

The Effects of Personality Traits on Junior High School Students' Peer Relationships: The Mediating Role of Interpersonal Emotion Regulation

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Abstract: To explore the relationship between personality traits, interpersonal emotion regulation and peer relationships. A total of 731 junior high school students were enrolled in the study, and were measured and analyzed using the Five-Factor Personality Questionnaire for Middle School Students, the Interpersonal Emotion Regulation Questionnaire, and the Adolescent Peer Relationship Scale. (1) Positive personality traits, use of interpersonal emotion regulation strategies, and peer relationships were significantly better among junior high school boys than girls ($P < 0.001$), and junior high school students with higher grades were more likely to be in a positive state in terms of personality traits, to use more interpersonal emotion regulation strategies, and to have better peer relationships; (2) Personality traits were significantly negatively correlated with poor peer relationships ($r = -0.35$, $P < 0.01$), and significantly positively correlated with interpersonal emotion regulation ($r = 0.61$, $P < 0.01$), interpersonal emotion regulation was significantly negatively correlated with poor peer relationships ($r = -0.41$, $P < 0.01$); (3) the results of the mediation analysis showed that interpersonal emotion regulation partially mediated the relationship between personality traits and peer relationships after controlling for gender and grade ranking. Personality traits not only directly affect junior high school students' peer relationships, but also indirectly affect the quality of peer relationships through interpersonal emotion regulation.

1. Introduction

Peer relationship mainly refers to the interpersonal relationship established and developed in the process of interaction between people of the same age or individuals with comparable level of psychological development, and adults cannot replace to meet the psychological needs and improve various abilities [1]. For junior high school students who are in a period of great physical and mental development and have a strong sense of independence, their psychological and emotional dependence on parents is diminishing, peers have become "significant others" in the growth of

junior high school students, peer relationships play an important role in their development and social adaptation [1]. Good peer relationships can provide junior high school students with a good foundation for their development and social adaptation. Good peer relationships can bring positive effects to junior high school students, such as facilitating the healthy development of individual self-awareness and social skills, helping them to acquire social values and successfully complete their education [1], which is an important protective factor for adolescents in the process of growing up [2]; while poor peer relationships may lead to junior high school students' difficulties in adapting to school, and negative emotions, problematic behaviors, and mental diseases. Therefore, it is of great significance to explore the potential correlates and mediating mechanisms of peer relationships in order to improve the quality of junior high school students' peer relationships and promote their physical and mental health development.

The factors affecting junior high school students' peer relationships are complex and are mainly divided into four levels: individual characteristics, interpersonal interactions, relationship level and group level [3]. As far as individual characteristics are concerned, studies have confirmed that personality traits are the main factors influencing adolescents' peer relationships [1]. Personality traits are distinctive behaviors that are relatively stable and persistent across a wide range of situations [4]. It has been shown that adolescents' choices and preferences for peers have been related to deeper personality traits [1]; the Five Personality Factors are significantly correlated with middle school students' interpersonal relationships, with openness, agreeableness, and conscientiousness being significantly positively correlated and neuroticism being significantly negatively correlated with interpersonal relationships, because individuals with extraversion personalities are the most capable of initiating interactions, and those with agreeableness are more emotionally supportive and have a higher level of emotional support. Individuals who are more emotionally supportive and more willing to disclose themselves, individuals with openness have a prominent influence in interpersonal interactions, individuals with conscientiousness personality can easily gain the trust of their peers [1], and individuals with high scores of neuroticism are easily anxious, emotionally unstable, lonely, paranoid, and less adaptive, and are unwelcomed, rejected, and ignored in peer interactions. Accordingly, research hypothesis 1 was proposed: Extraversion, agreeableness, conscientiousness and openness in personality traits negatively predicted poor peer relationships and neuroticism positively predicted poor peer relationships.

From the existing studies, it is known that emotional instability, isolation and lack of revealing and intimate communication with friends [1] are important influences on the poor development of individuals' peer relationships. Therefore, an individual's ability to regulate emotions and the level of interpersonal interactions will have an impact on his/her peer relationships. Previous research has focused on intra-individual emotion regulation, which is the process of recognizing, monitoring, and changing one's own emotional processes and goals, and a large number of studies have found that interpersonal emotion regulation is more conducive to emotion alleviation and relationship quality [5] than intra-individual emotion regulation. Interpersonal emotion regulation refers to the process of regulating one's own or others' emotions/achieving one's own or others' emotional goals through interactions with others [5]. Research has shown that interpersonal emotion regulation facilitates the development of closer interpersonal relationships and the formation of good peer relationships. Because the implementation of interpersonal emotion regulation is based on interpersonal interaction, the more adolescents share secrets and emotions with their peers and help each other to regulate negative emotions, the more the trust between the two regulators [6] and the stronger the intimacy with their peers. Accordingly, research hypothesis 2 is proposed: interpersonal emotion regulation negatively predicts poor peer relationships.

Moreover, personality traits are one of the main factors that can predict an individual's interpersonal emotion regulation behavior, Extraversion may be the personality trait most associated

with interpersonal emotion regulation, and people with high scores in extraversion, agreeableness, openness, and conscientiousness make more use of other people to enhance positive emotions and to regulate negative emotions. Accordingly, research hypothesis 3 is proposed: all four of the personality traits, except neuroticism, positively predict interpersonal emotion regulation. In addition, the relationship between personality traits and interpersonal emotion regulation can further affect the goodness of peer relationships, it has been found that extraversion and conscientiousness, as relatively stable personality traits, can enhance individuals' willingness to regulate interpersonal emotions, be more willing to express and share their own emotional experiences, and also feel better about their peer relationships. Accordingly, research hypothesis 4 is proposed: interpersonal emotion regulation is partially mediated between personality traits and peer relationships.

Based on this, this study will take junior high school students as the research object on the basis of previous studies, explore the current situation of personality traits, interpersonal emotion regulation and peer relationships and the relationship among the three, examine the mediating role of interpersonal emotion regulation between personality traits and peer relationships, and provide theoretical basis and scientific references for the promotion of the good development of junior high school students' peer relationships.

2. Research Methodology

2.1 Subjects of Study

Using convenience sampling method, 770 questionnaires were distributed to a junior high school in Urumqi City, and after excluding invalid questionnaires, 731 valid questionnaires were finally recovered, with an effective rate of 94.9%. Among them, 364 (49.8%) were boys and 367 (50.2%) were girls; 298 (40.8%) were in the first grade, 253 (34.6%) were in the second grade, and 180 (24.6%) were in the third grade.

2.2 Research Tools

2.2.1 Adolescent Peer Relationships Scale

The Adolescent Peer Relationship Scale (APRS) developed by Guo Bailiang and revised by Zhang Min was used at. The scale consists of 22 questions and is scored on a 4-point scale, with 1 indicating "not like this", 2 indicating "sometimes like this", 3 indicating "often like this", and 4 indicating "always". Among them, 11, 12, 15, 17, 19, 20, 21 are reverse questions and the rest are positive questions, and the higher the score on the scale, the worse the peer relationship. In this study, the Cronbach's alpha coefficient for the scale was 0.88.

2.2.2 Five-Factor Personality Questionnaire for Middle School Students

The Five-Factor Personality Questionnaire for Middle School Students compiled by Hui Zhou at and revised by Hong Zou at contained 50 items in 5 dimensions, namely Extraversion, Agreeableness, Conscientiousness, Openness and Neuroticism, and was scored on a 5-point Likert scale from "not at all consistent" to "completely consistent" with "1-5". On a scale of "1-5". The Cronbach's alpha coefficients for the total questionnaire and dimensions in this study were 0.92, 0.86, 0.84, 0.90, 0.81 and 0.82, respectively.

2.2.3 Interpersonal Emotion Regulation Questionnaire

The Interpersonal Emotion Regulation Questionnaire (IERQ) developed by Hofmann et al and

revised by Wenfei Gu was used. Four factors were included: Enhancement Positive Affect, Perspective Taking, Soothing, and Social Modeling. Each factor consists of 5 items, totaling 20 items, all of which are scored on a 5-point Likert scale from "not at all" to "completely" on a scale of 1-5, with higher scores indicating a greater use of interpersonal emotion regulation strategies. The higher the score, the more interpersonal emotion regulation strategies are used. The Cronbach's alpha coefficients for the total questionnaire and each dimension in this study were 0.92, 0.89, 0.71, 0.83, and 0.82, respectively.

2.3 Statistical Methods

SPSS 25.0 was used for statistical analysis, firstly using Harman one-way method to test the common method bias; secondly, descriptive statistics, correlation analysis, test of variance and regression analysis were performed for each variable; finally, Process plug-in was used to test the mediating effect.

3. Results

3.1 Common Method Bias Test

In order to exclude the common method bias effect, this study used Harman's one-way test [7] to factor analyze all the items in the three questionnaires, and the results showed that there were a total of 17 factors with an Eigen root greater than 1, and the explanation rate of the first common factor was 22.69% (much lower than the critical value of 40%), which indicates that the data of the present study do not have a serious problem of common method bias.

3.2 Descriptive Statistics and Correlation Analysis

In order to investigate whether the variables differed by gender and ranking of results, the scores of personality traits, interpersonal emotion regulation, and peer relationships of junior high school students of different genders and achievement ranks were tested for differences. The results, as shown in Table 1, showed that boys' peer relationships were significantly better than girls' ($P < 0.001$); and boys scored significantly higher than girls on the total personality traits score, extraversion, conscientiousness, openness, perspective taking, and social modeling dimensions ($P < 0.05$), whereas girls scored significantly higher than boys on neuroticism dimensions ($P < 0.001$); and boys and girls scored no significantly higher than girls on agreeableness, enhancing positive affect, soothing and interpersonal emotion regulation; in addition, the scores of junior high school students with different achievement rankings were significantly different in personality traits, interpersonal emotion regulation, and peer relationships and each dimension ($P < 0.05$), except that there was no significant difference in the scores on the extroversion dimension, and post hoc tests using *LSD* found that the higher the achievement rankings, the higher the scores on the dimensions of agreeableness, conscientiousness, and openness, and the lower the scores on the dimensions of neuroticism, and use more interpersonal emotion regulation strategies and also have more favorable peer relationships. Therefore, the present study included gender and achievement rank as control variables to be controlled for in subsequent analyses.

Table 1: Analysis of Differences in Personality Traits, Interpersonal Emotion Regulation and Peer Relationships among Junior High School Students on Demographic Variables (M±SD)

	distinguishing between the sexes			Ranking of results			
	schoolboy	schoolgirl	<i>t</i>	top third	Middle third	latter third	<i>F</i>
Extraversion	3.66±0.79	3.38±0.80	4.80***	3.56±0.82	3.53±0.81	3.40±0.78	1.73
Agreeableness	3.97±0.68	3.91±0.67	1.18	3.99±0.67	3.95±0.65	3.78±0.73	4.31*
Conscientiousness	3.70±0.83	3.55±0.79	2.62**	3.81±0.75	3.60±0.81	3.20±0.84	25.42***
Openness	3.88±0.71	3.73±0.72	2.77**	3.93±0.69	3.79±0.69	3.53±0.78	13.78***
Neuroticism	3.07±0.85	3.33±0.86	-4.19***	3.05±0.88	3.29±0.82	3.36±0.90	8.47***
Total Personality Trait Score	3.67±0.55	3.58±0.52	2.19*	3.68±0.51	3.63±0.53	3.45±0.60	7.84***
Enhancing Positive Affect	4.07±0.93	4.09±0.91	-0.26	4.22±0.84	4.02±0.94	3.87±1.01	7.58**
Perspective Taking	3.18±0.89	2.91±0.86	4.20***	3.07±0.88	3.10±0.89	2.86±0.89	3.27*
Soothing	3.10±1.06	3.25±1.08	-1.81	3.24±1.06	3.20±1.03	2.95±1.18	3.10*
Social Modeling	3.47±0.97	3.30±0.90	2.46*	3.51±0.90	3.38±0.96	3.08±0.94	8.75***
Total IER Score	3.46±0.82	3.39±0.76	1.21	3.51±0.75	3.42±0.79	3.19±0.83	7.06**
Total Peer Relationships Score	1.83±0.48	1.99±0.52	-4.37***	1.81±0.48	1.92±0.48	2.16±0.56	21.70***

Note: * P < 0.05, ** P < 0.01, *** P < 0.001, same below.

Table 2: Descriptive Statistics and Correlation Analysis of Personality Traits, Interpersonal Emotion Regulation and Peer Relationships of Junior High School Students

	1	2	3	4	5	6	7	8	9	10	11	12
1 Extraversion	1											
2 Agreeableness	0.64**	1										
3 Conscientiousness	0.48**	0.70**	1									
4 Openness	0.57**	0.61**	0.63**	1								
5 Neuroticism	-0.05	0.01	-0.78*	0.07	1							
6 Total Personality Trait Score	0.77**	0.84**	0.79**	0.81**	0.27**	1						
7 Enhancing Positive Affect	0.61**	0.62**	0.45**	0.42**	-0.03	0.60**	1					
8 Perspective Taking	0.45**	0.46**	0.43**	0.30**	-0.06	0.46**	0.49**	1				
9 Soothing	0.42**	0.42**	0.32**	0.29**	0.15**	0.46**	0.52**	0.56**	1			
10 Social Modeling	0.45**	0.53**	0.50**	0.36**	-0.10**	0.51**	0.58**	0.72**	0.58**	1		
11 Total IER Score	0.58**	0.61**	0.51**	0.42**	-0.00	0.61**	0.78**	0.83**	0.82**	0.87**	1	
12 Total Peer Relationships Score	-0.51**	-0.40**	-4.12**	-0.32**	0.47**	-0.35**	-0.44**	-0.35**	-0.19**	-0.39**	-0.41**	1
<i>M</i>	3.52	3.94	3.62	3.81	3.20	3.62	4.08	3.05	3.18	3.39	3.42	1.91
<i>SD</i>	0.81	0.68	0.81	0.72	0.87	0.54	0.92	0.89	1.07	0.94	0.79	0.51

The results of descriptive statistics and correlation analyses are shown in Table 2, which shows that junior high school students' peer relationships scores were significantly and negatively correlated with other dimensions of personality traits and with total interpersonal emotion regulation scores and dimensions, except for the neuroticism dimension; moreover, junior high school students' interpersonal emotion regulation and dimensions were significantly and positively correlated with all dimensions of personality traits except for the neuroticism dimension; the neuroticism dimension was significantly and positively correlated with the soothing dimension, the

significantly negatively correlated with the social modeling dimension. In conclusion, the results of the correlation analysis meet the statistical requirements for mediation effects [8].

3.3 Analysis of the Mediating Effects of Interpersonal Emotion Regulation

In this study, the data were analyzed by regression and mediation effects using personality traits as independent variables, interpersonal emotion regulation as mediator variables, and peer relationships as dependent variables, and controlling for the effects of gender and ranking of results. The results are shown in Table 3 and Table 4, which indicate that the direct effect of personality traits on peer relationships was significant ($Effect = -0.123$, $SE = 0.039$, $95\% CL [-0.199, -0.047]$), with an effect share of 42.12%, suggesting that personality traits are significant negative predictors of poor peer relationships; the indirect effect of interpersonal emotion regulation between personality traits and peer relationships was significant ($Effect = -0.169$, $SE = 0.027$, $95\% CL [-0.224, -0.119]$), with an effect share of 57.88%, suggesting that interpersonal emotion regulation was partially mediated between personality traits and peer relationships. The path of the mediating effect is shown in Figure 1.

Table 3: Tests of the Mediating Role of Interpersonal Emotion Regulation between Personality Traits and Peer Relationships

implicit variable	independent variable	β	t	R	$R-sq$	F
Peer Relationships	Distinguishing between the Sexes	0.13	3.89	0.41	0.17	50.19***
	Ranking of Results	0.19	5.45			
	Personality Traits	-0.31	-9.13			
Interpersonal Emotion Regulation	Distinguishing between the Sexes	0.01	0.17	0.61	0.38	146.87***
	Ranking of Results	-0.05	-1.74			
	Personality Traits	0.61	20.46			
Peer Relationships	Distinguishing between the Sexes	0.13	4.07	0.48	0.23	53.25***
	Ranking of Results	0.17	5.16			
	Personality Traits	-0.13	-3.17			
	Interpersonal Emotion Regulation	-0.30	-7.20			

Table 4: Percentage of Mediated Effects Models (Normalized)

effect path	efficiency value	Boot SE	(Bootstrap 95% CI)		efficiency ratio
			lower limit	limit	
Personality Traits → direct effects of Peer Relationships	-0.123	0.039	-0.199	-0.047	42.12%
Personality Traits → Interpersonal Emotion Regulation → indirect effects of Peer Relationships	-0.169	0.027	-0.224	-0.119	57.88%
Personality Traits → total effect of Peer Relationships	-0.292	0.032	-0.355	-0.229	100%

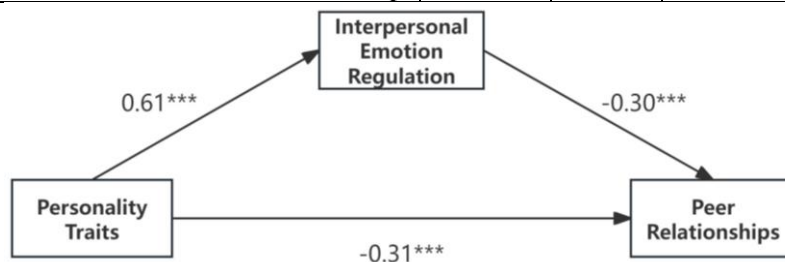


Figure 1: Path Diagram of Mediating Effects of Interpersonal Emotion Regulation in Personality Traits and Peer Relationships

4. Discussion

4.1 Demographic Differences in Personality Traits, Interpersonal Emotion Regulation, and Peer Relationships among Junior High School Students

This study found that the overall scores of personality traits of junior high school boys were significantly higher than those of girls, specifically, boys' scores on extraversion, conscientiousness and openness were significantly higher than those of girls, while their scores on neuroticism were significantly lower than those of girls. The reason for this may be that gender roles in society require different things from boys and girls, boys need a stronger sense of responsibility, they like to do risky things more, and their behavior is more dynamic and active; while due to the characteristics and differences in the physiological development of men and women, girls are usually more emotional, sensitive, and more susceptible to external influences to the extent that they are less emotionally stable. There is no significant difference in the level of interpersonal emotion regulation between male and female students, which is consistent with the results of previous research[9], although previous research suggests that girls' psychological maturity is earlier, so girls' emotion regulation during adolescence is better than that of boys; moreover, girls are more willing to share their emotions than boys are, especially in the case of emotional problems, girls will use more support-seeking strategies than boys^[9]. However, junior high school students, who are in a special period of physical and mental development, tend to show their positive and sunny side and hide their fragile and negative emotions in order to pay attention to and maintain their self-image due to their high self-esteem and sensitivity, and often prefer to keep their problems in their heart, so there is no significant difference in interpersonal emotion regulation between male and female students. The reason why girls have poorer peer relationships than boys may be that, compared with boys, girls are more emotionally delicate, more sensitive to peer relationships, and attach more importance to their relationships with peers, so they are more likely to be in conflict with their peers because of some minor details.

The study also found that junior high school students with higher grades were more likely to have positive personality traits, use more interpersonal emotion regulation strategies, and have better peer relationships. This may be because, in addition to their usual diligence and hard work, students with high grades and excellent overall development show more self-confidence than other students, are more emotionally rich, are outgoing and gregarious, have strong divergent and creative thinking, and are more cautious and organized in important situations[4]. These students also have more confidence in adopting various strategies to regulate their emotions when facing negative emotions, and utilize all available resources to regulate their emotions as much as possible, so that they can come out from the shadows of unfavorable emotions as soon as possible[10]; and due to their extroverted personality traits, they have more social interactions, and will consciously seek the help of others in the face of negative events, which will not only improve their own negative emotions effectively [10], but also help them to Maintaining and establishing good peer relationships.

4.2 The Influence of Personality Traits on Junior High School Students' Peer Relationships

This study found that the personality traits extraversion, agreeableness, conscientiousness, and openness were significantly and negatively correlated with peer relationship scores (i.e., the better the peer relationship), and neuroticism was significantly and positively correlated with peer relationship scores (i.e., the worse the peer relationship), validating Hypothesis 1 of this study. Sullivan's theory of interpersonal theory states that personality is the relatively enduring model of the interpersonal relationships that characterize human life, and that personality can never be

dissociated from the individual's The complexity of interpersonal relationships that exist in life is severed. Previous research has shown that neuroticism is negatively correlated with empathy, opening or constructing topics, and topic exchange pleasure, positively correlated with shyness, and negatively correlated with conflict resolution [11], which means that individuals scoring high on neuroticism are less likely to initiate interactions and resolve interpersonal conflicts well, and that they feel less emotional support, and thus have poorer peer and interpersonal skills. Individuals who score high on extraversion, agreeableness, conscientiousness, and openness are enthusiastic, socially competent, friendly, often perceived as reliable and trustworthy, lively and positive, and are also better able to read each other's facial expressions and are more expressive [11], and the higher the number and quality of their social relationships, so they have better interpersonal competence, and have more stable peer relationships.

4.3 The Mediating Role of Interpersonal Emotion Regulation between Personality Traits and Peer Relationships

According to the results of mediation effect analysis, interpersonal emotion regulation partially mediates the relationship between personality traits and peer relationships, i.e., extraversion, agreeableness, conscientiousness, and openness personality traits not only directly predict peer relationships, but also improve the quality of peer relationships through interpersonal emotion regulation; neuroticism is the opposite. That is, individuals with extraversion, agreeableness, conscientiousness, and openness personality traits tend to use emotion regulation strategies in interpersonal interactions and are more willing to share their own emotional experiences and seek emotional support from others, resulting in more intimate peer relationships. This may be due to the fact that individuals with high extraversion scores are expressive, dominant, and energetic; individuals with high agreeableness scores are comfortable and friendly with others and are empathetic; individuals with high conscientiousness scores are clearly organized and planned, strongly responsible, and very attentive; individuals with high openness scores are intelligent, optimistic, and cheerful [12], so they are more likely to initiate social interactions, make full use of the social resources around them to help them regulate their own emotions in the face of negative emotions, and are better able to deal with conflicts in social relationships and think about events from multiple perspectives, which all contribute to the development of good peer relationships. Individuals with high neuroticism scores are less likely to use interpersonal emotion regulation strategies, which is related to their emotional instability, temperamental, more insecure in interpersonal relationships, and prone to anxiety and stress, etc. Therefore, they are often less likely to use interpersonal emotion regulation due to shyness and lack of self-confidence when encountering emotional problems [12]. In addition, individuals with neuroticism personality are more inclined to seek emotional support and sympathy from others rather than learning effective emotion regulation through interaction with others, which in the long run will affect peer trust and closeness, and is not conducive to the establishment and maintenance of good peer relationships.

5. Conclusions

In summary, the results of this study revealed the mechanisms by which personality traits and interpersonal emotion regulation affect junior high school students' peer relationships, which provides valuable references for improving junior high school students' peer relationships or promoting the good development of their peer relationships. Moreover, this study provides insights for educational practices and interventions to help students acquire correct interpersonal emotion regulation strategies from the perspective of interpersonal emotion regulation, so as to improve the quality of junior high school students' peer relationships while alleviating their negative emotions.

In addition, educators and parents should pay attention to the development of students' personality traits, and develop positive personality traits through the provision of a favorable growth environment and educational guidance, in order to protect their physical and mental health development.

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