

Effects of Parents' Value of Children on Adolescent Depression: A Cross-Sectional Study in China

Dan Dong

Beijing Normal University

Yi Feng

Central University of Finance and Economics

Mengna Zheng

ECNU Wuhu Foreign Language School

Min Zong

China Foreign Affairs University

Peng Zhang

Beijing Normal University

Zhihong Qiao (✉ fengyijob@163.com)

Beijing Normal University

Research article

Keywords: Value of Children, Depression, Parenting style, External LOC, Self-esteem

Posted Date: July 21st, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-45016/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Abstract

Background: Parenting style has been extensively demonstrated as a predictor of depression in children and adolescents, but few studies have examined the antecedents of parenting style, especially parents' beliefs towards children. The effect of parents' implicit beliefs on children's mental health is still unclear. This study aimed to explore the influence of parents' value of children (VOC) on adolescent depression, and the underlying mechanism between parents' VOC and adolescent depression.

Methods: High school and college students and their parents were recruited to participate a cross-sectional online survey. The parents completed the VOC scale, and the adolescents completed the scales of parenting style, external LOC, self-esteem, and depression. A structural equation model was performed to analyze the multiple mediating effects on adolescent depression.

Results: A total of 963 Chinese adolescents (Mage = 17.78 ± 1.94 years, 55.5% female) and their parents (Mage = 45.40 ± 4.40 years, 58% mothers) were recruited and examined in the current analysis. The results showed that the social and psychological benefits of VOC directly predict adolescent depression ($\beta_{\text{social benefits}} = 0.191, p < 0.001$; $\beta_{\text{psychological benefits}} = -0.180, p < 0.001$), whereas the relational benefits of VOC do not ($\beta_{\text{relational benefits}} = -0.027, p > 0.05$). Moreover, the underlying mechanism and paths were examined between VOC, parenting style, external locus of control, self-esteem and depression.

Conclusions: Our results enrich the theoretical framework of parents' VOC on adolescent depression. It also provides valuable practical insights into parenting attitudes and beliefs, and highlighted the importance of VOC towards psychological benefits as a possible protective factor against depression in adolescence.

Background

Depression is currently the most common psychological issue worldwide [1], with more than 95 million people in China suffering from it [2]. Voluminous studies have reached the consensus that depression often starts in adolescence [3, 4] and is a pivotal element that damages psychosocial and social functioning [5], triggering subsequent suicidal thoughts and behaviors [6, 7]. Accordingly, examining the inner generative mechanism of depression at an early age, which enables adolescents to reduce its negative impact, is necessary.

VOC and depression

VOC refers to parents' intentions regarding fertility, raising their children, and the benefits that parents believe their children can derive from parenting [8]. It includes three types: psychological, relational, and social benefits [9]. Psychological benefits are the results of parents raising their children with the emotional values of pleasure, love, companionship, and satisfaction [9]. Relational benefits are parents' VOC mainly reflected in enhancing the parental sense of responsibility and strengthening connections with kin, friends, and spouses [9]. Social benefits represent parents' belief that raising children can lift the family's economic status, support the elderly, and continue the family line emphasizing the utilitarian values that parents see in their children [9, 10].

Previous studies have verified that both psychological and relational benefits are positive family values that create positive and close family patterns [9], and adolescents growing up in this type of family environment generally experience greater well-being and less depression [11, 12]. However, parents who value social benefits may distance themselves from their children, resulting in adolescents feeling less emotional support [13] and more negative affect [14, 15], which may facilitate depression.

Investigating the influence of parents' VOC on children's mental health is essential. As an important indicator of mental health, depression most likely to be affected by parents' VOC. However, recent research regarding VOC has focused on its impact on demographic changes in the field of sociology [16]. We attempted to investigate the construct from a different perspective—by exploring the influence of VOC on depression in the field of health psychology.

VOC, parenting style and depression

To date, the predominant perspective for understanding adolescent depression has focused on family factors, particularly parenting style [17–19]. Parenting style is widely recognized as an important factor in adolescents' psychological health [1], including adolescent anxiety [20] and depression [18, 21]. However, few studies have explored the antecedents of parenting style through the domains of implicit attitudes and beliefs. It's often neglected that children's depression due to negative parenting styles may be rooted in parents' implicit attitudes or beliefs toward their children, such as the value of children (VOC). VOC as the implicit beliefs of parents toward children can affect parents' rearing behavior [10, 22]. For parents who receive the social benefits of VOC, some orient to continue the family glory tend to employ children to high standards, severity and criticism to make children stand out [23]; others orient to support the elderly or improve the family economic level tend to supply low emotional warmth to children, because they care more about what the children will bring to the family when they grow up or whether the cost of raising children will be rewarded [9]. Relative to social benefits, parents who endow children with psychological and relational benefits reflect emotional closeness between generations [16], which drives parents to give their children more emotional warmth, praise, and encouragement. This positive

parenting style can improve adolescents' well-being and reduce depression [24]. Therefore, adolescent depression may be link to parents' VOC through the mediation of parenting styles.

VOC, external locus of control (LOC), self-esteem and depression

As parents' implicit attitudes and beliefs, VOC may play inhibiting and promoting roles on adolescent depression, relating to the development of internal self-system. However, the role of VOC on adolescents' internal self-system remains unclear. Self-system contains one's cognitive and affective structures [25], such as cognitive style, self-concept and personality. In this study, external LOC and self-esteem are considered important cognitive style and self-concept within the framework of the self-system.

LOC is considered as an important cognitive style in the self-system. It refers to the degree to which people believe that they, as opposed to external forces, have control over the outcome of events in their lives [26]. Individual locus is conceptualized as internal (a belief that one can control one's life) or external (a belief that outside factors can control one's life). Parents oriented toward social benefits of VOC generally have a strong desire for their children to be talented as a way to "save face," then adolescents under this control of their parents gradually become timid [27], and they subsequently develop external LOC. Learned helplessness theory proposes that the external LOC can produce reactive depression [28–30]. Conversely, low external LOC has been widely proven to inhibit depression [28]. Parents who hold VOC as psychological and relational benefits may signal to children that they are highly valued and loved, which increases adolescents' self-worth and sense of control, accordingly inhibits external LOC and depression [31]. Therefore, external LOC may be an important mediator connecting the relationship between VOC and depression.

In addition, self-esteem is convinced as an important construct as self-concept in the framework of self-system, and also a robust predictor of depression [32, 33]. The sociometer theory proposes that self-esteem is a sociometer that can mirror the subjective perception of adolescents' value in desirable relationships, in which people perceive being accepted, loved, and valued by others—thus improving their self-esteem [34, 35]. Therefore, VOC toward psychological benefits filled with care and love, which may elevate children's self-esteem; while social benefits may derogate their self-esteem. We assume that self-esteem is another possible internal factor mediating the relationship between VOC and depression.

Moreover, the development of children's LOC and self-esteem may be rooted in parenting styles. Negative parenting styles, such as uninterested and neglectful, lead to children's external LOC [25], low self-esteem [36] and then trigger depression [25, 37, 38]; while positive parenting styles such as encouragement and emotional warmth lead to internal LOC [25], high self-esteem [36, 39], inhabiting depression [28, 37]. Thus, we assume that parenting style may mediate the relationship between VOC and internal self-system.

Aims of this study

This study attempts to fill the gap by examining the effects and underlying mechanism of VOC on depression. First, we assessed the influence of parents' VOC on adolescent depression. Second, we explored the underlying mechanism of VOC on depression from the perspectives of both the external parenting style and the internal self-system.

By combining the above corollaries, we proposed the following hypotheses: (1) Parents' VOC will predict adolescent depression, and different types of VOC will play different role on depressive outcomes. (2) Parents' VOC will predict adolescent depression through parenting style. That is, VOC is the antecedent of parenting style. (3) Parents' VOC will predict adolescent depression through external LOC and self-esteem. (4) Parents' VOC affects adolescent depression through parenting style via external LOC and self-esteem.

Methods

Participants and procedures

The survey was carried out in March 2020. The participants included adolescents and their mothers or fathers. The adolescents were recruited from two high schools in Anhui, China and two colleges in Jiangsu, China. Adolescents who met the following criteria were included: (1) were Chinese adolescent; (2) were able to read and understand Chinese; and (3) were raised by their parents. Data was collected via the online questionnaires.

The survey was divided into two parts: parent answers and adolescent answers. Parents who spent more time taking care of their children in daily life were asked to complete the VOC scale. The adolescents were required to provide background information on sex, age, and educational level and then completed measures assessing parenting style, external LOC, self-esteem, and depression. Before filling out the questionnaires, each participant (including adolescents and their parent) received an informed consent form about the purpose and procedures of this study. This study was approved by the Research Ethics Review Committee of Beijing Normal University.

Measures

VOC

This study employed the parent-report method to measure parents' intention to raise their children by applying the VOC scale from the China Family Panel Studies [9]. In this study, this nine-item scale was divided into three dimensions using a factor analysis. Three dimensions were assessed:

social benefits, relational benefits, and psychological benefits. The parents were asked to rate each item on a five-point scale (1: *Completely disagree* to 5: *Completely agree*). An internal consistency test and confirmatory factor analysis were performed for this scale, and the results showed that the internal consistency reliability ($\alpha = 0.81$) and construct validity were good ($\chi^2/df = 4.280$, comparative fit index (CFI) = 0.978, Tucker-Lewis index (TLI) = 0.968, root mean square error of approximation (RMSEA) = 0.058 (0.047–0.070), Standardized Root Mean Residual (SRMR) = 0.037).

Parenting style

Parenting style was measured using the s-EMBU (Egna Minnen Beträffande Uppfostran) as revised by [40]. The participants rated their parents' frequency of engagement in 12 specific behaviors from 1 (*Never*) to 4 (*Always*). Sample items included "my parents praised me" and "my parents showed with words and gestures that they liked me". The participants recorded the behavior of the parent who spent more time taking care of them in daily life. The scores ranged between 12 and 48, with higher scores indicating a more positive parenting style. In this study, this scale possessed substantial reliability ($\alpha = 0.89$) and good construct validity ($\chi^2/df = 5.242$, CFI = 0.963, TLI = 0.953, RMSEA = 0.066 (0.059–0.074), SRMR = 0.033).

External LOC

The external LOC subscale of Levenson's Locus of Control Scale [41] was applied to measure the external LOC of the adolescents, which consisted of 4 items rated on a 6-point scale ranging from 1 (*Completely disagree*) to 6 (*Completely agree*). Specific items included "I feel like what happens in my life is mostly determined by powerful people." The scale possessed adequate internal consistency reliability ($\alpha = 0.79$) and construct validity ($\chi^2/df = 15.473$, CFI = 0.931, TLI = 0.889, RMSEA = 0.123 (0.108–0.138), SRMR = 0.048).

Self-esteem

Rosenberg Self-Esteem Scale (RSES) including 10 items was used to measure adolescents' self-esteem [42]. Sample items included "I feel that I am on an equal plane with others" and "I feel that I have a number of good qualities." The participants rated every item using a 4-point scale ranging from 1 (*Never*) to 4 (*Always*). In this study, this scale possessed acceptable reliability ($\alpha = 0.88$) and construct validity ($\chi^2/df = 13.37$, CFI = 0.927, TLI = 0.890, RMSEA = 0.113 (0.104–0.123), SRMR = 0.079).

Depression

Adolescent depression was assessed using the revised simplified version of the Center for Epidemiologic Studies Depression Scale (CES-D) [43, 44]. This scale consists of 9 items (e.g., "In the last month, how often have you felt that you could not shake off the blues even with help from family or friends") on a 4-point scale, from 1 (*Less than 1 day*) to 4 (*5–7 days*). A cut-off score of 17 was used to screen for depressive symptoms in this study [44]. This scale had good internal consistent reliability ($\alpha = 0.880$) and construct validity ($\chi^2/df = 11.248$, CFI = 0.926, TLI = 0.901, RMSEA = 0.099 (0.089–0.109), SRMR = 0.043) in this study.

Data analysis

We conducted Shapiro-Wilk test to test the normality of continuous variables. The results showed that all continuous variables were non-normally distributed. We performed Chi-square test and Mann-Whitney U test to test the difference of background characteristics between the adolescents with and without depressive symptoms. Correlations between main variables were analyzed utilizing Spearman's correlation.

In addition, a structural equation model by Mplus version 7.4 was established to assess the hypothesized multiple mediating affects. The goodness of fit was assessed by the χ^2/df , RMSEA, SRMR, CFI, and TLI. The acceptable criteria for the model parameters are: CFI > 0.90, TLI > 0.90, RMSEA < 0.08, and SRMR < 0.08 [45, 46]. We also performed a bias-corrected bootstrap test at the 95% confidence interval to examine the statistical significance of the effect [47]. The significance level was 0.05 in this study.

Results

Background characteristics

In total, 1005 questionnaires were distributed and 963 were completed, with a response rate of 95.82%. Of the adolescents in the sample (aged 14–20, Mage = 17.72 ± 1.95 years), 55.5% were females (Mage = 17.78 ± 1.94 years), with 44.5% were classified as being with depressive symptoms. Of the parents in the sample (aged 33–67, Mage = 46.05 ± 4.39 years), 58% were mothers (Mage = 45.40 ± 4.40 years) with an average of 9.07 ± 3.77 years of education. Table 1 displays the background characteristics of the adolescents with and without depressive symptoms.

Table 1
Background characteristics of the participants.

	Without depressive symptoms (N = 544)	With depressive symptoms (N = 419)	<i>p</i> value
	n,%	n,%	
Sex (N = 963)			0.138
Male (N = 429)	231(42.46%)	198(47.3%)	
Female (N = 534)	313(57.54%)	221(52.7%)	
School type (N = 963)			0.947
High school (N = 447)	252(16.91%)	195(46.6%)	
College (N = 516)	292(83.09%)	224(53.5%)	
Location (N = 963)			0.300
City (N = 424)	247(45.4%)	177(42.2%)	
Town (N = 292)	154(28.3%)	138(32.9%)	
Village (N = 247)	143(26.3%)	104(24.8%)	
Mean Age (SD) (N = 963)	17.739(1.944)	17.695(1.962)	0.677
Parents who spent more time taking care of the children in daily life (N = 963)			0.589
Mother (N = 559)	315(57.90%)	244(58.2%)	
Father (N = 404)	229(42.10%)	175(41.8%)	
Parent mean Age (SD) (N = 963)	46.09(4.450)	46(4.318)	0.849
Parent educational years (SD) (N = 963)	9.433(3.617)	9.539(3.622)	0.509
<i>p</i> value: Chi-square test and Mann-Whitney U test			

Table 1. Background characteristics of the participants.

Table 1

Correlations between depression and other variables

Table 2 shows the Spearman correlations between predictive variables and depression. We found significant correlations between depression and social benefits of VOC ($r = 0.111$, $p < 0.01$), relational benefits of VOC ($r = -0.08$, $p < 0.05$), psychological benefits of VOC ($r = -0.108$, $p < 0.01$), parenting style ($r = -0.499$, $p < 0.01$), external LOC ($r = 0.375$, $p < 0.01$), and self-esteem ($r = -0.495$, $p < 0.01$).

Table 2
Spearman's correlation between main variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1 Sex	1											
2 Age	0.036	1										
3 School type	0.047	0.915**	1	1	1	1						
4 Location	0.020	0.072*	0.056	-0.008	-	0.064**						
5 Parent age	-0.65	0.063	0.049	-	0.089**							
6 Parent educational years	-0.047	0.023	0.020									
7 Social benefits	-0.239**	-0.015	-0.034	0.132**	0.029	0.046	1					
8 Relational benefits	-0.131**	-0.28	-0.035	-0.025	0.009	0.022	0.296**	1				
9 Psychological benefits	0.015	0.051	0.035	-0.100*	0.002	0.018	0.106**	0.530**	1			
10 Parenting style	0.107**	0.037	0.042	-0.118*	0.050	0.038	-0.194**	0.110**	0.232**	1		
11 External LOC	-0.110**	-0.015	-0.051	0.032	0.000	-0.071*	0.236**	0.045	-0.067*	-0.312**	1	
12 Self-esteem	0.071*	0.037	0.048	-0.074*	0.019	0.026	-0.123**	-0.186*	0.228**	0.505**	-0.379**	1
13 Depression	-0.022	-0.020	0.000	0.027	-0.004	0.023	0.111**	-0.080*	-0.108**	-0.499**	0.375**	-0.495**

Table 2. Spearman's correlations between main variables.

Table 2

Multiple mediating model

We developed multiple mediating models using the following steps to assess the multiple mediator effects of parenting style, external LOC, and self-esteem in the relationship between VOC and depression.

Analysis of direct effects

We established a direct effects model of VOC on depression, and the results indicate that this model is a good fit ($\chi^2/df = 5.599$, CFI = 0.935, TLI = 0.920, RMSEA = 0.069 (0.061–0.077), SRMR = 0.034). Moreover, the direct effects of social and psychological benefits on depression were significant ($\beta_{\text{social benefits}} = 0.191$, (95% CI, 0.132, 0.248), $p < 0.001$; $\beta_{\text{psychological benefits}} = -0.180$, (95% CI, -0.264, -0.094), $p < 0.001$). However, relational benefits did not directly predict depression ($\beta_{\text{relational benefits}} = -0.027$, (95% CI, -0.104, 0.052), $p > 0.05$) and hence were not included in the subsequent multiple indirect analysis.

Analysis of multiple indirect effects

We developed a multiple indirect model based on the direct model (see Fig. 1). The results demonstrated that the model was acceptable ($\chi^2/df = 5.501$, CFI = 0.936, TLI = 0.914, RMSEA = 0.068 (0.062–0.075), SRMR = 0.037).

Moreover, the results showed that the social benefits of VOC indirectly predicted depression in two ways, including a one-step path involving parenting style ($\beta_{\text{social benefits}} = 0.070$ (95% CI, 0.051, 0.093), $p < 0.001$) and an external LOC ($\beta_{\text{social benefits}} = 0.039$ (95% CI, 0.025, 0.058), $p < 0.001$) and a two-step path involving parenting style through both an external LOC ($\beta_{\text{social benefits}} = 0.010$ (95% CI, 0.006, 0.016), $p < 0.001$) and self-esteem ($\beta_{\text{social benefits}} = 0.033$ (95% CI, 0.022, 0.045), $p < 0.001$). The psychological benefits of VOC indirectly predicted depression in two ways, including a one-step path involving parenting style ($\beta_{\text{psychological benefits}} = -0.085$ (95% CI, -0.113, -0.064), $p < 0.001$) and self-esteem ($\beta_{\text{psychological benefits}} = -0.040$ (95% CI, -0.058, -0.026), $p < 0.001$) and a two-step path involving parenting style through both an external LOC ($\beta_{\text{psychological benefits}} = -0.013$ (95% CI, -0.019, -0.008), $p < 0.001$) and self-esteem ($\beta_{\text{psychological benefits}} = -0.040$ (95% CI, -0.055, -0.028), $p < 0.001$) (see Table 3). The findings

also showed that the social benefits of VOC predict depression positively through an external LOC but not through self-esteem; meanwhile, psychological benefits of VOC predict depression negatively through self-esteem but not through external LOC.

Table 3
Bias-corrected bootstrap test of direct and indirect effects.

Paths	Standardized β	95% CI	
		Low	High
Social benefits			
Social-depression	0.019	- 0.038	0.080
One-step mediation			
Social-parenting→depression	0.070***	0.051	0.093
Social-external -LOC→depression	0.039***	0.025	0.058
Social-self-esteem→depression	0.013	- 0.001	0.030
Two-step mediation			
Social-parenting→external -LOC→depression	0.010***	0.006	0.016
Social-parenting→self-esteem→depression	0.033***	0.022	0.045
Psychological benefits			
Psychological-depression	- 0.009	- 0.082	0.064
One-step mediation			
Psychological-parenting→depression	- 0.085***	- 0.113	- 0.064
Psychological-external -LOC→depression	- 0.007	- 0.018	0.003
Psychological-self-esteem→depression	- 0.040***	- 0.058	- 0.026
Two-step mediation			
Psychological-parenting→external-LOC→depression	- 0.013***	- 0.019	- 0.008
Psychological-parenting→self-esteem→depression	- 0.040***	- 0.055	- 0.028

Figure 1

Table 3. Bias-corrected bootstrap test of direct and indirect effects.

Table 3

Discussion

This study used multiple theoretical models and developed four hypotheses to explain the effects and underlying mechanism of VOC on depression among Chinese adolescents. First, we found that VOC focused on social benefits accelerates depression, whereas VOC focused on psychological benefits directly inhibits depression. Meanwhile, VOC focused on relational benefits has an insignificant influence on depression. Previous research assumed that both relational and psychological benefits were positive and supported close family values [9]; however, relational benefits did not significantly inhibit depression as did psychological benefits in our study. One possible explanation is that relational benefits may endow children with value from the benefits of the entire family or spousal relationships, rather than that of the children themselves; therefore, relational benefits do not prevent depression as significantly as do psychological benefits. Second, we found that VOC indirectly influence depression through parenting style. More specifically, VOC focused on social benefits facilitates depression due to a negative parenting style, whereas VOC focused on psychological benefits inhibits depression due to a positive parenting style. Third, we found that VOC indirectly influence depression through an external LOC and self-esteem. In particular, social benefits can increase depression by fueling external LOC, whereas psychological benefits can decrease depression by inspiring self-esteem. Finally, our results show that both the social and psychological benefits of VOC affect depression as a result of parenting style, through the path of an external LOC and self-esteem. Above all, this study elaborately investigated the influence and underlying mechanism of parents' VOC on adolescent depression.

Theoretical implications

This study makes several theoretical contributions. First, we demonstrated that parents' VOC is an important construct that influences adolescents' mental health, particularly depression. Previous research on parenting style showed strong connections between parenting style and children's depression [1, 18]. However, few studies have explored the connections between parents' implicit beliefs of VOC and parenting style. We demonstrated that parents' VOC is the fundamental reason for variations in parenting styles and, accordingly, leads to depression outcomes among adolescents.

Second, this study adds multiple mediations to expand VOC theoretical models. On the one hand, we expand the mediators from the external parenting factor and internal self-system perspectives. Interestingly, hypothesis 3 was partially confirmed, suggesting that different types of VOC influence adolescent depression through different internal self-system factors. One possible explanation is that negative VOC (i.e., social benefits) tends to be associated with a social utilitarian purpose [9, 10], which likely increases the external LOC but has no significant impact on self-esteem. Conversely, positive VOC (i.e., psychological benefits) focuses on children's happy growth and self-realization, which results in high self-esteem in children and has no significant impact on external LOC. On the other hand, we tested the mechanism for understanding the associations among parenting style, external LOC, and self-esteem and adolescent depression. A chain mediation effect of parent's VOC on depression through parenting style via external LOC and self-esteem was assessed, which enriches the theoretical framework of VOC on depression.

Finally, our study extends the current research boundary of VOC in the field of sociology. Although we focused on adolescent depression from the perspective of clinical psychology, research on VOC should not stop here. Our study also provides empirical evidence that VOC relates to social attribution (i.e., external LOC) and self-concept (i.e., self-esteem), which are important constructs in social psychology and suggest that VOC may be an important construct in this field.

Practical implications

This study has important implications for practice. First, it helps inform the attitudes or beliefs that parents should have when raising their children. Chinese traditional values for children, which emphasize boys over girls and raising children for the elderly, have lasted for hundreds of years [48]. Consequently, some parents today still raise children for their social benefits, which can increase adolescent depression. This study provides parents with an opportunity to reflect on whether they should allow their children to grow up happier and healthier or to meet utilitarian social goals.

Moreover, this study provides an important reference for psychotherapy. For adolescents with depression because of parents' VOC toward social benefits, cognitive therapy should be adapted to change their external attribution style, thus reducing their depression and achieving therapeutic effects. However, to fundamentally improve their depression, therapy should focus on improving their self-esteem and reinventing their self-concept through the adoption of humanistic therapy or the perspective of positive psychology.

Limitations and future directions

Some limitations of the present study should be noted. First, this study investigated only the parent who spent more time taking care of the children in daily life. Future research should assess participants whose parents are not divorced and examine the VOC of both the father and the mother. Additionally, the data we collected are set in the Chinese cultural context. Cultural values and characteristics could play a role in influencing our findings. China is characterized by high collectivism [49], and the social and relational benefits of VOC may be universal in China and may differ from western culture in other countries. Therefore, caution is necessary when generalizing our findings to other cultural backgrounds. Future research could test the generalization of our models in other cultural contexts. Finally, our model was limited in its ability to reveal the causality of the interested variables because of self-reported measures. Longitudinal research should be performed to support causality in the future.

Conclusions

In conclusion, this study provides novel insights into the mechanism of VOC on adolescent depression. It addresses the important association of parents' implicit attitudes when raising children and adolescent depression. Parents should neither make their children feel barren in childhood nor suffocate them in adulthood, and must realize that the significance of raising children is participating in the birth of a life and witnessing its growth and, through the process, truly realizing transmigration or the meaning of life. If parents want their children to succeed, perhaps the best thing to do is not expect them to succeed.

Abbreviations

VOC
Value of children
LOC
Locus of control

Declarations

Ethical approval and consent to participate

This study was approved by the Institutional Review Board of Human Research Ethics Committee for the Faculty of Psychology at Beijing Normal University. At the beginning of the online questionnaires, informed consent was obtained from every participant.

Consent for publication

Not applicable.

Availability of data and materials

The dataset used during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

This study was funded by the Beijing Higher Education “Undergraduate Teaching Reform and Innovation Project 2019” (Grant No. 2019–552-N137), which was granted by Beijing Municipal Education Commission.

Authors’ contributions

DD and ZQ conceived and designed the study; DD and MeZ were involved in data collection and quality control; DD performed data analysis; DD and YF drafted the manuscript; ZQ and YF made special contribution by reviewing and revising the manuscript; MiZ, and PZ reviewed and proofread the manuscript. All authors read and approved the final manuscript.

Acknowledgements

We thank all the students, their parents and teachers for their cooperation in this survey.

References

1. Chapman R, Parkinson M, Halligan S. How do parent-child interactions predict and maintain depression in childhood and adolescence? A critical review of the literature. *Adolesc Psychiatry*. 2016;6(2):100–15.
2. Huang Y, Wang Y, Wang H, Liu Z, Yu X, Yan J, et al. Prevalence of mental disorders in China: A cross-sectional epidemiological study. *The lancet psychiatry*. 2019;6(3):211–24.
3. Zhou Q, Fan L, Yin Z. Association between family socioeconomic status and depressive symptoms among Chinese adolescents: Evidence from a national household survey. *Psychiatry Res*. 2018;259:81–8.
4. Hankin BL. Adolescent depression: description, causes, and interventions. *Epilepsy Behav*. 2006;8(1):102–14.
5. Naicker K, Galambos NL, Zeng Y, Senthilselvan A, Colman I. Social, demographic, and health outcomes in the 10 years following adolescent depression. *J Adolesc Health*. 2013;52(5):533–8.
6. Yu X, Fan G. Direct and indirect relationship between locus of control and depression. *Journal of Health Psychology*. 2014;21(7):1293–8.
7. Bianchi R, Boffy C, Hingray C, Truchot D, Laurent E. Comparative symptomatology of burnout and depression. *Journal of Health Psychology*. 2013;18(6):782–7.
8. Hoffman LW, Hoffman ML. The value of children to parents. In: Fawcett JT, editor. *Psychological perspectives on population*. New York:: Basic Books; 1973. pp. 19–77.
9. Kim U, Park Y-S, Kwon Y-E, Koo J. Values of children, parent–child relationship, and social change in Korea: Indigenous, cultural, and psychological analysis. *Applied Psychology: An International Review*. 2005;54(3):338–54.
10. Mayer B, Trommsdorff G. Adolescents' value of children and their intentions to have children: A cross-cultural and multilevel analysis. *J Cross Cult Psychol*. 2010;41(5–6):671–89.
11. You Y, Ye B, Tang RX, Chen JW, Lei X, Fu H. Family functioning and suicidal ideation in middle school students: Moderated mediation effect. *Chinese Journal of Clinical Psychology*. 2017;25(6):1101–3.
12. Shek DTL. A longitudinal study of perceived family functioning and adolescent adjustment in Chinese adolescents with economic disadvantage. *J Fam Issues*. 2005;26(4):518–43.
13. Whitbeck L, Hoyt DR, Huck SM. Early family relationships, intergenerational solidarity, and support provided to parents by their adult children. *J Gerontol*. 1994;49(2):85–94.
14. Zhang WJ, Zou H, Ling YL. The characteristics of adolescents' parental support and their effects on their social adjustment: The mediating role of emotional intelligence. *Psychological Development Education*. 2012;28(2):160–6.

15. Rueger SY, Malecki CK, Demaray MK. Relationship between multiple sources of perceived social support and psychological and academic adjustment in early adolescence: Comparisons across gender. *J Youth Adolesc.* 2010;39(1):47–61.
16. Kagitcibasi C, Ataca B. Value of children and family change: A three-decade portrait from Turkey. *Applied Psychology: An International Review.* 2005;54(3):317–37.
17. Sheeber L, Hops H, Davis B. Family processes in adolescent depression. *Clin Child Fam Psychol Rev.* 2001;4(1):19–35.
18. Oppenheimer CW, Hankin BL, Young J. Effect of parenting and peer stressors on cognitive vulnerability and risk for depression among youth. *J Abnorm Child Psychol.* 2017;46(3):597–612.
19. Scheider JL, Weisz JR. Family process and youth internalizing problems: A triadic model of etiology and intervention. *Dev Psychopathol.* 2017;29(1):273–301.
20. Cohen E, Biran G, Aran A, Gross-Tsur V. Locus of control, perceived parenting style, and anxiety in children with cerebral palsy. *Journal of Developmental Physical Disabilities.* 2008;20(5):415–23.
21. Alloy LB, Abramson LY, Gibb BE, Crossfield AG, Pieracci AM, Spasojevic J, et al. Developmental antecedents of cognitive vulnerability to depression: Review of findings from the cognitive vulnerability to depression project. *Journal of Cognitive Psychotherapy.* 2004;18(2):115–33.
22. Trommsdorff G, Nauck B. Introduction to special section for *Journal of Cross-Cultural Psychology*: Value of children: A concept for better understanding cross-cultural variations in fertility behavior and intergenerational relationships. *J Cross Cult Psychol.* 2010;41(5–6):637–51.
23. Teng ZW. Parents' expectation and children's psychological development. *Science of Social Psychology.* 2004;19(3):87–90.
24. Forbes EE, Williamson DE, Ryan ND, Dahl RE. Positive and negative affect in depression: Influence of sex and puberty. *Ann N Y Acad Sci.* 2004;1021(1):341–7.
25. Keshavarz S, Baharudin R. The moderating role of gender on the relationships between perceived paternal parenting style, locus of control and self-efficacy. *Procedia - Social Behavioral Sciences.* 2012;32:63–8.
26. Rotter JB. Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General Applied.* 1966;80(1):1–28.
27. Wang Q, Pomerantz EM, Chen H. The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the United States and China. *Child Dev.* 2007;78(5):1592–610.
28. Zampieri M, Souza EAPd. Locus of control, depression, and quality of life in Parkinson's disease. *Journal of Health Psychology.* 2011;16(6):980–7.
29. Presson PK, Benassi VA. Illusion of control: A meta-analytic review. *Journal of Social Behavior Personality.* 1996;11(3):493–510.
30. Seligman MEP. Learned helplessness. *Annu Rev Med.* 1972;23(1):407–12.
31. Wu F, Gong Q, Dai Y. Study on a Christian Chinese sample: Sense of self-worth, well-being and locus of control. *Mental Health Religion Culture.* 2017;20(3):239–45.
32. Orth U, Robins RW. Understanding the link between low self-esteem and depression. *Curr Dir Psychol Sci.* 2013;22(6):455–60.
33. Milevsky A, Schlechter M, Netter S, Keehn D. Maternal and paternal parenting styles in adolescents: Associations with self-esteem, depression and life-satisfaction. *J Child Fam Stud.* 2007;16(1):39–47.
34. Lin Z, Yuan-Yuan L. Review of sociometer theory on self-esteem. *Advances in Psychological Science.* 2009;17(4):852–6.
35. Leary MR, Tambor ES, Terdal SK, Downs DL. Self-esteem as an interpersonal monitor: The sociometer hypothesis. *J Pers Soc Psychol.* 1995;68(3):518–30.
36. Pinquart M, Gerke D-C. Associations of parenting styles with self-esteem in children and adolescents: A meta-analysis. *J Child Fam Stud.* 2019;28(1):2017–35.
37. Sowislo JF, Orth U. Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychol Bull.* 2013;139(1):213–40.
38. Baumrind D. Current patterns of parental authority. *Developmental Psychology Monograph.* 1971;4(1):1–103.
39. Herz L, Gullone E. The relationship between self-esteem and parenting style: A cross-cultural comparison of Australian and Vietnamese Australian adolescents. *J Cross Cult Psychol.* 1999;30(6):742–61.
40. Li Z, Wang L, Zhang L. Exploratory and confirmatory factor analysis of a short-form of the EMBU among Chinese adolescents. *Psychol Rep.* 2012;110(1):263–75.
41. Shewchuk RM Jr, Camp GAF, Blanchard-Fields CJ. F. Factorial invariance issues in the study of adult personality: An example using Levenson's locus of control scale. *Exp Aging Res.* 1992;18(1):15–24.
42. Rosenberg M. *Society and the adolescent self-image.* Princeton: Princeton University Press; 1965.
43. Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Appl Psychol Meas.* 1977;1(3):385–401.
44. He J, Chen Z, Guo F, Zhang J, Yang Y, Wang Q. A short Chinese version of center epidemiologic studies depression scale. *Chinese Journal of Behavioral Medicine Brain Science.* 2013;22(12):1133–6.

45. McDonald RP, Ho M-HR. Principles and practice in reporting structural equation analyses. *Psychol Methods*. 2002;7(1):64–82.
46. Zhonglin W, Kit-Tai H, Marsh HW. Structural equation model testing: Cutoff criteria for goodness of fit indices and chi-square test. *Acta Psychologica Sinica*. 2004;36(2):186–94.
47. MacKinnon DP, Lockwood CM, Williams J. Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivar Behav Res*. 2004;39(1):99–128.
48. Gupta MD, Zhenghua J, Bohua L, Zhenming X, Chung W, Hwa-Ok B. Why is son preference so persistent in east and south Asia? A cross-country study of china, India and the republic of Korea. *J Dev Stud*. 2003;40(2):153–87.
49. Markus HR, Kitayama S. Culture and the self: Implications for cognition, emotion, and motivation. *Psychol Rev*. 1991;98(2):224–53.

Figures

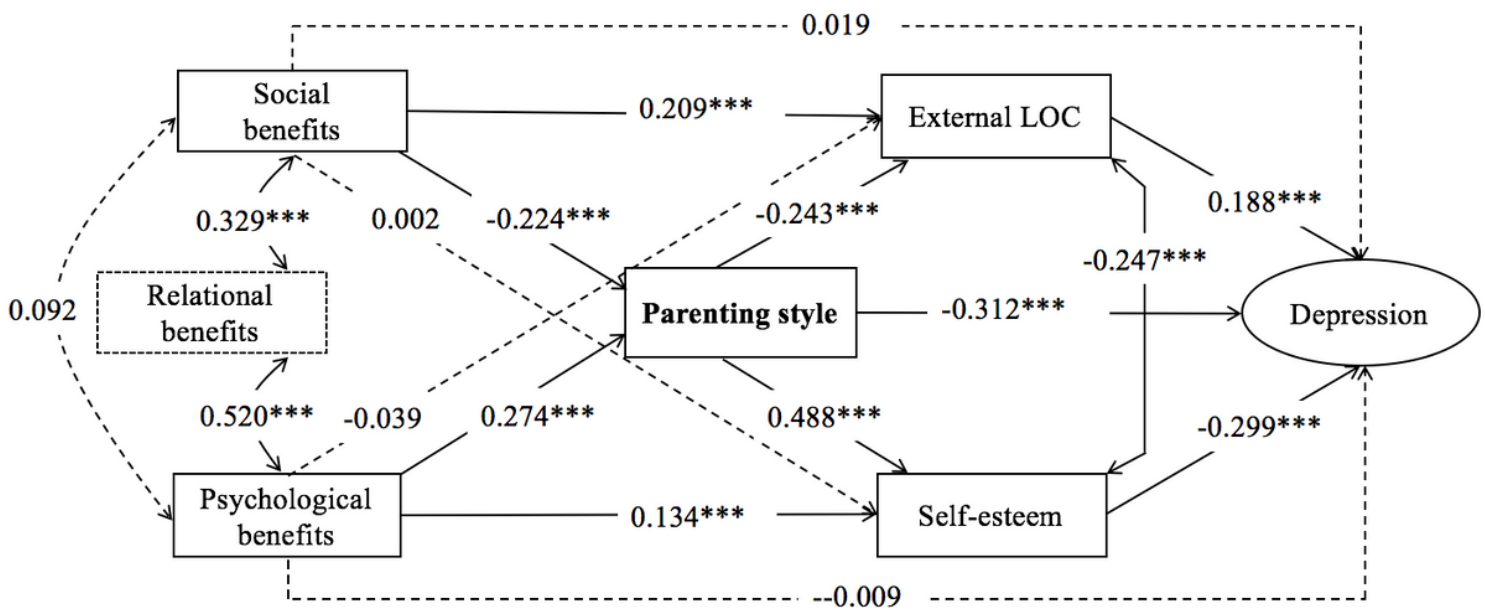


Figure 1

Figure 1