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Psychological distress due to COVID-19 in parents and children's emotional and conduct problems: the mediation role of couple adjustment and parenting stress

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Abstract

The COVID-19 pandemic and its related restrictions have caused a great impact on the global economy and mental health, with short- and long-term effects on parents' and children's well-being. International research has reported that the psychopathological impact of COVID-19 on parents may lead to higher levels of children's emotional-behavioral symptoms. An increase in parenting stress and a worse quality of couple adjustment has also been reported. However, no study has yet explored the possible complex interplay between the psychological impact of COVID-19 on parents, couple adjustment, parenting stress, and children's emotional-behavioral problems. During the second wave of COVID-19, we recruited N=126 parents (56.6% mothers) with school-aged children aged 5-11 years (M=7.68; SD=2.14) via an online survey. We assessed psychological distress due to COVID-19 in parents, parenting stress, dyadic adjustment, and children's emotional-behavioral functioning through self-report and report-form instruments. Results showed significant associations between parents' psychological distress both with parenting stress, dyadic adjustment, and children's emotional and conduct problems. Moreover, dyadic adjustment and parenting stress serially mediated the relationship between psychological distress due to COVID-19 and children's emotional and conduct problems. These findings have important clinical implications on the planning of prevention programs aimed at promoting children's well-being in the family.

Keywords: COVID-19; psychological distress; dyadic adjustment; parenting stress; children's emotional and conduct problems.

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Introduction

The COroNaVIrus Disease 19 (COVID-19) is an infectious respiratory disease caused by the virus named SARS-CoV-2. Emerged in Wuhan, China, in December 2019, it was declared as a public health emergency by the World Health Organization (WHO) on January 30, 2020, and as a global pandemic on March 11, 2020. During the so-called first wave, the Government of Italy and many other countries implemented a series of restrictive measures to limit its rapid spread, such as closing international borders, travel bans, closing schools and academic institutions, smart working, strict social and physical distancing, and quarantine, severely impacting the daily lives of families. These changes have had a major impact on the general population, with significant damage to the global economy (Ozili & Arun, 2020), as well as short- and long-term effects on mental health (Kola, 2020; Pfefferbaum & North, 2020). Several studies have reported an increase in psychopathological symptoms in the general population, including depression, anxiety, and psychological distress (Salari et al., 2020), with a higher impact on females (Bonati et al., 2021). Only a few studies have explored the psychological impact of the second wave of the pandemic, but showing a deterioration in people's mental health as the pandemic continues (Chodkiewicz et al., 2021; Zhang et al., 2021). Moreover, although most studies have focused on adult populations, national and international studies have also shown an impact on children's emotional and behavioral functioning (Crescentini et al., 2021; Cellini et al., 2021; Golberstein, Wen & Miller, 2020; Loades et al., 2020; Meherali et al., 2021). International research has widely shown the presence of intergenerational transmission of psychopathological risk from parents to children (Cents, 2016), also regarding the psychological distress resulting from COVID-19 (Marchetti et al., 2020; Spinelli et al., 2020). Children tend to cope with events based on the perception provided by their parents, especially in response to an unusual and stressful event (e.g., the COVID-19). Consequently, parents who perceived the COVID-19 pandemic as a traumatic event, showing resulting high levels of psychological distress, may transmit the same stress levels to their children (Chartier et al., 2021), with important consequences on children's emotional-behavioral functioning.

The Developmental Psychopathological theoretical framework (Cicchetti, 2016) offers a valid model for examining underpinning mechanisms of intergenerational transmission of psychopathological difficulties, which is considered as the result of the complex interplay between protective and risk factors within the affective family environment. In particular, clinicians and researchers in the field of developmental psychopathology have shown that the influence of parental psychopathological symptoms on children's emotional and behavioral problems could be mediated by couple adjustment and parenting stress (Tissot et al., 2016; Weijers, Van Steensel & Bögels, 2018). In this context, the restrictions resulting from COVID-19 have led to a substantial increase in the amount of time spent at home with partners and children while having to work from home. Coyne et al. (2020) have referred to the condition experienced by parents in terms of a stressful "collision of roles, responsibilities, and expectations" (e.g., as a parent, partner, worker, teacher). Consequently, this condition may represent a significant

contributing factor in the increase of psychopathological symptoms in parents and children (Loades et al., 2020; Salari et al., 2020). Moreover, psychological distress due to COVID-19 in parents has been prospective associated with a poor quality of marital adjustment (Epifani, Wisyaningrum & Ediati, 2021; Pieh et al., 2020) and high levels of parenting stress (Romero et al., 2020), that in turn exerted a key role in predicting children's emotional-behavioral symptoms (Petrocchi et al., 2020; Spinelli et al., 2020). Notably, international literature has widely shown that poor quality of marital adjustment represents a crucial risk factor for parenting stress (Lin et al., 2017; Salcuni et al., 2015). Consequently, both serial and separate mediation roles of dyadic adjustment and parenting stress on the relationship between psychological distress due to COVID-19 in parents and children's emotional and behavioral symptoms could be hypothesized. However, to our best knowledge, to date no study has explored this complex relationship in the field of psychological distress related to COVID-19.

Based on these premises, the present study aimed to explore the complex interplay between psychological distress due to COVID-19 in parents, the quality of couple adjustment, parenting stress levels, and children's emotional and behavioral symptoms in a community sample of parents with school-aged children. In particular, our specific aims were to examine: 1) possible differences between mothers and fathers in psychological distress related to COVID-19; 2) possible associations between psychological distress due to COVID-19 in parents, couple adjustment, parenting stress, and children's emotional and conduct problems, and; 3) possible sequential mediation role played by dyadic adjustment and parenting stress on the relationship between psychological distress in parents and children's emotional and conduct problems.

Methods

Sample recruitment and procedure

The study was carried out between 10 October and 15 January 2021, during the Italian second wave of COVID-19. N=544 parents were recruited via social media and filled out an anonymous online survey after reading the written informed consent and giving their agreeing to participate. All parents who accepted to participate in the study completed an ad-hoc questionnaire assessing sociodemographic information, and an ad-hoc questionnaire constructed to obtain a risk index related to possible changes resulting from the COVID-19 pandemic (e.g., work changes due to COVID, changes in the child's education due to COVID, increased time spent on children's daily management due to COVID, having been and/or knowing someone who tested positive for COVID or died due to COVID, etc.). Finally, self-reported and report-form instruments assessing psychological distress in parents, parenting stress, dyadic adjustment, and children's emotional and conduct problems (described below) were administered. The study was approved by the Ethical Committee of the Department of Dynamic and Clinical Psychology at Sapienza University of Rome (protocol N. 809/2020), in accordance with the Declaration of Helsinki.

Measures

An ad-hoc *COVID-19 Risk Index* was computed based on parents' responses on a series of items assessing possible changes in family daily life resulting from the COVID-19 pandemic and related restrictions. Specifically, parents were asked to indicate: whether they had to work from home (smart working) or lost their job due to COVID-19; whether their children had to attend school lessons from home (distance learning); whether they were to be responsible for the instruction and educational of their children and for how many hours per day; whether they had domestic help in managing their children; whether they tested positive for COVID-19; whether a familiar or a close friend tested positive and/or died due to COVID-19. For each item, zero, a half, one, or two points were given based on the relative impact on parents' psychological well-being.

The *COVID-19 Peritraumatic Distress Index* (CPDI) (Qiu et al., 2020; Italian validation, Costantini & Mazzotti, 2020) is a self-report questionnaire for the assessment of psychological distress due to COVID-19 pandemic, in line with criterion A for PTSD (e.g., anxiety and depressive symptoms, specific phobia, avoidance behaviors, compulsive behaviors). The scores were summed to create a total score ranging from 0 to 100, with higher scores indicating more psychological distress. The CPDI showed a good internal coherence (Qiu et al., 2020; Costantini & Mazzotti, 2020), also in this study (Cronbach alpha=.89).

The *Dyadic Adjustment Scale* (DAS) (Spanier, 1976; Italian validation, Gentili et al., 2002) is a 32-item self-report questionnaire measure to assess the relationship quality of intact (married or cohabiting) couples. The 32 items consist of questions and statements related to activities, behaviors, attitudes and feelings, frequent in a couple's life. The range is from 0 to 151, with higher scores indicating more positive dyadic adjustment. In this study, the DAS showed good internal coherence (Cronbach alpha=.78).

The *Parenting Stress Index-Short Form* (PSI-SF) (Abidin, 1990; Italian validation, Guarino et al., 2008) is a self-report screening questionnaire used to assess parental stress. The short form of the questionnaire (used in this study) is composed of 36 items evaluated on a scale of 1 (strongly agree) to 5 (strongly disagree). For the aims of this study, the scores were summed to create a total score. The scale showed very good internal consistency, with a Cronbach alpha=.83 in this study.

The *Strengths and Difficulties Questionnaire* (SDQ) (Goodman, 1997; Italian validation, Tobia & Marzocchi, 2018) is a parent-form questionnaire for the assessment of children's emotional and behavioral problems. For the aims of this study, we used the scores of the Emotional Problems (Cronbach alpha=.72) and Conduct Problems (Cronbach alpha=.75) scales, each of which is measured by 5 items.

Statistical analyses

Preliminary statistical analyses have been conducted (reliability of the measures, frequencies, mean scores, and percentages). To verify possible differences between maternal and paternal psychological distress ANCOVA was carried out, with parental gender as the independent variable, the score of CPDI as the dependent variable, and the COVID-19 Risk Index, parental

age, children's age, and children's gender as covariates. Then, Pearson's correlation analyses were conducted to determine significant correlations between study variables. Finally, to verify whether dyadic adjustment and parenting stress sequentially mediated the relationship between psychological distress due to COVID-19 in parents and children's emotional and conduct problems, sequential mediation analyses were performed using Hayes's (2017) PROCESS macro (Model 6). The COVID-19 Risk Index, parental age, children's age, and children's gender were included as covariates. Indirect effects were evaluated with 95% bias-corrected confidence intervals based on 10,000 bootstrap samples. All analyses were performed using SPSS software, Version 26.

Results

Sample characteristics

For the aim of this study, we excluded parents of children who were not aged between 5 and 11 years (N=235); parents with mental and/or physical disability (N=32) and/or who were following a psychological and/or psychiatric treatment (N=28); families separated/divorced (N= 45) or with single parents (N=37); and parents who have not completed the assessment procedure (N=41). The final sample consisted of N= 126 parents (57.1% mothers; Mage=42.04, SD=6.03) living in Italy, with school-aged children (54.8% males; Mage=7.68, SD=2.14). The majority (73.8%) were married and most often reported their highest level of education being more than high school (54%). In Italy, regions are divided into four areas (red, orange, yellow, and white), based on a series of COVID-19-risk indicators. Each color was characterized by different levels of restrictive measures, from high (red) to no restriction (white). In our sample, the majority of families lived in orange (44.5%) and yellow (46%) regions at the time of participation.

Differences between mothers and fathers in psychological distress due to COVID-19

Results of ANCOVA showed that the Covid-19 Risk Index [$F(1,120)=10.543$, $p=.002$, $\eta^2=.08$] and children's age [$F(1,120)=4.21$, $p=.04$, $\eta^2=.03$] were significant covariates. After controlling for these variables, parental gender had a significant effect on psychological distress due to COVID-19 [$F(1,120)=9.195$, $p=.003$, $\eta^2=.07$]. Specifically, mothers reported significantly higher scores on CPDI (M=27.46; SD=1.68) than fathers (M=19.45, SD=1.96).

Association between psychological distress due to COVID-19 in parents, dyadic adjustment, parenting stress, and children's emotional and conduct problems

Results of Pearson's correlation analyses showed that the score of the COVID-19 Risk Index was significantly associated with parents' CPDI and children's Conduct Problems.

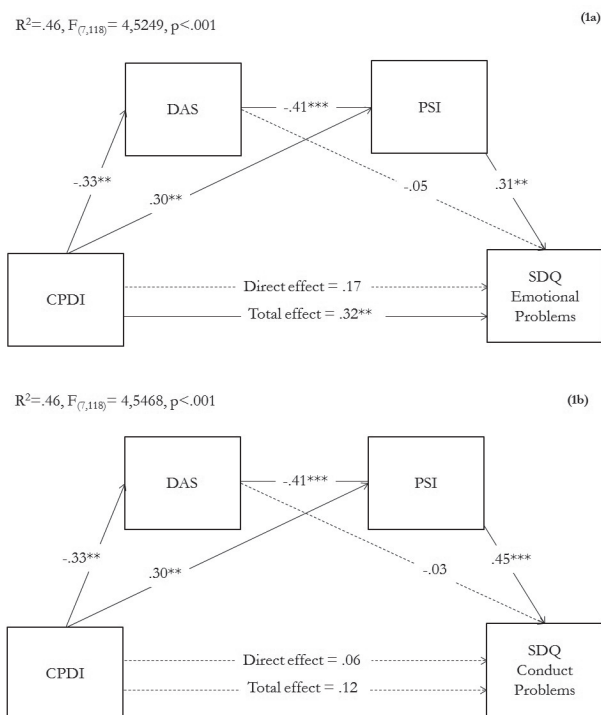
Consequently, it was inserted as covariate in subsequent analyses. CPDI was negatively associated with the score of DAS, and negatively associated with PSI and children's emotional problems. There was no significant association with children's conduct problems. Moreover, the total score of DAS was significantly and negatively associated both with PSI and children's emotional problems, whereas the score of PSI was positively associated with children's emotional and conduct problems (Table 1).

Tab. 1. Descriptive statistics and Pearson correlation coefficients

	1.	2.	3.	4.	5.	6.
1. COVID-19 Risk Index	1					
2. COVID-19 Peritraumatic Distress Index	.30**	1				
3. Dyadic Adjustment Scale	-.04	-.28**	1			
4. Parenting Stress Index-Short Form	.15	.43**	-.49**	1		
5. Strengths and Difficulties Questionnaire Emotional Problems	-.09	.25**	-.26**	.39**	1	
6. Strengths and Difficulties Questionnaire Conduct Problems	.17*	.16	-.16	.42**	.36**	1
M		24.03	101.39	82.20	2.98	2.26
DS		15.31	20.14	19.93	2.87	2.22

Note. * p<.05, ** p<.01.

Fig. 1. Serial mediation of dyadic adjustment and parenting stress on the relationship between psychological distress due to COVID-19 in parents and children's emotional problems (Figure1a) and conduct problems (Figure1b). Coefficients shown are standardized path coefficients. Dotted lines represent non-significant parameters. **p < .01, ***p < .001.



Dyadic adjustment and parenting stress as mediators of the relationship between psychological distress due to COVID-19 in parents and children's emotional and conduct problems

Finally, we verified whether dyadic adjustment and parenting stress, separately and in serial, mediated the effect of psychological distress due to COVID-19 in parents on children's emotional and conduct problems. Regarding children's emotional problems, as possible to see in Figure 1a, results of serial mediation analyses showed that, initially, the total effect of CPDI on children's emotional problems was significant. However, considering the effects of mediators, the direct effect was reduced to a nonsignificant level. The direct effects of CPDI on DAS and PSI were also significant. In addition, DAS, as the first mediating variable, significantly predicted PSI, as the second mediating variable. The direct effect of PSI on SDQ emotional problems was also significant, whereas the direct effect of DAS was not.

Regarding the indirect effects, Table 2 shows that the indirect paths via single mediation of parenting stress and via multiple serial mediation of dyadic adjustment and parenting stress were statistically significant. Conversely, the single mediation of dyadic adjustment was not significant.

Tab. 2. Indirect Effects of psychological distress due to COVID-19 in parents on children's emotional and conduct problems through dyadic adjustment and parenting stress.

Indirect effect	Effect (BootSE)	LLCI	ULCI
CPDI → DAS → SDQ Emotional Problems	.01(.03)	-.05	.10
CPDI → PSI → SDQ Emotional Problems	.09(.04)	.02	.19
CPDI → DAS → PSI → SDQ Emotional Problems	.04(.02)	.01	.09
CPDI → DAS → SDQ Conduct Problems	.01(.03)	-.07	.04
CPDI → PSI → SDQ Conduct Problems	.13(.04)	.05	.23
CPDI → DAS → PSI → SDQ Conduct Problems	.06(.02)	.02	.11

Note. CPDI=COVID-19 Peritraumatic Distress Index; DAS=Dyadic Adjustment Scale; PSI=Parenting Stress Index-Short Form; SDQ=Strengths and Difficulties Questionnaire; BootSE= Boot-strapped standard error; LLCI=Lower level confidence interval; ULCI=Upper level confidence interval. All bold values are statistically significant (CI not contained zero).

Regarding children's conduct problems, as possible to see in Figure 1b, both the total and direct effect of CPDI on children's conduct problems were not significant. The effect of DAS on conduct problems was also nonsignificant. However, PSI significantly predicted children's conduct problems. Results of the indirect effects showed that PSI fully mediated the relationship between CPDI and children's conduct problems. Moreover, the indirect effect via multiple serial mediation of dyadic adjustment and parenting stress was also statistically significant, whereas the single mediation of dyadic adjustment was not (Table 2).

Discussion

This study aimed to examine the possible influence of psychological distress due to COVID-19 in parents on children's emotional and conduct problems, considering the possible complex interplay between individual and relational risk factors (i.e., parenting stress, and dyadic adjustment) that the literature has shown to exert a significant contribution in the transmission of psychopathological difficulties from parents to children (Cents, 2016; Tissot et al., 2016; Weijers et al., 2018).

First, we explored possible parental gender differences in psychological distress, based on previous studies that have shown a higher psychological impact of COVID-19 on females than males (Bonati et al., 2021; Lai et al., 2020). Our results are in line with this, evidencing that mothers reported higher levels of psychological distress due to COVID-19 than fathers. This could be due to the fact that the female gender is a biological factor commonly related to a higher psychological vulnerability in response to stress events (Sareen et al., 2013). Generally, women tend to show higher psychological distress than men (Bonati et al., 2021), as well as to develop higher PTSD symptoms over time (Pineles, Hall & Rasmussen, 2017). Moreover, our results confirmed that parents' psychological distress was significantly and positively associated both with children's emotional (but not conduct) problems and parenting stress, and negatively associated with the quality of dyadic adjustment. Significant associations between the quality of dyadic adjustment, parenting stress, and children's emotional and conduct problems were also found. These findings supported our hypotheses that the relationship between psychological distress in parents and children's emotional and behavioral problems may be serial mediated by dyadic adjustment and parenting stress. Indeed, international literature in the field of developmental psychopathology has evidenced that parental psychopathological risk may predispose children to higher psychopathological risk both through the transmission of (epi-)genetic vulnerabilities (Cerniglia et al., 2020; Cicchetti, 2016; Cimino et al., 2018, 2019), and through children's exposure to a poor quality of the affective family environment, including poor quality of couple relationship and high parenting stress levels (Tissot et al., 2016; Weijers et al., 2018). In the specific context of effects of COVID-19 on children's well-being, as suggested by Prime and coll. (2020), the COVID-19 pandemic could affect children's adaptive functioning due to cascading effects: parents' stress and worries associated with the pandemic and its consequences in social and work life, generating high levels of parental psychological suffering, may affect the quality of the affective environment provided to children (e.g., resulting in a worse quality of couple relationship and higher parenting stress), which in turn increase the risk of children's internalizing and externalizing psychopathological symptoms. In line with this, the results of mediation analyses further supported the presence of a complex interplay between variables under study. Specifically, our findings are in line with previous studies that have evidenced that psychopathological symptoms due to COVID-19 in parents significantly predicted a low quality of marital relationship (Epifani et al., 2021; Pieh et al., 2020) and high parenting stress levels (Romero et al., 2020), that in turn were predictive of children's emotional-behavioral problems

(Petrocchi et al., 2020; Spinelli et al., 2020). In addition, our results are in line with the studies by Salcuni et al. (2015) and by Lin et al. (2017) that have shown the significant contribution of dyadic adjustment in parenting stress levels. Regarding the indirect effects, we found that the separate mediation of parenting stress and serial-multiple mediation of dyadic adjustment and parenting stress were statistically significant, whereas the direct effect of psychological distress in parents was not, supporting the presence of full mediations. Despite the study by Gewirtz and coll. (2017) has underlined that marital quality and parenting stress simple and serial mediated the relationship between parent's PTSD symptoms and children's emotional-behavioral functioning, to our best knowledge, this is the first study that has explored these associations considering psychological distress resulting from COVID-19 in parents.

There are some limitations to the current study. First, we assessed psychological distress, dyadic adjustment, parenting stress, and children's emotional and conduct problems through self-report and report-form tools. Although these instruments are validated and widely used, further studies should use more objective methodologies for the assessment of the variables under study (e.g., clinical interviews). Moreover, the homogeneity of the sample in terms of socio-demographic characteristics does not produce representative results generalizable to the population as a whole. Further studies should also consider families at higher risk (e.g., families with limited income and education level, families with single parents, families with children and/or parents with physical and/or psychological disabilities). Moreover, the lack of pre-COVID (baseline) measures do not allow to determine whether the effects we found would have been the same beyond the impact of the pandemic. Finally, given the cross-sectional nature of the study, future longitudinal researches on the psychological impact of COVID-19 on parents and the resulting cascading effects on children are needed. Despite the above limitations, this study was the first to explore the dynamic relationship between psychological distress due to COVID-19 in parents and children's emotional and conduct problems, considering the possible sequential mediation role played by dyadic adjustment and parenting stress. Our study has evidenced a key role of the affective family environment provided by both mothers and fathers in these processes. These findings support the importance of implementing treatment programs focused on marital and parenting support, to reduce the long-term consequences on children's emotional-behavioral functioning and promote psychological well-being in families.

Author Contributions

The authors contributed equally to this manuscript.

Compliance with Ethical Standards

Conflict of interest

The authors declare that they have no competing interests.

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Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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