

ORIGINAL ARTICLE

Actor–partner association of work–family conflict and parental depressive symptoms during COVID-19 in China: Does coparenting matter?

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Abstract

Parental depressive symptoms and their related factors have not been widely examined during the COVID-19 pandemic. Therefore, the current study examined the actor and partner associations of work–family conflict and parental depressive symptoms. Considering the new demands and challenges for families during the COVID-19 pandemic, we further explored the moderation effect of coparenting. A cross-sectional online survey with 985 paired fathers and mothers was conducted in Mainland China. In 11.6% of families, only mothers reported moderate to severe depressive symptoms; in 10.6% families, only fathers reported moderate to severe depressive symptoms; in 9.5% families, the mother and father reported mild to moderate depressive symptoms. Results of the actor–partner interdependence model showed that parental family-to-work conflict was negatively associated with their own depressive symptoms. The negative actor association of maternal family-to-work conflict and depressive symptoms was moderated by undermining coparenting. The partner effects of maternal family-to-work and work-to-family conflicts on paternal depressive symptoms were moderated by undermining coparenting. Moreover, supportive coparenting

moderated the actor association of work-to-family conflict and the depressive symptoms of fathers. Results highlight the importance of family-to-work conflict and family function for parental depressive symptoms. These findings can help promote parental well-being during the COVID-19 pandemic.

KEYWORDS

actor and partner associations, coparenting, COVID-19, parental depressive symptoms, work-family conflict

INTRODUCTION

The COVID-19 pandemic has exacerbated mental health crisis worldwide (Giuntella et al., 2021; Kowal et al., 2020). Xiong et al. (2020) reported that the prevalence of depressive symptoms ranged from 14.6% to 48.3% during the COVID-19 pandemic, which were higher than the estimated prevalence of depression prior to the global phenomenon. Therefore, a major current focus in public mental health is identifying the associated risk or protective factors with mental health in different populations during the COVID-19 pandemic (Duan et al., 2020; Huang & Zhao, 2020; Rheenen et al., 2020). However, little attention has been paid to parents, curbing the understanding of the entire spectrum of the negative effects of COVID-19 on mental health. Hence, this study aimed to investigate the prevalence of depressive symptoms among parents and its associated predictive factors during the COVID-19 pandemic in China.

After the Chinese government implemented rigid epidemic preventive measures in January and February, the country began reopening and resuming work in March 2020 (The State Council Information Office of the People's Republic of China, 2020). However, over 282 million students remained at home for 2–6 months (Chinese Education Daily, 2020). Adequate childcare was a major concern for parents returning to work or working from home. For example, parents were responsible for arranging food for their children on time, ensuring the safety, and monitoring their children's online learning process to prevent problematic Internet use behaviors (Duan et al., 2020; Lucie et al., 2020). Under these circumstances, work-family conflict for parents became increasingly prominent (Fisher et al., 2020), which were associated with their psychological and behavioral adjustment (Vaziri et al., 2020). Thus, the current study investigated the predicting effect of work-family conflict on depressive symptoms of parents who had returned to work and their children had been confined at home due to school shut-downs in the context of the COVID-19 pandemic in China.

Predicting effect of work-family conflict on depression

Work-family conflict is a form of interrole conflict in which role pressures from work and family domains are mutually incompatible because of the competing demands or discordant responsibilities among work and family roles (Greenhaus & Beutell, 1985). Researchers have

recognized the direction of interference in constructing this concept, revealing the bidirectional nature of work and family conflict (Byron, 2005). Work–family conflict includes two directional components, namely, work-to-family conflict and family-to-work conflict; the former refers to work interfering with family life, and the latter refers to family life interfering with work (Netemeyer & Boles, 1996). These two components are highly correlated but differ conceptually and empirically (Byron, 2005). Working parents are constantly balancing work and family roles, which renders them susceptible to work–family conflict (Haslam et al., 2015). Numerous studies have examined the effect of work–family conflict on various mental well-being outcomes. A meta-analysis conducted by Allen et al. (2000) revealed the widespread and serious consequences associated with work–family conflict, particularly underscoring their positive relationship with depressive symptoms. The negative effects of work–family conflict on depressive symptoms exist cross-culturally (e.g., Japan, Israel, India Korea, and the United States) (Norio et al., 2017; O'Brien et al., 2014; Susi et al., 2019).

Additionally, a large body of literature has investigated the different effects of work-to-family conflict and family-to-work conflict. However, different results regarding the effect size of work-to-family conflict and family-to-work conflict on individual stress-related outcomes exist. For example, Kalliath et al. (2015) found that work-to-family conflict and family-to-work conflict were related to psychological strain with minimal differences in magnitude. However, Grzywacz and Bass (2003) revealed that family-to-work conflict can influence depression, drinking problems, and anxiety disorder greater than work-to-family conflict. Simultaneously, compared with routine family life before the COVID-19 pandemic, parents have faced many new and challenging demands and responsibilities in the family domain after the outbreak (Wang, Zhang, et al., 2020; Xiong et al., 2020), indicating that parents have experienced an increasing level of family-to-work conflict (Vaziri et al., 2020). Hence, the current study hypothesized that family-to-work conflict would significantly affect parental depressive symptoms greater than work-to-family conflict in the context of the COVID-19 pandemic. Most of the studies have not included the two components of work–family conflict in a statistical model to control the high correlation between them. Consequently, the existing research has failed to examine the unique contribution of work-to-family conflict and family-to-work conflict on depressive symptoms from a comparative perspective. This study would include work-to-family and family-to-work conflicts in the same statistical model to explore their unique effects on depressive symptoms after accounting for each other.

Furthermore, previous studies have included fathers and mothers in the same research (Borgmann et al., 2019; Fujimoto et al., 2014). These works constantly combined the data from fathers and mothers or simply analyzed them separately. This method has hindered the ability to examine potential differences between fathers and mothers in the effects of work–family conflict and whether partner associations exist. Family system theory claims that fathers and mothers are interdependent (Fiese et al., 2019). For example, Terrone et al. (2020) used an actor–partner interdependence model (APIM) and revealed that paternal marital satisfaction negatively predicted fathers' (actor association) and mothers' (partner association) psychiatric symptoms. However, little attention has also been paid to the partner associations of parental work–family conflict and spouses' individual adjustment. Addressing the partner association is in line with the crossover hypothesis of family system theory—one individual's stress, psychological strain, or behavior is transferred to another person in a dyadic relationship (Newland et al., 2015; Zou & Wu, 2020). Although little empirical evidence is available to support this association directly, studies have found partner effects of work–family conflict on marital satisfaction and level of anger (Bakker et al., 2009; van Steenbergen et al., 2014), indicating that

fathers and mothers' work-family conflict would be related to their partner's depressive symptoms. Therefore, the current study investigated the contributions of fathers' and mothers' work-family conflicts to their own and spouses' depressive symptoms by using APIM (see Figure 1).

Moderation effect of coparenting

The literature on the different effects of work-to-family conflict and family-to-work conflict has reported mixed findings. Hence, further research must be conducted to examine whether the predicting effects of work-to-family conflict and family-to-work conflict on parental depressive symptoms depend on the characteristics of work or family. Identifying factors that may exacerbate or buffer the effects of work-family conflict can help facilitate in-depth understanding of these effects and provide targeted specific interventions. Considering the new demands and challenges for families under the context of school shutdowns during the COVID-19 pandemic (Wang, Pan, et al., 2020; Wang, Zhang, et al., 2020), the current study aimed to explore the moderation effect of family factor (i.e., coparenting) on the association between work-family conflict and parental depressive symptoms.

Coparenting is an often-conceptualized multidimensional construct in which a parenting alliance is established by parents to care for and raise their children together (Feinberg, 2003). In most cases, coparenting describes the relationship between mothers and fathers in parenting aspects, which is characterized by parents' behavior in collaboratively parenting their children (Zou et al., 2020). Supportive and undermining coparenting are the most acknowledged key dimensions (Feinberg et al., 2012). The former is defined as the parents' agreement and supportiveness in parenting behaviors and goals, whereas the latter is defined as the parents' disagreement, conflict, and disparagement in parenting a child (Margolin et al., 2001; Zou et al., 2020). Coparenting has been identified as a central family system dynamic (Feinberg, 2003; Riina et al., 2020), which significantly affects family outcomes, especially on parental depressive symptoms (Solmeyer & Feinberg, 2011; Tissot et al., 2017). Furthermore, coparenting has been identified as a moderator that regulates the relations between risk factors and family outcomes. Feinberg (2003) claimed that positive coparenting may protect parental and child adjustment from the negative effects of risk factors (i.e., work-family conflict in this study), whereas

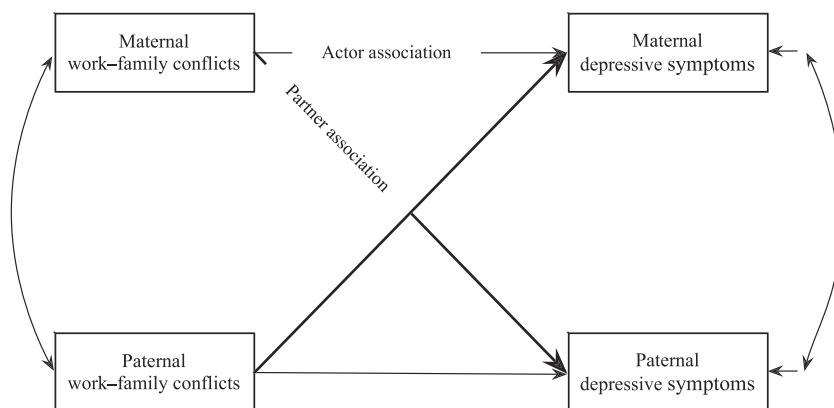


FIGURE 1 The conceptual model

negative coparenting may exacerbate this effect. However, empirical studies regarding the moderation effect of coparenting have mainly focused on the relationships between family stress and child adjustment (Chen, 2020; Kolak & Vernon-Feagans, 2008). Hence, the moderation effect of coparenting on parental adjustment has been largely neglected. Therefore, the current study investigated the moderation effect of supportive and undermining coparenting on the association between work–family conflict and parental depressive symptoms, which could promote the understanding of the central role of coparenting and clarify the conditions under which the predicting effect of work–family conflict on parental depressive symptoms occurs.

Current study

This study firstly aims to investigate the prevalence of parental depressive symptoms during the COVID-19 pandemic with paired fathers and mothers to report the prevalence of depressive symptoms among families where only one parent exhibited symptoms and families with fathers and mothers exhibited symptoms. Furthermore, the primary goal of the current study was to examine the predicting effects of work–family conflict on parental depressive symptoms. We specifically focused on the actor and partner associations between work–family conflict and parental depressive symptoms among paired heterosexual couples. Considering the different natures and effects of work-to-family conflict and family-to-work conflict, these two components of work–family conflict were measured and included in the same statistical model. Finally, the current study explored the moderation effect of coparenting on the associations between work–family conflict and parental depressive symptoms (see Figure 2). The current study hypothesized that supportive coparenting buffered the negative effect of work–family conflict on parental depressive symptoms, whereas undermining coparenting exacerbated the negative effect of work–family conflict on parental depressive symptoms.

METHODS

Participants and procedure

The present study conducted a cross-sectional web-based survey of Chinese heterosexual couples whose children study at home through the Internet because of the COVID-19 school shut-downs. Families, which include fathers, mothers, and focal offspring, participated in the questionnaire survey. Paired data of fathers and mothers were used to analyze the actor and partner associations of work–family conflict and parental depressive symptoms. The online questionnaires were developed in “Questionnaire Star,” a professional online questionnaire survey system in China. Links to the questionnaire were sent through the widely used Chinese social networking app WeChat. Participants were presented an online informed consent statement, which described the study purpose, procedure, and consent. Upon giving consent, participants filled out the set of questionnaires online, including their demographic information and the main measurement variables. The study was approved by the Research Ethical Committee of Beijing Normal University and conducted with the permission of the principals of the participating schools. The participating students and parents were free to withdraw from the research at any time. If the participants had any questions about this survey, they could consult or interact with us via email and telephone.

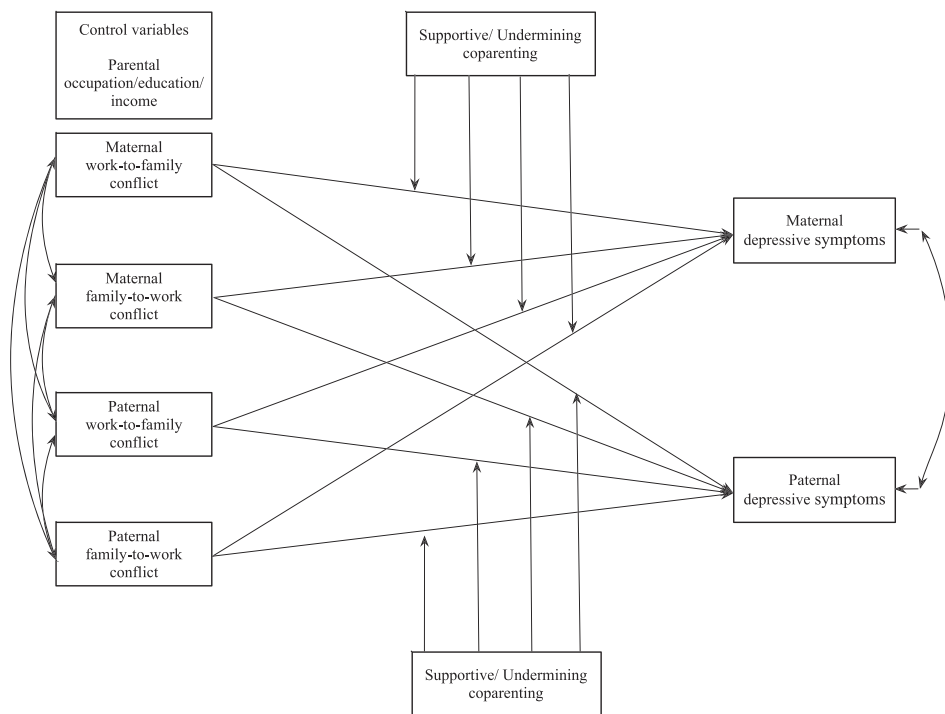


FIGURE 2 The hypothesized moderation effect model

A total of 985 pairs of fathers and mothers, who came from dual-earning families and had at least one child aged between 7 and 18 years old, participated in the present study. The mean age of the focal child was 13.44 years old ($SD = 3.18$). The number of boys and girls was approximately equal (50.4% boys). The mean age of mothers was 41.60 years old ($SD = 4.85$), ranging from 28 to 60 years old. The educational attainment of mothers was as follows: 25.7% were junior high school graduates or below, 23.8% were senior high school graduates, and 50.5% held college degrees or above. The monthly income of mothers was as follows: 30.2% earned lower than 750 USD, 35.8% earned 750 to 1500 USD, and 34.0% had an income higher than 1500 USD (the average monthly income of Chinese residents was 1050 USD in 2019). The mean age of fathers was 43.59 years old ($SD = 5.15$), ranging from 29 to 66 years old. The educational attainment of fathers was as follows: 21.7% were junior high school graduates or below, 25.6% were senior high school graduates, and 52.5% held college degrees or above. The monthly income of fathers was as follows: 26.6% were had an income lower than 750 USD, 36.5% earned 750 to 1500 USD, and 36.9% earned higher than 1500 USD.

Measures

Parental depressive symptoms

Paternal and maternal depressive symptoms was measured by the widely used Zung's Self-rating Depression Scale (SDS, Wang et al., 1999; Zung, 1965). This scale comprises

20 self-reported items. Some of the items were worded symptomatically negative (e.g., “I feel down-hearted and blue”) and were rated on a 4-point Likert-type scale ranging from 1 (*a little of the time*) to 4 (*most of the time*). Meanwhile, others were symptomatically positive (e.g., “I feel hopeful about the future”) and were reversed to compute the sum score of depressive symptoms. A higher sum score indicated greater depressive symptoms. In addition, the Severity Index of Depression represents the severity of the depressive symptoms, which equals the sum score divided by 80 and was grouped into normal range (below 0.50), mildly depressed (0.50–0.59), moderately depressed (0.60–0.69), and severely depressed (0.70 and above). Cronbach’s alphas for paternal and maternal depressive symptoms were 0.81 and 0.80, respectively.

Work–family conflict

Parental work–family conflict was measured using the scale developed by Netemeyer and Boles (1996). This scale includes two dimensions, namely, work-to-family conflict (e.g., “My job produces strain that makes it difficult to fulfill family duties,” five items) and family-to-work conflict (e.g., “I have to put off doing things at work because of demands on my time at home,” five items). Participants responded to these items on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A higher sum score indicated greater interference from work to family or vice versa. Cronbach’s alphas for paternal work-to-family and family-to-work conflicts were 0.91 and 0.89, respectively. Meanwhile, Cronbach’s alphas for maternal work-to-family and family-to-work conflicts were 0.92 and 0.93, respectively.

Supportive and undermining coparenting

Supportive and undermining coparenting were assessed using the Chinese version of the 29-item Coparenting Behavior Scale (Liu et al., 2017), which was the revised version of McHale’s (1997) Coparenting Behavior Scale. This scale had four dimensions, namely, family integrity behavior (e.g., “I showed physical affection [a hug, touch, or kiss] to my spouse/child,” seven items), consistent behavior (e.g., “I supported the limit or the type of discipline set to the child by my spouse,” 10 items), conflict behavior (e.g., “I argued with my spouse in front of the child,” six items), and disparaging behavior (e.g., “I commented negatively about my spouse in front of the child when he/she was absent,” six items). Fathers and mothers self-reported frequency with their own coparenting behavior on a 7-point Likert-type scale ranging from 1 (absolutely never) to 7 (almost constantly). Supportive coparenting was obtained by calculating the mean of fathers and mothers’ reported family integrity and consistent behaviors, whereas undermining coparenting was obtained by calculating the mean of fathers and mothers’ reported conflict and disparaging behaviors (Zou et al., 2020). Cronbach’s alphas for supportive and undermining coparenting were 0.97 and 0.96, respectively.

Data analysis

The online data collection precluded missing items as only complete questionnaires could be submitted in this study. Descriptive statistics, including the means and standard deviations of

the continuous variables, and Pearson correlational analysis were conducted in SPSS 26.0. The APIM estimated by path analysis was used to test the effect of paternal and maternal work-family conflict on their own and partner's depressive symptoms, which was conducted in Mplus 7.4. Using an APIM allows for the estimation of each parent's work-family conflict (actor effect) and the partner's work-family conflict (partner effect) on depressive symptoms. This is an important analytic approach of dyadic data, which accounts for the nonindependence of father and mother reports of work-family conflict and depressive symptoms in the same statistical model (Kenny & Ledermann, 2010). The APIM was a saturated model with chi-square and degree of freedom equaling to zero in this study. The first APIM explored the actor and partner associations of work-family conflict and parental depressive symptoms. The second APIM added eight interaction variables (maternal work-to-family conflict \times supportive coparenting, maternal family-to-work conflict \times supportive coparenting, paternal work-to-family conflict \times supportive coparenting, paternal family-to-work conflict \times supportive coparenting, maternal work-to-family conflict \times undermining coparenting, maternal family-to-work conflict \times undermining coparenting, paternal work-to-family conflict \times undermining coparenting, and paternal family-to-work conflict \times undermining coparenting) into the initial APIM to explore the moderation effect of supportive and undermining coparenting toward the association of work-family conflict and parental depressive symptoms. Before the analysis of APIM, work-family conflict, parental depressive symptoms, and coparenting were standardized to explain the path coefficient in the results (Hayes, 2013). Sociodemographic variables of fathers and mothers, including occupation, education, and monthly income, were controlled in the above APIMs.

RESULTS

Preliminary analysis

The results of the descriptive and correlational analysis for the main variables are presented in Table 1. The mean scores for maternal and paternal depressive symptoms were 32.29 ($SD = 9.51$) and 31.66 ($SD = 9.44$), respectively. Based on the Severity Index of Depression, in 211 families (21.4%), only the mother fulfilled the criteria for depressive symptoms, with 97 mothers (9.8%) meeting the criteria for mild depressive symptoms, 110 mothers (11.2%) for moderate depressive symptoms, and 4 (0.4%) mothers for severe depressive symptoms; in 193 families (19.6%), only the father fulfilled the criteria for depressive symptoms, with 89 fathers (9.0%) meeting the criteria for mild depressive symptoms, 102 fathers (10.4%) for moderate depressive symptoms, and 2 (0.2%) fathers for severe depressive symptoms. In 94 families (9.5%), mother and father met the criteria for mild depressive symptoms. In terms of work-family conflict, maternal and paternal work-to-family conflict were 2.12 ($SD = 0.97$) and 2.52 ($SD = 1.07$), respectively; maternal and paternal family-to-work conflict were 1.91 ($SD = 0.92$) and 1.92 ($SD = 0.83$), respectively. The mean item scores of supportive and undermining coparenting were 5.35 ($SD = 1.01$) and 2.30 ($SD = 0.98$), respectively. In addition, maternal and paternal work-family conflict, including work-to-family conflict and family-to-work conflict, were positively and significantly related to maternal and paternal depressive symptoms. Meanwhile, supportive coparenting was significantly negative related to maternal and paternal depressive symptoms. Conversely, undermining coparenting was positively and significantly related to maternal and paternal depressive symptoms.

TABLE 1 Pearson correlations and descriptive statistics for primary variables ($N = 985$)

Variables	1	2	3	4	5	6	7	8
1. Maternal work-to-family conflict	1							
2. Maternal family-to-work conflict	0.65***	1						
3. Paternal work-to-family conflict	0.30***	0.32***	1					
4. Paternal family-to-work conflict	0.33***	0.38***	0.59***	1				
5. Supportive coparenting	-0.16***	-0.19***	-0.15***	-0.19***	1			
6. Undermining coparenting	0.23***	0.31***	0.22***	0.30***	-0.35***	1		
7. Maternal depressive symptoms	0.30***	0.37***	0.12***	0.17***	-0.39***	0.41***	1	
8. Paternal depressive symptoms	0.21***	0.24***	0.22***	0.38***	-0.38***	0.34***	0.37***	1
<i>M</i>	2.12	1.91	2.52	1.92	5.35	2.30	32.29	31.66
<i>SD</i>	0.97	0.92	1.07	0.83	1.01	0.98	9.51	9.44
Range	1-5	1-5	1-5	1-5	1-7	1-7	20-80	20-80

* $p < .05$. ** $p < .01$. *** $p < .001$.

Actor and partner associations of work-family conflict and parental depressive symptoms

Table 2 presents the unstandardized coefficient of the predicting effect of parental work-family conflict on depressive symptoms, which is estimated by APIM. This model is a saturated model, showing that the chi-square and the degree-of-freedom equal zero. Maternal family-to-work conflict was positively associated with maternal depressive symptoms (actor association, $b = .30, p < .001$) and was not associated with paternal depressive symptoms ($b = .08, p > .05$) after controlling work-to-family conflict. Similarly, paternal family-to-work conflict was positively associated with paternal depressive symptoms (actor association, $b = .36, p < .001$) and was not associated with maternal depressive symptoms ($b = .03, p > .05$) after controlling work-to-family conflict. Finally, maternal and paternal work-to-family conflict were not significantly associated with the depressive symptoms of mothers and fathers after controlling family-to-work conflict.

Moderation effect of coparenting

The moderation effects of supportive and undermining coparenting toward work-family conflict on depressive symptoms are presented in Figure 3. Moderation variables (supportive and undermining coparenting) along with eight interaction variables were added into the APIM. Supportive coparenting was negatively associated with maternal ($b = -.23, p < .001$) and paternal depressive symptoms ($b = -.22, p < .001$). Conversely, undermining coparenting was positively associated with maternal ($b = .26, p < .001$) and paternal depressive symptoms ($b = .18, p < .001$). The interaction between maternal family-to-work conflict and undermining coparenting was significantly associated with maternal depressive symptoms ($b = .08, p < .05$) after

TABLE 2 The predicting effects of work and family conflicts on parental depressive symptoms in APIM

Variables	Maternal depressive symptoms		Paternal depressive symptoms	
	B	SE	B	SE
Maternal occupation	-.04	.03	-.02	.03
Maternal education	-.07	.04	-.03	.04
Maternal income	.21***	.05	.01	.05
Paternal occupation	-.04	.03	-.05	.03
Paternal education	.07	.11	.15	.11
Paternal income	-.04	.05	.14**	.05
Maternal work-to-family conflict	.05	.04	.04	.05
Maternal family-to-work conflict	.30***	.04	.08	.05
Paternal work-to-family conflict	-.02	.04	-.07	.04
Paternal family-to-work conflict	0.03	.04	.36***	.04
R^2	.20		.19	

Note: All variables were standardized separately for each parent.

* $p < .05$. ** $p < .05$. *** $p < .05$.

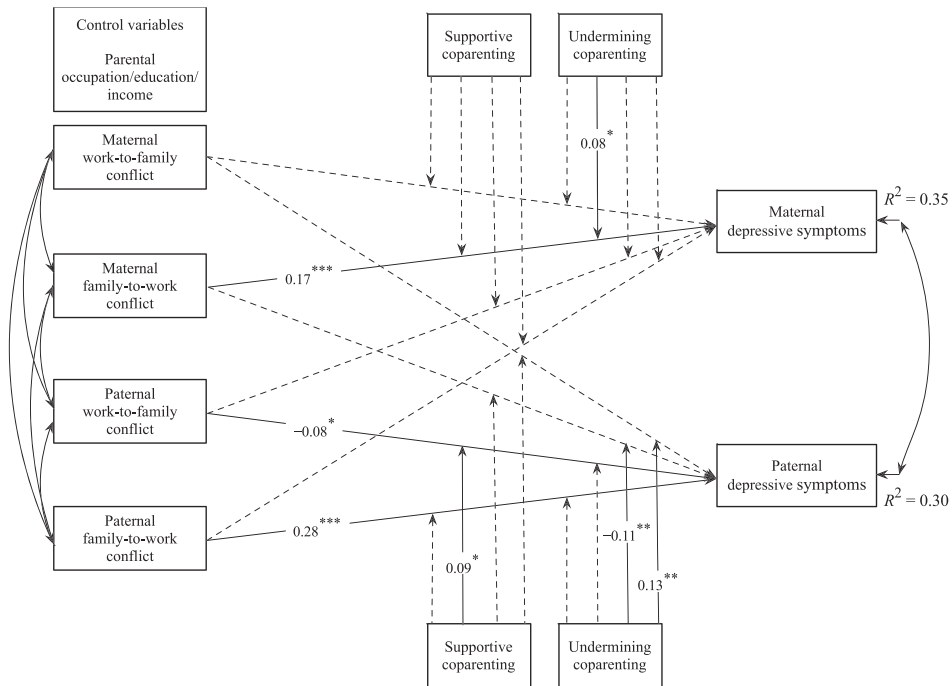


FIGURE 3 The moderation effect of coparenting toward work–family conflict on parental depressive symptoms. *Notes:* All variables were standardized. Dashed lines indicated non-significant coefficient. * $p < .05$, ** $p < .05$, *** $p < .05$

controlling work-to-family conflict, indicating a strengthening effect of undermining coparenting on the actor association between maternal family-to-work conflict and depressive symptoms. Simple slope analysis demonstrated that as the level of parental coparenting conflict increased, the negative actor association of maternal family-to-work conflict and depressive symptoms was enhanced (see Figure 4). The other seven interaction variables were not associated with maternal depressive symptoms.

Undermining coparenting moderated the partner association between maternal work–family conflict and paternal depressive symptoms. In terms of maternal work-to-family conflict, undermining coparenting promoted the partner association of maternal work-to-family conflict and paternal depressive symptoms ($b = .13$, $p < .01$) after controlling family-to-work conflict, showing that higher maternal work-to-family conflict was associated with a higher level of paternal depressive symptoms for families with high parental coparenting conflict. Conversely, undermining coparenting buffered the partner association of maternal family-to-work conflict and paternal depressive symptoms ($b = -.11$, $p < .01$) after controlling work-to-family conflict, showing that as the level of parental coparenting conflict decreased, the negative association of maternal family-to-work conflict and paternal depressive symptoms increased. Supportive coparenting moderated the actor association of paternal work-to-family conflict and depressive symptoms ($b = .09$, $p < .05$) after controlling family-to-work conflict. It showed that for families with low supportive coparenting, higher paternal work-to-family conflict was associated with lower paternal depressive symptoms. Supportive coparenting did not interact with paternal family-to-work conflict or maternal family-to-work conflict and work-to-family conflict in predicting paternal depressive symptoms.

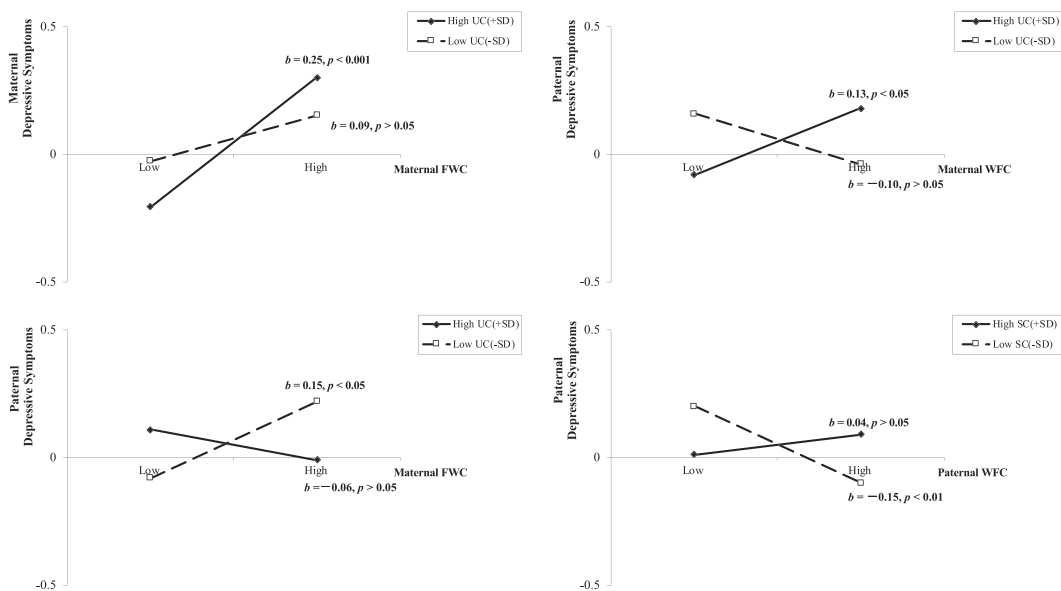


FIGURE 4 The simple slope analysis of the moderation effect of coparenting toward work–family conflict on parental depressive symptoms. FWC, family-to-work conflict, SC, supportive coparenting; UC, undermining coparenting; WFC, work-to-family conflict

DISCUSSION

The current study examined the negative effect of work–family conflict on parental depressive symptoms and the moderation effect of supportive and undermining coparenting with paired fathers and mothers during the COVID-19 pandemic in China. The findings revealed a relatively high rate of symptoms of depression among fathers and mothers. Paternal and maternal family-to-work conflict (not work-to-family conflict) were uniquely associated with their own symptoms of depression after accounting for the correlation between work-to-family conflict and family-to-work conflict, and only the actor association among mothers was moderated by undermining coparenting. Moreover, the partner association between maternal work–family conflict and paternal depressive symptoms was moderated by undermining coparenting, which revealed the conditional partner effect of maternal work–family conflict. The study complemented the lack of study on the prevalence of depressive symptoms among paired fathers and mothers during the COVID-19 pandemic and examined the risk and protective effects of work–family conflict and coparenting on parental depressive symptoms, which offered possible directions for family interventions to restore parental mental health during the COVID-19 pandemic.

Prevalence of depressive symptoms among parents

The prevalence of maternal depressive symptoms was 21.4%, with 11.6% reporting moderate to severe depressive symptoms; the prevalence of paternal depressive symptoms was 19.6%, with 10.6% reporting moderate to severe depressive symptoms. Furthermore, this study reported

that 9.5% of the families with fathers and mothers met the criteria for mild to moderate depressive symptoms. This finding was in line with the result of a systematic review (Xiong et al., 2020), which reported that the prevalence of depressive symptoms ranged from 14.6% to 48.3% during the COVID-19 pandemic. It further supported the research on the prevalence of depressive symptoms in the general population (30.3%) during the COVID-19 pandemic in China (Wang, Pan, et al., 2020; Wang, Zhang, et al., 2020). Meanwhile, the prevalence of parental depressive symptoms was higher than the previously estimated 1-year prevalence (3.6%–7.2%) of depressive symptoms among the general population prior to the pandemic (Xiong et al., 2020). Therefore, this study highlighted the significant impact of COVID-19 on mental health.

Unique actor effect of family-to-work conflict

Paternal and maternal family-to-work conflict were related to their own depressive symptoms (actor association) after accounting for work-to-family conflict, whereas work-to-family conflict was not related to depressive symptoms among fathers and mothers after accounting for family-to-work conflict. This result showed that family-to-work conflict exerted a greater effect on parental depressive symptoms than work-to-family conflict in the context of the COVID-19 pandemic. Family-to-work conflict was likely to be related to job performance (Allen et al., 2000; Bernardi, 2013) because a greater demand of family-related responsibilities was associated with a higher degree of absenteeism at work. However, excessive family demands and responsibilities were also related to overall stress, which ultimately led to psychological problems (Anderson et al., 2002; Vaziri et al., 2020). The COVID-19 outbreak and pandemic have intensified the number of new and challenging demands and responsibilities in the family domain (Wang, Pan, et al., 2020; Wang, Zhang, et al., 2020). For example, parents must spend ample time and energy to ensure that their children are cared for properly and are safe; moreover, they must monitor their children's online learning process amid the school shut-downs during workdays (Fisher et al., 2020; Lucie et al., 2020). This added responsibility may interfere with their normal work. Therefore, the tension and stress in family and work would increase synchronously as the family responsibilities changed (i.e., incompatibility between family and work), resulting in the occurrence of depressive symptoms among parents. However, future research is warranted to gain more solid evidence for the actor effect of family-to-work conflict.

Significant moderation effect of undermining coparenting

Furthermore, the current study revealed that the actor association of maternal family-to-work conflict and depressive symptoms was moderated by undermining coparenting, showing that high levels of undermining coparenting exacerbated the negative actor association of maternal family-to-work conflict and depressive symptoms. Undermining coparenting refers to parents' disagreement, conflict, and disparagement in parenting a child, which has been considered a threat to family outcomes (Zou et al., 2020). High undermining coparenting represents a high level of physical or emotional risk to the child and parents (Harold & Sellers, 2018), which further intensify the negative effects of family-to-work conflict on depressive symptoms. Therefore, this study further clarified the condition under which the actor effect of maternal

family-to-work conflict on depressive symptoms occurred. The actor association between paternal family-to-work conflict and depressive symptoms was not affected by supportive and undermining coparenting, thus representing a wide impact of family-to-work conflict on paternal depressive symptoms regardless of coparenting. This result also supported the notion that fathers appeared to be more vulnerable to negative factors related to family than mothers because of the vagueness and uncertainty of the father's role identity (Parke & Cookston, 2019; Ponnet et al., 2013). Future research is needed to gain more insights into the observed gender differences.

The partner association of work-family conflict and parental depressive symptoms was not observed in the main APIM. However, the moderation effect model showed that maternal work-to-family conflict and family-to-work conflict were related to paternal depressive symptoms in different levels of undermining coparenting. Specifically, maternal work-to-family conflict was positively related to paternal depressive symptoms when the undermining coparenting was high, and maternal family-to-work conflict was positively related to paternal depressive symptoms when the undermining coparenting was low. Therefore, this study revealed the existence of the partner association of maternal work-family conflict and paternal depressive symptoms and further clarified its conditions. Future research should continue to explore this topic for a more profound understanding. Moreover, the study further supported the notion of fathers' mental health vulnerability (Cummings et al., 2010), because the partner association of paternal work-family conflict and maternal depressive symptoms was not significant in any level of supportive and undermining coparenting.

Maternal work-to-family conflict and family-to-work conflict increased paternal depressive symptoms (partner association) at different levels of undermining coparenting. High levels of undermining coparenting exacerbated fathers' depressive symptoms, which was consistent with the hypothesis in the current study. We speculated that this may be because undermining coparenting increased the stress from mothers' loss of family involvement and resources due to work. However, the direction of the effect of the moderation role of undermining coparenting on the relationship between maternal family-to-work conflict and paternal depressive symptoms was opposite to the hypothesis. That is, undermining coparenting buffered the negative effect of maternal family-to-work conflict on paternal depressive symptoms, showing that maternal family-to-work conflict was not related to paternal depressive symptoms at a high level of undermining coparenting. One possibility for this trend may be that for families with high interparental conflict and low relationship satisfaction, fathers might not feel guilty about their spouse's interference with work due to high involvement in the family. Fujimoto et al. (2014) also used this mechanism to interpret the unexpected negative association of paternal work-to-family conflict and depression when their spouse was highly involved in work.

Finally, this study found that supportive coparenting has a significant moderation effect on the actor association between paternal work-to-family conflict and fathers' depressive symptoms. Paternal work-to-family conflict was not related to fathers' depressive symptoms when supportive coparenting was high. However, this relationship was significantly negative when this type of coparenting was low. Similarly, fathers' guilt might also account for this finding. Low supportive coparenting indicated low behavioral and emotional warmth between fathers and mothers (Harold & Sellers, 2018), which may emphasize the gendered division of domestic and productive activities in family (Shek & Sun, 2014). Fathers with high work-to-family conflict realized the imbalance between work and family, but their commitment to work and achievements in the organization might reduce the guilt for not being able to serve their family

in this low-warmth family atmosphere, exhibiting a protective effect on depressive symptoms. Future research should continue to explore this issue to test its repeatability and create a more profound understanding.

Implications

The study has implications for promoting targeted practice activities in improving parents' mental health during the COVID-19 pandemic. First, the prevalence of depressive symptoms of parents was relatively high, which highlighted the significant impact of COVID-19 on parental mental health and suggested that work, family, community, hospitals, and governments should strengthen cooperation and strive to establish effective intervention strategies and techniques for improving parents' mental health in this special period. Second, considering the effect of family-to-work conflict on parental depressive symptoms, developing intervention programs to help working parents reduce the challenging demands from the family caused by social distancing measures, such as school shutdowns, may be an important intervention direction. Third, intervention programs aimed at improving parental mental health through helping parents balance their competing demands from work and family must take account of the coparenting relationship. For example, in high-conflict families, efforts to decrease the level of work-to-family conflict could alleviate the depressive symptoms that manifest among fathers, whereas, in low-conflict families, reducing the interference of family to the work is an effective intervention.

Limitations

This study recruited paired fathers and mothers to complement the lacking study on the prevalence of parental depressive symptoms. It also examined the actor and partner association of work-family conflict and parental depressive symptoms by using the APIM and clarified the conditions of these effects. However, certain limitations must be acknowledged. First, the current study used a self-reported method to measure the main variables. On the one hand, this method may allow parents to underestimate the level of work-family conflict owing to social desirability. On the other hand, the self-reported depressive symptoms do not reflect a clinical diagnosis of depression. Second, this research was a cross-sectional study. The association between work-family conflicts and parental depressive symptoms cannot be regarded as a causality in the current study. Meanwhile, this association can also be understood from the opposite perspective of this study, that is, parents' bad emotional state (i.e., depression) makes it difficult for them to balance the relationship between work and family. A longitudinal study should be undertaken to validate the conclusions. Third, the correlation between work-to-family conflict and family-to-work conflict was high in the current study. These two dimensions were highly correlated but differ conceptually and empirically (Byron, 2005). Simultaneously, the current study ruled out the influence of multicollinearity (all the values of the variance inflation factor were less than three). However, whether this high correlation affects the outcome completely remains uncertain. Fourth, this study did not measure variables before the pandemic. Therefore, it cannot examine the negative effect of the pandemic on parental mental health directly and control the effect entailed by pre-pandemic factors. Finally, the current study only explored the moderation effect of family factors (i.e., supportive and undermining

coparenting) on the relationship between work-family conflict and parental depressive symptoms. Therefore, the moderation effect of the characteristics of the work domain (e.g., job demands and flexibility) and the child (e.g., age) on this relationship is unclear.

CONCLUSIONS

The current study found a high prevalence of depressive symptoms among fathers and mothers during the COVID-19 pandemic in China. Parental family-to-work conflict was associated with their own depressive symptoms. Specifically, the actor association between family-to-work conflict and depressive symptoms of mothers was significant only when the undermining coparenting was at high, whereas this association among fathers was not affected by undermining coparenting. The partner effects of maternal work-to-family conflict and family-to-work conflict on paternal depressive symptoms were moderated by undermining coparenting. Meanwhile, the moderation effect of supportive coparenting was significant only in the actor association of paternal work-to-family conflict and depressive symptoms. Therefore, the current study revealed the unique effect of parental family-to-work conflict on their own depressive symptoms and highlighted the moderated effect of coparenting, especially for undermining coparenting.

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ETHICS STATEMENT

This study was approved by the Ethics Committee of Beijing Normal University.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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