo investigar los impactos psicológicos de la pandemia de COVID-19 en la salud mental positiva de los padres, la parentalidad y el comportamiento de los niños. Participaron 150 padres, en su mayoría mujeres (82 %), con una edad media de 38 años ( $DE = 5.4$ ), madres de niños entre 3 y 11 años ( $M = 6.1$ ;  $DE = 2.5$ ). Los resultados muestran que los impactos psicológicos de la pandemia de COVID-19 tuvieron un efecto mediador a través de la salud mental de los padres en el comportamiento del niño; sin embargo, no tuvo un efecto significativo sobre la parentalidad. Nuestros resultados confirman algunas expectativas reportadas por investigadores brasileños e



internacionales, quienes predijeron deficiencias en la vida diaria de las familias y el comportamiento de los niños durante el período de aislamiento social.

**Palabras clave:** parentalidad; comportamiento infantil; salud mental; COVID-19; pandemia

### Resumo

Este estudo objetivou investigar os impactos psicológicos da pandemia da COVID-19 sobre a saúde mental positiva dos pais, a parentalidade e os comportamentos das crianças. Participaram 150 pais, em sua maioria mulheres (82 %), com idade média de 38 anos ( $DP = 5.4$ ), mães de crianças com idade entre 3 e 11 anos ( $M = 6.1$ ;  $DP = 2,5$ ). O modelo de análise de caminhos apresentou ótimo ajuste considerando o impacto indireto da COVID-19 sobre a parentalidade e comportamento da criança por meio do efeito direto sobre a saúde mental parental. Os impactos psicológicos da pandemia da COVID-19 exerceram um efeito mediado por meio da saúde mental parental sobre o comportamento da criança; contudo, não foram observados efeitos significativos sobre a parentalidade. Os resultados confirmam as expectativas de pesquisadores brasileiros e internacionais, que previram prejuízos para o cotidiano das famílias e o comportamento das crianças no período de isolamento social.

**Palavras-chave:** parentalidade; comportamento infantil; saúde mental; COVID-19; pandemia

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In March 2020, the World Health Organization (WHO) characterized the outbreak caused by the new virus Sars-COV-2 (New Coronavirus) as a pandemic (Pan American Health Organization, 2020). In the absence of proven pharmacological prevention and treatment mechanisms, social distancing measures were announced in many countries, including Brazil, in order to reduce contagion and avoid overcrowding in clinics and hospitals (Goodman & Borio, 2020). With the determination of social distancing, families with children began to share the domestic environment to carry out the majority of their activities. Many parents adjusted their daily routine to include new ways of doing their jobs (many working from home), supervising their children's study routine and having moments of leisure and rest (Linhares & Enumo, 2020).

Large-scale disasters cause a series of changes in the daily lives of those that are affected, both directly and indirectly, and the psychological consequences can last for long periods of time (North, 2016). In the case of the Coronavirus pandemic, its effects on the mental health of the general population are already being documented (Li et al., 2020; Rodríguez-Rey et al., 2020).

These problems affect a large part of the world population, but particularly parents and other caregivers, who need to maintain the care of their children while dealing with the consequences of the pandemic (Fontanesi et al., 2020). According to the analysis of Fontanesi et al. (2020), it is possible that the pandemic situation will result in positive outcomes for families, such as the possibility for parents to spend more time with their children, being able to provide care and supervise their routine more closely. However, there is a high risk of developing trauma associated with the isolation, fear of contamination and loss of loved ones, which can harm the general well-being of families.

Regarding children, evidence from before the COVID-19 pandemic suggests that they tend to suffer worse outcomes as a result of disasters when their caregivers reveal higher signs of stress, depression and/or anxiety (Yumbul et al., 2018). Similarly, it is known that high levels of stress and burnout experienced by parents can result in neglect in childcare and parental abuse (Jiao et al., 2020). For this reason, it is imperative to investigate the psychological challenges that are being faced by Brazilian families during the Coronavirus pandemic, as well as its impacts over the parenting exercise, providing empirical data that promote public policies and support for families and children during and after the suspension of the social distancing measures.

Parenting refers to the process of becoming a parent and involves a range of interrelated functions regarding the care, education and socialization of the child (Sanders & Turner, 2018). Thus, it can be described as a construct that encompasses the behaviors through which parental figures engage in child rearing (Cabrera & Volling, 2019), acting as a promoting or inhibiting factor in child development (Ong et al., 2018). The process model of the determinants of parenting by Belsky (1984) highlights three main factors that influence the parental functioning: parental characteristics (personality and psychological functioning); characteristics of the child (specifically temperament) and the social context in which parents participate. Decades after the model was proposed, current empirical studies have demonstrated the complexity of the interactions between predictive phenomena of parenting and expanded the scope of the initially proposed model. Currently, it is recognized the strength of social and environmental characteristics on parenting, which interact directly with personal characteristics of parents, such as mental health (Taraban & Shaw, 2018). Therefore, the COVID-19 pandemic can be characterized as a contextual risk factor for parenting, since it has caused an increase in stress and anxiety symptoms in parents, which in turn affect their willingness to act positively towards their children (Brown et al., 2020; Chung et al., 2020; Russell et al., 2020). This parental struggle can accentuate the manifestation of disruptive behavior in the child, generating a cycle of negative interaction between parents and children (Gassman-Pines et al., 2020; Spinelli et al., 2020). Therefore, it is important to consider personal parental resources that can help maintain positive parenting and cope with atypical situations.

Among these parental resources mental health stands out, which according to the WHO composes part of the general health and refers to a state of well-being in which the person identifies their resources, is able to cope with daily stress, is productive at work and helps in their community (Machado & Bandeira, 2015). A literature review study on mental health highlighted the importance of understanding it through two correlated factors that can coexist: mental illness and positive mental health, the latter being related to emotional, psychological and social well-being (Iasiello et al., 2020). Accordingly, studies indicate that a high level of mental health could shield people from the negative psychological impact arising from the current pandemic situation (Brailovskaia & Margraf, 2020; Holmes et al., 2020; Iasiello et al., 2020).

Regarding the different dimensions of parenting presented in the literature, two should be highlighted: parental warmth and parental coercive discipline. Parental warmth refers to the care, affection and support actions that parents direct toward their children (Jiao et al., 2020; Lau, 2019; Paraventi, 2018). These are expressed through actions and words in order to tranquilize, calm, comfort, provide emotional support, praise, maintain good communication with the child, ensure the child's safety and assist in times of fragility. This includes practices that demonstrate love, affection, acceptance and enthusiasm for the child's efforts, achievements and feelings.

On the other hand, parental coercive discipline refers to parental behaviors aimed at imposing limits and control on children expressed through the affirmation of parental power, withdrawal of privileges and affection, physical punishment, use of force by parents, threats, induction of fear, aggressiveness, verbal and emotional expressions related to frustration, disappointment, rejection or hostility (Carvalho & Cruz, 2018; Paraventi, 2018). It includes practices that do not respect the opinion of children, do not induce reasoning through explanations or negotiations, are inconsistent and permissive, and always impose the will and power of the parents.

Some studies carried out in the context of the COVID-19 pandemic confirm that the negative effects experienced by parents are affecting their relationship with their children and increasing the risk of parental neglect and punishment (Brown et al., 2020; Chung et al., 2020; Russell et al., 2020). Whittle et al. (2020) found similar evidence in Australia, in which the perceived impact of COVID-19 influenced the mental health of parents (anxiety and depression), as well as the use of hostile practices and the decrease in parental warmth, which in turn increased the problems of externalization and internalization in the children. According to child developmental psychopathology studies, one can differentiate the child's emotional and behavioral problems based on their expression and direction. Internalizing problems are those related to predominantly emotional symptoms, which are more difficult to be observed by others, such as depressive and anxious symptoms. On the other hand, externalizing problems are those usually manifested through disruptive, self- or hetero-harming behavior and, therefore, are more easily observable. These behavior problems are affected by individual child characteristics, such as gender, as well as family history (Beauchaine & Klein, 2017). On the other hand, children's behavioral 'strengths' are those skills or competencies that function as promoting factors for the child's development such as sociability and emotional self-regulation.

Studies on large-scale traumatic events or health-related disasters suggest that relationships between parents and children permeated by warmth, closeness and emotional openness have proved to be a protective factor for recovery and coping of children's adversities (Eltanamy et al., 2019; Salloum & Lewis, 2010). Specifically, regarding the COVID-19 pandemic, some studies indicated possible positive outcomes of the pandemic for families (Fontanesi et al., 2020), with mental health constituting a possible protective factor in relation to the psychological impacts of COVID-19 (Holmes et al., 2020). However, the results of studies conducted directly with families during the pandemic have shown otherwise, as Chung et al. (2020) found that parents that felt more impacted by COVID-19 had greater parenting stress, which decreased the relationship closeness between parents and children, while Whittle et al. (2020) found parental warmth to be only associated with fewer child trauma symptoms.

Although the literature on the relationship between parenting and childhood behavior is robust, little is known about the effects of a pandemic on these relationships, especially in the Brazilian context. Furthermore, studies published to date have focused on the effects of risk factors, such as stress and parental burden, maintaining a gap with regard to what can mitigate the effects of the pandemic on parenting and on the development of children. Therefore, the main goal of this study was to investigate the mediating effect of the psychological impacts of the COVID-19 pandemic on parenting and children's behavior according to the positive mental health of parents in Brazilian families.

Based on the literature of parenting and childhood behavior, the process model of the determinants of parenting by Belsky (1984), its updates (Taraban & Shaw, 2018) and

studies already developed about the impact of the Coronavirus pandemic on these phenomena, we raised the following hypotheses:

Main Hypothesis - The psychological impacts of the COVID-19 pandemic, through its effects on the parents' mental health, have a mediated effect on parenting and the child's behavior, as indicated by Brown et al. (2020), Chung et al. (2020) and Russell et al. (2020).

H1- The psychological impacts of the COVID-19 pandemic have a negative effect on the mental health of parents (Brailovskaia & Margraf, 2020; Holmes et al., 2020; Gassman-Pines et al., 2020; Li et al., 2020; Rodríguez-Rey et al., 2020).

H2 - The psychological impacts of the COVID-19 pandemic have a negative and mediated effect on parenting through the negative effect on parental mental health as proposed by Belsky (1984): decreased parental warmth and increased parental coercive discipline as found by Brown et al. (2020), Chung et al. (2020) and Russell et al. (2020).

H3 - The psychological impacts of the COVID-19 pandemic have a mediated effect on the child's behavior through its negative effects on the parents' mental health and on parenting: its impact is positive in relation to the difficulties of the child (Romero et al., 2020; Spinelli et al., 2020); and negative in relation to the child's strengths.

## Methods

### Participants and procedures

This was a quantitative, cross-sectional study in which 150 parents participated, mostly women (82.0 %), biological mothers (76.0 %), with a mean age of 38 years ( $SD = 5.4$ ), who declared themselves to be white (81.3 %). Most of the focal children were white (84.7 %), girls (54.7 %) and aged between 3 and 11 years ( $M = 6.1$ ;  $SD = 2.5$ ) during the period of data collection. The family configurations of the sample were mostly hetero-affective (89.3 %), biparental (84.0 %) and mononuclear (81.3 %). The families were from 14 states of Brazil, the majority of whom lived in the southern region of the country (72.0 %). A majority of the participants reported a high level of education (35.3 % with specialization and 30.7 % with higher education) and a monthly family income between 5 and 10 Brazilian minimum wages (R\$ 1,045.00). Considering the exclusion criteria, families with children with atypical development and families living outside Brazil were removed from the sample.

The study was approved by the Ethics Committee for Research with Human Subjects (CEPSH/UFSC), with authorization No. 4.050.295. The data presented here was collected between the months of June and September of 2020, a period in which the vast majority of the Brazilian population faced rigid social distancing measures. At that time, educational institutions across the country were still closed and emergency remote education had already been implemented by most schools. Due to these exceptional circumstances, we recruited the participants through social media (WhatsApp, Instagram, and Facebook) and by e-mails. Data collection was carried out through an online questionnaire made available after participants completed the consent form, agreeing to voluntarily participate in the study.

### Measures

**Parents' Psychological Impacts of the COVID-19 Pandemic.** We created a unidimensional variable from seven items selected from a battery of questionnaires developed by Conway et al. (2020) that assessed the psychological (emotional and cognitive) and social impacts of the pandemic through items such as "The Coronavirus (COVID-19) outbreak has impacted my psychological health negatively", "It has been

difficult for me to get the things I need due to the Coronavirus (COVID-19)” and “I have lost job-related income due to the Coronavirus (COVID-19)”. The measure was composed of the short versions of the Perceived Coronavirus Threat Questionnaire, the psychological dimension of the Coronavirus Impacts Questionnaire, and the news dimension of the Coronavirus Experience Questionnaire. The items were translated independently into Brazilian Portuguese by two researchers fluent in English, then reviewed by a third researcher. To assess the validity of the instrument in this sample, Cronbach's alpha was used to verify the internal consistency, which was sufficient ( $\alpha = .74$ ). The items were answered by parents using a 4-point frequency scale (1: *totally false*, and 4: *totally true*).

**Parents' Positive Mental Health.** The parents' positive mental health was assessed using the Mental Health Continuum - Short Form (MHC-SF), a self-report instrument adapted to the Brazilian context and validated by Machado and Bandeira (2015). The scale has 14 items referring to general well-being, with higher scores indicating better mental health of the respondent. The items are answered using a frequency scale between 1 (*never*) and 6 (*everyday*) considering a one-month period. The scale accuracy in this study was  $\alpha = .89$ .

**Parenting.** We assessed parenting through two dimensions: parental warmth (10 items) and parental coercive discipline (14 items) using a self-report instrument answered on a 6-point behavior frequency scale ranging from never to very frequently. The items that compose these dimensions are part of the updated version of the Parenting Dimensions Inventory (Paraventi, 2018) developed ad hoc and which is in validation process. In this study the accuracies of the dimensions were: parental warmth  $\alpha = .86$  and parental coercive discipline  $\alpha = .75$ .

**Child behavior.** We assessed child behavior through two dimensions: child's difficulties (20 items) and child's strengths (15 items). The child's difficulties were measured using a unidimensional variable from the four negative dimensions of the Brazilian version of the Strengths and Difficulties Questionnaire (SDQ), an instrument by Fleitlich et al. (2000). The dimensions reflect emotional symptoms, conduct problems, hyperactivity-inattention and problems in relationships with peers. The 20 items were answered using a 3-point Likert scale. The accuracy of the scale in this study was  $\alpha = .80$ . The child's strengths were investigated using 15 items: five from the SDQ prosocial behavior dimension; and ten items from the social competence dimension of the brief version of the Social Competence and Behavior Evaluation scale validated for the Brazilian population (SCBE-30; Bigras & Dessen, 2002). In the present study, we applied the 10 items of the SCBE-30 with an adaptation in the item-response scale. The items were answered on a 3-point scale from 1 (*never*) to 3 (*always*). The two dimensions of social competence were aggregated into a single scale ( $\alpha = .84$ ).

## Data analyses

We carried out the procedural steps proposed by Kline (2016) for data preparation, definition of the estimation of the structural model, testing and redefinition of the model. The data of the instruments were tabulated in the SPSS version 22 statistical program and analyzed using packages from the R statistical program. The reliabilities of the instruments were measured using Cronbach's alpha.

Subsequently, using the lavaan program (Rosseel, 2012), the validity of the model proposed by the study was tested through structural equation modeling techniques. The maximum likelihood estimation technique with robust correction for non-normality of Satorra-Bentler (Kline, 2016) was used to calculate the estimation of model parameters. The following comparative indices were used to assess the relevance of the model: robust

$\chi^2$ ; robust CFI (Comparative Fit index); robust RMSEA (Root Mean Square Error of Approximation); and SRMR (Standardized Root Mean Square Error). After testing the model from the indices described above, it was redefined based on the modification indices, residuals and estimates of the parameters of the model.

## Results

Table 1 presents the correlations, means and standard deviations of the variables that composed the model tested in this study (Figure 1). Table 2 and Figure 2 contain the main results of the model of the psychological impacts of COVID-19 on parental mental health, parenting and child behavior, which presented an excellent fit [S-B  $\chi^2=7.602$  (5),  $p=.180$ ; Robust CFI =.974; Robust RMSEA =.059; SRMR=.036]. In it, 16.0 % of the child's strengths were explained by the parental variables of parental mental health, warmth and coercive discipline, whereas 18.3 % of the child's difficulties were explained by the same parental variables. In addition, 11.1 % of parental mental health was explained by the psychological impacts of COVID-19 on the participant.

**Table 1**

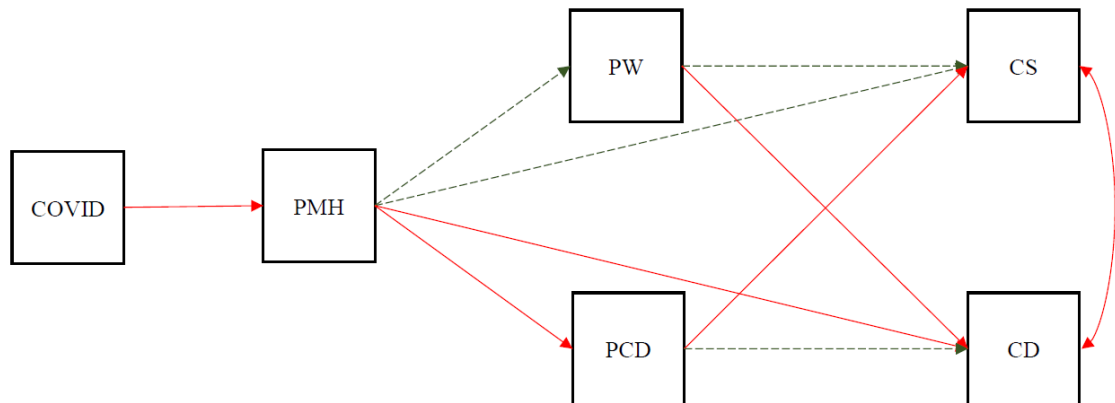
*Means, Standard Deviations and Pearson Correlations between all dimensions of variables of final model*

	1. COVID	2. PMH	3. PW	4. PCD	5. CS	6. CD
2	-0.333***					
3	0.056	0.099				
4	-0.042	-0.074	-0.106			
5	-0.050	0.368***	0.112	-0.124		
6	0.171*	-0.374***	-0.103	0.247**	-0.506***	
<i>M</i>	2.543	4.044	5.316	2.478	2.627	1.541
<i>(SD)</i>	(0.565)	(0.852)	(0.543)	(0.541)	(0.277)	(0.290)

*Note.* COVID: Parental Psychological Impacts of COVID-19; PMH: Parental Mental Health; PW: Parental Warmth; PCD: Parental Coercive Discipline; CS: Child Strengths; CD: Child Difficulties.

**Figure 1**

Initial model with different colors in the edges: the dashed green edges are positive estimates and red edges are negative estimates



Note. COVID: Parental Psychological Impacts of COVID-19; PMH: Parental Mental Health; PW: Parental Warmth; PCD: Parental Coercive Discipline; CS: Child Strengths; CD: Child Difficulties.

The psychological impacts of COVID-19 had a statistically significant negative direct effect on parental mental health ( $\beta = -.333, p = .000$ ). Parental mental health had direct statistically significant effects on the child’s behavior: negative on the child’s difficulties ( $\beta = -.337, p = .000$ ) and positive on their strengths ( $\beta = .374, p = .000$ ). The parental coercive discipline had a statistically significant direct positive effect on the child’s difficulties ( $\beta = .216; p < .001$ ).

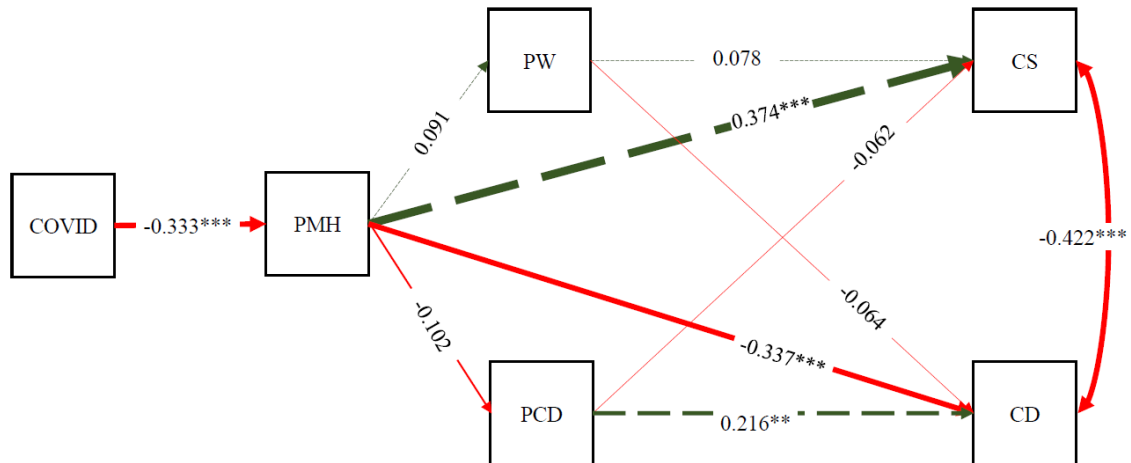
**Table 2**

Maximum likelihood estimates for the model of the psychological impacts of COVID-19 on parental positive mental health, parenting and child behavior

Variables		R <sup>2</sup>	β	B(SE)
Predictor	Outcome			
COVID →	PMH	0.111	-0.333	-0.496 (0.113)***
PMH →	PW	0.008	0.091	0.058 (0.055)
PMH →	PCD	0.010	-0.102	-0.065 (0.055)
PMH →	CS		0.374	0.124 (0.027)***
PW →	CD	0.183	-0.064	-0.035(0.043)
PCD →	CD		0.216	0.118(0.039)**
PMH →	CS	0.160	0.078	0.041 (0.042)
PCD →	CS		-0.062	-0.032 (0.041)
PMH →	CD		-0.337	-0.117(0.026)***
PW →	CD		-0.064	-0.035(0.043)
PCD →	CD		0.216	0.118(0.039)**
A= COVID → PMH → PW		-	-0.030	-0.029(0.027)
B= COVID → PMH → PCD		-	0.034	0.032(0.027)
C= COVID → PMH → CS		-	-0.124	-0.061(0.019)**
D= COVID → PMH → CD		-	0.112	0.058(0.019)**
E= COVID → PMH → PW → CS		-	-0.002	-0.001(0.002)
F= COVID → PMH → PCD → CS		-	-0.002	-0.001(0.001)
G= COVID → PMH → PW → CD		-	0.002	0.001(0.002)
H= COVID → PMH → PCD → CD		-	0.007	0.004(0.004)
COVID → CS (TOTAL= C + E + F)		-	-0.129	-0.064(0.020)**
COVID → CD (TOTAL=D + G + H)		-	0.121	0.063(0.020)**

Note. COVID: Parental Psychological Impacts of COVID-19; PMH: Parental Mental Health; PW: Parental Warmth; PCD: Parental Coercive Discipline; CS: Child Strengths; CD: Child Difficulties; β: Standardized Estimate; B(SE): Estimate(Standard Error); †p<0.10; \*p < .05; \*\*p ≤ .001; \*\*\*p ≤ .000.



**Figure 2***Final model with standardized estimates in the edges*

*Note.* The dashed green edges are positive estimates and the red edges are negative estimates. The thickness of the edges decreases as the estimate decreases for easier viewing. COVID: Parental Psychological Impacts of COVID-19; PMH: Parental Mental Health; PW: Parental Warmth; PCD: Parental Coercive Discipline; CS: Child Strengths; CD: Child Difficulties; \* $p < .05$ ; \*\* $p \leq .001$ ; \*\*\* $p \leq .000$ .

The psychological impacts of COVID-19 had statistically significant mediated effects on the child's behavior. They were negative regarding the child's strengths both indirectly through parental mental health ( $\beta = -.124$ ,  $p < .01$ ), and on the total effect - sum of the three possible mediation paths in relation to the parental variables: 1) the psychological impacts of COVID-19 affecting parental mental health and consequently the child's strengths; 2) the psychological impacts of COVID-19 affecting parental mental health and consequently parental warmth and the child's strengths; 3) the psychological impacts of COVID-19 affecting parental mental health and, consequently, parental coercive discipline and the child's strengths; ( $\beta = -.129$ ,  $p < .01$ ). Regarding the child's difficulties, the effects were positive both indirectly through parental mental health ( $\beta = .112$ ,  $p < .01$ ), and on the total effect - sum of the three possible mediation paths in relation to the parental variables: 1) the psychological impacts of COVID-19 affecting parental mental health and consequently the child's difficulties; 2) the psychological impacts of COVID-19 affecting parental mental health and consequently parental warmth and the child's difficulties; 3) the psychological impacts of COVID-19 affecting parental mental health and consequently parental coercive discipline and the child's difficulties; ( $\beta = .121$ ,  $p < .01$ ).

## Discussion

The aim of this study was to investigate the mediating effect of the psychological impacts of the COVID-19 pandemic on parenting and child's behaviors through the positive mental health of parents in Brazilian families. For this, we used the structural equation modeling through path analysis. Considering the time in which data was collected, this is one of the first empirical reports on the topic after the rise of the COVID-19 pandemic in the context of families with children in Brazil. The results indicated evidence of a significant association between these phenomena. The following discussion was organized based on the hypotheses of this study.

The general hypothesis (the psychological impacts of the COVID-19 pandemic have a mediated effect on parenting and the child's behavior through its effects on the mental health of the parents) was partially confirmed, as the psychological impacts of the COVID-19 pandemic had only a mediated effect through the parents' mental health on the child's behavior; however, it had no significant effect on parenting. This result is in line with that found by Russell et al. (2020), in which the relationship between parental burden and parental mental health (presence of generalized anxiety and depression) affected the child's behavior (stress), but not the parent-child relationship. The findings of Spinelli et al. (2020) also showed that the impacts of COVID-19 on the psychological problems of children were mediated by the individual parental stress and the relationship with the child.

Analogous to our results, in the study by Chung et al. (2020) the impacts of the pandemic affected parental mental health (stress), but contrary to what we found here, there was a mediating effect on parenting through the direct effect of the pandemic on parental stress. This was also found in the results of Brown et al. (2020) regarding the positive relationship between worsening parental mental health (stress, anxiety and depression) and parental stress with a potential increase in child abuse. Our results confirm some expectations reported by Brazilian and international researchers, who predicted impairments in the daily lives of families and the behavior of children during the period of social isolation (Linhares & Enumo, 2020; Taraban & Shaw, 2018).

Hypothesis 1 was confirmed, corresponding to the results of other studies already carried out with adults during this period. In Spain, preliminary data show the presence of psychological distress in almost 40% of participants, being more prevalent among women and younger people (Rodríguez-Rey et al., 2020). Similarly, parental mental health worsened significantly with greater socioeconomic impacts and the increase in risk factors during the pandemic in the study by Gassman-Pines et al. (2020), conducted with parents in the USA. As already noted in studies conducted with parents in periods of macro-social crises, the impact of stressful events tends to reduce well-being and drain emotional resources, which can make the parenting task more challenging and exhausting (Schneider et al., 2017). These impacts can be felt through job loss, economic instability, uncertainty and loss of perspective, especially if families are already living in situations of vulnerability due to other risk factors.

It is important to note, however, that the aforementioned studies investigated parental mental health due to the presence/absence of mental illness. Li et al. (2020) investigated the two poles of mental health and found an increase in symptoms of mental illness, as well as a decrease in positive mental health on a Chinese virtual search platform shortly after the worldwide declaration of the pandemic. Our study investigated positive parental mental health, as the inclusion of this particular dimension in studies that investigate the construct was recommended by Osofsky et al. (2020). According to the WHO (Machado & Bandeira, 2015), positive mental health is a relevant protective factor for coping with adverse situations such as the one caused by COVID-19. This agrees with the findings of Brailovskaia and Margraf (2020) that the presence of positive mental health was able to reduce the negative impacts of COVID-19 on the general mental health of adults in Germany.

Hypothesis 2 was refuted, since the psychological impacts of COVID-19 did not have a significant effect on parenting through its negative effect on parents' mental health. This goes against the findings of Chung et al. (2020) that identified an increase in more severe and inconsistent discipline strategies used by parents, who also reacted more negatively to their children's behaviors, with an effect size twice as large in the relationship between the impacts of the pandemic on harsh parenting through parental

stress than on the parent-child relationship closeness. Brown et al. (2020) also found that the increased stress caused by the pandemic was associated with a greater potential for child abuse, placing children at risk and vulnerable to behavior problems in the short and long term, which reveals an urgent need to promote parental mental health.

It is possible that the reduction in the mental health of Brazilian fathers and mothers does not significantly affect their ability to provide emotional care and affection to their children and does not significantly modify their discipline strategies, even in stressful situations, due to the impacts of the pandemic. Fontanesi et al. (2020) hypothesized that this could be because the possibility of parents spending more time with their children allows them to provide care and supervise their children's routine more closely. In addition, the Brazilian population faces adverse situations for their mental health daily, such as high levels of violence and the current economic and political instability, which may indicate that, culturally, Brazilian parents have already developed strategies to cope with macrosocial aversive situations that protect the parent-child relationship. Besides, considering that the sample of this study reported a considerably higher family income and level of education than that of the majority of the Brazilian population, the participants may have greater access to resources that help them to better deal with the negative effects of the pandemic on their mental health, such as psychotherapy and medical care. In addition, it is possible that other factors not measured in this study are interacting with parental mental health and mediating their effects on parenting, such as social support. Since social support is known to be a protective factor for parenting (Coltro et al., 2020), it is possible that parents with a greater support network are able to sustain the care provision to their children, even in situations of physical isolation.

Another finding of this study should be highlighted, despite not being part of the hypotheses. It refers to the statistically significant association between parental coercive discipline and the child's difficulties, which has already been widely reported in the literature (Kim & Kochanska, 2015; Lau, 2019). In Brazil, harsh discipline strategies were culturally accepted and used by previous generations of parents with their children, partly due to the scarcity of disciplinary strategies available at the time - Brazil underwent decades of dictatorship with restricted information and presented (still presents) high rates of school dropout (Böing & Crepaldi, 2016). Currently, greater access to useful information and active thinking by parents about the negative impact of severe discipline on childhood development have encouraged parents to try to act more positively with their children, although they often resort to the use of inconsistent and/or permissive discipline (Koltermann et al., 2019). An example of this imposed challenge is given by Law No. 13.010, nicknamed the "Law of Spanking", which came into force in 2014 in Brazil and determines the prohibition of physical punishment for children and adolescents. Accordingly, intervention programs aimed at promoting positive parenting, which provide information, models and support for parents to develop healthier relationships with their children, are clearly relevant.

Finally, H3 was partially confirmed since, although the mediation paths of the dimensions of parenting were not statistically significant in isolation, the total mediation effect on the child's behavior was significant, as was the effect mediated by positive parental mental health. This result agrees with the findings of Spinelli et al. (2020) that parental mental health had a mediating effect on the difficulties experienced by parents during quarantine and the behavioral problems of the child in Italy. It is important to note that the Italian study evaluated parental mental health only in its negative aspect, assessed parenting only in the context of the quarantine and not in general and did not evaluate the child's resources to cope with the pandemic situation.

The model presented in this study corresponds to the determinants of parenting model of Belsky (1984) and is in line with the analyses by Taraban and Shaw (2018). These studies reinforce the need to evaluate and understand the effects of the interactions that occur between socio-contextual factors (e.g. pandemic) and individual factors of parents (e.g. mental health) on parenting and, consequently, on the child's behavior as an integrated system, with the mere sum of the parts not representing the total possible impact. In line with ours, these findings contribute significantly to the understanding that the structure of the relationships between the phenomena—child behavior, parental mental health and parenting, under the effect of the pandemic COVID-19—is formed by associations of direct and indirect effects, however, mainly through a cascade effect. This complex conceptual structure was also confirmed in the study by Romero et al. (2020), the results of which indicating that the confinement resulting from COVID-19 generated emotional impacts on parents, which directly and indirectly affected negative and positive parenting practices and consequently altered the child's emotional problems.

In the present study, parental mental health appeared to play an important role in the sequence in which the processes occurred in the Brazilian sample. As stated earlier, for cultural reasons, parents' mental health is affected on a daily basis, which may possibly indicate that, even in a global crisis, such as the pandemic negatively affecting parents' mental health, those responsible for the child may have already developed strategies for coping with adverse situations. As so, they manage to maintain the practices related to parental warmth. Furthermore, this population probably also already presented practices of parental coercive discipline, and even with the decrease in their mental health, they managed not to aggravate these negative practices. This maintenance of positive and negative practices during the pandemic may explain the total mediating effect on the child's behavior.

### **Conclusions**

Considering the time in which data was collected, this study is one of the first presenting data regarding the effects of the COVID-19 pandemic on Brazilian families, constituting an important resource to guide future investigations and the implementation of national coping strategies against the Coronavirus. The international investment that has been made in seeking preventive measures against the disease and developing an effective vaccine is notable, however, it is necessary to acknowledge psychological and socioeconomic risk factors resulting from the pandemic and, mainly, from social distancing, to put coping strategies into practice during and after, as well as in any future pandemic. In the case of families with children, this situation adds risk factors for the parents' well-being, generating worrying consequences for parenting and for the behavior of children.

The results presented should be interpreted with some caution, taking into consideration the limitations of this study. The difficulty of composing a more diverse sample prevents generalizations to other groups and populations, as hetero-affective two-parent families in southern Brazil, with relatively high socioeconomic conditions, were over-represented. Therefore, it is possible that the results reported here may differ for families in conditions of socioeconomic vulnerability and/or for minority ethnic groups and/or different family configurations. The hypothesis is that the collection through an online survey reduced the reach among families with low income, since their access to the Internet and electronic devices is comparatively limited. Additionally, participants of research studies in Brazil are not allowed to receive payment or any gratification for their

participation, which must be taken into account while analyzing the sample limitations of the present study.

The use of self-report instruments and access to the child's data through only a single data source also adds to the risk of bias. However, self-report instruments have an important advantage in the context of the pandemic, since direct naturalistic or controlled observations are not currently recommended. In addition, future research with a larger sample size will be needed to confirm the current findings.

Although statistically significant relationships were found in the model tested, it should be emphasized that it is not possible to confirm the causality between the phenomena based only on the data collected in this cross-sectional study. The associations found are based on the recognized determinants of parenting model of Belsky and similar empirical studies, however, this presents a limited number of constructs that evidently do not reflect the complexity of the interrelationships between family phenomena and the psychological impacts of COVID-19. Despite this limitation, one of the greatest strengths and contributions of this study was the investigation of positive dimensions related to mental health, parenting and the behavior of the child, little investigated in other studies. This generated the possibility of investigating family resources that could mediate the relationship between COVID-19 and child development.

It is recommended that future studies include more diverse samples, especially single-parent families, who potentially face a greater risk of reduced family income and increased caregiver burden in times of pandemic. Furthermore, the effects of the pandemic and its psychological impacts over time could be investigated through longitudinal studies with measures taken during the global health crisis and after it ceases. Above all, the inclusion of other dimensions of parenting is recommended, such as positive discipline strategies and encouragement of children's autonomy, and other determinant phenomena for parenting, such as the marital relationship, family-work conflict and, in particular, social support, which is an important protective factor for mental health during periods of quarantine and social distancing.

The present study found that the psychological impact of COVID-19, through its negative effect on parents' mental health, affected parents and children. Lower levels of mental health, which is a relevant resource for the exercise of positive parenting, was associated with more behavioral problems and less adaptive behavior in children. Consistent with studies already conducted in other countries, these results show greater vulnerability of children to parental maltreatment and abuse. In terms of practical implications, as with other international studies, the implementation of support and intervention programs through telehealth and remote access is recommended. With this, psychotherapy and monitoring of parents and children due to the direct and mediated effects of the psychological impact of COVID-19 on children's behavior could be performed, aiming to mitigate the negative effects on the parents' mental health and on the child's behavior. Online group interventions can show promising outcomes, providing parents with an environment for sharing strategies, mutual support and promoting mental health during the period of social distancing.

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