

Relationship Between Empathy and Interpersonal Distress of Chinese Left-Behind Children: The Role of Emotion Regulation and Gender

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Introduction: Interpersonal relationship serve as crucial of social support and a sense of security for left-behind children, playing a compensatory role in mitigating the absence of familial affection. Interpersonal distress can significantly impact their mental well-being. Although previous research has established a connection between empathy and interpersonal distress, the mechanisms by which empathy triggers interpersonal distress, as well as potential gender-based variations in this relationship, remain elusive. To bridge this gap in knowledge, this study investigates the mediating influence of emotion regulation and the moderating impact of gender in the relationship between empathy and interpersonal distress.

Methods: A total of 713 rural left-behind children completed the Interpersonal Reactivity Index scale, Emotion Regulation Competence Scale, and Interpersonal Relationship Assessment Scale.

Results: Pearson correlation analyses suggested strong significant correlations among empathy, emotion regulation ability, and interpersonal distress. Path analyses indicated that emotion regulation ability mediated the relationship between empathy and interpersonal distress. Furthermore, hierarchical regression analyses suggest a moderating effect of gender in the relationship between empathy and emotion regulation ability.

Discussion: The present study reveals the role of emotion regulation ability and gender in the relationship between empathy and interpersonal distress, which has important theoretical and practical implications for the prevention and intervention of interpersonal distress in left-behind children. Moreover, it may strengthen the relationship between peer and teacher at school, and improve the quality of parent-child communication at home.

Keywords: empathy, interpersonal distress, emotion regulation ability, gender, left-behind children

Introduction

The migration and movement of the rural workforce in China has given rise to a demographic known as left-behind children. These are individuals under the age of 18 who have resided in their hometown for a period exceeding three months while being separated from their parents. Typically, they are under the care of relatives or grandparents, as one or both of their parents seek employment in other urban areas to pursue improved economic prospects.^{1,2} Due to their parents' job relocation, children of left-behind may lack effective guidance of interpersonal skills and strategies from their parents, and tend to express social withdrawal, incompatibility, fear of interacting with others, and other interpersonal distress problems.³

Interpersonal distress refers to the incoordination of interpersonal relationships caused by various factors in the process of interaction with others and manifests negative emotions such as anxiety, low self-esteem, and depression.⁴ It will affect children's social adaptation ability and physical and mental development.⁵ In addition, for left-behind children, interpersonal relationships in schools are a significant source of support and security,⁶ and peer relationships have a certain compensatory effect on their lack of family affection.⁷ Therefore, identifying the factors that influence

interpersonal distress has important theoretical and practical implications for the prevention and intervention of left-behind children's interpersonal distress.

The Direct Relationship Between Empathy and Interpersonal Distress

Empathy is an individual's ability to perceive and understand the emotions of others and respond appropriately,⁸ and is also a key predictor of interpersonal indicators. The employment of strong empathy to respond to the suffering of others, however, can also result in despair, anxiety, and exceptionally high levels of interpersonal skills.^{9–11} Tone and Tully proposed that the development of empathy, influenced by intra- and inter-individual interactions, increases the risk of personal distress and excessive interpersonal guilt. Interpersonal guilt is a maladaptive form of empathy-driven by excessive and irrational altruistic concerns, an individual's irrational belief that he or she is responsible for alleviating the suffering of others, and a strong fear of harming others.^{12,13} In order to adapt to the school environment, left-behind children are prone to deviations such as excessive physiological arousal in the development of empathy, which makes them emotionally insensitive or lacks interpersonal skills.² Specifically, when developing empathy, they tend to internalize the pain of others, showing excessive disgust, excessive cognitive views, excessive self-protection, etc. Egocentric comforting responses or self-thoughts to observed distress leads to internalization problems or interpersonal distress. This suggests that empathy is a force among left-behind children, but it may also be a dangerous force, leading to hypervigilance and guilt caused by the inability to alleviate the pain of others, which in turn affects interpersonal issues.^{14–17} To demonstrate whether the above empathy can lead to left-behind children's interpersonal distress, this study intends to explore the role of empathy on left-behind children's interpersonal distress.

The Mediation Role of Emotion Regulation Ability

Although previous studies have suggested a positive correlation between empathy and interpersonal distress,⁹ the mechanisms underlying the relationship remain unclear. As a process of initiating, regulating, suppressing, and maintaining emotions, emotion regulation may have an indirect effect on the relationship between empathy and interpersonal distress. Emotion regulation is the monitoring and regulation of an individual's internal emotional process and external behavior to adapt the external environment and promote interpersonal relationships.^{18,19} In the process of interpersonal communication, people can be aware of their own and others' emotions, and use effective emotion regulation strategies to control emotions and maintain positive relationships with others.¹⁸ From the perspective of affective empathy, after establishing a strong empathic relationship with others in distress, some individuals will have a strong negative emotional response. This can lead to emotional dysregulation, which in turn leads to internalization problems or interpersonal problems. However, MacDonald and Price found that emotion regulation ability may mitigate the strong effects of empathy on internalization problems, specifically, people with high emotional regulation ability are more likely to adjust their negative feelings, alleviate the negative effects of emotions, and reduce the occurrence of internalization problems.^{20,21} In short, high empathy produces hypervigilance, accompanied by deep emotional experience. When aware of negative emotions, they may use catharsis or self-regulation to reduce negative effects, thereby reducing internalizing problems or interpersonal distress problems. The empathy of left-behind children may have a certain impact on interpersonal distress, but it is not clear whether they can reduce interpersonal distress through emotion regulation ability. Therefore, this study intends to explore the mediating role of emotion regulation ability between empathy and interpersonal distress in left-behind children.

The Moderating Role of Gender

Gender is a significant demographic factor closely associated with empathy. Many studies have shown that there is a gender difference in the level of empathy²² and processing and managing emotions.^{23,24} Generally speaking, females have a higher level of empathy than males.²² In addition, when faced with negative emotions, females tend to pay more attention to their inner thoughts and emotional experiences, making them pay more attention to their negative emotions than males.^{25,26} Due to the long-term separation between parents and left-behind children, their emotions are more easily neglected and loneliness is stronger. Compared with left-behind boys, girls are more likely to be affected by emotional neglect and have mental health problems such as low self-esteem and depression.^{27,28} Therefore, when an individual

experiences distress and interpersonal guilt as a result of empathy, girls' emotional sensitivity and deeper emotional experience characteristics can enhance this negative impact^{29,30} and consume girls' emotional self-recovery and regulation ability. However, males are more rational in dealing with negative emotions caused by empathy, can adopt appropriate coping strategies to alleviate their damage and show greater emotional regulation ability.³¹ It is evident that, when confronted with the adverse repercussions of heightened empathy, girls face a comparatively greater challenge in mitigating the harm through emotional regulation. Therefore, gender characteristics of left-behind children may moderate the effect of empathy on emotion regulation ability. Throughout previous studies, gender differences in empathy³² and emotion regulation ability^{28,33} have been confirmed. However, this gender difference in the relationship between empathy and emotion regulation ability in left-behind children has not been paid attention to. In this regard, this study intends to investigate the moderating effect of gender on the relationship between empathy and emotion regulation ability in left-behind children.

The Present Study

In summary, this study proposes a moderated mediation model (see Figure 1) to explore the relationship between empathy and interpersonal distress in left-behind children. Specifically, the following three hypotheses: 1) Empathy can predict interpersonal distress in left-behind children; 2) Emotion regulation ability mediates the relationship between empathy and interpersonal distress among left-behind children; 3) Gender plays a moderating role in the relationship between empathy and emotion regulation ability, and this association may differ between boys and girls.

Methods

Participants

A total of 734 left-behind children from 4 rural primary and secondary schools in Yunnan, Shandong, Jilin, and Sichuan Province participated in the questionnaire survey. At least one parent has departed from home, resulting in a separation from the child lasting more than three months. In addition, all left-behind children have no obvious physical disabilities or developmental disabilities. Prior to conducting the formal questionnaire survey, the researchers obtained consent from both students, parents, and teachers. This process involved signing the informed consent form before the participants proceeded with the questionnaire. After removing 21 participants with invalid and missing data, there was 713 valid subjects (ages ranging from 10 to 17 years, $M = 12.21$, $SD = 1.61$) and the validity rate of the questionnaire was 97.14%. Students in this study provided informed verbal consent before completing the questionnaire, while students under the age of 18 obtained consent from school administrators, teachers, and parents or legal guardians. The students' responses were anonymous, and their answers were completely voluntary and confidential. This study protocol was approved by the Ethics Committee of the school of Psychology, Northeast Normal University. The study was conducted in accordance with the Declaration of Helsinki. All sample were collected after ethical permission was obtained.

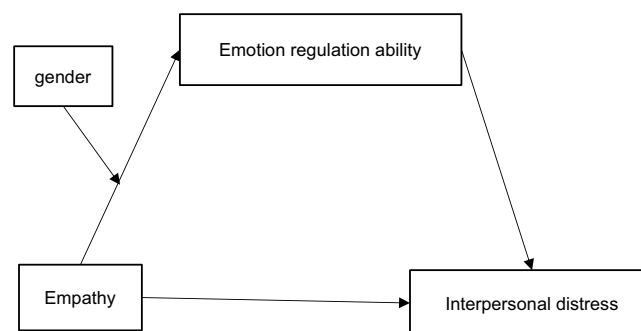


Figure 1 Hypothetical model of the relationship between empathy and interpersonal distress in left-behind children.

Measures

Empathy

The Interpersonal Reactivity Index Scale (IRI)³⁴ was developed to evaluate empathy ability. The scale mainly involves 4 dimensions: fantasy (the proclivity to identify with fictitious characters), perspective taking (the ability to adapt the perspective of others in common life), empathic concern (the tendency to experience feelings of compassion and sympathy from others' misfortune), and personal distress (the proneness to feel uncomfortable about the distress of others). The Chinese version of the scale has been proven to have good validity and reliability.³⁵ Children rated each item on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). A mean score of the 22 items was calculated, with higher scores mean a higher empathy ability. In the present research, Cronbach's α coefficient was 0.70, which was acceptable validity.

Emotion Regulation Ability

The emotion Regulation Competence Scale (ERC)³⁶ was developed to measure adolescents' emotion regulation ability. The scale involves 6 dimensions: emotion perception, emotion assessment, emotion regulation self-efficacy, applying emotion regulation strategies, emotion control, and emotion regulation reflection. All items were scored on a 6-point Likert scale (from 1 = "not at all" to 6 = "always"). The higher scores indicated that the left-children's level of emotion regulation ability is strong. This scale has good validity and reliability in Chinese version.³⁶ In the present study, Cronbach's α coefficient was 0.91, and its reliability is high.

Interpersonal Relationship Assessment

The interpersonal Relationship Assessment Scale (IRAS)³⁷ was developed to measure interpersonal distress. The scale involves 4 dimensions: conversation, communication and making friends, dealing with others, and interacting with friends of the opposite gender. Items were scored on a 2-point Likert scale (1 = "yes", 0 = "no"). Higher scores indicate more severe interpersonal behavioral distress. The Chinese version of the scale development study conducted by Zheng reported good validity and reliability. In the present research, Cronbach's α coefficient was 0.85, which denotes a satisfactory internal consistency and acceptable validity.

Statistical Analyses

Descriptive statistics (mean and standard deviation) and Pearson correlations among key variables were obtained by SPSS 22.0. The mediation effect of emotion regulation ability on the relationship between empathy and interpersonal distress was analyzed through Hayes's PROCESS 3.5 macro Model 4. The moderating role of gender on the relationship between empathy and emotion regulation ability was tested by Model 7. The bias-corrected non-parametric percentile Bootstrap test was used to test the hypothetical model by estimating the 95% confidence intervals of mediation and moderating effects through 5000 sample sampling. In addition, gender was dummy coded, female=1 and male=0, and an interaction term was generated as the product of gender and the centered predictor (average emotion regulation ability). First, enter the predictor variables (emotion regulation ability) and moderator variables (gender). Then, enter the interaction terms between emotion regulation ability and the moderator variables (gender). If the interaction term "emotion regulation ability \times gender" is found to be significant, it means that there is a gender moderation effect.³⁸ Finally, based on previous research,^{39,40} a standard simple slopes analysis was performed to show the relations between the predictor variables (empathy) and outcome variables (emotion regulation ability) when gender = 1 (female) and gender = 0 (male), separately.

Harman's single factor test⁴¹ tests whether the data has a common method bias. All variables are included in the same latent variable for testing. The results show that a total of 20 factors are generated without rotation, and the first factor explains the variation. The amount is 13.18%, which is less than the critical standard of 40%, indicating that there is no serious common method bias in the data.^{42,43}

Results

Descriptive Statistics and Correlation Analysis

The results of the descriptive analysis and Pearson correlations among key variables are displayed in Table 1. Correlation analysis of empathy, emotion regulation ability, and interpersonal distress support of left-behind children shows that is

Table 1 Descriptive Analysis and Pearson Correlations Analyses

		<i>M</i> ± <i>SD</i>	1	2	3	4
1	Gender	—				
2	Empathy	3.53±0.42	−0.12***			
3	Emotion regulation ability	4.15±0.76	0.09*	0.39***		
4	Interpersonal distress	10.50±5.73	−0.01	0.07*	−0.22***	

Notes: * $p < 0.05$, *** $p < 0.001$. Bold signifies a meaningful disparity between two variables.

Table 2 The Mediating Effect of Emotion Regulation Ability on the Relationship Between Empathy and Interpersonal Distress

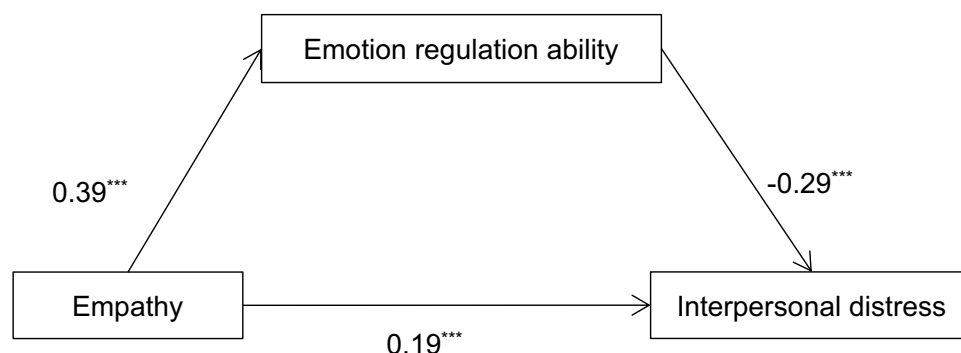
Dependent Variable	Independent Variable	<i>R</i> ²	<i>F</i>	β	<i>T</i>
Interpersonal distress	Empathy	0.01	4.29*	0.08	2.07*
Emotion regulation ability	Empathy	0.15	124.55***	0.39	11.16***
Interpersonal distress	Empathy	0.08	28.92***	0.19	4.80***
	Emotion regulation ability			−0.29	−7.30***

Notes: * $p < 0.05$, *** $p < 0.001$.

a significant correlation between empathy, emotion regulation ability, and interpersonal distress. Empathy presents a positive correlation with emotion regulation ability ($r = 0.039$, $p < 0.001$) and interpersonal distress ($r = 0.08$, $p = 0.039$). Emotion regulation ability is negatively correlated with interpersonal distress ($r = -0.21$, $p < 0.001$). In addition, gender was significantly associated with empathy ($r = -0.13$, $p < 0.001$), emotion regulation ability ($r = 0.09$, $p = 0.014$), but not interpersonal distress ($r = -0.01$, $p = 0.990$).

Mediation Analyses

According to the correlation analysis in Table 1, empathy is positively correlated with emotion regulation ability and interpersonal distress, which offers the precondition for the mediator effect test. The PROCESS version 3.5 Model 4 was conducted to test the mediating role of emotion regulation ability in the relationship between empathy and interpersonal distress. From Table 2 or Figure 2, it can be seen that there is a positive direct correlation between empathy and interpersonal distress ($\beta = 0.08$, $p = 0.039$). Meanwhile, the bias-corrected percentile bootstrap method showed that the

**Figure 2** The mediating effect of emotion regulation ability on the relationship between empathy and interpersonal distress.

Note: *** $p < 0.001$.

Table 3 Moderating Effect of Gender on the Correlation Between Empathy and Emotion Regulation Ability

Independent Variable	Equation 1 (Emotion Regulation Ability)		Equation 2 (Interpersonal Distress)	
	β	T	β	T
Age	0.01	0.14	0.03	1.48
Empathy	0.34	7.52***	0.18	4.56***
Gender	0.29	4.20***		
Empathy \times Gender	0.15	2.14*		
Emotion regulation ability			-0.28	-7.27***
R^2	0.17		0.08	
F	37.28***		19.75***	

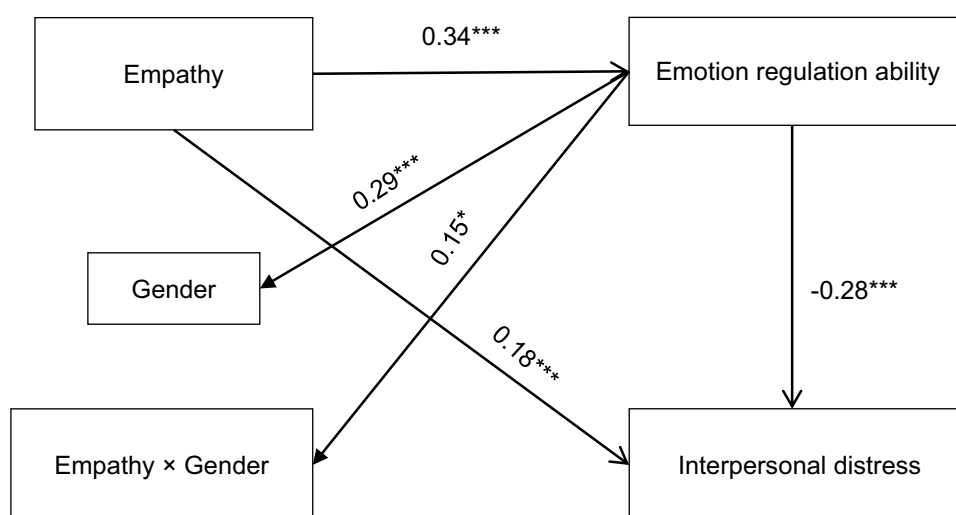
Notes: * $p < 0.05$, *** $p < 0.001$.

mediating effect of emotion regulation ability was 0.19, and its 95% confidence interval was $[-0.15, -0.07]$. The mediation effect accounted for 36.67% of the total effect ($\beta = -0.29$, CI: $[-0.15, -0.07]$). This indicates that emotion regulation ability partially mediated the association between empathy and interpersonal distress of left-behind children.

Moderated Mediation Analyses

To explore gender's moderating effect on empathy's influence on emotion regulation ability, analysis was performed with Model 7 (see Table 3, Figure 3). The variables are centralized, and gender is converted into a dummy variable with male=1 and female=0. After controlling for age, using empathy as the independent variable, interpersonal distress as the dependent variable, emotion regulation as the mediating variable, and gender as the moderating variable. The results show that the product term of empathy and gender has a significant predictive effect on emotion regulation ability ($\beta = -0.15$, $p = 0.035$), that is, gender plays a moderating role in the prediction of empathy on emotion regulation ability, and the judgment index INDEX = -0.04 , 95% CI = $[-0.09, -0.01]$.

To clarify the nature of the moderating effect, a simple slope analysis was conducted to examine the predictive effect of the level of empathy in males and females on emotion regulation ability (Figure 4). The results showed that empathy had a significant predictive effect on emotion regulation ability regardless of male or female groups ($\beta_{female} = 0.34$, $p <$

**Figure 3** The moderating effect of gender on the relationship between empathy and emotion regulation ability.

Notes: * $p < 0.05$, *** $p < 0.001$.

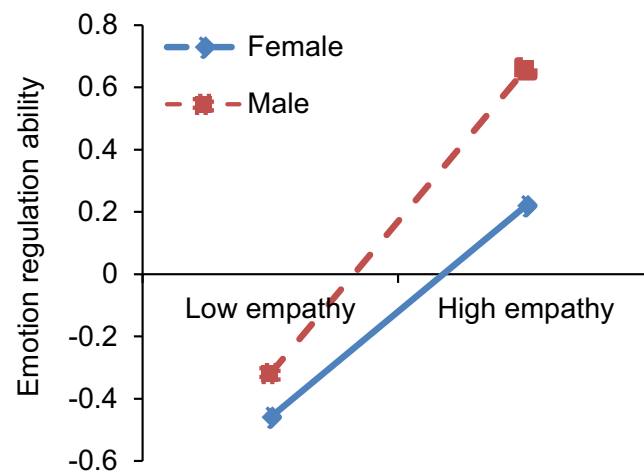


Figure 4 Empathy at low vs high levels of emotion regulation ability for female vs male left-behind children.

0.001, confidence interval [0.25, 0.43]; $\beta_{male} = 0.49$, $p < 0.001$, confidence interval [0.39, 0.60]). Meanwhile, the predictive effect of empathy on emotion regulation ability was stronger in boys (simple slope = 0.49) than in girls (simple slope = 0.34). Taken together, it is confirmed that emotion regulation plays a mediating role between empathy and interpersonal distress, and the first half of the pathway is mediated by gender.

Discussion

The Direct Link Between Empathy and Interpersonal Distress

The results of this study showed that empathy has a positive predictive effect on left-behind children's interpersonal distress,⁴⁴ which is also consistent with previous research.¹² Left-behind children undergo heightened vigilance and guilt due to their perceived incapacity to alleviate other's distress, consequently engendering negative emotional shades. Simultaneously, the absence of parental emotional presence often coexists with low self-esteem, feeling of isolation, and depression, among other emotional traits. This amalgamation further accentuates their susceptibility to negative emotions. They tend to internalize these unfavorable feeling, resulting in distressing experiences like anxiety, which then permeate their interpersonal interactions. This can lead to a scarcity of trust and a sense of security among their peer, causing difficulties in assimilation, acceptance, and popularity, ultimately contributing to interpersonal challenges.⁴⁵ This study did not unveil an advantageous correlation between empathy and interpersonal relationships. Instead, it delves into the extension of the connection between maladaptive empathy and interpersonal distress. Left-behind children who excessively empathize with others' negative emotions may manifest symptoms like depression and anxiety—a rational outcome. Past research has already indicated an exclusive association between empathy and internalizing issues.^{12,14,15,46,47} In light of this, it becomes imperative to devise pertinent intervention strategies and effective measures to ameliorate the adverse ramifications of heightened empathy in left-behind children. This can subsequently mitigate the challenge of interpersonal distress.

The Mediating Role of Emotional Regulation Ability

The current study found that emotional regulation ability played a partial mediating role in the predictive effect of empathy on left-behind children's interpersonal distress. The findings of this study support the view of these studies that high empathy individuals over-identify with the emotional experiences of others, especially when individuals have difficulty managing and regulating their own emotions,^{48,49} can lead to interpersonal distress problems. Empathy positively predicted interpersonal distress, and the correlation coefficient of total effect was 0.08, indicating that empathy has a little predictive effect on interpersonal distress. After the inclusion of mediating variable, there was still a significant difference in the direct effect, with a correlation coefficient of 0.19. This shows that left-behind children with high empathy will have negative feelings, but the impact of empathy on interpersonal distress can be effectively

reduced to a certain extent through self-emotional adjustment. This is similar to the findings of two recent studies.^{13,20} Tully et al found that emotion regulation plays a moderator between empathy and depression. Furthermore, MacDonald and Price also suggest that emotion regulation indirectly affects the relationship between empathy and depression, anxiety, and stress.²⁰ This result indicates that emotion regulation ability may partially explain the relationship between empathy and interpersonal distress, and also reflects the important role of emotion regulation and adaptive empathy skills in left-behind children's interpersonal distress.

The Moderating Role of Gender

We also found that gender moderates the first half of the mediating effect of emotion regulation ability. Among left-behind boys, empathy has a stronger positive predictive effect on emotion regulation ability, indicating that boys with high levels of empathy have the better emotional regulation ability and thus less interpersonal distress. This revealed that emotional regulation ability had a stronger mediating effect among left-behind boys. As previously mentioned, females tend to undergo more profound emotional experiences when confronted with others' distressing situations. This heightened emotional engagement leads to enhanced management of negative emotions. In contrast, male exhibit a greater propensity for rational responses when faced with the discomfort stemming from empathy. This enables them to efficiently regulate negative emotions within a shorter timeframe.^{50,51} Therefore, empathy ability has a more significant effect on males' emotional regulation ability than females. This suggests that when investigating the impact of empathy on emotion regulation, gender differences should be considered, that is, left-behind children of different genders should be trained and intervened differently according to their conditions.

Limitations and Implications

The current study has several limitations that can be addressed in future work. First, this study only focused on emotion regulation ability to explain how empathy affects interpersonal distress, leaving out other psychological variables such as self-esteem, prosocial and aggressive behavior. Future research should consider these variables. Second, the cross-sectional nature of this study, without drawing causal inferences, is one of its main limitations. The model could be examined in the future using a longitudinal design. Third, the study sample was limited to Chinese left-behind children, which may limit the findings' generalizability. Further research including other populations would be required to replicate this study's findings. Finally, this study only considered the demographic variable of gender, neglecting the potential influence of other variables, such as the difference between single and dual left-behind children, age disparities, and more.

Despite these limitations, this study provides new perspectives and evidence to support the theory of the relationship between empathy and interpersonal distress. It also illuminates the role of emotional regulation ability and gender in their relationship. Furthermore, exploring protective factors and different factors for interpersonal distress aids in the development of prevention and intervention measurements to reduce it. This study implies that policymakers and educators should consider emotion regulation ability and gender difference when formulating empathy-related mental health interventions for Chinese left-behind children.

Conclusions

This study takes several middle and primary schools in rural areas of China as the research object, and explores the influence of empathy on interpersonal distress of left-behind children in rural and its influencing mechanism. This result provides new evidence for the interpersonal theory of left-behind children by clarifying the role of emotion regulation ability and gender in the relationship between empathy and interpersonal distress. Furthermore, this study suggests that policymakers and educators should consider emotion regulation ability and gender differences when developing effective mental health interventions for Chinese left-behind children with interpersonal distress.

Data Sharing Statement

The data linking to the present study could be obtained by sending email to Fangfang_Liu0608@outlook.com.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

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Disclosure

The authors declare that they have no competing interests in this work.

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