

Intergenerational transmission of parenting style in rural China and the mediation effect of Caregiver's mental health

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ABSTRACT

Background: The quality of parenting is associated with both early childhood development and lifelong negative adult outcomes, and there is evidence to suggest that some aspects of parenting show patterns of intergenerational transmission. However, the mediating mechanisms of the intergenerational transmission of parenting style are not fully understood.

Aims: This study aims to examine whether intergenerational transmission of parenting style occurs among caregivers in rural China, and whether the mental health of caregivers is a critical mediator in the transmission process across generations.

Methods: The sample consists of 194 caregivers who were recruited from an investigation in rural Jiangxi Province, China. Parenting style of both father and mother of the caregiver were self-reported by the caregiver using the simplified version of Egna Minnen av Barndoms Uppfostran (s-EMBU) inventory. The current parenting style of the caregiver is assessed by using the Parenting Practice Questionnaire (PPQ). We use multivariate regression to predict the intergenerational transmission of parenting style and examine the potential mediation effects.

Results: We found that 'emotional warmth' and 'rejective' parenting style of caregiver's parents are positively and significantly associated with 'warm' and 'hostile' parenting style of the caregiver, respectively. The transmission of rejective, hostile parenting style across generation is fully mediated by the mental health status of the caregiver. Specifically, the mediation effect of caregiver's depression, anxiety, and stress are all statistically significant.

Conclusions: Findings in this paper support the existence of intergenerational transmission of parenting styles in rural China. Caregiver's mental health mediate the transmission process of rejective, hostile parenting style. This raises the possibility that parenting services may benefits across generations, and provides empirical evidence for preventive services aimed at improving caregiver's mental health and parenting styles at the early stage of child development.

1. Introduction

Early child development (ECD)—which includes the cognitive, language, motor, and social-emotional domains of development—provides a strong base for one's wellbeing throughout life. Harvard University's Center on the Developing Child has shown that, babies' brains form more than 1 million new neural connections every second in their earliest years, an astounding rate that will never repeated again (Center on the Developing Child, Harvard University, 2020). The skills developed in the early years are critical for the child's

developmental trajectory, with long-term implications for the health, education and earning potential as these children become adults (Attanasio, 2015; Campbell et al., 2014; Currie & Almond, 2011; Heckman, 2006). Despite the well documented importance of ECD, poor cognitive and noncognitive development remain significant problems among young children in developing countries, as recent research demonstrating that 250 million (43%) children under the five-year-old in low- to middle-income countries are at risk for developmental delays (Black et al., 2013).

Many children in China are facing the challenge of poor ECD as

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well. New estimates revealed a large proportion (85%) of the children aged 0–3 years in four major subpopulations of rural China who have not reached their full developmental potential in at least one of the major domains: cognition, language, motor, and social emotion (Wang et al., 2019). The cognitive and language delays become even more severe as children age (Luo et al., 2017), which may impair children in the long term, harming their ability to succeed in the classroom and throughout their life (Gertler et al., 2014).

A mix of factors determine why some children have better developmental outcomes while others are lagged behind. The absence of interactive parenting practices, such as reading and playing with children with insufficient length of time and frequency, is a common part of the equation (Wang et al., 2019). Comparing to their counterparts in urban areas, fewer rural caregivers read to or play with their children younger than three-year-old, which is significantly associated with developmental delays in children (ibid). For example, a research in Sichuan Province indicates that 50% of the urban parents read to their child every day and 64% at least once every two days (Guo, 2016). Whereas in rural areas in Yunnan, Hebei, Guizhou, Shaanxi, and Henan, the frequency of reading books is surprising low: only 9% had read a book to their child on the day prior to survey administration, and only 18% had told a story to their child (Wang et al., 2019). The answer for this phenomenon likely lies in the fact that traditional parenting, which involves simple feeding and little interaction, is sufficient in the past, since most of the rural residents were engaged in subsistence farming, an activity that does not require high levels of cognitive or noncognitive skills. However, the quickly development in rural China and many poor communities in other middle-income countries leave little time for caregivers to adjust their parenting techniques to raise their children by means of scientific approaches, so as to let their children become developmentally equipped in a high-skill economy (Wang et al., 2019). Developmental delays in rural China, as well as the wide rural-urban disparity in terms of parenting, are the hidden trouble for sustainable economic development and the potential root of the middle-income trap in China (Zhang, Yi, Luo, Liu, & Rozelle, 2013).

An important characteristic that makes the problem more noteworthy is the possibility of intergenerational transmission of parenting: that is, the influence of parents' own experiences as a child on their later parenting style and practices. A body of evidence suggest such transmission exists, although only to a mild to moderate degree, with estimates suggesting an average of 35–45% of parenting styles transmitted to the next generation (Belsky, Conger, & Capaldi, 2009). Earlier studies indicate that early exposure to harsh or abusive parenting is probably the most consistent predictor of the subsequent adoption of coercive parenting style toward one's own children (Belsky et al., 2009; Wang, Xing, & Zhao, 2014). The strength of intergenerational transmission of corporal punishment, according to the research conducted by Wang et al. (2014), was strong and parents' attitudes toward corporal punishment played a mediating role in the continuity of corporal punishment for both fathers and mothers in China.

Several recent prospective studies initiated in adolescence indicate that it is not just aggressive, hostile parenting that seems to be intergenerationally transmitted (Chen, Liu, & Kaplan, 2008; Madden et al., 2015). For instance, using a longitudinal data consists of 146 parents who were recruited from maternity wards and followed up for 24 months in England, Madden et al. (2015) found that the "affection" score of the mothers of the first generation (G1) was associated with positive parenting behaviors in fathers of the second generation (G2). Similar result was also found in a 200 people cohort in New Zealand, where participants were being studied repeatedly since 3-year-old and were videotaped interacting with their own 3-year-old children (Belsky, Jaffee, Sligo, Woodward, & Silva, 2005). Belsky et al. (2005) conclude that childrearing experiences in the family of origin predict warm-sensitive-stimulating parenting.

In addition to the role of mothers, the role of fathers is worth noting when exploring the intergenerational transmission of parenting

as well. Traditional fathering is defined in terms of fathers' roles as a relatively distant moral guardian. With a gradually larger part of female employment around the world takes place in the formal economy, there has been recognition that social and cultural change has impacted on men and their roles as fathers that is shift to a more 'involved' fatherhood (Kwon & Roy, 2007). In a systematic review of longitudinal studies, increased level of paternal parenting is suggested to result in improved outcomes for children in terms of health and well-being (Sarkadi et al., 2009). Yet the intergenerational transmission and the impact of fathering are insufficiently discussed.

The mediating role of mental health in the intergenerational transmission of parenting are not fully understood as well. At least 100 million Chinese adults live in the shadow of mental disorders (Fan, Pei, & Hou, 2013). Psychological well-being and parenting styles are significant predictors of mental health among children, as mothers who are more depressed are more likely to have experienced child abuse or more negative life events than nondepressed mothers (Khodabakhsh, Kiani, & Ahmedbookani, 2014). In addition to being a potential consequence of adverse parenting, mental health also affects displayed parenting. Studies have indicated that mothers who have higher level of mental health disorder show higher levels of harsh or neglected parenting (Leinonen, Solantaus, & Punamäki, 2003; Rogosch, Cicchetti, & Toth, 2004), and preferred less parental consistency and adjustment, and more coercive parenting (Huang, Costeines, Kaufman, & Ayala, 2014). Nevertheless, few researches have linked the two part of the stories systematically.

This paper has two specific objectives. First, it aims to investigate the associations between parenting styles of G1 and G2, i.e. the existence of intergenerational transmission of parenting style, in Chinese rural households. Second, it aims to identify the mediating role of caregiver's mental health in the transmission process abovementioned.

2. Materials and methods

2.1. Study participants

Participants were drawn from a cross-sectional investigation that was conducted in 3 townships in the eastern part of Jiangxi province. There are 21 nationally designated poverty-stricken counties located in Jiangxi Province (Bureau, 2019). To identify the sample, first, we randomly selected one county among these poverty-stricken counties using the Random Sequence Generator. Second, from a list of all townships in the sample county that was obtained from the local regulatory authority, three sample townships were randomly chosen. For each sample township, we obtained a list of registered births from the local health care official. We randomly chose 200 children aged 6–24 months who were living in the sample townships at the time of data collection. Of those 200 children, 5 had migrated to other places with their parents, and 1 did not complete the initial interview. Therefore, this study involved 194 children.

The Peking University Institutional Review Board (PU IRB), Beijing, China, approved the ethical assessment of the study (No. IRB00001052-19132). The purpose of the study was explained to and verbal informed consent was obtained from the caregivers of all the children.

2.2. Data collection

The data used in this study were collected from sample households over a 3-week investigation. The survey team collected 4 types of information: 1) parenting styles of caregiver's father and mother, measured by the Egna Minnen av Barndoms Uppfostran inventory (EMBU), which consist of three subscales: rejection, emotional warmth, and (over)protection; 2) caregivers' own parenting style, measured by the Parenting Practice Questionnaire (PPQ), including four subscales: warm, consistency, hostile and hostility; 3) mental health condition, measured by the Depression, Anxiety and Stress Scale (DASS); and 4)

socio-demographic characteristics.

We trained college students as enumerators who were blind to study hypotheses to administer the interview with the primary caregivers of children in sample households. Primary caregivers are those who takes primary responsibility for the child's daily care. Enumerators were trained intensively for one week to make sure that they understand the survey in a consistent way and can administer the survey in a standardized way.

A series of measures were taken to ensure quality data collection. First, the team carefully developed the research protocols and questionnaire at the proposal stage. Pretesting around the sample areas were invaluable components of this research, affording the team an opportunity to identify questions that don't make sense to participants, or problems with the questionnaire that might lead to biased answers. Additionally, crosschecking was conducted at the enumerator level, and routinely special investigations were conducted by the research team. During each step of quality control, the team paid great attention to resolve anomalies, and to ensure that issues were identified and dealt with in a timely fashion.

2.2.1. Measuring parenting style of father and mother in G1

The Egna Minnen av Barndoms Uppfostran (EMBU, Swedish acronym for "My memories of upbringing") inventory was developed to assess retrospectively how individual perceived their father's and mother's parenting styles separately. It has been introduced, translated in Chinese in the late 1980s (Yue, 1993). Researchers from Australia, Denmark, Hungary, Italy, Netherlands and other countries have also revised EMBU and have conducted cross-cultural researches (Arrindell et al., 1986). The original long version of EMBU consists of 81 items. Given the time constraint during data collection, in this study, we adopted a short form (s-EMBU) consisting of 23-item with three subscales: rejection, emotional warmth, and (over)protection. There are 7, 6, 10 items in the abovementioned subscales, respectively. The factorial and construct validity and reliability of s-EMBU were examined among samples of 1331 students from Italy/Hungary/Guatemala and Greece, and was recommended as a reliable functional equivalent to the 81-item early EMBU (Arrindell et al., 1999). The scoring key and the instructions for filling out the form were reported by Arrindell et al. (1999).

Questions in s-EMBU can be categorized into three subscales, and are separately asked for the experience with father and mother. Thus, we can come up with six subscales: emotional warmth (father), rejection (father), overprotection (father), emotional warmth (mother), rejection (mother), overprotection (mother). The rejective parenting subscale are used to evaluate the critical and judgmental approach to parenting, such as punitive, shaming, rejection through criticism. Example questions in the rejective subscale include, "do you feel it was difficult to approach your parents?", "did it happen that your parents punished you, even for small offences?". On the other hand, the emotional warm parenting style subscale are used to measure the affectionate, stimulating and praising that parents normally did to their children, with questions like, "did you feel that warmth and tenderness existed between you and your parents", "do you think that your parents tried to make your adolescence stimulating, interesting and instructive?". They are asked to use the 4-point Likert-type scales (1 = 'never', 2 = 'seldom', 3 = 'often', 4 = 'always') to score the items. Amongst, the 17th item is reversely scored. Higher score indicates a higher level of emotional warmth or rejection experienced by the caregiver.

Internal consistency reliability was tested through Cronbach's alpha. The results show that the Cronbach's alpha coefficient was 0.74–0.81, which are good with this study's sample (Nunnally & Bernstein, 1978).

2.2.2. Assessing parenting style of primary caregiver in G2

Parenting Practice Questionnaire (PPQ) was a self-report

questionnaire completed by the child's primary caregiver to measure parenting style. The psychometric characteristics of the questionnaire had been examined by parents from the United States, Australia, China, and Russia (Robinson, Hart, & Mandleco, 1996), which shows similar overall parenting styles across the four cultures.

PPQ consist of four subscales: warm, consistency, hostile and hostility. The 'warm' subscale in PPQ refers to the degree to which the parents respond to their children in warm, encouraging ways and place an emphasis on the child's autonomy, whereas the 'hostile' subscale refers to the extent to which parents express rejection and behave as if they do not care about the child. The "hostile" and "warm" subscales of PPQ which are selected to be reported in this paper include 6 items in each subscales, such as: when the child misbehaves, refused to do what the parent wanted he/she to do, the parent scold or yell, threaten to punish, give a spanking, slap or hit in this study. The response format of the items is a 5-point scale: '1 = never/hardly ever', '2 = seldom', '3 = sometimes', '4 = often', and '5 = always'. Scores were averaged and higher scores reflected greater levels of that parenting style.

Based on the premise that EMBU are normally used to measure the people's memories of upbringing, the PPQ instrument evaluate their current parenting styles, and the fact that the 'rejection' and 'emotional warmth' subscales in EMBU and the 'hostile' and 'warm' subscales in PPQ are used to measure similar parenting styles, respectively, we decided to use 'rejection' and 'emotional warmth' scores in EMBU as the independent variables and the 'hostile' and 'warm' scores in PPQ as dependent variables, in order to see the transmission of parenting styles among the two generations.

The PPQ has also demonstrated satisfactory reliability scores, with the Cronbach's alpha coefficients of 0.59–0.78, indicating that the internal consistency are acceptable in our sample (Nunnally & Bernstein, 1978).

2.2.3. Evaluating mental health of primary caregiver in G2

Depression, Anxiety and Stress Scale (DASS) is a self-reported instrument to measure the three related negative emotional states of depression, anxiety, and tension/stress. The original 42-item DASS is simplified into a 21-item version (DASS-21) by Antony, Bieling, Cox, Enns, and Swinson (1998). Its validity has been verified in China by Wang et al. (2016). DASS-21 includes three subscales: depression, anxiety and stress, and each subscale contains 7 items.

The primary caregiver of each child is individually administered the DASS-21. They are asked to use the 4-point degree/frequency scales (0, 1, 2, 3) to score the items. The rating scale is as follows in detail: 0 – Did not apply to me at all, 1 – Applied to me to some degree, or some of the time, 2 – Applied to me to a considerable degree or a good part of time, 3 – Applied to me very much or most of the time. The total scores are calculated by summing up the scores for the relevant items, and multiply that number by 2. The higher total score of DASS a primary caregiver gets, the severer is her/his mental disorders.

The Cronbach's alpha coefficients of the DASS-21 inventory are larger than 0.9, which indicates that the internal consistency is quite good in our sample (Nunnally & Bernstein, 1978).

2.2.4. Confounding factors

In addition, we collected data on factors that could confound the intergenerational transmission of parenting style, which include three categories of variables: (1) child characteristics: gender (boy/girl), age in months (mean \pm standard deviation (SD)), and low birthweight (yes/no); (2) caregiver characteristics: age in years and education level (0 = illiteracy, 1 = preschool, 2 = primary school, 3 = middle school, 4 = senior high school / technical secondary school, 5 = junior college, 6 = bachelor, 7 = master or above); (3) household characteristics: whether the mother is the primary caregiver (yes/no), family income (greater than 25,000 yuan/at most 25,000 yuan). In this study, low birth weight is defined as less than 2500 g. To increase the accuracy of estimation, we further control these confounding variables in the

multivariate linear regression.

2.3. Empirical strategies

First, sample characteristics are described, and present with means and standard deviations of continuous variables and numbers (percent) of categorical variables used in the analyses. Second, bivariate correlations are conducted to examine the associations between predictor (parenting style of G1, separately for mother and father) and outcome (parenting style of G2) variables.

Thereafter, multiple linear regression analyses, designed to test whether parenting style of G1 predict parenting style of G2, are conducted after controlling for a series of confounding variables. In addition, we use causal step regression procedures to identify the mediation effect of caregiver’s mental health in the relationship between the perceived parenting style from caregiver and the current parenting style of caregiver. In this step, we adopt the classic approach as outlined by Baron & Kenny (1986) and Judd and Kenny (1981) to demonstrate the mediation.

$$Parenting_i = \alpha + \beta_1 exp_i + \gamma X_i + u_j + \epsilon_i \tag{1}$$

$$mental_i = \alpha + \beta_2 exp_i + \gamma X_i + u_j + \epsilon_i \tag{2}$$

$$Parenting_i = \alpha + \beta_3 exp_i + \beta_4 mental_i + \gamma X_i + u_j + \epsilon_i \tag{3}$$

where $Parenting_i$ is the caregiver i ’s parenting style; exp_i is the perceived parenting style from caregiver i ’s parents; $mental_i$ is caregiver i ’s mental health status; X_i refers to covariates on socioeconomic characteristics, including the child’s gender, age in month, whether the child was born with low birthweight; caregiver’s age, educational attainment; whether the mother is the child’s primary caregiver; and family income. u_j is the village fixed effects to control for the unobserved heterogeneity at the village level; and the ϵ_i is the random error term. We adjusted the standard errors to account for clustering at the village level.

β_1 indicates the direct effect of the parenting style of G1 on parenting style of G2, β_2 is the indirect effect of the parenting style of G1 on the mediator, β_3 refers to the residual direct effect of the parenting style of G1 on parenting style of G2, and the product term $\beta_2\beta_4$ is the indirect effect through caregivers mental health.

The hypothesis drawn from Eq. (1) is that β_1 is significant, indicating that the parenting style of G1 is significantly associated with the parenting style of G2. In addition, if β_2 and β_4 are both significant, and β_3 is significant as well, then the mediation is a partial mediation; otherwise it is a complete mediation. On the other hand, if at least one of β_2 and β_4 is insignificant, then we need to conduct Sobel test to see if the mediation is a partial mediation or no mediation (see Appendix A1).

Standard errors of the indirect effects are computed by using the bootstrap method based on resampling with 500 replications. As standard errors from bootstrap process are not always appropriate for statistical inference, we included three types of 95% confidence intervals (CI), i.e., percentile interval, bias-corrected (BC) interval, and bias-corrected and accelerated (BCa) interval, to test statistical significance of the indirect effects through the mediator. The percentile interval uses usual sampling distribution cutoffs without bias correction, while the BC interval corrects for a bias in the distribution of bootstrap estimates. The BCa interval corrects for bias and skewness in the distribution of bootstrap estimates (Efron, 1987). The indirect effect is considered statistically significant if the CIs do not contain zero.

Given the multi-factorial measure of the DASS, we then examined which subscale is the stronger mediator. We use the scores of the three subscales in DASS to replace the DASS total score as mediators and reported the estimates of indirect effects of parenting style of G1 on parenting style of G2.

Table 1
Descriptive statistics.

Variable	Definition	Mean ± S. D /No. (%)
Dependent variable		
<i>G2_warm</i>	Warm parenting style	3.44 ± 0.52
<i>G2_hostile</i>	Hostile parenting style, match with “rejective” in G1	1.62 ± 0.46
Independent variable		
<i>G1_warm_dad</i>	Warm parenting of caregiver’s father	11.95 ± 3.4
<i>G1_warm_mom</i>	Warm parenting of caregiver’s mother	12.4 ± 3.26
<i>G1_reject_dad</i>	Rejective parenting of caregiver’s father	10.06 ± 3.36
<i>G1_reject_mom</i>	Rejective parenting of caregiver’s mother	10.19 ± 3.06
Mediator variable		
<i>DASS</i>	Total score of mental health status	13.2 ± 9.85
<i>depress</i>	Score of depression	8.31 ± 7.22
<i>anxiety</i>	Score of anxiety	6.41 ± 6.44
<i>stress</i>	Score of stress	11.67 ± 8.52
Covariates		
<i>Gender</i>	Children’s gender	
<i>Boy</i>		99 (51.03)
<i>Girl</i>		95 (48.97)
<i>Age in month</i>	Children’s age in month	11.32 ± 4.72
<i>Low birthweight</i>	Born with low birthweight	
<i>yes</i>		44 (22.68)
<i>no</i>		150 (77.32)
<i>Caregiver’s age</i>	Caregiver’s age in year	38.22 ± 13.67
<i>Education</i>	Caregiver’s educational attainment	3.23 ± 1.17
<i>Generation</i>	Whether mother/father is the primary caregiver of the child	
<i>yes</i>		118 (60.82)
<i>no</i>		76 (39.18)
<i>Dibao</i>	Whether the family receives social security support	
<i>yes</i>		32 (16.49)
<i>no</i>		162 (83.51)

Data source: Authors’ survey.

Note: Threshold for determining the mental health condition are:

Depress: Normal — 0 ~ 9; Mild — 10 ~ 13; Moderate — 14 ~ 20; Severe — 21 ~ 27; Extremely Severe — 28 +
 Anxiety: Normal — 0 ~ 7; Mild — 8 ~ 9; Moderate — 10 ~ 14; Severe — 15 ~ 19; Extremely Severe — 20 +
 Stress: Normal — 0 ~ 14; Mild — 15 ~ 18; Moderate — 19 ~ 25; Severe — 26 ~ 33; Extremely Severe — 34 +

3. Results

3.1. The relationship between parenting styles of G1 and G2

Table 1 reports the descriptive statistics for our sample. In terms of socioeconomic characteristics, just over half (51.03%) of the children are male; the children are slightly over 11 months old on average; the primary caregivers are around 38 years old on average; the caregiver’s average educational attainment is middle school; and mother/father account for 61% of the primary caregivers in the sample households. 16% of the households are receiving social security support.

In terms of caregivers’ parenting style, the average score of caregivers’ PPQ within the “warm” subscale is 3.44, whereas the average “hostile” parenting score is 1.62. In terms of caregivers’ perceived experience of parenting, the average score of perceived warm experience with father, perceived warm experience with mom, perceived rejective experience with dad, and perceived rejective experience with mom are 11.95, 12.4, 10.06, 10.19, respectively.

Table 2 presents the Pearson correlation coefficients among the predictor and outcome variables included in the analyses, separately for mothers and fathers of the caregiver. As expected, warm parenting style of caregiver’s father (correlation coefficient = 0.225, P < 0.01) and mother (correlation coefficient = 0.221, P < 0.01) are positively and significantly associated with the caregivers’ displayed warm parenting

Table 2
Bivariate Pearson correlation coefficients (and significance levels) for the parenting style of G2 and the parenting style of both parents in G1.

Variable	1	2	3	4	5	6
1. G2_warm	—					
2. G2_hostile	-0.044	—				
3. G1_reject_dad	-0.105	0.172***	—			
4. G1_warm_dad	0.225***	0.002	-0.195*	—		
5. G1_reject_mom	-0.016	0.213***	0.831**	-0.055	—	
6. G1_warm_mom	0.221***	-0.008	-0.054	0.830**	-0.054	—

Notes: (i) N = 194. (ii) *** p < 0.01, ** p < 0.05, * p < 0.1.

toward their own child. Rejective parenting style of caregiver’s father (correlation coefficient = 0.172, P < 0.01) and mother (correlation coefficient = 0.213, P < 0.01) are positively and significantly associated with the caregivers’ displayed hostile parenting toward their own child.

Column 1 and column 4 in both Tables 3 and 4 present the findings of the multivariate linear regression for the analyses predicting warm and hostile parenting styles indicated in Eq. (1). After controlling for the effects of potential confounding variables, paternal emotional warmth and rejection are still positively and significantly associated with the warm parenting style (adjusted $\beta = 0.207$, P < 0.01, column 1 in Table 3) and hostile parenting style (adjusted $\beta = 0.226$, P < 0.01, column 1 in Table 4) of caregivers, respectively. Similarly, maternal emotional warmth and rejection are positively and significantly associated with the warm parenting style (adjusted $\beta = 0.221$, P < 0.01, column 4 in Table 3) and hostile parenting style (adjusted $\beta = 0.236$, P < 0.01, column 4 in Table 4) of caregivers, respectively. More specifically, greater emotional warmth from both father and mother of G1 predict more warm parenting style of G2, and greater rejection from both father and mother of the caregiver predicted more hostile parenting currently displayed by the caregiver.

3.2. The mediation effect of caregivers’ mental health status

Having examined the prediction effects of perceived parenting

Table 3
Regressing warm parenting style of G1 on warm parenting style of G2 and the mediation effect of DASS on the association.

Variable	G2_warm (1)	G2_DASS (2)	G2_warm (3)	G2_warm (4)	G2_DASS (5)	G2_warm (6)
G1_warm_dad	0.207*** (0.056)	-0.113 (0.071)	0.209*** (0.059)			
G1_reject_dad	-0.032 (0.080)	0.279** (0.112)	-0.036 (0.072)			
G1_warm_mom				0.221*** (0.050)	-0.139** (0.065)	0.221*** (0.052)
G1_reject_mom				0.010 (0.083)	0.305*** (0.101)	0.010 (0.078)
DASS			0.015 (0.070)			0.001 (0.062)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.113	0.130	0.114	0.115	0.148	0.115
Observations	194	194	194	194	194	194

Notes: (i) Table 3 reports the association between warm parenting style of G1 and G2, as well as the mediation effect of DASS, indicated by Eqs. (1)-(3). Standard errors present in parentheses are clustered at the village level.

(ii) In column (1) the dependent variable is the warm parenting style of the caregiver, and the independent variable is the caregiver’s perceived warm and rejective parenting styles from father. In column (2), the dependent variable is the caregiver’s DASS score, and the independent variable is the caregiver’s perceived warm and rejective parenting styles from father. In column (3), the dependent variable is the warm parenting style of the caregiver, the independent variable is the caregiver’s perceived warm and rejective parenting styles from father, and the mediator variable is the caregiver’s DASS score. Column (4) – (6) are represented in similar pattern as in (1) – (3) but the independent variable is the caregiver’s perceived warm and rejective parenting styles from mother.

(iii) The covariates include: child’s gender, age in month, and whether the child was born in low birthweight; caregiver’s age in years and education level; whether the caregiver is the parent or grandparent of the child; the number of children that the caregiver is taking care of in the household; whether the family is receiving social security support (dibao).

*** p < 0.01, ** p < 0.05, * p < 0.1.

experience, we follow the recommendations of Muller, Judd, and Yzerbyt (2005) to conduct another set of causal step regression of mediation, to test whether mental health status mediated the correlations between the parenting style of G1 and that of G2, as indicated in Eqs. (2) and (3).

The association of warm parenting style of father and the mental health of caregiver ($\beta = -0.113$, p = 0.037, column 2 in Table 3) and the association of the mental health of caregiver and the warm parenting style of G2 ($\beta = 0.015$, p = 0.887, column 3 in Table 3) are insignificant. On the other hand, although the association of warm parenting style of mother and the mental health of caregiver ($\beta = 0.305$, p < 0.01, column 5 in Table 3) is significant as expected, the association of the mental health of caregiver and the warm parenting style of G2 ($\beta = 0.001$, p = 0.851, column 6 in Table 3) is insignificant. To summarize, the DASS failed to mediate the intergenerational transmission of warm parenting style.

The mediation effect of DASS appeared in the intergenerational transmission rejective, hostile parenting style. The association of rejective parenting style of G1 parents and the mental health of G2 caregiver ($\beta = 0.279$, p < 0.05; $\beta = 0.305$, p < 0.01, column 2 and 5 in Table 4, respectively) are positive and significant. The coefficient of the residual direct effect of the rejective parenting style of both parents in G1 on the hostile parenting of G2 are statistically insignificant, while the coefficient of the mediator itself is significant (column 3 and column 6 in Table 4), indicating the fully mediation effects of the DASS in the relationship between the rejective, hostile parenting style of the two generations.

The Sobel test for the mediation model is applied. According to the results the indirect effect of the independent variable on the dependent variable through the mediator variable DASS is insignificant in the transmission of emotional warmth (Sobel statistic = -0.07, p = 0.18). Which means, no significant contribution of DASS is detected in the transmission of warm parenting style. The Sobel test verified the conclusion that the mediation effect of DASS only appeared in the intergenerational transmission of rejective, hostile parenting style.

The calculated indirect effect of warm parenting style of G1 on G2 through DASS was very small in size and insignificant, with zero

Table 4
Regressing rejective parenting style of G1 on hostile parenting style of G2 and the mediation effect of DASS on the association.

Variable	G2_hostile (1)	G2_DASS (2)	G2_hostile (3)	G2_hostile (4)	G2_DASS (5)	G2_hostile (6)
G1_warm_dad	0.059 (0.081)	-0.113 (0.071)	0.096 (0.085)			
G1_reject_dad	0.226*** (0.047)	0.279** (0.112)	0.135** (0.058)			
G1_warm_mom				0.018 (0.077)	-0.139** (0.065)	0.062 (0.069)
G1_reject_mom				0.236*** (0.064)	0.305*** (0.101)	0.140* (0.075)
DASS			0.325*** (0.055)			0.314*** (0.064)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.173	0.130	0.265	0.181	0.148	0.265
Observations	194	194	194	194	194	194

Notes: (i) Table 4 reports the association between rejective, hostile parenting style of G1 and G2, as well as the mediation effect of DASS, indicated by Eq. (1) – (3). Standard errors present in parentheses are clustered at the village level.

(ii) In column (1) the dependent variable is the hostile parenting style of the caregiver, and the independent variable is the caregiver’s perceived warm and rejective parenting styles from father. In column (2), the dependent variable is the caregiver’s DASS score, and the independent variable is the caregiver’s perceived warm and rejective parenting styles from father. In column (3), the dependent variable is the hostile parenting style of the caregiver, the independent variable is the caregiver’s perceived warm and rejective parenting styles from father, and the mediator variable is the caregiver’s DASS score. Column (4) – (6) are represented in similar pattern as in (1) – (3) but the independent variable is the caregiver’s perceived warm and rejective parenting styles from mother.

(iii) The covariates include: child’s gender, age in month, and whether the child was born in low birthweight; caregiver’s age in years and education level; whether the caregiver is the parent or grandparent of the child; the number of children that the caregiver is taking care of in the household; whether the family is receiving social security support (dibao).

*** p < 0.01, ** p < 0.05, * p < 0.1.

Table 5
Bootstrap estimates of indirect effects of parenting style of G1 on parenting style of G2 through the mental health of caregiver (G2_DASS).

Indirect effect	Point estimate	Bootstrap S. E.	95% CI (Percentile)	95% CI (BC)	95% CI (BCa)
	(1)	(2)	(3)	(4)	(5)
G1_warm_dad on PPQ_warm through G2_DASS	0.001	0.014	[-0.029, 0.029]	[-0.034, 0.026]	[-0.034, 0.026]
G1_warm_mom on PPQ_warm through G2_DASS	0.001	0.013	[-0.03, 0.026]	[-0.033, 0.023]	[-0.033, 0.025]
G1_reject_dad on PPQ_hostile through G2_DASS	0.095***	0.033	[0.034, 0.164]	[0.039, 0.173]	[0.04, 0.177]
G1_reject_mom on PPQ_hostile through G2_DASS	0.096***	0.029	[0.04, 0.155]	[0.048, 0.172]	[0.048, 0.172]

Notes: (i) Table 5 reports the bootstrap estimates of indirect effects of parenting style of G1 on parenting style of G2 through the mental health of caregiver, DASS. The dependent variables are the warm/hostile parenting style of G2, and the independent variable are the warm/rejective parenting style of G1. The mediator variable is the DASS score.

(ii) Bootstrap standard errors are based on resampling with 500 replications.

(iii) The percentile 95% CI uses usual sampling distribution cutoffs without bias correction, while the BC 95% CI corrects for a bias in the distribution of bootstrap estimates, and the BCa 95% CI corrects for bias and skewness in the distribution of bootstrap estimates.

*** p < 0.01, ** p < 0.05, * p < 0.1.

contained in all three types of 95% CIs. On the contrary, for the association between rejective/hostile parenting style of the two generation, none of the 95% CIs contained zero (Table 5). The mediation effect of DASS is relatively higher when the parenting style of mother was rejective ($\beta = 0.089, p < 0.01$) than in the scenario when the parenting style of father was rejective ($\beta = 0.075, p < 0.01$), although the difference was not significant.

In addition to the total score of DASS, we also differentiate the effect of the three subscales of DASS, namely, depression, anxiety, and stress, by replacing the total score of DASS with the subscales in the mediation analyses. The three subscales seem to mediated the relationship between rejective parenting style of G1 and hostile parenting style of G2 (row 3 and 4, Table 6), while the mediation effects of depression, anxiety, and stress were disappeared in the transmission of warm parenting style across generation (row 1 and 2, Table 6).

4. Discussion

Using the survey data collected from 194 rural households in 3 townships located in rural Jiangxi, China, this study sought to extend investigation of the intergenerational transmission of parenting style. This study also examined the mediation effect of caregiver’s mental health status on the link between the parenting styles of two generations. Consistent with expectations derived from relevant research (Capaldi, Pears, Patterson, & Owen, 2003; Conger, Belsky, & Capaldi, 2009; Madden et al., 2015), this paper found that warm parenting style of G1 can positively predict warm parenting of G2, and rejective parenting style of G1 can positively predict hostile parenting style of G2.

The mediation model has shown that the transmission of rejective parenting from one generation to another are fully mediated by the overall mental health status of the caregiver. That is, caregivers who have experienced rejective parenting in childhood and adolescence may undertake higher level of mental disorder, and there are possibilities that caregiver’s mental disorders exerted negative impacts on their

Table 6

Bootstrap estimates of indirect effects of parenting style of G1 on parenting style of G2 through different aspect of the mental health of caregiver (depression, anxiety, and stress).

Indirect effect	depression (1)	anxiety (2)	stress (3)
<i>G1_warm_dad on PPQ_warm through</i>			
(1) Point estimate	0.01	0.016	0.004
(Bootstrap S.E.)	0.015	0.013	0.014
<i>G1_warm_mom on PPQ_warm through</i>			
(2) Point estimate	0.01	0.017	0.004
(Bootstrap S.E.)	0.013	0.013	0.013
<i>G1_reject_dad on PPQ_hostile through</i>			
(3) Point estimate	0.074**	0.055**	0.09***
(Bootstrap S.E.)	0.03	0.023	0.031
<i>G1_reject_mom on PPQ_hostile through</i>			
(4) Point estimate	0.079***	0.051**	0.09***
(Bootstrap S.E.)	0.03	0.02	0.03

Notes: (i) Table 6 reports the bootstrap estimates of indirect effects of parenting style of G1 on parenting style of G2 through the depression, anxiety and stress condition of caregiver. The dependent variables are the warm/hostile parenting style of G2, and the independent variable are the warm/rejective parenting style of G1. The mediator variable is the three subscales of DASS.

(ii) Bootstrap standard errors are based on resampling with 500 replications.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

parenting skills. In particular, depression, anxiety, and stress all contributed to the transmission of rejective, hostile parenting. Collectively, this mediation model is theoretically informed, and is consistent with the developmental view of the life course that, caregivers who are born in families with insecure and disorganized attachment may be more consumed by other aspects of their lives (e.g. depression) and are therefore less likely to provide consistently sensitive care toward their children (Moss et al., 2011).

We found that the parenting style of both father and mother of the caregiver is associated with caregiver's currently displayed parenting style. Traditionally, (grand)mothers are mostly the primary caregivers of children while fathers go out for better job opportunities in China (Wen & Lin, 2012). Frequency of daily communication and interaction between father and child are much lower than that of mother-children (Huang, 2014). This finding that the transmissible parenting style of father is an interesting one, and potentially highlights a greater role of father as disciplinarian, educator and caregiver, with increased paternal involvement in many families in recent years.

The problems of caregiver's mental health and parenting are of great importance in rural China. The prevalence of mental disease, such as depression, is higher among female and rural residents than male and urban residents (Qin, Wang, & Hsieh, 2018). The relatively low level of mental health support designed for caregivers would inevitably contribute to the intergenerational transmission of negative parenting style, and might partly explain the severe developmental delays of children in these areas.

Existing studies regarding the transmission of parenting across generations have been replicated in various socio-demographic sample. However, the majority of the existing literature on the intergenerational transmission of parenting has focused on abusive or harsh parenting (Capaldi et al., 2003; Conger et al., 2009), with a smaller number of studies investigating the continuity of warm or supportive parenting (Chen et al., 2008). In addition, the intergenerational transmission of fathering behavior has not been as well studied as that of mothers. Moreover, the mediating role of mental health in the intergenerational transmission of parenting is not fully understood.

This study adds to the evidence base demonstrating intergenerational transmission of parenting in several ways. First, it confirms previous findings about the transmission of both warm and rejective parenting across generation. The associations found in this study (effect size 0.21–0.24) are similar in magnitude to previous studies (around

0.2–0.4) (Conger et al., 2009). Which means, the findings are relatively robust across studies from diverse socio-demographic background. Second, this study is one of the few studies to assess the intergenerational transmission of both positive and negative parenting styles. Third, this is also one of the few studies to investigate separately the parenting styles of mothers and fathers of the previous generation.

There are limitations in this study. One of the most notable limitations is related to measures of parenting styles, both retrospective memories of parenting from the previous generation, and the parenting styles of the caregiver himself/herself are being self-reported in this study. As it is a sensitive issue, the retrospectively self-reported parenting is influenced not only by memory but also by the individual's willingness to report (Jolliffe et al., 2003). Second, the findings based on the cross-sectional data do not indicate causal inference, although it is helpful to understand the relationships between the parenting style of two generation and mental health condition of caregivers. Third, depending on the identity of the primary caregiver, intergenerational transmission of parenting style implies three or four generations. That is, there are two types of transmission of parenting styles across generations which are collectively called the "intergenerational transmission". The first is from grandparents to parents (parents as the primary caregivers), and the second is from great grandparents to grandparents (grandparents as the primary caregivers). Given the relatively small sample size, we did not differentiate the two types of intergenerational transmission in this study. Fourth, our sample was only collected from a typical rural area in East China, the conclusions cannot be simply generalized to other contexts.

5. Conclusion

In a sense, this paper extends the current research base on the intergenerational transmission of parenting style, while drawing attention on the importance of mental health disorder among caregivers as a mediator in the transmission of rejective, hostile parenting style across generation. This finding has important implications not only for a better understanding of the long-term effect of parenting style, but also provide empirical evidence for preventive services aimed at improving caregiver's mental health and parenting styles at the early stage of child development.

CRedit authorship contribution statement

Yang He: Methodology, Validation, Formal analysis, Writing - original draft, Writing - review & editing. **Chengfang Liu:** Writing - review & editing. **Yanggeng Chen:** Software, Project administration, Investigation, Writing - review & editing. **Jie Huang:** Writing - review & editing, Visualization. **Renfu Luo:** Conceptualization, Resources, Writing - review & editing, Supervision, Investigation, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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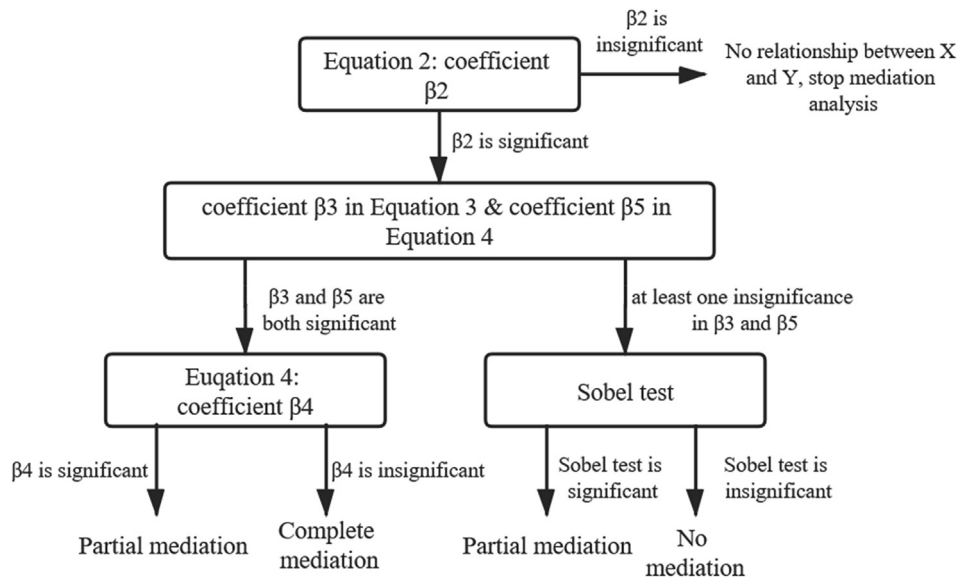
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Appendix A1. : Analytic models for mediation effects



Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.childyouth.2020.105319>.

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