



Associations from Parental Mindfulness and Emotion Regulation to Child Emotion Regulation Through Parenting: the Moderating Role of Coparenting in Chinese families

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Abstract

Objectives The roles of parental mindfulness and coparenting relationships in Eastern cultures have been relatively understudied. This study aimed to investigate the associations of parental mindfulness, emotion regulation, parenting quality, and coparenting quality with children's emotion regulation and negativity in Chinese families.

Methods Data for a subsample of 2156 parents were drawn from a study with 2237 Chinese parents of school-age children aged 6 to 12 years. Parents completed the Five Facet Mindfulness Questionnaire, the Difficulties in Emotional Regulation Scale, the Multidimensional Assessment of Parenting Scale, the Brief Coparenting Relationship Scale, and the Emotion Regulation Checklist.

Results Fewer parental emotional regulation difficulties and higher levels of dispositional mindfulness were linked to better parenting quality, which was, in turn, associated with better emotion regulation and lower negativity among children. The association between parenting quality and child negativity was stronger when coparenting quality was higher.

Conclusions This study highlights the roles of parental mindfulness and emotion regulation skills in children's emotional development in Chinese culture through their associations with parenting practices.

Keywords Mindfulness · Emotion regulation · Parenting · Coparenting · Child social-emotional development

Emotion regulation is defined as “the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals” (Thompson, 1994, pp. 27–28). The ability to regulate emotion is crucial throughout development, as it has been related to better school performance, more successful peer relationships, and fewer psychopathology symptoms (Brumariu et al., 2012; Han and Shaffer, 2014). Parental characteristics and parenting behaviors are

considered critical factors in shaping children's emotion regulation (Morris et al., 2017). Moreover, the quality of coordination of parental roles and responsibilities, also known as coparenting relationship quality (McHale et al., 2000a), serves as the context for parent-child interactions and may also play a role in children's emotion regulation.

One of the parental factors that may predict child emotion regulation is parental mindfulness. Mindfulness is conceptualized as “the awareness that emerges through paying attention, on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). Situating the construct of mindfulness in Belsky (1984)'s process model of parenting, which laid out the theoretical foundations to understand antecedents of parenting, parental mindfulness shares associations with personality traits (e.g., openness, conscientiousness, neuroticism) and other parent characteristics that exert impact on parenting practices. Parents with higher levels of mindfulness are more likely to engage in positive parenting behaviors with children, including expressions of warmth and affection, using positive reinforcement, clarifying instructions, and facilitating

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supportive communication (Parent et al., 2016). Mindful parents are more likely to listen to and respond to children with their full attention, maintain awareness of emotions during the parenting process, and remain non-judgmental and tolerant of emotional experience (Duncan et al. 2009).

To date, research on mindfulness among parents in China is limited. A pioneering study found positive associations between parents' mindfulness and positive parenting behaviors among Chinese mothers (Siu et al., 2016), which further contributed to children's fewer emotional and behavioral problems (Han et al., 2021; Siu et al., 2016; Wang et al., 2018). Dispositional mindfulness also buffered the negative effect of cumulative family risks on Chinese parents' mental health (Wang et al., 2020). Mindfulness, given its origination from meditation in Buddhism, may have a greater audience in China, compared to Western cultures. Therefore, it is important to understand the roles of parental mindfulness in Chinese culture.

Moreover, a parent's ability to regulate their own emotions is central to the parenting behaviors that they practice (Lorber, 2012). Growing evidence has suggested that parents' capacities to regulate emotions are associated with their parenting behaviors and their children's socioemotional adjustment. Maternal emotional hyperactivity and distancing were prospectively associated with lower levels of regulation parenting and higher levels of indulgent parenting (Crandall et al., 2016), as well as harsher and distressed responses to children's negative emotions (Mazursky-Horowitz et al., 2015). Indeed, difficulties in emotion regulation, including a limited repertoire of emotion regulation strategies and deficits in impulse control, may hinder a parent's capacity to respond appropriately in stressful situations when their children display intense negative emotions.

Emotions are culturally constructed (Mesquita et al., 2016). It is important to examine the family processes of emotional development in the context of different cultures. Culture may shape societal beliefs and expectations about the appropriateness of different coping strategies and parenting practices (Lansford et al., 2010). Therefore, parents in different cultures may have different interaction patterns with their children. Even the same practices may yield different outcomes or different family processes across cultural contexts (Lansford et al., 2010). Research on emotion regulation among Chinese parents is relatively limited. Using a sample of middle-class fathers from two major cities in China, Yan et al. (2016) found that Chinese fathers' emotion regulation difficulties mediated the relation between their bonding style with their own parents and their parenting practices toward their children. Another study with 150 middle-class families from Beijing, the capital city and one of the largest cities in China, showed that physiological regulation dynamics during parent-child interaction was associated with parents' emotional sensitivity and availability (Zhang et al., 2017). However,

during the past decades, modernization has enlarged cultural differences in urban and rural areas in China with their different extent of exposure to globalization (Gu et al., 2012). More research is needed to elucidate the effect of parental mindfulness and emotion regulation on parenting behaviors in China, particularly in the understudied less urban settings (e.g., medium-sized cities or rural areas).

Empirical associations between parenting and children's emotion regulation in early childhood and adolescence have been well established (e.g., Feng et al., 2008; Van Lissa et al., 2019). For example, greater maternal positivity has been associated with preschoolers' active regulation and joy, particularly in families with depressed mothers (Feng et al., 2008). Additionally, in a multi-wave, multi-informant study, high levels of maternal support and lower levels of paternal behavioral control were associated with adolescents' intraindividual increases in the ability to regulate emotions (Van Lissa et al., 2019). Positive parenting may facilitate child emotion regulation by providing a positive emotional climate, effective coregulation when children encounter emotionally salient situations, and a good exemplar for children to model and reference (Morris et al., 2007), whereas ineffective parenting may reinforce emotional lability (Beauchaine, 2015).

In China, parents' lower levels of psychological control and harsh discipline and higher levels of parental warmth were linked to children's better emotion regulation in middle childhood (Li et al., 2018; Wang et al., 2018). Chinese fathers' and mothers' more supportive and less unsupportive reactions to children's negative emotion expressions mediated the association of their own better emotion regulation with children's greater emotion regulation abilities (Han et al., 2015). These links were further moderated by the other parent's emotion regulation abilities (Han et al., 2015).

It is also important to consider the family context for parenting and child development. Family systems theorists posited that families should be understood as "complex, integrated wholes" (Minuchin, 1988, p. 8) that are composed of interdependent subsystems. As one of the key subsystems in families, coparenting is a component of the interparental relationship that does not involve romantic or sexual aspects (McHale et al., 2000b). Components of the coparenting subsystem may spill over to the parent-child subsystem. For example, coparenting conflicts can overwhelm parents' self-management and disrupt their capability to be sensitive caregivers for their children (Martin et al., 2017). Unsupportive coparenting relationships may prevent parents from creating optimal environments for their children at all ages to thrive and develop competence (e.g., Schoppe-Sullivan et al., 2008). Coparenting support mitigated levels of externalizing behaviors for children with high negativity and low effortful control (Altenburger et al., 2017; Schoppe-Sullivan et al., 2009). From a family systems perspective, coparenting quality serves as a context for parent-child interactions. Supportive

coparenting may boost the benefits of positive parenting on child emotional adjustment and buffer the risks of negative parenting (Scrimgeour et al., 2013).

In Chinese and East Asian families, research on coparenting is limited, and the majority of existing studies have focused on families of infants and preschoolers. Coparenting quality predicted lower levels of externalizing problems and anxiety, greater academic competence (one of the most valued assets among Chinese children), and better social-emotional outcomes for infants and preschoolers in East Asian countries (McHale et al., 2000a, b; Rempel et al., 2020; Ren & Xu, 2019).

Focusing on a Chinese sample, this study tested the indirect effect of parenting quality in the associations of parental characteristics with children's emotional development. Specifically, higher levels of parental mindfulness and lower levels of emotion regulation difficulties may be associated with higher levels of child emotion regulation and lower levels of child emotional negativity through more positive parenting. We further hypothesized that greater coparenting quality may facilitate the positive effect of parenting quality on children's emotion regulation. As an exploratory step, we also tested two multiple-group models with child gender and parent gender as grouping variables to examine potential boy-girl differences or mother-father differences in the proposed associations.

Method

Participants

The participants included 2237 parents ($M_{\text{age}} = 38.46$, $SD = 4.43$; 23% fathers) of children ages 6 to 12 years ($M_{\text{age}} = 9.40$, $SD = 1.78$; 51.9% boys). Approximately half of the parents completed at least a bachelor's degree (56.4%). The majority of parents were full-time (67.2%) or part-time (13.7%) employees. Most parents (70.3%) reported an annual household income at or above the average (approximately \$17,316, National Bureau of Statistics of the People's Republic of China 2017) for Chinese urban families where the study was conducted. Most parents identified as Han ethnic Chinese (93.8%), which constitutes the largest ethnic group in China.

Participants were asked to report the total number of family members and how many children they had. We took the difference between these two variables in order to compute (approximately) how many non-child members were living in the household. Among 2237 participants, 7 reported the same number of children and number of family members (which might indicate misreport, or not living with all or some of their children), and 74 reported 1 more member in the family than the number of children (indicating only 1 adult in the household). Because of our interest in studying the role

of coparenting in families, we decided to exclude these 81 participants from the analyses, so at least 2 adults were residing in the household in the remaining sample. This exclusion criterion resulted in a subsample with 2156 participants. Among these, 1657 parents (76.86%) had 1 child, 479 parents (22.22%) had 2 children, and the remaining 20 parents (0.93%) had 3 or more children. In cases where parents had more than one child, they were instructed to complete the study-related survey based on one child who was between 6 and 12 years of age.

We were not able to confirm that the other adult(s) reported as family members included the partner of the participating parent, or that the target children were living with the participants. However, we may safely speculate that the majority of families (~95%) in the sample meet the criterion that two married biological parents live with their target child, based on demographic characteristics of other datasets from similar sources (e.g., Yan et al., 2017).

Procedures

Participants were recruited via flyers distributed through online and off-line mechanisms. Interested parents received a brief introduction to the study and provided informed consent by signing electronically. After agreeing to participate, parents completed an online survey.

Measures

Parental Mindfulness

Parental mindfulness was measured with the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). On a 5-point Likert scale (1 = *never or very rarely true*; 5 = *very often or always true*), parents rated to what extent the 39 statements applied to themselves. The 39 items assessed five aspects of mindful dispositions: observing ("I notice the smells and aromas of things"), describing ("I'm good at finding words to describe my feelings"), acting with awareness ("I am easily distracted" [reverse-coded]), non-judging of inner experience ("I disapprove of myself when I have irrational ideas" [reverse-coded]), and non-reactivity to inner experience ("I watch my without getting lost in them"). After proper reverse coding, a sum score was computed to represent parents' overall mindfulness. The Chinese version of FFMQ has shown good psychometric properties in previous studies (Deng et al., 2011) and the present study ($\alpha = .89$).

Parental Difficulties in Emotion Regulation

Parental emotion dysregulation was assessed by the Difficulties in Emotional Regulation Scale (DERS; Gratz and Roemer, 2003). Parents rated how often the statements

applied to themselves on a 5-point Likert scale (1 = *almost never*; 5 = *almost always*) with 36 items. The scale contained 6 subscales: lack of awareness of emotional responses (“[reverse coded] I pay attention to how I feel”), lack of clarity of emotional responses (“I have no idea how I am feeling”), non-acceptance of negative emotional responses (“When I’m upset, I feel guilty for feeling that way”), limited access to effective emotion regulation strategies (“When I’m upset, I believe there is nothing I can do to make myself feel better”), difficulties controlling impulses (“When I’m upset, I become out of control”), and difficulties engaging in goal-directed behaviors (“When I’m upset, I have difficulty concentrating”). A total score was computed to reflect parental emotion regulation difficulties. The Chinese version of the DERS has shown good psychometric properties in the past (Yan et al., 2016) and present study ($\alpha = .93$).

Parenting Practices

The 34-item Multidimensional Assessment of Parenting Scale (MAPS; Parent & Forehand, 2017) was used to assess participants’ parenting practices with the target child. Parents rated how much each statement best describes their parenting on a 5-point Likert scale (1 = *Never*, 5 = *Always*). Dimensions measured included proactive parenting (“I avoid struggles with my child by giving clear choices”), positive reinforcement (“If my child cleans his room, I will tell him/her how proud I am”), warmth (“My child and I hug and/or kiss each other”), supportiveness (“I listen to my child’s ideas and opinions”), hostility (“I argue with my child”), lax control (“I feel that getting my child to obey is more trouble than it’s worth”), and physical control (“I spank my child when I am extremely angry”). Since MAPS had not yet been used in Chinese samples, a group of three bilingual psychology professors and doctoral students independently forward-translated (i.e., from original English scale to Chinese scale) and back-translated (i.e., from the resulting Chinese scale to English scale) the scale. The back-translation was checked by the original author of MAPS to ensure that the original meanings of items were retained by the translation. A total score was computed by taking the sum of the scores of 34 items after reversing those of negative items. In the present study, the scale showed good reliability ($\alpha = .93$).

Coparenting Quality

The Brief Coparenting Relationship Scale (B-CRS; Feinberg et al., 2012) was used to measure coparenting relationships. The parents were asked to indicate to what extent statements describe the way that they and their partner work together as parents by using a 0–6 scale (0 = *not true of us*, 6 = *very true of us*). This study used 6 items of the B-CRS that comprise three aspects: coparenting closeness (“We are

growing and maturing together through experiences as parents”), coparenting support (“My partner appreciates how hard I work at being a good parent”), and undermining coparenting (“My partner undermines my parenting”). A composite score of these three aspects was computed by reversing the undermining items and then taking the sum. Therefore, a higher score reflects better coparenting quality. The B-CRS showed acceptable psychometric properties in previous samples (Yuan, 2016) and this sample ($\alpha = .66$).

Children’s Emotion Regulation

Parents completed the 24-item Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) to assess children’s self-regulation on two dimensions: (1) Lability/Negativity, which described the child’s dysregulated negative affectivity (e.g., “is prone to angry outbursts”) and (2) Emotion Regulation, which represented situationally proper emotion expressions, awareness, and empathy (e.g., “can say when s/he is feeling sad, angry or mad, fearful or afraid”). The responses were provided on a 4-point scale (1 = *Never*; 2 = *Sometimes*; 3 = *Often*; 4 = *Almost Always*). The scale has been previously used among Chinese parents and demonstrated acceptable psychometric properties (Suveg et al., 2014). In the current sample, the scale yielded acceptable internal consistency ($\alpha = .81$ for lability/negativity and .73 for emotion regulation).

Data Analyses

Preliminary Analysis

First, we examined means (M), standard deviations (SD), missing rates, and Pearson correlations of all study variables. We then examined relations between study variables and demographic variables using unpooled independent two-sample t tests for binary variables (e.g., child gender) and Pearson correlations for continuous variables.

Missing Data

We used the R package *BaylorEdPsych* (Beaujean, 2012) to examine the nature of missing data. Results of Little’s MCAR test indicated that the missing data mechanisms were not completely at random ($\chi^2(70) = 122.74$, $p < .001$). Associations between demographic characteristics and missingness were examined using unpooled independent two-sample t tests for continuous demographic variables (i.e., child age, parental age, parental education, and income). Associations between missingness and binary covariates (i.e., child gender, parent gender) were examined with a series of chi-square tests. For model estimation, missing data were handled with the full information maximum likelihood method.

Path Models

We used the R package *lavaan* (Rosseel, 2012) to estimate the model parameters and compute the model fit. To evaluate the model fit, the model chi-square (χ^2) statistic with its degrees of freedom (*df*) and *p* value, the Steiger-Lind root mean square error of approximation (RMSEA; Steiger, 1990) and its 90% confidence interval (CI), the Bentler comparative fit index (CFI; Bentler, 1990), and standardized root mean square residual (SRMR) are reported as recommended by Kline (2015). RMSEA values below .05 suggest a good model fit (Browne & Cudeck, 1993). Moreover, lower bounds of RMSEA 90% CI less than .05 and upper bounds less than .08 indicate a good fit. CFI values greater than .95 and SRMR values less than .08 also indicate good fit (Hu & Bentler, 1999). To accommodate non-normality in the outcome variables, we used the maximum likelihood estimation method with robust standard errors (MLR).

Multiple-Group Analysis

We tested the potential mother-father differences and boy-girl differences in the path model by conducting two multiple-group analyses with child and parent gender as the grouping variables, respectively. We first freely estimated all the parameters for each group, then we added an equality constraint for each regression path parameter and compared the model fit before and after the equality constraint. An equality constraint significantly worsening the model fit suggests gender differences in the corresponding path.

Indirect Effects

We estimated the indirect effects with the *lavaan* package. We used 5000 bootstrap samples to compute the standard errors and confidence intervals for the indirect effects. All of the analysis procedures were completed using RStudio (R Team, 2015).

Moderated Mediation

Moderation by coparenting was tested by including the product term of centered coparenting and parenting to predict children's emotion regulation and negativity within the *lavaan* package and computing the index of moderated mediation. Significant interactions were probed for the conditional effects at five levels of coparenting quality (i.e., mean level and 1 and 2 standard deviations above and below the mean).

Results

Preliminary Analyses

Table 1 shows the means (*M*), standard deviations (SD), and Pearson correlations of all study variables and covariates. A series of independent two-sample *t* tests showed that girls in our sample were better at regulating emotions ($t(1819.73) = 2.61, p = .009, d = 0.12$), whereas boys were higher in negativity ($t(1828.61) = 2.99, p = .003, d = 0.14$). Parents of girls reported higher levels of parenting quality ($t(2064.52) = 2.89, p = .004, d = 0.13$) and dispositional mindfulness ($t(1872.34) = 2.03, p = .043, d = 0.09$). Fathers in the current sample reported greater levels of coparenting quality ($t(762.16) = 5.01, p < .001, d = 0.26$) and lower levels of child emotion regulation abilities ($t(704.30) = -4.23, p < .001, d = -0.23$).

As for missing data analysis, a series of independent two-sample *t* tests showed that parents who did complete FFMQ, DERS, MAPS, CRS, and ERC were more highly educated than those who did not (FFMQ: $t(314.89) = 6.56, p < .001, d = 0.46$; DERS: $t(451.00) = 7.41, p < .001, d = 0.45$; MAPS: $t(68.68) = 2.61, p = .011, d = 0.31$; CRS: $t(265.71) = 6.12, p < .001, d = 0.45$; and ERC: $t(389.19) = 7.01, p < .001, d = 0.45$). Moreover, parents who did not complete FFMQ, DERS, CRS, and ERC had lower income (FFMQ: $t(317.67) = 4.33, p < .001, d = 0.30$; DERS: $t(452.73) = 3.95, p < .001, d = 0.24$; CRS: $t(267.32) = 4.03, p < .001, d = 0.29$; and ERC: $t(393.48) = 3.95, p < .001, d = 0.25$). Child gender, parent gender, child age, and parent age were not associated with missingness on any study variables. The missing data mechanism is therefore likely to be MAR and could be appropriately handled by the full information maximum likelihood method.

Primary Analyses

Path Model and Indirect Effects

Prior to testing the moderated mediation model that we proposed, we first fitted a saturated model without coparenting as the moderator to examine the mediation effect. The unstandardized and standardized coefficient estimates, standard errors, and test statistics for all paths are displayed in Table 2. Specifically, after controlling for the demographic characteristics, fewer parental emotional regulation difficulties and higher levels of dispositional mindfulness were linked to better parenting quality, which was, in turn, associated with better emotion regulation and lower negativity among children. The indirect and total effects are presented in Table 3. Specifically, all paths from parental mindfulness and emotion regulation

Table 1 Means (*M*), standard deviations (*SD*), and bivariate correlations among study variables and continuous covariates

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. P-Mindfulness	12.44	1.14											
2. P-ER Difficulties	81.58	17.59	-.59**										
3. Parenting	123.01	13.20	.49**	-.49**									
4. Coparenting	53.35	14.28	.37**	-.33**	.39**								
5. C-ER	28.50	3.53	.39**	-.46**	.40**	.28**							
6. C-Negativity	33.90	6.12	-.40**	.45**	-.46**	-.38**	-.36**						
7. Child Gender	0.52	0.50	-.05*	.01	-.06**	-.02	-.06**	.07**					
8. Parent Gender	0.23	0.42	-.01	.02	-.03	.11**	-.10**	.02	0.03				
9. Education	4.44	1.02	.20**	-.15**	.12**	.08**	.08**	-.06*	0.02	.11**			
10. Income	5.85	2.92	.25**	-.19**	.14**	.13**	.14**	-.11**	.00	.08**	.55**		
11. Child Age	9.38	1.78	-.06*	.05	-.10**	-.01	-.11**	-.02	0.03	.00	-.19**	-.11**	
12. Parent Age	38.35	4.33	.13**	-.09**	.05*	.07**	.00	-.05*	-.02	.21**	.17**	.14**	.28**

P Parent, *C* Child, *ER* Emotion Regulation

* $p < .05$; ** $p < .01$

difficulties to child emotion regulation and negativity were mediated by parenting quality.

Final Model with Coparenting as a Moderator

The proposed model showed good fit, $\chi^2(4) = 18.35$, $p = .001$; RMSEA = .041 (90% CI = 0.028, 0.055); CFI = .992; SRMR = .013. Figure 1 shows the standardized coefficients of all regression paths in the final model. The unstandardized and standardized coefficient estimates, standard errors, and p values of all regression paths to child emotion regulation and negativity are shown in Table 4. Specifically, coparenting quality moderated the association between parenting quality and child negativity. As shown in Fig. 2, child negativity was low only when parenting and coparenting qualities were both high. The positive effect of parenting quality on lower child negativity was stronger when coparenting quality was high. The index of moderated mediation was statistically different from zero for the mediation from mindfulness (estimate = -0.029 , $z = -3.086$, $p = .002$) and parental emotion regulation (estimate = 0.009 , $z = 3.032$, $p = .002$) to child negativity. Evidence was not enough to support coparenting quality as a moderator for the association between parenting quality and child emotion regulation. Rather, coparenting exerted a main effect on emotion regulation. Better coparenting quality predicted children's greater emotion regulation ability.

Multiple-Group Analyses

We did not find parent or child gender differences on any path coefficients in this model.

Discussion

The current study examined the collective roles of parental mindfulness, emotion regulation difficulties, parenting quality, and coparenting quality in shaping the development of emotion regulation among Chinese children in middle childhood. As hypothesized, we found that higher levels of parental dispositional mindfulness and fewer emotion regulation difficulties were associated with lower levels of child emotion negativity/lability and greater child emotion regulation abilities directly and indirectly through better parenting quality. The association between parenting quality and child negativity was further moderated by the quality of coparenting relationships within Chinese families, in that the positive effect of parenting quality on lower child negativity was stronger when the coparenting relationship was also in high quality (i.e., characterized by more supportive and closeness, and less undermining behavior).

Highly consistent with the theoretical model proposed by Morris et al. (2007) based on Western cultures, we found that within Chinese families, emotion regulation could be transmitted across generations. When a parent was high in dispositional mindfulness and had few difficulties regulating their own emotions, they were more likely to provide scaffolding for their children's emotional development through positive parenting practices. These practices were in turn helpful for children to develop the skills they need to successfully regulate their emotions and achieve the goals. Indeed, as suggested by recent meta-analytic results, more similarities than differences were expected when it came to the association between parenting and child socioemotional outcomes across cultures (Pinquart & Kauser, 2018). To some extent, the

Table 2 Path coefficients for the associations between parental mindfulness, emotion regulation difficulties, parenting quality, and child emotion regulation and negativity

Outcomes	Predictors	<i>B</i>	SE	β	<i>z</i>	<i>p</i>
Child Emotion Regulation	Parental Dispositional Mindfulness	0.35***	0.08	0.11	4.16	<.001
	Parental Emotion Regulation Difficulties	-0.06***	0.01	-0.30	-10.26	<.001
	Parenting Quality	0.05***	0.01	0.19	6.93	<.001
	Child Age	-0.13**	0.04	-0.07	-2.99	.003
	Child Gender	0.26	0.14	0.04	1.84	.066
	Parent Age	-0.01	0.02	-0.01	-0.49	.624
	Parent Gender	0.68***	0.16	0.08	4.18	<.001
	Degree	0.14	0.09	0.04	1.55	.120
	Income	0.06*	0.03	0.05	2.13	.033
Child Negativity	Parental Dispositional Mindfulness	-0.65***	0.16	-0.12	-4.20	<.001
	Parental Emotion Regulation Difficulties	0.09***	0.01	0.25	9.11	<.001
	Parenting Quality	-0.13***	0.01	-0.28	-10.46	<.001
	Child Age	-0.25**	0.07	-0.07	-3.41	.001
	Child Gender	-0.58*	0.24	-0.05	-2.44	.015
	Parent Age	0.03	0.03	0.02	1.05	.295
	Parent Gender	-0.02	0.30	0.00	-0.06	.949
	Degree	-0.17	0.15	-0.03	-1.16	.247
	Income	-0.04	0.05	-0.02	-0.87	.382
Parenting Quality	Parental Dispositional Mindfulness	3.54***	0.31	0.31	11.55	<.001
	Parental Emotion Regulation Difficulties	-0.23***	0.02	-0.31	-11.78	<.001
	Child Age	-0.53***	0.15	-0.07	-3.60	<.001
	Child Gender	1.14*	0.49	0.04	2.33	.020
	Parent Age	0.05	0.06	0.02	0.73	.464
	Parent Gender	0.70	0.60	0.02	1.16	.248
	Degree	-0.11	0.29	-0.01	-0.37	.708
	Income	-0.07	0.10	-0.02	-0.66	.510
	Parental Dispositional Mindfulness	Child Age	-0.03*	0.02	-0.05	-2.04
Child Gender		0.09	0.05	0.04	1.81	.070
Parent Age		0.03***	0.01	0.11	4.33	<.001
Parent Gender		0.13*	0.06	0.05	2.17	.030
Degree		-0.09**	0.03	-0.08	-3.02	.003
Income		0.08***	0.01	0.19	7.42	<.001
Parental Emotion Regulation Difficulties	Child Age	0.40	0.24	0.04	1.70	.089
	Child Gender	-0.20	0.80	-0.01	-0.25	.802
	Parent Age	-0.29**	0.10	-0.07	-3.04	.002
	Parent Gender	-2.42*	0.99	-0.06	-2.46	.014
	Degree	0.87	0.46	0.05	1.89	.059
	Income	-0.96***	0.16	-0.16	-5.94	<.001

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

similarity of results may reflect globalization or a lack of a more precise measure of cultural variations in parenting. Efforts should be devoted to developing measures of culture-specific practices and beliefs to gain a more nuanced understanding.

Our study provided evidence that the strengths of links between parenting quality and child emotional development may depend on the level of coparenting quality. When coparenting relationships were of high quality, the negative association between parenting quality

Table 3 Associations between parental characteristics and child emotion regulation: total effects and indirect effects through parenting quality

	Estimate	SE	z	p	95% CI	
					Lower bound	Upper bound
Indirect effects						
Mindfulness–Parenting Quality–Child ER	0.177***	0.028	6.266	<.001	0.120	0.231
Parent ER Difficulties–Parenting Quality–Child ER	−0.012***	0.002	−5.961	<.001	−0.016	−0.008
Mindfulness–Parenting Quality–Child Negativity	−0.464***	0.059	−7.868	<.001	−0.593	−0.351
Parent ER Difficulties–Parenting Quality–Child Negativity	0.030***	0.004	8.475	<.001	0.024	0.037
Total effects						
Mindfulness–Child ER	0.527***	0.083	6.349	<.001	0.357	0.697
Parent ER Difficulties–Child ER	−0.071***	0.005	−13.146	<.001	−0.083	−0.061
Mindfulness–Child Negativity	−1.117***	0.155	−7.198	<.001	−1.412	−0.829
Parent ER Difficulties–Child Negativity	0.117***	0.010	12.182	<.001	0.098	0.136

*** $p < .001$

and child negativity was most substantial. When coparenting quality was low, child negativity remained high even if parenting quality was strong. This finding was consistent with family systems theory that the functioning and well-being of an individual and a subsystem depend on the whole family system and the interactions among each part (Minuchin, 1988). High coparenting quality may provide a warm and positive emotional climate within the family (Schoppe et al., 2001), which facilitates and enhances the benefit of positive parenting. Children with undermining coparents may be negatively aroused and more likely to express negativity. The moderation of coparenting was not detected for

child emotion regulation, suggesting an additive effect of parenting and coparenting quality on promoting emotion regulation.

Limitations and Future Research Directions

The current study had a few limitations. First, due to the interest in investigating the role of coparenting relationships in Chinese families, we only included households in which more than one adult was present. This inclusion criterion may have led to a restricted range in all constructs. The findings may not generalize to other family structures (e.g., single-parent families). Second,

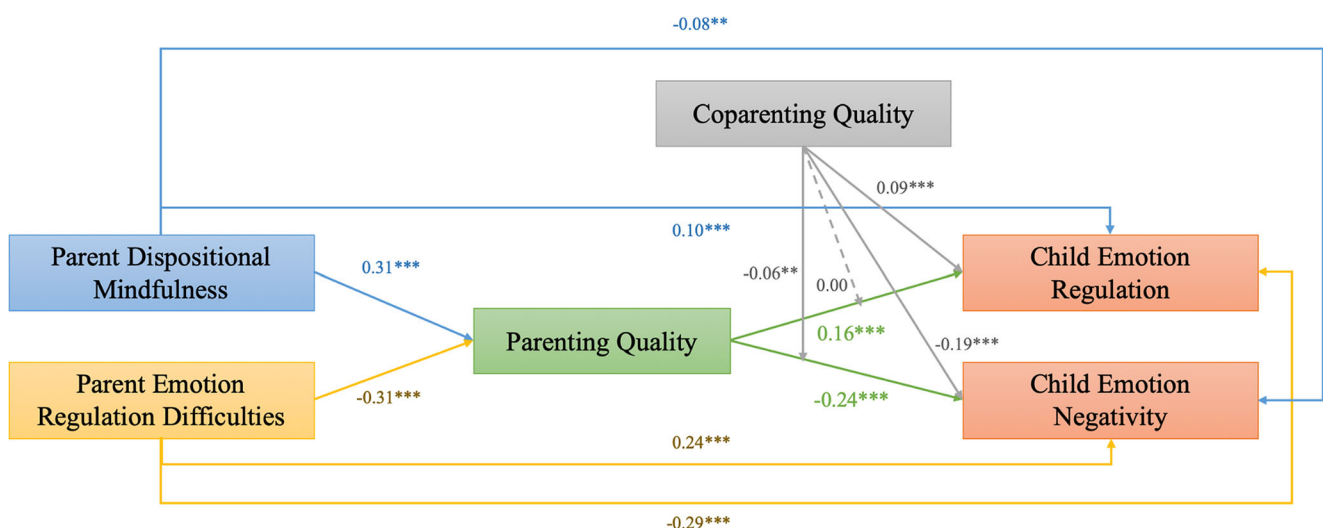


Fig. 1 Standardized parameter estimates of the proposed model. ** $p < .01$; *** $p < .001$. Model fit: $\chi^2(4) = 18.35, p = .001$; RMSEA = .041 (90% CI = 0.028, 0.055); CFI = .992; SRMR = .013. Covariances and

covariates were omitted in the figure. For each construct, we included child age, child gender, parent age, parent gender, parent education, and household income as control variables

Table 4 Path coefficients for the associations parenting, and child emotion regulation and negativity being moderated by coparenting quality

Outcomes	Predictors	<i>B</i>	SE	β	<i>z</i>	<i>p</i>
Child Emotion Regulation	Parental Dispositional Mindfulness	0.30***	0.09	0.10	3.55	<.001
	Parental Emotion Regulation Difficulties	-0.06***	0.01	-0.29	-9.97	<.001
	Parenting Quality	0.04***	0.01	0.16	5.95	<.001
	Coparenting Quality	0.02***	0.01	0.09	3.86	<.001
	Parenting \times Coparenting	0.00	0.00	0.00	0.16	.877
	Child Age	-0.14**	0.04	-0.07	-3.17	.002
	Child Gender	0.25	0.14	0.04	1.81	.070
	Parent Age	-0.01	0.02	-0.01	-0.44	.663
	Parent Gender	0.78***	0.16	0.09	4.78	<.001
	Degree	0.13	0.09	0.04	1.45	.147
Child Negativity	Income	0.06*	0.03	0.05	1.98	.047
	Parental Dispositional Mindfulness	-0.43**	0.15	-0.08	-2.81	.005
	Parental Emotion Regulation Difficulties	0.08***	0.01	0.24	8.66	<.001
	Parenting Quality	-0.11***	0.01	-0.24	-8.65	<.001
	Coparenting Quality	-0.08***	0.01	-0.19	-8.35	<.001
	Parenting \times Coparenting	0.00**	0.00	-0.06	-3.18	.001
	Child Age	-0.23**	0.07	-0.07	-3.16	.002
	Child Gender	-0.54*	0.24	-0.05	-2.31	.021
	Parent Age	0.03	0.03	0.02	0.98	.327
	Parent Gender	-0.34	0.30	-0.02	-1.16	.247
Degree	-0.12	0.14	-0.02	-0.87	.386	
Income	-0.03	0.05	-0.01	-0.56	.578	

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

the cross-sectional design precluded inferences regarding the temporal order and causality of the examined associations, and potential transactional associations between parenting, coparenting, and child emotion regulation. Future longitudinal studies are warranted to further investigate the temporal precedence among the constructs. Third, all constructs were reported by the same parent for each family. Therefore, the reporter's response style, social desirability, and priming effect of measures in the

same survey may lead to spurious associations between constructs. This is known as the common method bias (Podsakoff et al., 2003). Future studies should adopt a multi-informant method to address these limitations. Nonetheless, the current study made a contribution to the extant literature by focusing on the roles of family processes in child emotional development within the Chinese cultural context.

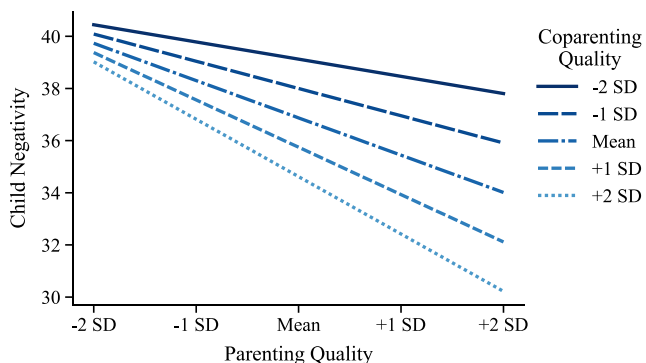


Fig. 2 Coparenting moderates the association between parenting quality and child negativity. The conditional effect of parenting quality was significant at all levels of coparenting quality ($\alpha = .05$), but the slope is significantly steeper when coparenting quality is high

Author Contribution JY developed the study concept, analyzed the data, and wrote the paper. SJSS and QW collaborated in the writing and editing of the paper. RH designed and executed the study, assisted with the data analysis, and collaborated in the writing and editing of the paper.

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Declarations

Ethics Approval and Consent to Participate This research involved human participants. The procedures were approved by the Institutional Review Board of Beijing Normal University. Informed consent was provided by all participants.

Conflict of Interest The authors declare no competing interests.

References

- Altenburger, L. E., Lang, S. N., Schoppe-Sullivan, S. J., Kamp Dush, C. M., & Johnson, S. (2017). Toddlers' differential susceptibility to the effects of coparenting on social-emotional adjustment. *International Journal of Behavioral Development, 41*, 228–237. <https://doi.org/10.1177/0165025415620058>.
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27–45. <https://doi.org/10.1177/1073191105283504>.
- Beauchaine, T. P. (2015). Future directions in emotion dysregulation and youth psychopathology. *Journal of Clinical Child and Adolescent Psychology, 44*, 875–896. <https://doi.org/10.1080/15374416.2015.1038827>.
- Beaujean, A. A. (2012). *Latent variable modeling using R*. New York: Routledge.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development, 55*, 83–96.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychology Bulletin, 107*, 256–259.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Brumariu, L. E., Kerns, K. A., & Seibert, A. (2012). Mother-child attachment, emotion regulation, and anxiety symptoms in middle childhood. *Personal Relationships, 19*, 569–585. <https://doi.org/10.1111/j.1475-6811.2011.01379.x>.
- Crandall, A., Ghazarian, S. R., Day, R. D., & Riley, A. W. (2016). Maternal emotion regulation and adolescent behaviors: The mediating role of family functioning and parenting. *Journal of Youth and Adolescence, 45*, 2321–2335. <https://doi.org/10.1007/s10964-015-0400-3>.
- Deng, Y. Q., Liu, X. H., Rodriguez, M. A., & Xia, C. Y. (2011). The Five Facet Mindfulness Questionnaire: Psychometric properties of the Chinese version. *Mindfulness, 2*, 123–128. <https://doi.org/10.1007/s12671-011-0050-9>.
- Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009). A model of mindful parenting: Implications for parent-child relationships and prevention research. *Clinical Child and Family Psychology Review, 12*, 255–270. <https://doi.org/10.1007/s10567-009-0046-3>.
- Feinberg, M. E., Brown, L. D., & Kan, M. L. (2012). A multi-domain self-report measure of coparenting. *Parenting, 12*, 1–21. <https://doi.org/10.1080/15295192.2012.638870>.
- Feng, X., Shaw, D. S., Kovacs, M., Lane, T., O'Rourke, F. E., & Alarcon, J. H. (2008). Emotion regulation in preschoolers: The roles of behavioral inhibition, maternal affective behavior, and maternal depression. *Journal of Child Psychology and Psychiatry, 49*, 132–141. <https://doi.org/10.1111/j.1469-7610.2007.01828.x>.
- Gratz, K. L., & Roemer, L. (2003). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment, 14*–54. <https://doi.org/10.1023/B:JOBA.0000007455.08539.94>.
- Gu, C., Wu, L., & Cook, I. (2012). Progress in research on Chinese urbanization. *Frontiers of Architectural Research, 1*, 101–149. <https://doi.org/10.1016/j.foar.2012.02.013>.
- Han, Z. R., & Shaffer, A. (2014). Maternal expressed emotion in relation to child behavior problems: Differential and mediating effects. *Journal of Child and Family Studies, 23*, 1491–1500. <https://doi.org/10.1007/s10826-014-9923-6>.
- Han, Z. R., Ahemaitijiang, N., Yan, J., Hu, X., Parent, J., Dale, C., DiMarzio, K., & Singh, N. N. (2021). Parent mindfulness, parenting, and child psychopathology in China. *Mindfulness, 12*, 334–343. <https://doi.org/10.1007/s12671-019-01111-z>.
- Han, Z. R., Qian, J., Gao, M., & Dong, J. (2015). Emotion socialization mechanisms linking Chinese fathers', mothers', and children's emotion regulation: A moderated mediation model. *Journal of Child and Family Studies, 24*, 3570–3579. <https://doi.org/10.1007/s10826-015-0158-y>.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*, 1–55. <https://doi.org/10.1080/10705519909540118>.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice, 10*, 144–156. <https://doi.org/10.1093/clipsy.bpg016>.
- Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.). New York, NY: Guilford Press.
- Lansford, J. E., Malone, P. S., Dodge, K. A., Chang, L., Chaudhary, N., Tapanya, S., Oburu, P., & Deater-Deckard, K. (2010). Children's perceptions of maternal hostility as a mediator of the link between discipline and children's adjustment in four countries. *International Journal of Behavioral Development, 34*, 452–461. <https://doi.org/10.1177/0165025409354933>.
- Li, J., Ahemaitijiang, N., Han, Z. R., & Jin, Z. (2018). Grandparents' parenting on children's internalizing symptoms: The serial mediation of parents' psychological control and children's emotion regulation. *Journal of Family Issues, 39*, 3996–4018. <https://doi.org/10.1177/0192513X18804284>.
- Lorber, M. F. (2012). The role of maternal emotion regulation in overreactive and lax discipline. *Journal of Family Psychology, 26*, 642–647. <https://doi.org/10.1037/a0029109>.
- Martin, M. J., Sturge-Apple, M. L., Davies, P. T., Romero, C. V., & Buckholz, A. (2017). A process model of the implications of spillover from coparenting conflicts into the parent-child attachment relationship in adolescence. *Development and Psychopathology, 29*, 417–431. <https://doi.org/10.1017/S0954579417000086>.
- Mazursky-Horowitz, H., Felton, J. W., MacPherson, L., Ehrlich, K. B., Cassidy, J., Lejuez, C. W., & Chronis-Tuscano, A. (2015). Maternal emotion regulation mediates the association between adult attention-deficit/hyperactivity disorder symptoms and parenting. *Journal of Abnormal Child Psychology, 43*, 121–131. <https://doi.org/10.1007/s10802-014-9894-5>.
- McHale, J. P., Kuersten-Hogan, R., Lauretti, A., & Rasmussen, J. L. (2000a). Parental reports of coparenting and observed coparenting behavior during the toddler period. *Journal of Family Psychology, 14*, 220–236. <https://doi.org/10.1037/0893-3200.14.2.220>.
- McHale, J. P., Rao, N., & Krasnow, A. D. (2000b). Constructing family climates: Chinese mothers' reports of their co-parenting behaviour and preschoolers' adaptation. *International Journal of Behavioral Development, 24*, 111–118. <https://doi.org/10.1080/016502500383548>.
- Mesquita, B., Boiger, M., & De Leersnyder, J. (2016). The cultural construction of emotions. *Current Opinion in Psychology, 8*, 31–36. <https://doi.org/10.1016/j.copsyc.2015.09.015>.
- Minuchin, P. (1988). Relationships within the family: A systems perspective on development. In R. A. Hinde & J. Stevenson-Hinde (Eds.), *Relationships within families: Mutual influences* (pp. 7–26). Oxford, England: Oxford University Press.
- Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development, 16*, 361–388. <https://doi.org/10.1111/j.1467-9507.2007.00389.x>.
- Morris, A. S., Criss, M. M., Silk, J. S., & Houlberg, B. J. (2017). The impact of parenting on emotion regulation during childhood and

- adolescence. *Child Development Perspectives*, 11, 233–238. <https://doi.org/10.1111/cdep.12238>.
- Parent, J., & Forehand, R. (2017). The Multidimensional assessment of parenting scale (MAPS): Development and psychometric properties. *Journal of Child and Family Studies*, 26, 2136–2151. <https://doi.org/10.1007/s10826-017-0741-5>.
- Parent, J., McKee, L. G., Rough, N., & J., & Forehand, R. (2016). The association of parent mindfulness with parenting and youth psychopathology across three developmental stages. *Journal of Abnormal Child Psychology*, 44, 191–202. <https://doi.org/10.1007/s10802-015-9978-x>.
- Pinquart, M., & Kauser, R. (2018). Do the associations of parenting styles with behavior problems and academic achievement vary by culture? Results from a meta-analysis. *Cultural Diversity and Ethnic Minority Psychology*, 24, 75–100. <https://doi.org/10.1037/cdp0000149>.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879–903.
- Rempel, J. K., Rempel, L. A., Hoa, D. T., Vui, L. T., & Long, T. K. (2020). Parenting teamwork: The impact of a fathering intervention on mothers and infants in Vietnam. *Child Development*, 91, e345–e364. <https://doi.org/10.1111/cdev.13244>.
- Ren, L., & Xu, W. (2019). Coparenting and Chinese preschoolers' social-emotional development: Child routines as a mediator. *Children and Youth Services Review*, 107, 104549. <https://doi.org/10.1016/j.childyouth.2019.104549>.
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48, 1–36.
- RStudio Team. (2015). *RStudio: integrated development for R*. RStudio, Inc. Boston: Author.
- Schoppe-Sullivan, S. J., Brown, G. L., Cannon, E. A., Mangelsdorf, S. C., & Sokolowski, M. S. (2008). Maternal gatekeeping, coparenting quality, and fathering behavior in families with infants. *Journal of Family Psychology*, 22, 389–398. <https://doi.org/10.1037/0893-3200.22.3.389>.
- Schoppe-Sullivan, S. J., Weldon, A. H., Cook, J. C., Davis, E. F., & Buckley, C. K. (2009). Coparenting behavior moderates longitudinal relations between effortful control and preschool children's externalizing behavior. *Journal of Child Psychology and Psychiatry*, 50, 698–706. <https://doi.org/10.1111/j.1469-7610.2008.02009.x>.
- Schoppe, S. J., Mangelsdorf, S. C., & Frosch, C. A. (2001). Coparenting, family process, and family structure: Implications for preschoolers' externalizing behavior problems. *Journal of Family Psychology*, 15, 526–545. <https://doi.org/10.1037/0893-3200.15.3.526>.
- Scrimgeour, M. B., Blandon, A. Y., Stifter, C. A., & Buss, K. A. (2013). Cooperative coparenting moderates the association between parenting practices and children's prosocial behavior. *Journal of Family Psychology*, 27, 506–511. <https://doi.org/10.1037/a0032893>.
- Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion Q-Sort Scale. *Developmental Psychology*, 33, 906–916. <https://doi.org/10.1037/0012-1649.33.6.906>.
- Siu, A. F. Y., Ma, Y., & Chui, F. W. Y. (2016). Maternal mindfulness and child social behavior: The mediating role of the mother-child relationship. *Mindfulness*, 7, 577–583. <https://doi.org/10.1007/s12671-016-0491-2>.
- Steiger, J. H. (1990). Structural model evaluation and modification: an interval estimation approach. *Multivariate Behavioral Research*, 25, 173–180.
- Suveg, C., Raley, J. N., Morelen, D., Wang, W., Han, R. Z., & Champion, S. (2014). Child and family emotional functioning: A cross-national examination of families from China and the United States. *Journal of Child and Family Studies*, 23, 1444–1454. <https://doi.org/10.1007/s10826-013-9800-8>.
- Thompson, R. A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development*, 59, 25–52.
- Van Lissa, C. J., Keizer, R., Van Lier, P. A., Meeus, W. H., & Branje, S. (2019). The role of fathers' versus mothers' parenting in emotion-regulation development from mid-late adolescence: Disentangling between-family differences from within-family effects. *Developmental Psychology*, 55, 377–389. <https://doi.org/10.1037/dev0000612>.
- Wang, H., Han, Z. R., Yan, J. J., & Ahemaitijiang, N. (2020). Dispositional mindfulness moderates the relationship between family risks and Chinese parents' mental health. *Mindfulness*, 1–11. <https://doi.org/10.1007/s12671-020-01529-w>.
- Wang, Y., Wang, M., & Xing, X. (2018). Parental harsh discipline and child emotion regulation: The moderating role of parental warmth in China. *Children and Youth Services Review*, 93, 283–290. <https://doi.org/10.1016/j.childyouth.2018.07.035>.
- Yan, J., Han, Z. R., & Li, P. (2016). Intergenerational transmission of perceived bonding styles and paternal emotion socialization: Mediation through paternal emotion dysregulation. *Journal of Child and Family Studies*, 25, 165–175. <https://doi.org/10.1007/s10826-015-0199-2>.
- Yan, J., Han, Z. R., Tang, Y., & Zhang, X. (2017). Parental support for autonomy and child depressive symptoms in middle childhood: The mediating role of parent-child attachment. *Journal of Child and Family Studies*, 26, 1970–1978. <https://doi.org/10.1007/s10826-017-0712-x>.
- Yuan, S. (2016). *Coparenting, marital quality, and children's adjustment in mainland China (Unpublished doctoral dissertation)*. Texas: Texas Tech University.
- Zhang, X., Cui, L., Han, Z. R., & Yan, J. (2017). The heart of parenting: Parent HR dynamics and negative parenting while resolving conflict with child. *Journal of Family Psychology*, 31, 129–138. <https://doi.org/10.1037/fam0000285>.

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