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Effects of parental empathy and emotion regulation on social competence and emotional/behavioral problems of school-age children

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ABSTRACT

Importance: Parents take the lead in parent–child interactions and their emotion regulation ability and empathy during parenting may be associated with children's emotional/behavioral problems. However, the specific mechanisms underlying these associations remain unclear.

Objective: The present study aimed to explore the effect of parental empathy and emotional regulation on social competence and emotional/behavioral problems in school-age children.

Methods: A questionnaire-based survey was conducted with 274 parents of 8–11-year-old children using Achenbach's Child Behavior Checklist, the Emotion Regulation Questionnaire, and the Questionnaire of Cognitive and Affective Empathy.

Results: Children with emotional/behavioral problems (n = 37) had relatively lower social competence than children in a matched control group (n = 37). Compared with the parents of children in the control group, parents of children with emotional/behavioral problems had significantly lower cognitive empathy scores, mainly manifested by low perspective-taking and online simulation abilities. Mediation analysis showed that parental cognitive empathy had an indirect effect on children's emotional/behavioral problems through children's social competence.

Interpretation: Parental empathy may have a subtle influence on the social competence of school-aged children, which further affects the severity of children's emotional/behavioral problems.

KEYWORDS
School-age children, Social competence, Emotional/Behavioral problem, Empathy, Emotion regulation

INTRODUCTION

Emotional/behavioral problems in children, including internalization problems (e.g., anxiety and depression) and externalization problems (e.g., aggression and violence),[1] often cause distress for children and others. A survey in China involving 24 013 urban school-age children in 22 provinces and municipalities found that the prevalence of childhood behavior problems was approximately 13%.[2] Emotional/behavioral problems in early childhood can have an ongoing effect on physical and mental development and are closely related to antisocial behaviors and psychological problems in adulthood.[3,4] Therefore, research on the influencing factors of childhood emotional/

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behavioral problems has important theoretical and practical value for the early identification and prevention of psychological/behavioral problems and the healthy development of children.

School and home are the two main living environments of school-age children. Maladaptive interpersonal relationships and unsatisfactory academic performance in school usually cause children high levels of psychological distress.[5,6] Several studies have demonstrated a close correlation between lower social competence and greater emotional/behavioral problems in children.[7,8] One study found that increased social competence from a training program intervention played a mediating role in reducing behavior problems.[8] Most previous studies have demonstrated the importance of parental capabilities, such as parental empathy and parental emotion regulation, in improving children's social competence.

Parents structure children's home environment and implement family parenting. Their abilities to handle their own emotional problems and accept and cope with their children's emotional problems can substantially affect children's social competence and mental health.[9,10] Research has shown that parental negative emotional expressions can trigger childhood destructive behavior problems.[11] Compared with parents of children without behavior problems, parents of children with a persistent tendency to disobey cannot accurately perceive their own emotions and have poorer emotional regulation and management skills.[12] Although there is evidence that parental regulation and low negative emotionality affect children's social development,[13-15] it remains unclear whether parental emotion regulation has a direct or indirect effect on children's problems, and which types of emotion regulation strategies are more effective.

Parental empathy may be another factor that affects children's social abilities. Research has shown that parental empathy is positively associated with childhood attachment security and emotional openness.[16] Parents with strong empathy provide their children with a safe foundation from which children can explore their emotional experiences and seek comfort when experiencing emotional distress. Children with good empathy experiences are more likely to develop a functional pattern of emotional expression, rather than emotional avoidance or withdrawal, which helps them to establish more stable interpersonal relationships.[16] Previous studies have focused more on correlations between children's own empathy and their social adaptation and emotional regulation.[17,18] Few studies have explored the association of parental empathy with childhood psychological disorders, behavior problems, and internal mechanisms. Recently, Crocetti et al[19] conducted a six-wave longitudinal study and found an indirect effect of maternal empathy on adolescent antisocial behaviors mediated by parent–adolescent relationships. However, some researchers have argued that empathy includes both "bottom-up" emotional processes and "top-down" cognitive processes.[20,21] These correspond, respectively, to affective empathy (the ability to produce the same or similar emotional experiences) and cognitive empathy (based on the understanding and perception of the situation or emotional states of others). Although Crocetti et al[19] used the Interpersonal Reactivity Index to assess both cognitive and affective empathy, they did not investigate the unique influences of each of these two components.

Taken together, previous studies suggest that parents' ability to regulate their own emotions and foster empathy may have a subtle influence on the social competence of children and the severity of children's emotional/behavioral problems. However, the internal mechanisms underlying this effect remain unclear. In this study, we aimed to explore the pathways of the effects of parental empathy and emotional regulation on social competence and emotional/behavioral problems of school-age children. According to the parental meta-emotion philosophy,[22,23] parents' perceptions, attitudes, and responses to both their own and children's emotions have important effects on children's psychological adaptability or mental health. On the basis of this theory and previous findings,[9,16] we hypothesized that parents of children with emotional/behavioral problems would score lower on emotional regulation and empathy than parents of healthy children, and that parental empathy and emotional regulation ability would have an indirect effect on children's emotional/behavioral problems mediated by children's social competence (conceptual diagrams of these associations are shown in Figure 1).

METHODS

Ethical approval

This study was approved by the Ethics Committees of Weifang Medical University. All parents of children participated in the survey provided written informed consent.

Participants

Using a stratified cluster sampling method, we selected parents of 340 8–11-year-old children from three primary schools in Weifang, Shandong Province, China to participate in the investigation. Exclusion criteria were families in which children were not living with their parents, single-parent families, children with no living parents, and parents/children diagnosed with a mental illness. A total of 304 questionnaires were collected, yielding a response rate of 89.4%. After incomplete questionnaires were eliminated, 274 valid questionnaires were used in the final analysis.

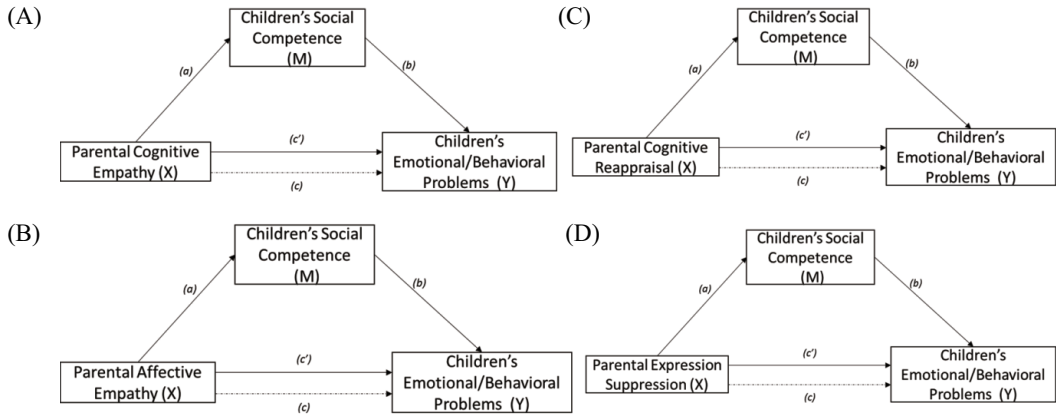

FIGURE 1 Conceptual diagram of Andrew Hayes's mediation model (model 4). (A) and (B) illustrate the hypothetical mediation effect of social competence on the relationship between parental empathy and children's emotional/behavioral problems. (C) and (D) illustrate the hypothetical mediation effect of social competence on the relationship between parental emotion regulation and children's emotional/behavioral problems.

Assessments

Achenbach's Child Behavior Checklist (CBCL) (parental reports)

The parent-reported CBCL (for ages 6–18), first developed by Achenbach[24] and adapted by Xin et al[2] for Chinese populations, was used to assess children's behavioral and emotional problems. The scale contains three modules: general items, social competence, and emotional/behavioral problems. Social competence, which includes the child's participation in various activities, participation in social organizations, and performance in the school setting, is assessed with 16 items. Higher scores indicate greater social competence. Emotional/behavioral problems are assessed using 113 items rated on a three-point Likert scale (0 = absent, 1 = occurs sometimes, 2 = occurs often) according to the child's behavior in the past 6 months. Higher scores represent more severe problems. In addition to the total score, each syndrome consistent with diagnostic categories of the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV) is scored. According to norms for Chinese children,[2] the upper cutoff values of the total scores for boys and girls aged 6–11 years are 42 points and 41 points, respectively. The cutoff values of each syndrome for boys (withdrawn 5–6, somatic complaints 6–7, depressed 9–10, aggressive behavior 19–20, rule-breaking behavior 7–8, schizoid 5–6, social problems 5–6, compulsivity 8–9, attention problems 10–11) and girls (withdrawn 8–9, somatic complaints 8–9, depressed 3–4, aggressive behavior 18–19, rule-breaking behavior 2–3, brutality 3–4, schizoid 3–4, attention problems 10–11, sexual problems 3–4) aged 6–11 years differ, and scores above the cutoff value are considered in the borderline clinical and clinical ranges.[2] A Cronbach's alpha and test-retest reliability of 0.83–0.94 and 0.88–0.92, respectively, have been demonstrated for the CBCL/6–18,[25,26] and a study of 24 013 children demonstrated good reliability and validity for the Chinese version.[2]

Emotion Regulation Questionnaire (ERQ) Chinese Revised Version

The ERQ was initially developed by Gross and John[27] and used to measure the two strategies of cognitive reappraisal and expressive suppression. The questionnaire contains 10 items rated on a seven-point scale ranging from "strongly disagree" to "strongly agree." The Chinese revised version of the ERQ shows a test–retest reliability of 0.82 and an internal consistency reliability of 0.85 for cognitive reappraisal, and a test–retest reliability of 0.79 and internal consistency reliability of 0.77 for expressive suppression.[28]

Questionnaire of Cognitive and Affective Empathy (QCAE)

The QCAE, developed by Reniers et al,[29] comprises 31 items measuring cognitive and affective empathy. Cognitive empathy includes perspective-taking and online simulation, whereas affective empathy comprises the subscales of emotion contagion, proximal responsivity, and peripheral responsivity. The internal consistency and test–retest reliability of the QCAE for the Chinese population are 0.86 and 0.76, respectively.[30]

Data analysis

Descriptive analyses were used to describe sociodemographic and psychological characteristics. All statistical analyses were carried out using SPSS version 21.0 (SPSS, Inc., Chicago, IL). Comparisons of categorical variables and continuous variables were conducted using the Chi-square test, and the Wilcoxon rank-sum test and the independent samples *t*-test, respectively. Pearson correlation analysis was used to examine correlations between study variables. The PROCESS macro for SPSS,[31] based on ordinary least squares regression, was used to analyze the hypothesized mediation model (Model 4, see Figure 1). The bias-

corrected 95% confidence interval was calculated. For resampling, we used 1000 bootstrap iterations.[32] If the interval does not include zero, the effect is statistically significant at $P < 0.05$.

RESULTS

CBCL scores

The 274 children comprised 129 boys (47.1%) and 145 girls (52.9%) aged on average 9.99 years (standard deviation = 0.90). Parent-reported academic performance was "excellent" for 92 students (33.6%), "good" for 175 students (63.8%), and "adequate" or "failed" for 7 students (2.6%).

Of the 274 children, the median of the total score for emotional/behavioral problems was 13 (interquartile range [IQR] 6–24) in boys and 10 (IQR 4–16) in girls, which was significantly different ($P = 0.016$). Using the norms for Chinese children aged 6–11 years,[2] the most common behavior problem in girls was depression (11.7%), whereas the main behavior problems in boys were obsessive–compulsive disorder (5.4%), schizoid personality disorder (3.9%), and poor interpersonal communication (3.1%) in our study.

Comparison of social competence between children with emotional/behavioral problems and children in the control group

A total of 37 children with at least one emotional/behavioral problem or a total score exceeding the upper cutoff value were categorized as the problem group. The control group comprised 37 age- and sex-matched children with no detectable problems whose parents were matched with the parents of the problem group for sex and age. The total scores for social competence and the participation scores for various activities and social organizations were significantly lower in the problem group than in the control group ($P < 0.001$) (Table 1).

Comparison of empathy and emotional regulation ability of parents of children with or without emotional/behavioral problems

Empathy and emotional regulation ability were compared between parents of the 37 children with emotional/

TABLE 1 Comparison of social competence between children with emotional/behavioral problems and children in the control group

Variables	Group with emotional/behavioral problems (n = 37)	Control group (n = 37)	t	P
Male/female	23/14	23/14	–	–
Age (years)	9.7 ± 0.8	9.7 ± 0.8	–	–
Participat ion in various activities	4.11 ± 2.11	7.72 ± 2.23	−7.138	< 0.001
Participation in social organizations	6.36 ± 1.99	8.81 ± 1.74	−5.637	< 0.001
Academic performance	5.92 ± 1.01	6.20 ± 1.02	−1.194	0.237
Total score of social competence	16.39 ± 4.25	22.73 ± 3.95	−6.641	< 0.001

Data are shown as mean ± standard deviation or n.

TABLE 2 Comparison of empathy and emotional regulation ability between parents of children with or without emotional/behavioral problems

Variables	Group with problems (n = 37)	Control group (n = 37)	t/χ^2	P
Mother/Father	28/9	30/7	0.319	0.778
Age (years)	38.4 ± 3.6	37.0 ± 4.4	0.792	0.379
QCAE score				
Perspective-taking	29.24 ± 3.73	31.32 ± 4.97	−2.035	0.046
Online simulation	27.22 ± 3.14	29.81 ± 3.50	−3.356	0.001
Emotion contagion	11.43 ± 2.47	10.73 ± 2.94	1.112	0.270
Proximal responsivity	12.35 ± 2.07	12.40 ± 2.06	−0.113	0.911
Peripheral responsivity	9.41 ± 1.69	9.86 ± 2.52	−0.921	0.360
Cognitive empathy	56.46 ± 5.79	61.14 ± 7.92	−2.899	0.005
Affective empathy	33.19 ± 4.65	33.00 ± 6.58	0.143	0.887
ERQ score				
Cognitive reappraisal	31.73 ± 4.51	34.05 ± 6.91	−1.714	0.092
Expressive suppression	15.32 ± 4.52	16.35 ± 6.97	−0.752	0.455

Data are shown as mean ± standard deviation or n. QCAE, Questionnaire of Cognitive and Affective Empathy; ERQ, Emotion Regulation Questionnaire.

behavioral problems and parents of the 37 children without problems. The results of an independent samples *t*-test are summarized in Table 2. Compared with the parents of children without problems, the parents of children with problems had significantly lower cognitive empathy scores ($t = -2.899$, $P = 0.005$), mainly manifested by low perspective-taking ($t = -2.035$, $P = 0.046$) and online simulation abilities ($t = -3.356$, $P = 0.001$). There were between-group differences in ERQ scores, but these did not reach statistical significance.

Correlations of parental empathy and emotional regulation with children's behavior problems

Pearson correlation analysis was performed to examine the associations of parental empathy and emotion regulation with children's social competence and emotional/behavioral problems (Table 3). Children's participation in various activities and social organizations was negatively correlated with total emotional/behavioral problem scores, respectively, indicating that children with lower participation in various activities and social organizations tended to have more emotional/behavioral problems. In addition, parental cognitive empathy was positively correlated with the total score for social competence, and with children's participation in various activities and social organizations.

Effects of parental empathy and emotion regulation on childhood social competence and emotional/behavioral problems

According to our study hypothesis, we established mediation models to examine the effects of parental empathy and emotion regulation on children's social competence and emotional/behavioral problems. In these models, different components of parental empathy and emotion regulation were the independent variables (X), the total childhood emotional/behavioral problem score was the dependent variable (Y), and children's social competence was the mediator variable (M) (Figure 1). Model 4 was generated using the PROCESS macro for SPSS[27]; for resampling, the bootstrap iterations were set at 1000. The verification results showed that only the mediation model in Figure 1A was applicable. The verified model is shown in Figure 2. Children's social competence had a complete mediating effect on the relationship between parental cognitive empathy and children's emotional/behavioral problems (Path c) (effect = −0.123, *SE* = 0.040).

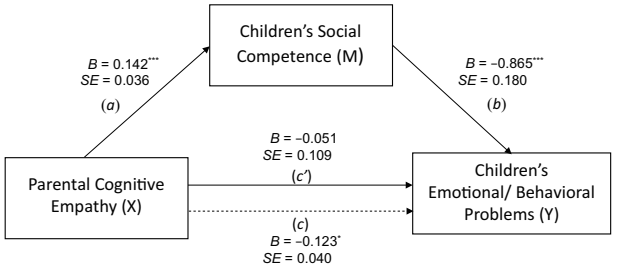

FIGURE 2 Mediation model of children's social competence on the relationship between parental cognitive empathy and children's emotional/behavioral problems. Path c represents the total effect of parental cognitive empathy on children's emotional/behavioral problems without considering the mediation of social competence. Path c' represents the indirect effect of parental cognitive empathy on children's emotional/behavioral problems. $^{*}P < 0.05$, $^{***}P < 0.001$. *B*, unstandardized regression coefficient; *SE*, standard error.

TABLE 3 Correlation analyses of the association of parental empathy and emotion regulation with children's social competence and emotional/behavioral problems

Variables	Total score of emotional /behavioral problems	Total score of social competence	Participation in various activities	Participation in social organizations	Academic performance	Parental cognitive empathy	Parental affective empathy	Parental cognitive reappraisal	Parental expressive suppression
Total score of emotional/ behavioral problems	–								
Total score of social competence	−0.293**	–							
Participation in various activities	−0.249***†	0.897***†	–						
Participation in social organizations	−0.304***†	0.862***†	0.619***†	–					
Academic performance	−0.093	0.550***†	0.305***†	0.355***†	–				
Parental cognitive empathy	−0.095	0.233***†	0.224***†	0.206**	0.084	–			
Parental affective empathy	0.101	−0.031	−0.006	−0.046	−0.034	0.454***†	–		
Parental cognitive reappraisal	0.020	0.036	0.039	0.023	0.021	0.405***†	0.303***†	–	
Parental expressive suppression	−0.043	0.023	0.061	0.001	−0.047	0.259***†	0.336***†	0.283***†	–

$^{**}P < 0.01$, $^{***}P < 0.001$; †significant after Bonfferoni correction.

DISCUSSION

The present findings show that children with emotional/behavioral problems had significantly lower social competence than children without problems. Compared with parents of children without emotional/behavioral problems, parents of children with problems had lower cognitive empathy. As shown in the mediation analysis, parental cognitive empathy had an indirect effect on children's emotional/behavioral problems through children's social competence.

Empathy is closely related to the long-term social adaptation and mental health of individuals.[33] Parents take the lead in parent–child interactions, so their ability to empathize not only affects their own mental health but also their children's psychological and behavior problems.[34-36] The present findings reflect this pattern, as cognitive empathy was significantly lower in parents of children with emotional/behavioral problems than in parents of healthy children. Additionally, parental cognitive empathy was positively correlated with children's social competence, which in turn affected children's emotional/behavioral problems.

Cognitive empathy is the ability to build a working model of the emotional state of others, whereas affective empathy is the ability to be sensitive to the feelings of others and to experience them indirectly.[29] One study on parental empathy and parent–child relationships showed that parental empathy was positively correlated with childhood narrative coherence.[16] It was concluded that parents with strong empathy provide their children with a safe foundation from which children can explore their emotional experiences and seek comfort when experiencing emotional distress. Children also learn empathy from their parents, which helps them to develop a functional pattern that is more conducive to the establishment of interpersonal relationships and promotes the development of prosocial behaviors.[16] Therefore, parents with a greater ability to recognize their children's current emotional experiences are more likely to provide sensitive and responsive care that can manage children's social adaptation problems, such as poor academic performance, relatively isolated social status, and less participation in activities, thus providing early prevention and intervention for childhood emotional and behavioral problems.

Most previous studies have found that parental emotional regulation is related to childhood internally and externally generated emotions and can affect childhood behavior problems (e.g., confrontation, disobedience, and perseverance).[14] However, the current study failed to find a correlation between parental emotional regulation strategies (i.e., cognitive reappraisal and expressive suppression) and childhood emotional or behavioral problems. Some studies have suggested that emotional regulation tends to have a more direct effect on an individual's own emotional performance and on the parent–child relationship.[37,38] Difficulty in emotional regulation may trigger violence and aggression against others and increase the likelihood of adopting simpler and more immature solutions when managing parent–child relationships.[37,38] Contradictory and indifferent parent–child relationships or aggressive management are more likely to cause behavior problems in children.[39] Conversely, difficulty in emotion regulation may cause parents to experience more negative emotions, and parents' expression of these negative emotions may trigger children's destructive behavior problems.[11] Therefore, the present results suggest that parental emotional regulation is more likely to be a distal factor that affects children's social competence and emotional/behavioral problems. Future research on the relationship between parental emotional regulation and childhood emotional/behavioral problems should pay more attention to the mediating or regulating roles of parents' own emotional status and parenting styles.

The current study also showed that boys scored higher on overall problems than girls. Boys' problems were characterized by syndromes like obsessive–compulsive disorder, schizoid personality disorder, and poor interpersonal communication, whereas girls were more likely to experience emotional problems such as depression. Thus, emotional/behavioral problems manifest differently in boys and girls, and the effect of parental empathy on children of different genders (and the mechanisms of action of these effects) may differ. Studies with larger sample sizes are warranted to further explore the roles of empathy and emotional regulation in the occurrence of emotional/behavioral problems in children and adolescents of different genders and ages.

This study had some limitations. First, we did not stratify children according to age and gender owing to the relatively small sample size. Additionally, we did not elucidate the differential impact of paternal and maternal empathy and emotional regulation on the emotional/behavioral problems of children of different genders. Second, children's emotional/behavioral problems were assessed by their parents. Owing to factors such as social desirability, parents may not have accurately reported their children's behavioral performance. Future studies should use a combination of face-to-face interviews and questionnaires to obtain a more objective and comprehensive understanding of the emotional/behavioral problems of children from the perspectives of their teachers and peers.

To summarize, this study demonstrated an effect of parental cognitive empathy on childhood social competence and emotional/behavioral problems. Curriculum programs and interventions focusing on the

enhancement of parental empathy should be a priority in future attempts to prevent and manage childhood emotional and behavioral problems.

CONFLICT OF INTEREST

None to declare.

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