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FAMILY PROCESS

ORIGINAL ARTICLE

Associations between parents' and grandparents' depressive symptoms, intergenerational coparenting relationships, and (grand)parenting behaviors: An actor–partner interdependence mediation model

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Abstract

Intergenerational coparenting has become an increasingly common family phenomenon across the globe. In this study, we examined the associations among depressive symptoms, perceptions of intergenerational coparenting relationships, and (grand)parenting behaviors. Participants were parents and grandparents most involved in child care from 464 Chinese coparenting families sampled in urban China. The results from a test of the actor–partner interdependence mediation model showed that the depressive symptoms of parents and grandparents were indirectly and positively related to their harsh discipline of children or negatively related to their supportiveness toward children, and the association was mediated via their own perceptions of the coparenting relationship. In addition, parents' depressive symptoms were indirectly and positively related to grandparental harsh parenting or negatively related to grandparental supportive parenting through grandparents' perceived coparenting relationship. Grandparents' depressive symptoms were indirectly and positively related to parental harsh parenting or negatively related to parental supportive parenting through parents' perceptions of the coparenting relationship. This study highlights the importance of uncovering the processes and dynamics of parent–grandparent coparenting practices through a lens of family systems and interdependence theories as well as a dyadic approach. It also has practical implications for family interventions in the context of intergenerational coparenting. Specifically, this study recommends parallel (grand)parenting intervention sessions for parents and grandparents simultaneously to benefit the well-being of all three generations.

KEYWORDS
depressive symptoms, dyadic, harsh discipline, intergenerational coparenting, parenting behavior

INTRODUCTION

Intergenerational coparenting is defined as "joint caregiving by parents and grandparents" for children (Bai et al., 2022). Influenced by the collectivist family culture, intergenerational coparenting has historically been a prevalent phenomenon in many Asian families (Bai et al., 2022; Hoang et al., 2020). China has a long tradition of intergenerational coparenting, and grandparents are commonly involved in intensive child care (Chen et al., 2011). In addition, the rising rate of women's labor force participation and limited formal child care services (particularly for children under 3 years old) have led many grandparents to become the alternative caregivers of young children (Li & Liu, 2020). It was estimated that 66.5% of grandparents in China are involved in taking care of grandchildren (Li et al., 2016). In the context where childrearing practices involve extended family members as one of primary child caregivers, researchers suggested an expanded view from the original parental coparenting framework to include other co-caregivers, especially grandparents, considering the impact that cohesive coparenting networks may have on child development (Bai et al., 2022; Goh & Kuczynski, 2010; Kurrien & Vo, 2004).

Compared with parental coparenting, parent–grandparent coparenting is more complicated and stressful because of the multiple interactions across generations. Moreover, intergenerational coparenting may involve more parenting conflicts between the parents and grandparents, which are likely largely related to disagreements about parenting skills and child education that are based on differences in values, experiences, and beliefs (Li & Liu, 2020). Therefore, family process in the intergenerational coparenting context deserves substantial attention because it may clarify the connections between individual characteristics and multigenerational outcomes. Feinberg (2003) conceptually proposed that, in coparenting families, the individual child caregiver's characteristics—including, but not limited to, mental health—can influence the quality of coparenting relationships and thus directly influence parenting. The evidence from qualitative focus group interviews among Chinese parents and grandparents indicated that intergenerational coparenting relationship was closely associated with emotional distress of both parties, and might further have a negative impact on the development of the (grand)children (Leung & Fung, 2014). However, not much is known quantitatively about how exactly parents and grandparents mutually influence each other in the coparenting process and how a person's mental health status and coparenting interactions are related to their parenting practices.

Caregiver mental health and (grand)parenting behaviors

Parenting behavior is one of the most important determinants of child development (Rose et al., 2018). Two main types of parenting behaviors have been defined in the literature: (a) parental control (e.g., harsh discipline) and (b) parental supportiveness (Kuppens & Ceulemans, 2019). Harsh discipline (e.g., verbal punishment, physical punishment, and psychological control) by parents and grandparents can negatively affect a child's behavioral outcomes (Pinquart, 2017). Caregivers' supportiveness (e.g., sensitivity, responsiveness, and affection) has been found to be related to positive developmental outcomes for children and a protective factor for risk behaviors (Bean et al., 2006). Despite its negative effect on child

development (e.g., Wang & Kenny, 2014), harsh discipline has been utilized by parents across the world (World Health Organization, 2002). According to a survey of 2518 father–mother dyads of children ages 3–15 years in China, approximately 50% of them admitted using corporal punishment with their children (Wang & Liu, 2014).

Mental health status influences parenting behaviors, which can in turn become a risk factor for child development (Bryant et al., 2018). An optimal mental health status of the parents is one precondition for positive and supportive parenting (Newland, 2015). Parents who are psychologically worse off are more likely to choose a controlling style of parenting. A meta-analysis of 63 studies revealed that, in nonclinical populations, parental negative affect is a predictor of harsh parenting practices (Rueger et al., 2011). Moreover, a higher level of parenting stress is positively associated with a higher likelihood of engaging in harsh discipline (Anthony et al., 2005). A similar result was confirmed among Chinese parents (Liu & Wang, 2015). The underlying mechanism might be that parents with a worse emotional status could be more easily irritated by children's misbehavior and thus are more likely to adopt harsh discipline practices (Liu & Wang, 2015).

Mental health, coparenting relationships, and parenting behaviors

In the context of coparenting, a caregiver's mental health may affect not only their parenting behaviors but also the coparenting relationship. Feinberg (2003) conceptually demonstrated that parental depressive symptoms, as one of the essential individual characteristics, can lead to a different quality of coparenting relationship. Depression is one of the most prevalent mental health problems and remains a global public health challenge (Commission on Social Determinants of Health, 2008). Throughout the child-rearing and parenting process, adult depression has a significant impact on children's development, including, but not limited to, their physical, social, and behavioral health as well as cognitive functioning (Huang et al., 2017; Lee et al., 2007; Minkovitz et al., 2005). Because of the interdependence of caregivers in coparenting families, one caregiver's depression may be related to both their own and their coparenting partner's perceptions of the coparenting relationship (Williams, 2018). Caregivers' depression may lead to personal negative behaviors, including withdrawal from their partners, which creates barriers to a healthy coparenting relationship (Feinberg, 2003). Research conducted in China also has highlighted the role of depressive symptoms in poor-quality coparenting relationships (e.g., Ju et al., 2021; Yu, 2021).

The quality of coparenting relationship might influence the parenting behaviors of persons involved in the coparenting process. A shared child-rearing responsibility influences factors such as intergenerational communications and generational boundaries, and further affects related family outcomes, such as parenting efficacy (Xiao & Loke, 2022). Parents who are in a poor-quality coparenting relationship are more likely to resort to harsh discipline and have lower levels of sensitivity during parent–child interactions (Feinberg et al., 2007). Research among African American families has shown that that in mother–grandmother coparenting relationships, conflict was a risk factor for children's problematic behavior, and the relationship was indirectly mediated via mothers' negative parenting behaviors (Banett et al., 2012).

Theoretical perspectives for understanding intergenerational coparenting

According to family systems theory (Minuchin, 1998), interpersonal relationships in families cannot be understood in isolation but must be examined within the family system. Goh and Kuczynski (2010) emphasized the importance of investigating intergenerational

coparenting coalitions as a culturally appropriate subsystem unit for analysis, namely, the interaction between grandparents and parents as joint caregivers of a child. The *spillover effect* (Erel & Burman, 1995), derived from family systems theory, suggests that the emotions, moods, and affect experienced in relation to one subsystem relationship (e.g., interparental relationship) can transfer to a person's reactions in a different subsystem relationship (e.g., parent–child relationship). The spillover hypothesis has been examined in both parental coparenting context (e.g., Gerard et al., 2006; Parkes et al., 2019), and parent–grandparent coparenting context (e.g., Goh & Kuczynski, 2010; Zou et al., 2020). For instance, the competitive mother–grandmother coparenting would spill over to mother–child relationship (Goh & Kuczynski, 2010). In addition, interdependence theory provides clues for understanding the mutual influence of experiences, perceptions, and emotional closeness in the context of intergenerational coparenting practices (Conn et al., 2013). It proposes that members in a relational context always influence each other's behaviors and, as a result, each person has specific perceptions of the experience and relationship quality (Polenick et al., 2017; Rusbult & Buunk, 1993). In the context of intergenerational coparenting, caregivers and their coparenting partners may have their own interpretations of and feelings about the coparenting relationship, and their perceptions of the relationship may not only influence their own (grand)parenting behaviors but also may interfere with their partners' behaviors, and vice versa. On the basis of the aforementioned theoretical perspectives, it is essential to investigate (grand)parenting behaviors in a dyadic coparenting context whereby parents and grandparents mutually influence each other and lead to a sequence of individual and family outcomes.

The present study

In this study, we aimed to investigate the mediating role of the perceived intergenerational coparenting relationship on the associations between parents' and grandparents' depressive symptoms and their (grand)parenting behaviors in a dyadic context. Based on family systems and interdependence theories and prior empirical research, we proposed the conceptual framework of this study (Figure 1). We proposed four research hypotheses:

Hypothesis 1. For both parents and grandparents, depressive symptoms would be positively associated with their own (H1a) and their partners' (H1b) harsh discipline toward the cared children and negatively related to their own (H1c) and their partners' (H1d) supportiveness to children.

Hypothesis 2. For both parents and grandparents, depressive symptoms would be negatively associated with their own (H2a) and their partners' (H2b) perceived coparenting relationship.

Hypothesis 3. For both parents and grandparents, the perceived coparenting relationship would be negatively associated with their own (H3a) and their partners' (H3b) harsh discipline toward the children and positively related to their own (H3c) and their partners' (H3d) supportiveness of the children.

Hypothesis 4. For both parents and grandparents, the perceived coparenting relationship would mediate the effects of depressive symptoms on their own (H4a) and their partners' (H4b) harsh discipline toward children and would mediate the effects of depressive symptoms on their own (H4c) and their partners' (H4d) supportiveness to children.

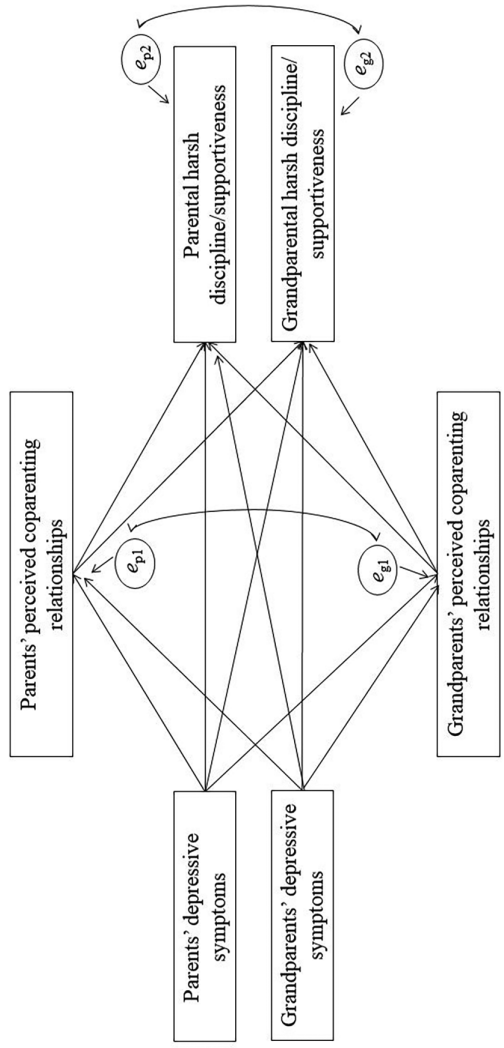

FIGURE 1 Hypothesized associations among parents' and grandparents' depressive symptoms, parent–grandparent coparenting relationships and (grand)parenting behaviors.

METHOD

Participants and procedure

We collected data about intergenerational coparenting relationships in urban Chinese families with the following inclusion criteria: (a) the children were 1–3 years old, (b) the parents took care of the child together with at least one grandparent, and (c) the grandparents undertook parts of the responsibilities of childrearing (e.g., daily care, discipline, and play) and provided at least 12 h of child care per week. We focused on children aged 1–3 years because early child development before age three is very vital as a golden period for influencing a child's outcome (Cusick & Georgieff, 2016). Due to limited formal care services available for children under 3 years old in China, nurturing care given by family members and family dynamics are particularly important for children's development at this age. In addition, prior research has indicated the necessity of distinguishing infants and toddlers

when discussing parenting behaviors (Bornstein, 2005). In the present study, we paid particular attention to parental and grandparental parenting behaviors of toddlers. We invited each eligible family to specify one parent and one grandparent who were most involved in intergenerational coparenting and to fill in their specific versions of questionnaires based on the selection of parent–grandparent coparenting dyads. Participants were recruited from the cities of Shanghai and Tianjin in China from April to November 2021. Shanghai and Tianjin are both province-level municipalities located in the east and northeast of China, respectively. The research protocol was approved by the research ethical committee of the first author's affiliated institution.

Using convenience sampling, in each city, we included 15 nursery institutions and early childhood education centers from eight administrative districts. Note that these institutions provide daily care services to children at or under 3 years old, but usually in a way of providing early childhood education classes only half a day at most every day when either parents or grandparents have to attend these classes with children together. At each research site, we received permission from directors and, with the help of class teachers, distributed the recruitment introduction material to children's parents or grandparents. A total of 735 parents and 677 grandparents nested in 800 eligible families participated in the study. Among them were 435 families from Shanghai and 365 from Tianjin. We excluded 58 families in Shanghai because respondents in these families were interviewed with a different scale of depressive symptoms, which was a key variable in this study. Two families were dropped because the children were under 1 year old. Both parents and grandparents completed individual questionnaires in 495 families, yielding 495 intergenerational coparenting dyads. Among them, parents in 489 families were currently married and only six families were single-parent families due to parents' divorce or separation. The latter group was too small to compare with. Therefore, we chose to focus on intact families with two parents in the present study. We further restrained our dyadic samples to 489 dyads by parents' marital status. Finally, after dropping dyads with missing values for the key variables in the analytical model (5.11%), we had a final sample of 464 parent–grandparent coparenting dyads.

In the final working sample, most of the children were boys (51.72%) that were taken care of by parents and grandparents jointly. The children were 30.89 months old on average (SD = 7.24, Range = 12–42). The most popular parent–grandparent coparenting dyads were mother–paternal grandmother (36.42%) and mother–maternal grandmother coparenting dyads (36.42%). Among the parent–grandparent coparenting dyads, only 16.81% of the parents were fathers; 68.10% of the participating parents and grandparents lived together. The average age for parents and grandparents was 34.39 years (SD = 4.11) and 61.63 years (SD = 5.80), respectively. More details of the sample characteristics are presented in Table 1.

Survey procedure

Because of different local COVID-19 epidemic prevention and control policies, we conducted the survey in slightly different ways in Shanghai and Tianjin. In Shanghai, for families who were willing to participate, trained researchers interviewed parents or grandparents on site with their specific version of questionnaire when they came to research sites to accompany their children to early childhood education classes. The interviewees then were asked to bring the other version of questionnaire in an envelope to their intergenerational coparenting partners so they could fill it out at home. The completed questionnaires were required to be returned in sealed envelopes to teachers next day. In Tianjin, because outsiders were forbidden to enter the research sites due to COVID-19 control measures, we asked the teachers to distribute the study materials to participants. Parents and grandparents were required to fill in the

TABLE 1 Descriptive statistics of sample characteristics.

Variable	*n*	*M* (SD)/%
Parents' age	456	34.39 (4.11)
Parents' gender	464	
Mother	386	83.19
Father	78	16.81
Parents' health[a]	464	3.12 (1.00)
Parents' hours spent on child care per day	464	6.86 (5.27)
Parents' educational levels[b]	464	
Low	4	0.86
Middle	24	5.17
High	436	93.97
Grandparents' age	463	61.63 (5.80)
Grandparents' gender	464	
Grandmother	401	86.42
Grandfather	63	13.58
Grandparents' health[a]	463	2.68 (0.93)
Grandparents' hours spent on child care per day	461	8.17 (5.34)
Grandparents' marital status	464	
Having a married/cohabitating partner	415	89.44
Divorce/Separation/Widowhood	49	10.56
Grandparents' educational levels[b]	464	
Low	174	37.50
Middle	193	41.59
High	97	20.91
Parent–grandparent coparenting dyad	464	
Mother—maternal grandmother	169	36.42
Mother—maternal grandfather	23	4.96
Mother—paternal grandmother	169	36.42
Mother—paternal grandfather	25	5.39
Father—-maternal grandmother	21	4.53
Father—maternal grandfather	3	0.65
Father—paternal grandmother	42	9.05
Father—paternal grandfather	12	2.59
Parent–grandparent coresidence	464	
Living together	316	68.10
Not living together	148	31.90
Household income last year[c]	464	7.77 (2.80)
Number of children	464	1.31 (0.55)
Child gender	464	
Boy	240	51.72
Girl	224	48.28

(Continues)

TABLE 1 (Continued)

Variable	*n*	*M* (SD)/%
Child age in months	464	30.89 (7.24)
Sample city	464	
Shanghai	248	53.45
Tianjin	216	46.55

[a]Rated from 1 (poor) to 5 (very healthy).
[b]Categorized into three groups: Low = junior high school or below, Middle = senior middle school or junior college, High = college or above.
[c]Rated from 1 (<7000 RMB) to 11 (500,000 RMB and above).

consent forms and their corresponding questionnaires at home independently and return them in sealed envelopes to teachers within 1 week. A gift was provided to express appreciation for the families' participation.

Measures

Depressive symptoms

Parents and grandparents reported their depressive symptoms using a 20-item version of the Center for Epidemiological Studies Depression scale (CES–D, Cronbach's $\alpha = 0.89$ for parents and Cronbach's $\alpha = 0.87$ for grandparents; Radloff, 1977). The CES–D scale has been validated and widely used among Chinese samples (Zhang et al., 2010). Respondents were asked to report the frequency of occurrence of feeling depressed, guilty, worthless, hopeless, and so on, in the past week. All of the items were rated on a four-point scale that ranged from 1 (*rarely or none of the time*) to 4 (*most or all the time*). An example of a CES–D item is "I felt depressed." We summed the 20 items by reverse scoring the negative ones. The additive score ranged from 20 to 67 for parents ($M = 30.37$, SD = 7.96) and from 20 to 74 for grandparents ($M = 28.98$, SD = 7.64). Higher scores indicate a higher level of depressive symptoms.

Parent–grandparent coparenting relationship

Parents and grandparents rated their own coparenting relationship with the Grandparents–Parents Coparenting Relationship Scale, which was derived from the revision of Feinberg's (2003) Coparenting Relationship Scale. The Grandparents–Parents Coparenting Relationship Scale is intended to measure the intergenerational coparenting relationship and has been well validated in Chinese samples, with good reliability (Li & Wei, 2018). The scale consists of 38 items in seven dimensions: (a) coparenting agreement, (b) coparenting closeness, (c) exposure of child to conflict, (d) coparenting support, (e) undermining coparenting, (f) endorsement of partner's parenting, and (g) division of labor. Parents and grandparents rated each item on a seven-point Likert scale that ranged from 1 (*not true*) to 7 (*very true*). Sample items include "The grandparent does not trust my abilities as a parent," in the parents' questionnaire, and "The parent does not trust my abilities as a grandparent," in the grandparents' questionnaire. In this study, the Cronbach's α value of the scale was 0.94 for parents' reports ($M = 5.37$, SD = 0.81) and 0.89 for grandparents' reports ($M = 5.41$, SD = 0.67). The mean score of the scale was used as an indicator of the quality of the parent–grandparent coparenting relationship. Higher scores indicate a better parent–grandparent coparenting relationship.

Parenting behaviors

Parenting behaviors was assessed in two dimensions, namely, harsh discipline and supportiveness. Parents and grandparents reported their parenting behaviors using the two subscales of the Chinese version of Comprehensive Early Childhood Parenting Questionnaire, which has been validated among Chinese parents with children ages 1–4 years (Dong et al., 2021). The Harsh Discipline subscale consists of 12 items related to verbal punishment, physical punishment, and psychological control (Cronbach's $\alpha = 0.87$ for parents and 0.83 for grandparents, respectively). The Support subscale consists of 13 items related to sensitivity, responsiveness, and affection (Cronbach's $\alpha = 0.94$ for parents and 0.91 for grandparents, respectively). Parents and grandparents reported the frequency of engaging in each parenting behavior (e.g., "I tell my [grand]child that she or he should be ashamed when she or he misbehaves") on a six-point scale that ranged from 1 (*never*) to 6 (*always*). The average score of each subscale was used as an indicator of (grand)parents' use of harsh discipline ($M = 2.20$, SD = 0.77 for parents, $M = 2.23$, SD = 0.78 for grandparents) and supportiveness ($M = 5.06$, SD = 0.66 for parents, $M = 4.91$, SD = 0.74 for grandparents) to their (grand)children. Higher scores indicate a higher level of harsh discipline or supportiveness.

Covariates

We controlled for parental gender (1 = mother), household income in the past year, and grandparents' education levels (1 = low level [i.e., primary and junior middle school], 2 = middle level [i.e., senior middle school], and 3 = high level [i.e., junior college, college, master's degree, doctoral degree]). In a preliminary analysis, we also controlled for parents' and grandparents' health status, age, co-residence status and hours spent on child care per day, parents' educational levels, grandparents' gender and marital status, types of parent–grandparent coparenting dyad, number of children, the cared children's age and gender, and sample city. However, inclusion of these variables did not change the interpretation of our findings and also undermined the model fit. Therefore, we excluded them when we considered the model fit and the principle of parsimony.

Analytical strategy

We used the actor–partner interdependence mediation model (APIMeM; Ledermann et al., 2011) to examine associations among depressive symptoms, the parent–grandparent coparenting relationship, and parenting behaviors in a parent–grandparent coparenting dyadic context. The APIMeM is an extension of the actor–partner interdependence model, which allows one to examine the effect of one's own characteristics on the subsequent outcomes (*actor effect*, e.g., parents' depressive symptoms are associated with their own parenting behaviors), as well as the effect of one's own characteristics on their partner's outcomes (*partner effect*, e.g., parents' depressive symptoms are associated with grandparents' parenting behaviors). Moreover, the APIMeM is useful when investigating the mediating effects of parents' and grandparents' perceived coparenting relationships in a dyadic context. We used structural equation modeling with observed variables to test the aforementioned direct and indirect effects, using Mplus 8.

The final analysis was based on a sample of 464 parent–grandparent coparenting dyads without missing data in terms of the key variables of interest and covariates in the model. We first counted the skewness and kurtosis estimates for all mean scores of the primary variables to examine the assumption of normal distribution (skewness = −1.33–1.77,

kurtosis = 2.57–8.09). To evaluate model fit, we referred to the following five parameters to indicate a good model: (a) χ^2 value (nonsignificant), (b) comparative fit index (CFI; ≥0.95), (c) Tucker–Lewis Index (TLI; ≥0.95), (d) root-mean-square error of approximation (RMSEA; ≤0.06), and (e) standardized root-mean-square residual (SRMR;<0.08; Hu & Bentler, 1999). Furthermore, we performed a bootstrap resampling method using 5000 replications to correct the results for non-normality and to determine the significance of the mediation effects. The significance of indirect effects was derived from their 95% confidence intervals (CIs), which did not include zero (Enders, 2010). We specified parents' and grandparents' depressive symptoms as predictors, their perceived intergenerational coparenting relationships as mediators, and parental and grandparental harsh discipline or supportiveness as outcome variables in the APIMeM model.

RESULTS

Correlation analysis

The correlation matrix of key variables is displayed in Table 2. For both parents' and grandparents' reports, depressive symptoms were negatively associated with their own ($r = -0.39$, $p < 0.001$, for parents; $r = -0.49$, $p < 0.001$, for grandparents) and their partners' perceived coparenting relationships ($r = -0.33$, $p < 0.001$, for parents; $r = -0.38$, $p < 0.001$, for grandparents). Parents' and grandparents' higher levels of depressive symptoms were associated with higher levels of their own ($r = 0.25$, $p < 0.001$, for parents; $r = 0.24$, $p < 0.001$, for grandparents) and their partners' harsh discipline of children ($r = 0.17$, $p < 0.001$, for parents; $r = 0.28$, $p < 0.001$, for grandparents). In contrast, parents' and grandparents' depressive symptoms were negatively associated with their own ($r = -0.24$, $p < 0.001$, for parents; $r = -0.34$, $p < 0.001$, for grandparents) and their partners' supportiveness of children ($r = -0.18$, $p < 0.001$, for parents; $r = -0.12$, $p < 0.01$, for grandparents). In addition, parents' and grandparents' perceived coparenting relationships were positively correlated with their own ($r = 0.33$, $p < 0.001$, for parents; $r = 0.42$, $p < 0.001$, for grandparents) and their partners' supportiveness ($r = 0.35$, $p < 0.001$, for parents; $r = 0.26$, $p < 0.001$, for grandparents) and negatively related to their own ($r = -0.29$, $p < 0.001$, for parents; $r = -0.36$, $p < 0.001$, for grandparents) and their partners' harsh discipline of children ($r = -0.23$, $p < 0.001$, for parents; $r = -0.27$, $p < 0.001$, for grandparents).

APIMeM results

Harsh discipline

The APIMeM results for parental and grandparental harsh discipline are depicted in Figure 2. The model fit the data adequately, $\chi^2(8) = 17.24$, $p = 0.028$; RMSEA = 0.050, 90% CI [0.016, 0.082]; CFI = 0.982; TLI = 0.932; SRMR = 0.028.

Parents' depressive symptoms were directly related to their own harsh discipline (H1a, $\beta = 0.13$, $p < 0.05$) but not to grandparental harsh discipline (H1b, $\beta = 0.05$, $p = 0.402$). Grandparents' depressive symptoms were not directly associated with their own harsh discipline (H1a, $\beta = 0.07$, $p = 0.292$) but were positively associated with parental harsh discipline (H1b, $\beta = 0.13$, $p < 0.05$). Parents' and grandparents' depressive symptoms were significantly associated with their own (H2a, $\beta = -0.29$, $p < 0.001$, for parents; $\beta = -0.42$, $p < 0.001$, for grandparents) as well as with their partners' perceived coparenting relationships (H2b, $\beta = -0.17$, $p < 0.01$, for parents; $\beta = -0.27$, $p < 0.001$, for grandparents). Parents' and grandparents' perceived coparenting relationships were significantly negatively related to their own harsh discipline (H3a, $\beta = -0.14$, $p < 0.01$, for

TABLE 2 Correlation matrix of key variables.

	M (SD)	1	2	3	4	5	6	7	8
1 Parents' depressive symptoms	30.37 (7.96)	—							
2 Grandparents' depressive symptoms	28.98 (7.64)	0.37***	—						
3 Parents' perceived coparenting relationships	5.37 (0.81)	−0.39***	−0.38***	—					
4 Grandparents' perceived coparenting relationships	5.41 (0.67)	−0.33***	−0.49***	0.51***	—				
5 Parental harsh discipline	2.20 (0.77)	0.25***	0.28***	−0.29***	−0.27***	—			
6 Parental supportiveness	5.06 (0.66)	−0.24***	−0.12**	0.33***	0.26***	−0.18***	—		
7 Grandparental harsh discipline	2.23 (0.78)	0.17***	0.24***	−0.23***	−0.36***	0.41***	−0.13**	—	
8 Grandparental supportiveness	4.91 (0.74)	−0.18***	−0.34***	0.35***	0.42***	−0.15**	0.08	−0.14**	—

**$p < 0.01$; ***$p < 0.001$.

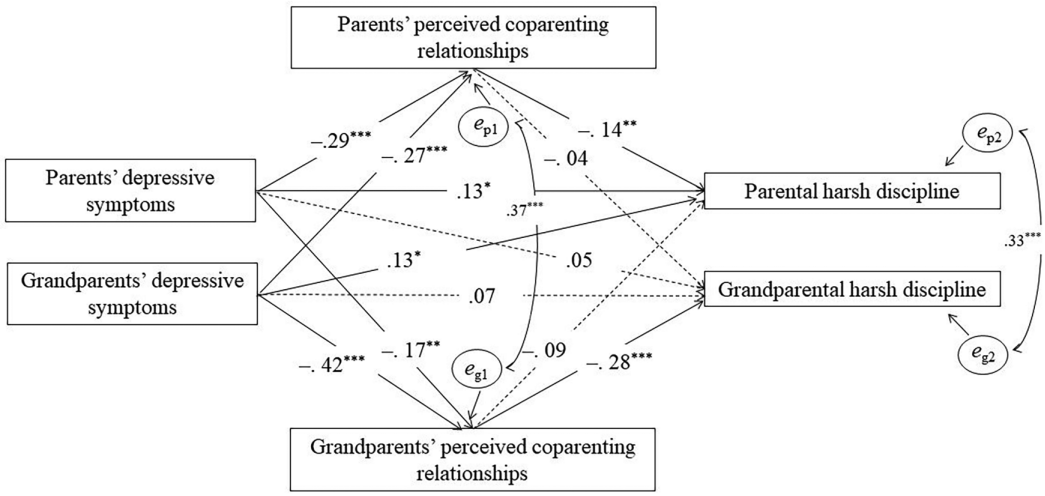

FIGURE 2 Standardized actor and partner associations of parents' and grandparents' depressive symptoms and harsh discipline through parent–grandparent coparenting relationships. The model includes parental gender, household income and grandparents' educational levels as control variables. Solid lines indicate statistically significant paths and dashed lines indicate non-significant paths. *$p<0.05$; **$p<0.01$; ***$p<0.001$.

parents; $\beta=-0.28$, $p<0.001$, for grandparents) but not significantly related to their partners' (H3b). Mediation analyses with bias-corrected bootstrapped CIs (see Table 3) showed that the associations between parents'/grandparents' depressive symptoms and their own harsh discipline (H4a) were mediated by their own perceived coparenting relationships ($\beta=0.04$, $p<0.05$, for parents; $\beta=0.12$, $p<0.001$, for grandparents). With regard to the partner effects (H4b), the relation between parents' depressive symptoms and grandparental harsh discipline was mediated by grandparents' perceptions of the coparenting relationship ($\beta=0.05$, $p<0.01$) but not by parents' perceptions of the coparenting relationship ($\beta=0.01$, $p=0.485$). The association between grandparents' depressive symptoms and parental harsh discipline was mediated by parents' perceptions of the coparenting relationship ($\beta=0.04$, $p<0.05$) but not by grandparents' perceptions ($\beta=0.04$, $p=0.177$).

Supportiveness

The APIMeM results for parental and grandparental supportiveness are shown in Figure 3. The model fit the data adequately, $\chi^2(8)=17.24$, $p=0.028$; RMSEA = 0.050, 90% CI [0.016, 0.082]; CFI = 0.983; TLI = 0.936; SRMR = 0.031.

Parents' and grandparents' depressive symptoms were directly related to their own supportiveness of children (H1c, $\beta=-0.12$, $p<0.05$, for parents; $\beta=-0.14$, $p<0.05$, for grandparents). However, their depressive symptoms were not directly related to their partners' supportiveness of children (H1d, $\beta=0.02$, $p=0.722$, for parents; $\beta=0.09$, $p=0.165$, for grandparents). Parents' and grandparents' depressive symptoms were significantly associated with their own perceptions of the coparenting relationship (H2a, $\beta=-0.29$, $p<0.001$, for parents; $\beta=-0.42$, $p<0.001$, for grandparents) as well as with their partners' perception of the coparenting relationship (H2b, $\beta=-0.17$, $p<0.01$, for parents; $\beta=-0.27$, $p<0.001$, for grandparents). In addition, parents' and grandparents' perceived coparenting relationships were significantly associated with their own supportiveness of children (H3c, $\beta=0.21$, $p<0.001$, for parents; $\beta=0.27$, $p<0.001$, for grandparents) as well as with their partners' supportiveness of children (H3d, $\beta=0.14$, $p<0.01$, for parents; $\beta=0.13$, $p<0.05$, for grandparents). Mediation analyses showed that the associations

TABLE 3 Results of actor-partner interdependence mediation models.

	Harsh discipline			Supportiveness		
Effect	***β***	**SE**	**Bias-corrected 95% CI**	***β***	**SE**	**Bias-corrected 95% CI**
Pdepressive symptoms→**P**parenting behaviors						
Direct effect	0.13*	0.06	[0.01, 0.24]	−0.12*	0.06	[−0.23, −0.002]
Total indirect effect	0.06**	0.02	[0.03, 0.10]	−0.09***	0.02	[−0.13, −0.05]
Pdepressive symptoms→**P**coparenting relationship→**P**parenting behaviors	0.04*	0.02	[0.01, 0.08]	−0.06**	0.02	[−0.11, −0.03]
Pdepressive symptoms→**G**coparenting relationship→**P**parenting behaviors	0.02	0.01	[−0.002, 0.04]	−0.02†	0.01	[−0.06, −0.005]
Gdepressive symptoms→**G**parenting behaviors						
Direct effect	0.07	0.06	[−0.05, 0.20]	−0.14*	0.07	[−0.28, −0.008]
Total indirect effect	0.13***	0.03	[0.07, 0.21]	−0.16***	0.03	[−0.23, −0.10]
Gdepressive symptoms→**G**coparenting relationship→**G**parenting behaviors	0.12***	0.03	[0.06, 0.20]	−0.12***	0.03	[−0.19, −0.07]
Gdepressive symptoms→**P**coparenting relationship→**G**parenting behaviors	0.01	0.01	[−0.02, 0.04]	−0.04*	0.02	[−0.08, −0.01]
Pdepressive symptoms→**G**parenting behaviors						
Direct effect	0.05	0.06	[−0.06, 0.16]	0.02	0.05	[−0.09, 0.13]
Total indirect effect	0.06**	0.02	[0.02, 0.11]	−0.09***	0.02	[−0.14, −0.05]
Pdepressive symptoms→**G**coparenting relationship→**G**parenting behaviors	0.05**	0.02	[0.02, 0.09]	−0.05**	0.02	[−0.08, −0.02]
Pdepressive symptoms→**P**coparenting relationship→**G**parenting behaviors	0.01	0.02	[−0.02, 0.04]	−0.04*	0.02	[−0.08, −0.01]
Gdepressive symptoms→**P**parenting behaviors						
Direct effect	0.13*	0.07	[0.01, 0.27]	0.09	0.06	[−0.04, 0.21]
Total indirect effect	0.08**	0.03	[0.03, 0.14]	−0.12***	0.03	[−0.17, −0.07]
Gdepressive symptoms→**P**coparenting relationship→**P**parenting behaviors	0.04*	0.02	[0.01, 0.07]	−0.06***	0.02	[−0.10, −0.03]
Gdepressive symptoms→**G**coparenting relationship→**P**parenting behaviors	0.04	0.03	[−0.01, 0.10]	−0.06*	0.02	[−0.11, −0.01]

Note: The standardized coefficients are reported.

Abbreviations: CI, Confidence interval; **P**, parents'; **G**, grandparents'.

†$p < 0.1$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

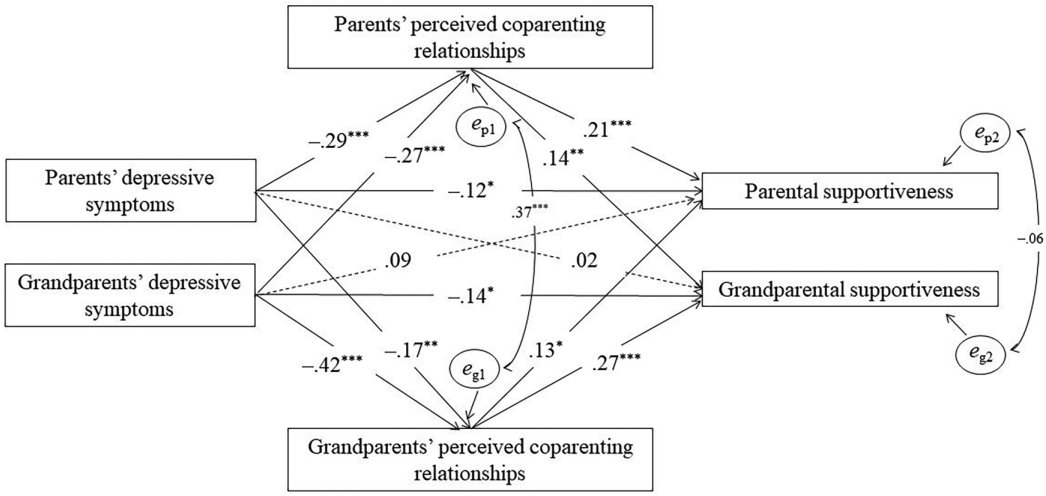

FIGURE 3 Standardized actor and partner associations of parents' and grandparents' depressive symptoms and supportiveness through parent–grandparent coparenting relationships. The model includes parental gender, household income, and grandparent's educational levels as control variables. Solid lines indicate statistically significant paths and dashed lines indicate non-significant paths. *$p<0.05$; **$p<0.01$; ***$p<0.001$.

between parents'/grandparents' depressive symptoms and their own supportiveness (H4c) were mediated not only by their own perceptions of the coparenting relationship ($\beta=-0.06$, $p<0.01$, for parents; $\beta=-0.12$, $p<0.001$, for grandparents) but also by their partners' perceptions of the relationship ($\beta=-0.02$, $p<0.10$, marginally, for parents; $\beta=-0.04$, $p<0.05$, for grandparents). In terms of partner effects (H4d), the relationships between parents'/grandparents' depressive symptoms and their partners' supportiveness were mediated not only by their own perceptions of the coparenting relationship ($\beta=-0.04$, $p<0.05$, for parents; $\beta=-0.06$, $p<0.05$, for grandparents) but also by their partners' perceptions of the relationship ($\beta=-0.05$, $p<0.01$, for parents; $\beta=-0.06$, $p<0.001$, for grandparents).

DISCUSSION

Using the data from two province-level municipalities, we examined intergenerational coparenting practices in urban China. With the application of the APIMeM, we tested the actor and partner effects of parents' and grandparents' depressive symptoms on their own and their coparenting partners' (grand)parenting behaviors, as well as the mediating role of the perceived coparenting relationship. This study extends the focus on antecedents of or impacts on intergenerational coparenting relationships, as examined in the extant literature, to the underlying family processes and dynamics. It highlights the importance of applying the perspectives of family systems and interdependence theories to deepen our understanding of intergenerational coparenting. Parents and grandparents undergo noticeable paths of mutual influences in relation to their experiences in the parent–grandparent subsystem as well as to their ensuing reactions in the (grand)parent–child subsystems.

Regarding the main direct path of the study, the significant actor effect of depressive symptoms on (grand)parenting behavior was partially confirmed (H1a and H1c). Parents with more depressive symptoms were more likely to be involved in harsh discipline and less likely to have a supportive parenting style. The finding is consistent with those of prior studies stating that parents with a worse mental health status are more likely to be involved in dysfunctional parent–child relationships and parenting behaviors (Steele & McKinney, 2020). In addition,

our findings suggest that grandparents with more depressive symptoms tend to provide lower levels of supportiveness to grandchildren. Grandparenting itself might be a risk factor for older adults' psychological well-being, which may decrease the possibility of positive grandparenting behaviors. According to a recent meta-analysis, older adults involved in grandparenting duties generally have worse mental health outcomes than their non-grandparenting counterparts (Kelley et al., 2021). Therefore, the burden and stress caused by the grandparenting workload may prevent the grandparent from applying a positive parenting approach. However, this does not mean that grandparents would turn to harsh grandparenting. We found that grandparents' depressive symptoms were not associated with harsh discipline toward the grandchildren. A tentative explanation might be that, compared with parents, grandparents are much less likely to discipline their grandchildren harshly and are more likely to spoil grandchildren (Sun & Jiang, 2017). Furthermore, compared with parents, grandparents are better able to cope with their emotions in response to childrearing and family conflict (Charles & Carstensen, 2006), so they may protect their grandchildren despite having depressive symptoms. Coparenting does not imply equal responsibility (Feinberg, 2003). In the context of intergenerational coparenting, even though parents normally take the leading roles, how the division of labor and differences in parenting styles between parents and grandparents influence children's development remains unknown, for future research to uncover. We found little partner effect in the relationship between depressive symptoms and (grand)parenting behavior for parents and grandparents, except that grandparents' depressive symptoms were significantly associated with parental harsh discipline (H1d). This suggests that grandparents' negative emotions may be more likely to transfer to parents, not vice versa. The first few years of parenting are stressful for new parents, especially in the context of COVID-19 (Taubman-Ben-Ari et al., 2021). The COVID-19 pandemic has been a significant risk factor to individuals' mental health. Compared to pre-pandemic, parents reported higher rates of mental health and parental behavior problems including depression, anxiety, stress, parenting irritability, and a decline in coparenting quality during the pandemic period (Feinberg et al., 2022; Westrupp et al., 2023). For families with depressed grandparents, the parents, as members of the "sandwich generation," may be under a dual burden to take care of both older and younger family members.

In terms of the indirect paths, we found that individual depressive symptoms were significantly associated with parents'/grandparents' own (H2a) and their partners' (H2b) perceptions of the coparenting relationship. Depressive symptoms might significantly affect the family dynamic by influencing the coparenting relationship. The finding indicates that the coparenting relationship might be delicate, and the mental health status of any coparenting caregivers in a family would have a remarkable influence on the coparenting relationship. Most of relevant literature on family settings mainly has focused on the associations between mental health problems and the quality of couple relationships (e.g., Li & Johnson, 2018; Whisman & Baucom, 2012). Attempts have been made to study mother–father coparenting settings, indicating that fathers' mental health has an influence on the quality of coparenting relationships (Price-Robertson et al., 2017). Our study extends the understanding of the significance of family members' mental health to the context of parent–grandparent coparenting.

With respect to the third set of hypotheses, we found that a better coparenting relationship was related to higher levels of parents'/grandparents' own (H3c) and their partners' (H3d) supportiveness of children. This finding echoes the basic assumption from family systems theory that the relationship experienced in the parent–grandparent coparenting subsystem would influence the subsystems consisting of the specific caregiver and the child. This finding also reveals a positive circle of the intergenerational coparenting relationship and caregivers' supportive parenting in the family child-rearing environment. Positive interactions between parents and grandparents may not only influence their own interactions with children but also transfer positively to their partners' interactions with children, which are, ultimately, beneficial to all family members. On the other hand, regarding the harsh discipline

(grand)parenting approach, only the actor effect (H3a), but not the partner effect (H3b), was confirmed. This suggests that when parents and grandparents take care of children together, the level of harsh (grand)parenting mainly depends on the actors. When the partners perceive a worse coparenting relationship, the actors may serve as a buffer against the transfer to the children of negative perceptions. These findings fit the Chinese intergenerational coparenting culture, in which children are always the center of the three-generational relationship, and protecting and maximizing the benefit to the children is always the core principle of intergenerational coparenting.

Our findings revealed the actor-mediating effect that parents'/grandparents' depressive symptoms were associated with their own coparenting behaviors, and this occurs via the influence of their perceptions of coparenting relationship. This conclusion applies to both types of parenting behaviors (harsh discipline and supportiveness) in this study and confirms the spillover effect (Erel & Burman, 1995) whereby, in an intergenerational coparenting relationship a person's level of depressive symptoms may be associated with a lower quality of the perceived coparenting relationship, and those experiences, emotions, and moods could transfer to the young children by means of different (grand)parenting behaviors. In addition, we found important partner-mediating effects. In terms of harsh (grand)parenting, parents'/grandparents' depressive symptoms were indirectly linked to their partners' parenting behaviors, through their partners' perceptions of the coparenting relationship; the same was observed for supportive (grand)parenting. These findings echo the interdependence theory's claim that people have mutual influences on each other regarding experiences and affections (Rusbult & Buunk, 1993). A person's mental health problems may lead to tense interactions, and this interdependence between parents and grandparents in a coparenting context may influence their (grand)parenting behaviors toward (grand)children.

Limitations and implications

This study has several limitations. First, the cross-sectional design prevents us from verifying causality among individual depressive symptoms, perceived coparenting relationship, and parenting behaviors. Future studies could use a longitudinal design to better interpret the direction of relationships among these variables. Second, the results cannot be generalized to intergenerational coparenting families with school-age children or older. The project mainly targeted intergenerational coparenting families with children ages 1–3 years, in which intergenerational family caregivers had to have a higher level of involvement in child care because of a current lack of formal child care services in China. The complexity of the family processes that underlie the effects of caregivers' mental health on parenting behaviors might be strengthened by more intensive coparenting interactions in such families with younger children. Last, but not least, this study used dyad-based convenience samples collected from the nursery institutions and early childhood education centers, which may overrepresent families where mothers and grandmothers are more involved in (grand)parenting. Future studies need to be more concerned with the sampling method to mitigate the potential effects of sample stratification on biased results. In addition, because the study samples were recruited from two relatively wealthier cities in China, whether the results can be generalized to families with a lower economic status, or located in other regions, remains unknown.

Despite these limitations, this study extends the previous literature by demonstrating the dyadic interdependence between parents and grandparents in terms of their mental health, perceived coparenting relationships, and (grand)parenting behaviors. It provides theoretical salience for understanding intergenerational coparenting practices by considering the mutual influences of individuals and subsystems within family. Given the prevalence of parent–grandparent coparenting practices in today's urban China, our study

highlights the importance of applying the intergenerational coparenting dyad as a localized analytical unit for contemporary Chinese families when studying individual and family adjustment in the child-rearing process. In addition, by focusing on two types of parenting behavior (i.e., supportiveness and harsh discipline), our study provided potential theoretical insights into other parenting behaviors (e.g., laxness, over-reactivity, and hostility, Arnold et al., 1993) in the context of intergenerational coparenting, which could be further studied in the future.

Furthermore, this study may provide insights for future intervention programs aimed at improving the nurturing environment for children and child development. First, to promote a better and more supportive nurturing environment, it calls for early screening of and intervention for caregivers with depressive symptoms. Individual caregivers' mental health could not only affect their own experiences in parenting but also be intertwined with their coparenting partners' adjustment, hence likely leading to undesirable family relations and child outcomes. Second, we suggest that traditional parenting programs (e.g., the Triple P —Positive Parenting Program; Sanders, 2012), which originally targeted only parents, should be culture-sensitive as in some societies, grandparents contribute substantially to childcare, especially during early childhood and thus grandparenting practices inevitably influence children's physical and psychological outcomes. In this sense, parenting programs should also be extended to grandparents where necessary. Future interventions could conduct parallel sessions for parents and grandparents simultaneously and target three prioritized areas: (a) use of positive parenting strategies, (b) building positive coparenting relationships across generations, and (c) coping strategies to manage negative emotions (Kirby & Sanders, 2014). Third, our findings suggest that, for family counselors and therapists, when dealing with domestic issues it is important to identify the complicated dynamics within the family. These implications are especially useful for intergenerational coparenting families in societies with limited access to formal child care, where greater demands for grandparenting exist.

CONCLUSIONS

This study is one of only a few to have investigated dyadic family dynamics in the context of intergenerational coparenting behaviors in China. It highlights the mediating role of individual perceptions of the coparenting relationships in linking their own and their coparenting partners' depressive symptoms and (grand)parenting behaviors. (Grand)parenting behaviors in the context of intergenerational coparenting cannot be evaluated, or improved, without a consideration of the coparenting partners' mental health and their perceptions of the coparenting relationship. These special intergenerational mutual influences linked to joint parenting have implications for future family interventions, in particular to postnatal interventions focused on parenting education and caregivers' mental health. With regard to intergenerational coparenting, parallel interventions for both parents and grandparents are essential to capture dyadic family dynamics and improve their mental health and parenting skills and, ultimately, to build a promising family nurturing environment for children.

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