



Parental psychological control and adolescents depression during the COVID-19 pandemic: the mediating and moderating effect of self-concept clarity and mindfulness

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Abstract

During the COVID-19 pandemic, the mental health state of adolescents had caused widespread concern, especially the various problems caused by the relationship between adolescents and their parents in the long isolation at home. Based on the mindfulness re-perceiving model and Rogers's Self-theory, this study aimed to explore the roles of adolescents' self-concept clarity and mindfulness level in the relationship between parental psychological control and adolescent depression. A total of 1,100 junior high school students from China completed the questionnaires regarding parental psychological control, depression, self-concept clarity, and mindfulness. Moderated mediation analyses suggest that parental psychological control affects adolescent depression via self-concept clarity. The association between parental psychological control and depression is moderated by self-concept clarity. The effect was stronger among adolescents with high mindfulness levels than those with low. This study suggests that it is necessary to consider both parental factors and adolescents' factors in the future. The interventions on self-concept or mindfulness may ameliorate adolescent mental problems more effectively.

Keywords Parental psychological control · Adolescent depression · Self-concept clarity · Mindfulness · COVID-19

Introduction

Depression is one of the most common mental illnesses in children and adolescents, with about half of the first depressive episodes occurring during adolescence (Hamilton et al., 2014). Since Corona Virus Disease 2019 (COVID-19) broke out and spread in December 2019 (Hui et al., 2020), most of primary and middle schools postponed the spring semester and organized students to study at home worldwide. The teenagers' study and lifestyle have significantly changed, so they need to spend more time with their parents than before. Studies from both western and eastern cultural backgrounds have reported that the epidemic quarantine affects teenagers' mental health from various aspects. 85.7% of American parents reported that teenagers' emotions had changed during the suspension of classes (Neece et al., 2020). Psychological problems, especially depression and anxiety, have become

more prominent among adolescents during the COVID-19 pandemic (Hawes et al., 2021). Chinese researchers found that a higher level of perceived stress of the COVID-19 pandemic might lead to more depression symptoms in adolescents (Liu & Wang, 2021).

As the principal caregivers of adolescents and the prominent contact members during the epidemic, parents crucially impact the mental development of adolescents and play an essential role in the socialization of adolescents (Hadwin et al., 2006). In addition, parenting style has influences on the depression of adolescents (Hong & Min, 2018; Chorot et al., 2017; Pozzi et al., 2020). Furthermore, as the core variable of parenting style, parental psychological control is associated with internalized mental health problems in children (Barber et al., 1994), closely related to adolescent depression (Soenens et al., 2012). However, among the small number of studies about the role of parental psychological control in adolescent depression (Barber et al., 1994), less attention is paid to the mechanism of the relationship between parental psychological control and adolescent depression. Therefore, it is essential to explore the mechanism and buffer method of adolescent depression in such a

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background, which has great significance for future effective prevention and intervention programs.

Parental psychological control and adolescent depression

According to ecological systems theory (Bronfenbrenner, 1986), the family is the most crucial environment for teenagers to grow up, and parenting style can affect teenagers' depression both directly and indirectly (Wei & Liu, 2021; Zaki et al., 2020). As one of the core variables in parenting style, parental control is divided into psychological control and behavior control. Parental behavior control is considered as a set of positive parenting strategies, including clarifying appropriate behavior norms and expectations through communication and monitoring children's behavior consistent with these expectations (Akcinar & Baydar, 2014). In contrast, parental psychological control is a negative rearing style that manipulates their children's psychological and emotional experience, such as guilt, shame, and conditional love, in order to exert pressure on their children (Barber, 1996). According to Self-determination Theory, everyone has self-development needs, including autonomy, competency, and relationship (Ryan & Deci, 2000). Psychological control will affect the demand for independence and weaken self-reliance so that wishes from their parents can carry out teenagers' behavior.

In addition, psychological control from parents can lead to teenagers' behavior problems (Geng et al., 2020). Through a longitudinal follow-up study of 908 teenagers, researchers found that parental psychological control had a significant predictive effect on online game addiction of adolescents (Lin et al., 2020). Teenagers internalize their perceived parental control into their norms, resulting in intensifying internal conflict and the lost parts of themselves (Ryan & Deci, 2000). Similarly, Hee and Juliet (2018) found a significant correlation between parental psychological control and depression of middle school students. They proposed that parental psychological control can depress children's emotional regulation strategies and expression, resulting in depression. Besides, the relationship between parental psychological control and anxiety varies as the teenagers' age changes. Parental psychological control can significantly predict anxiety in young teenagers, but this effect reduces with age (Creveling-Benefield & Varela, 2019). Taken together, previous studies confirmed that high level of parental psychological control is related to higher adolescent internalization problems including anxiety and depression (Barber, 1996; Pettit et al., 2010).

Therefore, we formed our first hypothesis: parental psychological control would positively associate with adolescent depression (H1). More importantly, our study focuses on the factors that influence the relationship between those

two, as well as the role that psychological control plays in the impact of adolescent depression.

Self-concept clarity as a mediator

Adolescence is the second leap during the development of individual self-consciousness. Erickson (1969) believes that what needs to be solved in adolescence is the problem of ego-identity and role confusion. Self-concept clarity is a structural level of self-concept, indicating the extent to which self-concept is clearly and confidently defined and shows internal consistency and stability (Campbell et al., 1996). Research demonstrated that self-concept clarity is related to adolescents' mental health. Individuals with low self-concept clarity are more likely to have loneliness, internet addiction, depression, and other mental problems (Butzer & Kuiper, 2006; Campbell et al., 1996; Leeflynn et al., 2011; Lin et al., 2021; Tsukawaki & Imura, 2020). Through an online survey on Korean adolescents during the COVID-19 pandemic, researchers found that self-concept clarity negatively affected mental stress (Lee, 2021). In addition, self-concept clarity is positively associated with psychological adjustment. The more adolescents had a clear idea of themselves, the more they were effective in emotion regulation when dealing with both positive and negative emotions (Parise et al., 2019).

According to Rogers's Self-theory (1975), there will be more distortion and denial in the composition of individual self-concept with low adaptability. The process of value conditioning dominated by the concepts and values of parents and others increases the elements of distortion and denial in personal self-concept, which makes the inconsistency between self-concept and experience more prominent. Once this conflict enters the field of consciousness, individuals will doubt their self-concept to be in an ambiguous state (Kirschenbaum, 2004). Empirical evidence indicates that parental psychological control can significantly predict adolescents' negative self-concept and affect adolescents' social anxiety (Byun & Kim, 2019). Besides, parental influence directly impacts college students' self-concept clarity, thereby affecting adolescent depression by influencing their physical appearance (Seo et al., 2020). Research on adults also found the mediating role of self-concept clarity between adverse childhood experiences and suicide behavior, depression, loneliness, perceived stress, and life distress (Wong et al., 2018). Then, will self-concept clarity play the same mediating role between parental psychological control and adolescent internalizing problems? To our knowledge, the effect of self-concept clarity as a mediator in the relationship between parental psychological control and adolescent depression is poorly understood. Therefore, based on Rogers's Self-theory and empirical evidence above, the second hypothesis was proposed: parental psychological control

would be associated with adolescent depression via self-concept clarity (H2).

Mindfulness as a moderator

Mindfulness is regarded as a conscious and non-critical way to focus on the awareness of the present moment, which is a concentration method (Kabat-Zinn, 2006). According to the mindfulness re-perceiving model (Shapiro et al., 2006), mindfulness provides a new perception mode for individuals to have an open and inclusive attitude to accept the changes of the surrounding environment by breaking through the inherent automatic cognition and behavior mode. At the same time, it also emphasizes the individual's perception and unconditional acceptance of his own emotion and body state (Shapiro et al., 2006). The emotion regulation mode of mindfulness (Gross, 1998) indicates that the mindfulness intervention will affect the attention distribution link of the emotion regulation process. Through the awareness of emotional experience and the acceptance without evaluation, one can reduce the negative effect of emotions including its automatic evaluation process (Gross, 1998). Grabovac et al. (2011) found that focusing on events and experiences of the moment and being treated with an open and receptive attitude can cultivate insight and self-awareness.

To some extent, individuals who pay close attention to their inner experiences as well as external events and situations related to these experiences may have a clearer understanding of their specific emotions and self-awareness (Grabovac et al., 2011). In addition, as a therapeutic method, mindfulness intervention has been widely used to prevent or treat various mental diseases. For example, mindfulness can weaken the impact of mental distress on eating disorder and the effects of bullying on resilience and depression (Pidgeon et al., 2012; Zhou et al., 2017). Yuan (2021) also found that mindfulness training improved the resilience and emotional intelligence of adolescents isolated at home, leading to a better level of their mental health.

Although negative factors will cause more depression and mental health problems among children, there are still individual differences. Therefore, whether the child has protective factors matters greatly (Rutter, 1986). Among all kinds of factors such as personality traits and social support system, adolescent mindfulness level plays an essential role in promoting children's positive adaptation (Chen et al., 2012). Zimmer-Gembeck et al. (2021) found that adolescents with higher dispositional mindfulness would have lesser mental issues. The research about American university students reports that mindfulness can regulate the effect of adverse childhood experiences on depression (Mckeen et al., 2021). At the same time, paying attention to children's feelings and accepting children without evaluation can reduce their depression through self-esteem improvement (Hu & Ai, 2016). Furthermore,

individual mindfulness level is also significantly correlated with the higher level of self-concept (Grabovac et al., 2011).

The theory of individual environment interaction holds that the growth of adolescents is not only affected by their external growth environment but also by their internal characteristics (Lerner, 2004). Previous studies have mainly discussed the factors of adolescent mental health unilaterally, which is not comprehensive (Munroe et al., 2020). Therefore, exploring the mechanism of internal and external interaction has important guiding significance for reducing adolescent depression and promoting the healthy growth of adolescents. Based on the successful cases of mindfulness intervention in previous studies, the use of mindfulness as a key factor is worthy of further discussion. Given the theoretical analysis and empirical studies above, the third hypothesis was proposed: Mindfulness plays a regulatory role in the relationship among parental psychological control, self-concept clarity, and depression (H3).

The present study

Compared with previous studies, which only discussed the internal or external causes of depression, the current study explores the mechanism of depression from both internal and external causes. Moreover, considering that adolescence is a stage of rapid development of self-concept, the research from the dynamic level of self-concept clarity is more practical. In addition, previous studies are more about the impact mechanism of negative family environment on depression, but did not put forward the way to intervene such impact in theory, which has important guiding significance for clinical practice.

To sum up, we assumed that parental psychological control may affect adolescent depression via self-concept clarity. Meanwhile, mindfulness may serve as a helpful method to moderate interaction between different factors. Three aims would be examined in the current study. First, we would like to examine the association between parental psychological control and adolescent depression. Second is to examine whether self-concept clarity would mediate the association between parental psychological control and adolescent depression. Third, we would explore the moderating role of mindfulness in the relation between parental psychological control and adolescent depression via self-concept clarity. These three purposes constituted a moderated mediation model (Fig. 1).

Method

Participants

The present study recruited 1,100 adolescents from two junior high school in Henan Province of China. 141 students

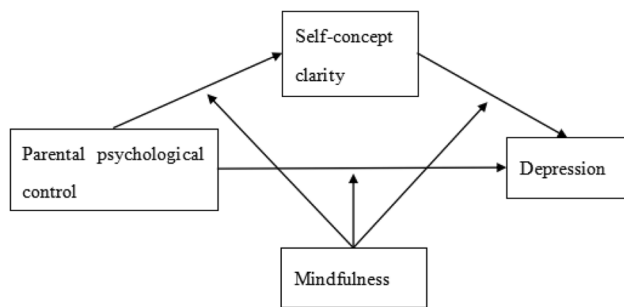


Fig. 1 The proposed moderated mediation model

were excluded because of not finishing the questionnaire. Finally, 959 participants were included in the final analysis, with 445 males (46.40%), and 514 females (53.60%). Participants were from three grades: 393 students in grade one (41.0%), 289 in grade two (30.10), and 277 in grade three (28.90%). The mean age of participants was 13.56 (range = 11–16 years). Only children accounted for 2.3%, and non-only children accounted for 97.7%. No child had obvious physical or developmental disabilities.

Procedures

Before the investigation, all the participants signed informed consent, with the class as a unit. The experimenters were graduate students who majored in psychology and trained for the procedure. A uniform instruction language was used during the survey to explain the questionnaire, which was withdrawn on the spot after completion. For each question, there were no right or wrong answers. Besides, the students were told that all the information they answered in the study would be kept secret. All the students completed the questionnaire independently, and the experimenters would take back the questionnaire separately after completing the questionnaire to avoid information leakage.

Measures

Parental psychological control

The Parental Psychological Control Scale compiled by Shek was used to measure adolescents' perception of parental psychological control. (Shek, 2006). The scale which has been adapted into the Chinese version is widely used in Chinese adolescents. The original scale includes two parts: father's psychological control of father and mother's psychological control. The two parts each have 10 questions. Except for the different title "father" and "mother", the other contents are the same. Because this study mainly investigates the impact of family rearing environment on adolescent depression, and parents constitute the main part of family environment, the

two parts of the questionnaire are combined into a "parents" questionnaire in this study. The questions ranged from 1 (*not conform at all*) to 5 (*very conform*), no reverse scoring questions. The average scores were calculated, with higher scores indicating higher levels of parental psychological control. In our present research sample, Cronbach's alpha coefficient was 0.889.

Depression

This study used a 13-item version of the Beck Depression Inventory (Beck, 1961) and translated to Chinese. Each item was graded on a scale of 0 to 3 (*no symptoms* = 0; *mild* = 1; *medium* = 2; *severity* = 3), it has only one-dimensional structure, the total score of the dimension judges the existence of depressive symptoms and the degree of depression, the higher the score is, the higher the tendency of depression is, where: 0–4 have no depressive symptoms, 5–7 mild, 8–15 moderate, and more than 16 severe. In our present research sample, Cronbach's alpha coefficient was 0.898.

Self-concept clarity

Self-concept Clarity Scale compiled by Campbell et al. (1996) and revised by Niu et al. (2016) was used for measurement. The scale included 20 items, and all the questions ranged from 1 (*not conform at all*) to 5 (*very conform*). Some questions are scored backward. The average scores were calculated, with higher scores indicating higher levels of self-concept clarity. In our present research sample, Cronbach's alpha coefficient was 0.685.

Mindfulness

The Chinese version of mindful Attention Awareness Scale compiled by Brown and Ryan (2003) and revised by Chen et al. (2012) was adopted. Fifteen items were measured in the scale. The scale ranged from 1 (*always*) to 6 (*never*), and there are no reverse scoring questions. The average scores were calculated, with higher scores indicating higher levels of mindfulness. In our present research sample, the Cronbach's alpha coefficient was found to be 0.864.

Analytic Plan

Descriptive statistics and bivariate correlations among study variables were computed. Multivariate linear regressions were performed to investigate the associations between parental psychological control, depression, self-concept clarity, and mindfulness. Data were analyzed with the Statistical Package for Social Sciences (SPSS) V.24.0.

Table 1 The means and standard deviations of key variables by gender and only child or not

	Gender			Only child or not		
	Boys	Girls	<i>t</i>	Only child	Non-only child	<i>t</i>
Parental psychological control	27.19(8.64)	25.02(9.83)	3.73***	30.64(8.16)	25.92(9.10)	2.41*
Self-concept clarity	34.98(5.54)	34.20(5.58)	2.15*	34.14(6.83)	34.57(5.54)	-0.36
Depression	9.83(7.13)	10.65(7.37)	-1.74	11.18(7.68)	10.25(7.26)	0.60
Mindfulness	54.28(12.14)	53.97(13.28)	0.38	53.77(15.42)	54.12(12.70)	-0.13

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$

Table 2 The means and standard deviations of key variables by grades

	Grades			<i>F</i>	<i>LSD</i>
	Grades 1	Grades 2	Grades 3		
Parental psychological control	25.10(9.02)	25.70(9.39)	27.68(8.72)	6.87**	3 > 1,2
Self-concept clarity	35.22(5.62)	34.70(5.21)	33.48(5.73)	8.20***	1,2 > 3
Depression	8.97(6.85)	10.48(7.48)	11.87(7.30)	13.45***	3 > 2 > 1
Mindfulness	56.49(13.28)	53.40(11.22)	51.47(12.94)	13.60***	1 > 2,3

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$

Besides, pathway analysis was used to explore the role of self-concept clarity as potential mediator and mindfulness as moderator using PROCESS (Hayes, 2013). The indirect mediating and moderating effects were investigated using a bootstrapping method, which included a 5,000-bootstrap sample. Bootstrapping was done at the 95% confidence interval, and statistical significance was calculated at the p -value of 0.05 to be considered indirect meditating and moderating effects.

Table 3 The correlations among parental depression, self-concept clarity, mindfulness and adolescent depression

	1	2	3	4
1. Parental psychological control	1			
2. Self-concept clarity	-0.32**	1		
3. Depression	0.40**	-0.37**	1	
4. Mindfulness	-0.37**	0.44**	-0.40**	1

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$

Result

Preliminary analyses

Table 1 shows the means and standard deviations of key variables by gender and only child or not. The results showed that boys' perception of parental psychological control is higher than girls', and boys' self-concept is clearer than girls'. The only-child's perception of parental psychological control is higher than that of the non-only-child. One-way ANOVA was performed on the differences among three students' grades in the main study variables. The results are shown in Table 2. The three groups were significantly different on parental psychological control ($F = 6.87$, $p < 0.01$). Further analysis showed that the degree of parental psychological control perceived by students of grade three was significantly higher than that among the students of grade one and two. As for depression, the three groups were also different ($F = 13.45$, $p < 0.001$). Further analysis showed that the depression

level of junior high school students increased significantly with the grade. Besides, the three groups were significantly different on mindfulness ($F = 13.60$, $p < 0.001$). The results showed that the mindfulness level of students in grade one was significantly higher than the other two groups. The results showed that self-concept clarity among the grade one and two was significantly higher than that of grade three ($F = 8.20$, $p < 0.001$).

The correlations among parental depression, self-concept clarity, mindfulness, and adolescent depression can be found in Table 3. There are significant correlations among all variables. The information showed that parental psychological control was significantly negatively correlated with self-concept clarity and mindfulness and positively correlated with depression. There was a significant and negative correlation between self-concept clarity and depression. However, self-concept clarity was positively correlated with mindfulness. Besides, depression was significantly positively correlated with mindfulness.

Testing for mediation effect

Results revealed that parental psychological control was significantly related to depressive symptoms in the first step, $\beta = 0.39$, $p < 0.001$ (Table 4). Parental psychological control was significantly related to self-concept clarity in the second step, $\beta = -0.32$, $p < 0.001$ (Table 4). In the third step, when parental psychological control was controlled, self-concept clarity was significantly related to depressive symptoms, $\beta = -0.25$, $p < 0.001$ (Table 4). Finally, the biased-corrected percentile bootstrap method revealed that the indirect effect of parental psychological control on depressive symptoms via self-concept clarity was significant, $ab = 0.08$, $SE = 0.01$, 95% $CI = [0.06, 0.11]$. The ratio of the mediation effect of the total effect was 20.49%.

Testing for moderated mediation effect

Moderated mediation hypothesis was estimated by the PROCESS macro (Model 59) (Hayes, 2013). As Table 5 demonstrated, the effect of parental psychological control on self-concept clarity was significant, $\beta = -0.20$, $p < 0.001$. Besides, the impact of mindfulness on self-concept clarity was significant, $\beta = 0.35$, $p < 0.001$, and the association between parental psychological control and self-concept clarity was moderated by mindfulness, $\beta = -0.10$, $p < 0.001$.

We further plotted predicted depression against self-concept clarity (Fig. 2), separately for low mindfulness level and high mindfulness level. Simple slope tests demonstrated that, for low mindfulness level, higher levels of parental psychological control were related to lower levels of self-concept clarity, *simple slope* $= -0.1$, $p < 0.05$. However, for high mindfulness level, the effect of parental psychological control on self-concept clarity was stronger, *simple slope* $= -0.31$, $p < 0.001$. Given that mindfulness level moderated the first stage of the mediation process.

Discussion

During the COVID-19 pandemic, the mental problem of adolescents had caused widespread concern, especially the depression caused by the relationship between the children and their parents in the long isolation at home (Hawes et al., 2021). Based on previous research, the present study further explores the association between parental psychological control and depression by testing 1,100 junior high school students during the COVID-19 pandemic. It simultaneously incorporated the role of adolescents' self-concept clarity as a mediator and mindfulness level as a moderator. The results demonstrated that the association between parental psychological control and depression is moderated by self-concept clarity. The effect was stronger among adolescents with high mindfulness levels than those with low. The findings imply that during the COVID-19 epidemic, adolescent depression is affected by parental psychological control, self-concept clarity, and mindfulness level. The result further suggests that it is necessary to consider the factors from both parents and adolescents in the future. The interventions on self-concept or mindfulness may ameliorate adolescent mental problems more effectively.

Table 5 Testing the moderated mediation model

	Self-concept clarity		Depression	
	β	t	β	t
Parental psychological control	-0.20	-6.57***	0.31	10.32***
Mindfulness	0.35	11.15***	-0.25	-8.25***
Parental psychological control \times Mindfulness	-0.10	-3.97***		
R^2	0.25		0.24	
F	51.81***		58.89***	

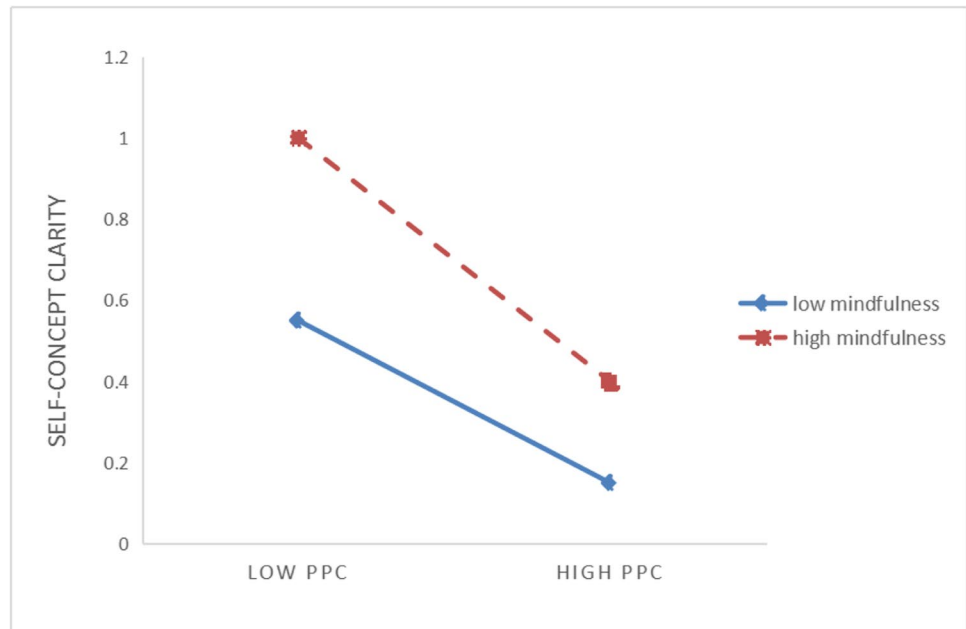
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$

Table 4 Testing the mediation effect of self-concept clarity

	Depression		Self-concept clarity		Depression	
	β	t	β	t	β	t
Parental psychological control	0.39	13.26***	-0.32	-10.52***	0.31	10.32***
Self-concept clarity					-0.25	-8.25***
R^2	0.18		0.12		0.24	
F	52.90***		33.37***		58.89***	

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$

Fig. 2 Self-concept clarity as a mediation of parental psychological control and mindfulness



Parental psychological control and adolescent depression

Sociodemographic characteristics analyses have shown that boys' level of parental psychological control is significantly higher than that of girls, which is consistent with the previous research results in China (Shek, 2005). This may be related to the fact that the participants in this study mainly come from rural areas. Some parents in rural areas still have a severe idea of attaching importance to boys over girls to strengthen the psychological control of boys. In contrast, girls adopt a relatively loose parenting style. In addition, there is a gender difference for the speed of mental development. Girls of the same age are generally more mature than boys. Therefore, parents give mature and sensible girls more autonomy, and relatively "naive" boys are still strictly controlled. With the increase of grades, parental psychological control also increases gradually. With the rise in grades, junior high school students are more and more willing to leave their parents, and they may feel a stronger sense of restraint from their parents. In contrast, parents have not adapted to the new parent-child relationship model at this stage, so the level of parental psychological control has increased. The non-only child shows lower parental psychological control than the only child, which could be explained by social influence theory (Kelman, 1958). The influence of parents' psychological control can be diffused to each individual in families with more children than those families with only one child.

The present study revealed that parental psychological control positively predicted adolescent depression. This finding aligns with previous work (El-Khodary & Samara,

2019). As the object-relations theory holds, the interaction mode between parents and children has far-reaching consequences. Children understand the world and form a stable diagram of the external world. Excessive psychological control is unfavorable to the development of children's thinking and creativity and affects their social development, leading to the emergence of internalization problems. At the same time, parental psychological control will distort and deny the correct perception of teenagers' noumenon to make them fall into the conflict of cognition, emotion, and behavior (Kernberg, 1988).

The mediating role of self-concept clarity

The clarity of self-concept shows gender differences. Boys and girls live at different physiological and psychological development speeds. Girls' psychological development speed is faster, and the exploration of self-concept is earlier than boys. However, due to limited experience and knowledge for girls in junior high school, the exploration at this stage has not been completed, and a clear understanding of themselves has not been formed (Arnett, 2000). The data analysis indicated that the self-concept clarity decreases year by year from grade 1 to grade 3. In other words, self-concept becomes more and more blurred from grade 1 to grade 3. This study believes that at this stage, self-concept of teenagers is in a period of "youth out of touch", and junior high school students are the initial stage of adolescence. Although teenagers' investment in self-exploration gradually increases in this period, the original self-concept is constantly challenged when facing academic and interpersonal problems, while the new self-concept diagram is still not established

instead. Therefore, there will be a decline in the clarity of self-concept with age.

The results revealed that parental psychological control is negatively correlated with self-concept clarity, but positively correlated with depression. Furthermore, self-concept clarity plays a partial intermediary role between parental psychological control and depression. That is, parental psychological control can both directly affect adolescent depression and indirectly affect it via self-concept clarity. As the initial stage of adolescence, junior high school students must be independent of their parents in all aspects. At the same time, the individual invests more cognitive resources to strengthen the depth and breadth of self-concept, in order to finally form their own complete and independent self-concept (Gecas et al., 1974). During this period, adolescents shifted from family communication to the dominant one with peers, transitioning from vertical transmission to parallel. They began to establish intimate relationships with peers. At this time, if the psychological control in the family environment is relatively high, it will hinder children's separation from the family to society and may seriously lead to depression. In addition, the self-concepts of most adolescents early come from the interaction with significant others such as parents. However, with the growth of teenagers, teenagers' self-concept is constantly refreshed because of the expansion of their activity space and deepening of their knowledge. If a parent's psychological control contradicts a teenager's ontological perspective, a conflict of self-concept will diminish self-concept clarity and lead to difficulties such as anxiety and despair.

Moderating role of mindfulness

The results revealed that mindfulness moderated the effect of parental psychological control on depression and the relationship between parental psychological control and self-concept clarity. This is partly consistent with our previous hypothesis(H3). Specifically, for the direct path, the protective effect of mindfulness on depression decreased with parental psychological control level. Children with high parental psychological control may already have a higher depression level, so mindfulness protection is unclear. On the contrary to the recently proposed mindfulness education, parental psychological control leads to teenagers' depression through ignoring feelings, restricting verbal expression, personal attack, withdrawal of love, and excessive intervention (Wei & Liu, 2021; Zaki et al., 2020). This suggests that we should not exaggerate the defensive impact of mindfulness and ignore the prevention of adolescent depression by changing the adverse environmental factors such as reducing parental psychological control, which is similar to previous studies on the impact of family factors on individuals (Liu & Li, 2017).

Although numerous studies proved that mindfulness has a positive impact on the improvement of behavior problems, our research found that mindfulness only moderated the relationship between parental psychological control and self-concept clarity. Another interesting finding is that high level of mindfulness can strengthen the negative predictive effect of parental psychological control on self-concept clarity. There are two possible reasons for this. First, this may be because mindfulness has a limited protective effect on high-risk factors (Vanderbilt-Adriance & Shaw, 2008). Parents have a significant and direct impact on junior high school students who are entirely in their native families, which belongs to high-risk factors. Therefore, mindfulness cannot moderate the relationship between parental psychological control and depression. Once self-concept is formed, it is relatively stable and has a latent defense mechanism, and self-concept clarity also shows relative stability. Second, the result still shows a significant interaction between parental psychological control and mindfulness. Based on individual environment interaction theory, personal mental health problems are primarily the result of the interaction of personal and environmental (Lerner, 2004). As an external condition, excessive parental psychological control will impact the self-concept of junior high school students. Mindfulness enables individuals to accept the parental psychological control unconditionally and without judgment. In this way, mindfulness has disadvantages as intensifying the adverse effects of parents' psychological control and directly "expands" its strength, resulting in the deterioration of individual problems. Nevertheless, some individuals can still form a clear understanding of themselves under the condition of high parental psychological control. One possible reason for this may be that mindfulness makes individuals pay special attention to their inner experiences and external situations related to these experiences. They may have a clearer understanding of their reactions and motives (Dummel, 2018).

Implication

The findings of our study have several theoretical and practical implications. First, mindfulness cognitive therapy is widely used in the intervention to improve people's mental health. For some depressed groups, mindfulness intervention can be considered to improve the mindfulness level of visitors (Kuyken et al., 2016). Consider that parental psychological control can directly affect individual depression and indirectly affect depression via clarity of personal self-concept. Therefore, parental psychological control can be taken as a starting point when consulting the adolescent depression group and exploring the individual's family environment in consultation and treatment. We also should

fully understand the client's self-concept to help the client recognize and accept himself or herself to improve the mental health level. Second, this study shows that for those with low parental psychological control, high level of mindfulness can significantly reduce the negative impact of parental psychological control. Therefore, we can consider mindfulness intervention for individuals with common parental psychological control to improve their mindfulness level and improve their self-concept clarity.

There were still several limitations in the present study. First of all, this study is a cross-sectional study. Because the dependent and independent variables are measured at the same time, it is impossible to discern the causal relationship between them. Future research can consider the pre-test and post-test research method and use cross lag analysis to explore the causal relationship between variables. Furthermore, future study should include cross-cultural research to establish a foundation for universal conclusions with disparities in parenting styles among people of various cultural backgrounds. Second, the study uses a self-report scale to measure. The collective class test does not pay attention to the participants' answers in time. It may be that junior high school students can not accurately understand the true meaning of the question because of their limited understanding ability. The study was conducted during COVID-19, and due to the pandemic, the number of participants was reduced because many children were unable to attend school. Future research could consider using the Online Photovoice method (OPV), an online approach for gathering more mental data from participants than typical quantitative methods (Tanhan & Strack, 2020). In addition, considering the complexity of the pandemic situation, researchers should examine various innovative counseling strategies for providing psychological aid to youngsters. Thirdly, the measurement of parental psychological control in the study adopts the self-assessment of junior high school students; it measures the level of teenagers' perception of parental psychological control. In the follow-up, we will consider let the parents to self-rate the level of parental psychological control over their children. It is possible that assessment of the parents may be different from that of teenagers. So that, we can provide a clearer explanation and more effective educational suggestions based on the psychological state of both sides.

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Data availability The authors declare that the data supporting the findings of this study are available within the article.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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