

Self-esteem, Social support and coping Strategies of left-behind Children in Rural China, and the intermediary role of subjective support

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Abstract

Background

Negative coping strategies and behavioral problems are common among Chinese left-behind children, which are related to a variety of negative consequences. At this stage of development, the relevant factors of coping strategies need to be further studied, in which social support and self-esteem are worthy of our attention. The aim of this study is to detect the self-esteem, social support, and coping strategy of left-behind children (LBC) in rural China.

Methods

322 children from 3 schools in China participated in this study, including 236 LBC and 86 non-left-behind children (NLBC) to assess self-esteem, social support and coping strategies.

Results

The LBC group had lower self-esteem score and lower total social support (subjective support, objective support and support-seeking behavior) than the NLBC group. In terms of coping strategies, the LBC group was lower than the NLBC group in problem-solving and rationalization. The self-esteem score in LBC was significantly positive associated with the subjective support score, objective support score, problem-solving and help-seeking score. Based on the SES score, the LBC group was divided into low, moderate and high self-esteem groups. There were significant differences in the total scores of social support problem solving and seeking help between the low self-esteem group and the high self-esteem group. In addition, our study found that subjective support plays an intermediary role between self-esteem and problem-solving in LBC group, while the intermediary role of objective support is not obvious.

Conclusions

These results of this study indicate that providing more subjective support to LBC can reduce the negative consequences of low self-esteem and improve the tendency and effectiveness of problem-solving.

1. Background

Since the 1980s, China has experienced rapid economic development. However, different regions are developing at different rates, resulting in significant differences in the economy between regions. An increasing number of adults from economically underdeveloped rural areas are moving to economically developed cities in search of better job opportunities. At the same time, due to the high cost of living and education in the cities, most of rural migrate residents cannot afford the education and daily living costs

of their children in the cities, resulting in their children remaining in their rural hometowns. These children are known as left-behind children (LBC) [1–3]. LBC are children under 18 who were left behind at their rural communities while one or both of their parents migrated into cities for work, and who have not lived with them for over six months [4, 5]. According to the report of All-China Women's Federation in 2013, China now has approximately 61.03 million LBC, which represents an increase of 2.42 million since 2005, and this accounts for 21.88% of the Chinese children population today [6]. Most of them are in the rural areas of the following provinces: Sichuan Province, Guangdong Province, Jiangxi Province, Anhui Province, Henan Province, and Hunan Province [7].

According to previous studies in China and abroad, children who are left behind encounter a range of problems. LBC tends to show more emotional, behavioral, and learning problems, such as depression, non-suicidal self-injury, and game addiction [8–10]. Previous studies also indicated that low self-esteem and LBC's emotion and behavior problems are strongly related [11–13].

Valtolina and colleagues point out that lack of self-esteem is an obvious characteristic of LBC in many countries around the world [14]. In China, contradictory results have been given from a few studies on self-esteem of LBC. A study reports that the self-esteem of LBC is significantly lower than that of non-left-behind children (NLBC) among junior high school students [15]. However, another study shows that there is no difference in self-esteem between Chinese LBC and the control group, but the self-esteem of urban LBC is significantly higher than that of LBC in remote rural areas [16]. The interview results of the same study show that from the perspective of teachers, there may be differences in self-esteem between LBC and non-LBC. So, there is lack of consistent findings in research on self-esteem among LBC in China.

Numerous empirical studies have shown that social support significantly related to one's level of self-esteem [17, 18]. Social support is a broad concept, which in a broad sense refers to instrumental assistance (such as helping with work), emotional assistance (such as providing encouragement) or informational assistance (such as informing someone that there is a job opportunity) from others. Social support is considered to be a protective factor for mental health. People who receive less social support are more likely to experience depression and social anxiety. Lack of parental support has been shown to affect the mental health of LBC [19]. The results of the studies on social support of LBC in China are inconsistent. One of the articles points out that there is no difference in perceived and objective support between LBC in junior high school, but the utilization of support in the former is relatively low [20]. Another article points out that the social support system of LBC in rural areas is extremely imperfect [21].

As we all know, children may face a lot of stress in the process of growing up. Coping strategy is an important factor to determine whether life stress affects mental health [22, 23]. Different coping strategies adopted by children in the face of stress will bring different results, which will also have different effects on the psychological health of children. For individuals in high stress state, if they lack positive coping strategies and social support, the risk of psychological damage can be twice as high as that of the general population [24, 25]. Previous studies have pointed out that compared with NLBC, LBC are less likely to use positive coping styles such as problem-solving [26]. If a child has social problem-

solving deficits, or have difficulties identifying problems and generating appropriate solutions, he will have more hopelessness, depression, suicide-related behaviors[27, 28]. Many studies have confirmed that social support provides relevant information and emotional support for problem-solving [26, 29]. Individuals with high social support tend to have high self-esteem personality traits, and the level of self-esteem is also related to the level of problem-solving [17, 30].

The purpose of this study is to detect the self-esteem, social support and coping strategies of LBC in Anhui Province, also examine the relationship between self-esteem, social support and coping strategies of LBC group. Finally, investigate the possible mediating factors between teenagers' self-esteem and problem-solving tendency and effectiveness.

2. Methods

2.1. Participants

We conducted a cross-sectional survey in Anhui Province from January to March 2019. In this study, 350 children from 6 classes were selected from three rural middle schools in Maanshan City, Bozhou City, and Chaohu City, Anhui Province by cluster sampling. The first step was to randomly select three cities (districts) from Anhui Province; the second step was to randomly select a rural middle school from each city (district); the third step was to randomly select three classes of qualified students from each middle school into this study.

A total of 350 questionnaires were distributed, and due to high levels of missing data (questionnaires with missing values more than 5% will be eliminated), or obviously false responses, 28 (8%) participants were excluded from the study. As a result, data from 322 participants were analyzed. We used the most widely accepted definition of LBC in China: children or adolescents under 18 years old who stay at home, while one or both of the parents migrated to other cities for work, and the separation exceeded a period of six consecutive months in the past year. It has been suggested that a child cannot fully understand the questionnaire until the age of 14, so we only included LBC who were aged between 14 and 17 years old. LBC who met either of the following conditions were further excluded: 1) Physically disease, or cannot finish the survey; 2) Auditory dysfunction or language disorder; 3) Unconscious or delirious, and cannot clearly express oneself.

Prior to the survey, written consent was obtained from either the participant's parent, legal guardian or teacher, according to whichever was appropriate to the specific situation. In addition, verbal consent was also obtained from the participant.

2.2. Measures

All the interviewers are pre-trained graduate students majoring in clinical medicine. A self-designed questionnaire was used to collect demographic data of all participants, such as age, gender, child number, parental marriage, parental education, and attachment type.

2.2.1. Self-esteem

In this study, the Chinese version of Rosenberg Self-esteem Scale (SES) was used to evaluate the self-esteem of participants. The scale consists of 10 items on a 4-point scale, ranging from 1 to 4. The total score is between 10 and 40. Higher score on the self-esteem scale indicates higher self-esteem of the person being assessed. Those with score ≤ 25 , score between 26 and 32, and score ≥ 33 were considered as low self-esteem, moderate self-esteem and high self-esteem, respectively. The Chinese version of SES has good internal and construct validity and reliability [31], and Cronbach's α coefficient was 0.87.

2.2.2. Social support

The Chinese version of Social Support Rating Scale (SSRS) was used to evaluate social support of participants. The scale includes 10 items in three dimensions as follows: objective support, subjective support, and support-seeking behavior. The total score of social support is the sum of 10 items. The higher score of participants means the higher level of social support. The application of SSRS in Chinese children and adolescents confirmed its reliability and validity [32], and Cronbach's α coefficient was 0.82.

2.2.3. Coping strategy

The Coping Strategies Questionnaire (CSQ) was utilized to measure coping strategies. The CSQ is based on Folkman and Bond's coping and defense questionnaire. The scale consists of 62 items, which is in line with Chinese characteristics and Chinese coping habits. Items are rated as 1 (agree) or 0 (disagree). The questionnaire comprises six subscales including both immature and mature coping strategies. Each subscale examines two dimensions, tendency and effectiveness, and the score of each coping strategy is the sum of the score of tendency and effectiveness. Immature coping strategies include avoidance, fantasy, and self-accusation. Mature coping strategies include problem-solving, help-seeking, and rationalization. The reliability and validity of the CSQ have been corroborated in respect to its use among Chinese children and adolescents [33], and Cronbach's α coefficient was 0.81.

2.3. Statistical analysis

The data were expressed as means \pm standard deviations. Group differences in demographic and other characteristics between LBC and NLBC group were compared using independent t test for continuous variables, and chi-squared test for categorical variables. Besides, we used spearman correlation coefficients to examine the correlation among self-esteem, social support, and coping strategy. Then, the LBC were divided into three groups based on the SES scores. One-way analysis of variance (ANOVA) was used for comparison of data among the three groups, followed by Fisher's Least Significant Difference (LSD) post hoc tests. Then, numerical variables in LBC group were normalized to Z scores, PROCESS V3.3 was used for multiple mediation analysis [34]. In order to test any explanation mechanism behind the significant relationship between self-esteem and problem-solving ability, we tested the role of subjective support and objective support as mediating variables in LBC group. Multivariate intermediary analysis is used to test multiple variables and their indirect effects at the same time. This analysis can investigate the joint effects of several intermediary variables at the same time, rather than in a series of

single intermediary models [35]. In the intermediary analysis, the Bootstrap program was repeated 5000 times to verify the mediating effect of the above variables, and the confidence interval (CI) was 95%. When CI does not contain 0, the indirect effect is considered to be significant. All data were analyzed in SPSS 20.0. A two-tailed *p* value of less than 0.05 was considered to be statistically significant.

3. Results

3.1. Demographic data and characteristics of LBC and NLBC group

322 LBC were enrolled in our study, included 236 LBC and 86 NLBC. Table 1 shows the demographic data of all subjects. There were no difference in gender, age, and child number (all *p* values \geq 0.05). However, there were significantly difference in parental marriage, parental education, and child attachment type (all *p* values < 0.01) (Table 1). Compared with NLBC, less of LBC had safe attachment type (Table 1). Parents of LBC had a higher rate of divorce and a lower level of education compare to NLBC's parents (Table 1).

Table 1

Demographic data and characteristics of left-behind children group and non-left-behind children group

Variable		LBC group (n = 236)	NLBC group (n = 86)	t or χ^2	p
Age (years)		14.41 \pm 0.65	14.47 \pm 0.68	-0.29	0.77
Gender	Male (n)	125	43	0.22	0.64
	Female (n)	111	43		
Child number	Only one (n)	64	23	0.00	0.95
	More than one (n)	172	63		
Parental marriage	Divorce (n)	34	3	7.39	0.01
	Not divorced (n)	202	83		
Parental education	Both are less than 9 years education (n)	184	54	7.53	0.01
	One of them is more than 9 years education (n)	52	32		
Attachment type	Safe (n)	24	27	21.30	0.00
	Insecure (n)	212	59		

LBC, left-behind children; NLBC, non-left-behind children.

3.2. Comparison of self-esteem, social support, and coping strategy between LBC and NLBC group

Self-esteem, social support and coping strategy scores are shown in Table 2. The LBC group had lower self-esteem scores than the NLBC group ($p < 0.05$). The LBC group was lower than the NLBC group in total social support, subjective support, objective support, and support-seeking behavior scores (all p values < 0.05). In terms of coping strategies, the LBC group was lower than the NLBC group in problem-solving, help-seeking, and rationalization, and the difference was significant. There was no significant difference between the two groups in other aspects of coping strategies, such as avoidance, self-accusation, and fantasy (all p values > 0.05) (Table 2).

Table 2
Comparison of self-esteem, social support, and coping strategy between left-behind children group and non-left-behind children group

Measure	LBC group (n = 236)	NLBC group (n = 86)	t	p
Self-esteem	28.80 ± 0.28	30.19 ± 0.47	-2.52	0.01
Low self-esteem (n)	50	12		
Moderate self-esteem (n)	141	49		
High self-esteem (n)	45	25		
Social support	33.52 ± 0.36	36.55 ± 0.59	-4.42	0.00
Subjective support	19.29 ± 3.65	20.79 ± 3.23	-3.36	0.00
Objective support	6.93 ± 1.70	7.64 ± 1.77	-3.27	0.00
Support-seeking behavior	7.36 ± 2.01	8.12 ± 1.98	-3.00	0.00
Coping strategy				
Problem-solving	2.02 ± 0.39	2.14 ± 0.28	-2.58	0.01
Help-seeking	1.85 ± 0.52	1.94 ± 0.43	-1.42	0.16
Rationalization	1.61 ± 0.48	1.73 ± 0.40	-2.10	0.04
Avoidance	1.59 ± 0.55	1.64 ± 0.42	-0.66	0.51
Self-accusation	1.43 ± 0.60	1.42 ± 0.60	0.20	0.84
Fantasy	1.58 ± 0.52	1.56 ± 0.49	0.20	0.83
LBC, left-behind children; NLBC, non-left-behind children.				

3.3. Comparison of social support and coping strategy among LBC group

Based on the SES score, the LBC group was divided into low self-esteem group, moderate self-esteem group, and high self-esteem group. In terms of social support, there was significant difference between the low self-esteem group and the high self-esteem group in total social support, subjective support, objective support, and support-seeking behavior scores (all p values < 0.01) (Fig. 2). In terms of coping strategies, there was significant difference between the low self-esteem group and the high self-esteem group in problem-solving, help-seeking scores (all p values < 0.05) (Fig. 2).

3.4. Correlation between self-esteem, social support and coping strategy in LBC

Spearman correlation analysis in Table 3 showed that self-esteem was significant positively correlated with subjective support ($r= 0.32$), objective support ($r= 0.21$), problem solving ($r= 0.35$) and help-seeking ($r= 0.20$, all p values ≤ 0.01). The correlation between self-esteem and subjective support and problem solving is more obvious. In addition, the study also found that subjective support was positively correlated with self-esteem ($r= 0.32$) and problem-solving ($r= 0.38$, all p values ≤ 0.01).

Table 3
Correlations among self-esteem, social support, and coping strategy in LBC

variable	1	2	3	4	5	6	7	8	9
1. Self-esteem		0.32**	0.21**	0.35**	-0.05	-0.12	0.20**	-0.01	-0.09
2. Subjective support			0.16*	0.38**	0.04	-0.01	0.16*	0.07	0.11
3. Objective support				0.14*	0.02	-0.07	0.11	0.02	-0.08
4. Problems-solving					0.36**	0.23**	0.42**	0.15*	0.25**
5. Rationalization						0.51**	0.11	0.35**	0.43**
6. Self-accusation							-0.05	0.45**	0.50**
7. Help-seeking								-0.03	0.08
8. Fantasy									0.50**
9. Avoidance									

3.5 The mediating role of subjective support between self-esteem and problem-solving tendency and effectiveness

Figure 3 shows a multiple mediation model in which subjective support plays an intermediary role between self-esteem and problem-solving, while the intermediary role of objective support is not obvious. When evaluating the total and direct effects of self-esteem on problem-solving ability, it was found that it was statistically significant (all $p \leq 0.001$). Then, after testing the introduction of these intermediary variables (subject support and objective support) into the model, we calculate the indirect effect of the relationship between self-esteem and problem-solving ability, and the statistical significance that may appear in each path. The 95% CI value does not include 0, indicating that there is a significant indirect effect. Finally, Table 4 shows bootstrap results of mediating effect of subject support and objective support and their respective effect ratio. The 95% CI value of the mediating effect of subjective support does not include 0, indicating that there is a significant mediating effect, accounting for 26.23% of the total effect. The 95% CI value of the mediating effect path of objective support includes 0, indicating that objective support has no significant mediating effect in the relationship between self-esteem and problem-solving ability.

Table 4
Bootstrap results of mediating effect of subject support and objective support

Effect type	Effect	Boot SE	Bootstrap 95% CI		Effect ratio
			LLCI	ULCI	
Total effect	0.35	0.07	0.22	0.48	100%
Direct effect	0.25	0.07	0.12	0.38	70.81%
Indirect effect	0.10	0.03	0.05	0.15	29.18%
Subjective support	0.09	0.03	0.04	0.15	26.23%
Objective support	0.01	0.01	-0.01	0.04	2.95%
Subjective - objective support	0.08	0.03	0.02	0.14	

4. Discussion

The first purpose of this study was to determine the differences between LBC and NLBC in self-esteem, social support and coping strategies. We found that compared with NLBC group, the LBC group had lower self-esteem, social support. Few LBC used mature coping strategies, like problem-solving, help-seeking, and rationalization. Compared with the low and moderate self-esteem LBC, the high self-esteem LBC had a better social support, especially subjective support. Correspondingly, LBC with high self-esteem tend to adopted problem-solving and help-seeking cope strategies.

Family was found to be the main source of social support and the way of raising the child had a great influence on the personality of the child [36]. Gao and colleagues pointed out that the more contact there was between the parents and the child, the more social support and interpersonal relationships the left-behind children could achieve at school [32]. However, because the parents of LBC migrate to large cities

for more salaries work, there is little contact with their children. So, in our study, we found that the LBC group had lower social support compare with the NLBC. Interestingly, we found that there is a positive correlation between self-esteem and subjective support in LBC. High self-esteem LBC had more subjective support feelings in this study. Dai and colleagues study reported that western Chinese LBC show a lower level of happiness and self-esteem [37]. They examined self-esteem among LBC in Sichuan Province in China through Modified Harter Self-esteem Scale. Although they used different assessment scale with us, the results were similar. Low self-esteem induced depression, anxiety, internet addiction, and psychiatry and behavior problems [33, 7, 26]. It is important to note that different levels of self-esteem can cause LBC to adopt different coping strategies. Few LBC in our study used mature coping strategies, like problem-solving, help-seeking, and rationalization. LBC tended to adopt immature coping strategies such as avoidance and self-accusation when faced with negative events in everyday life [38, 39].

The second purpose of this study is to determine the relationship between self-esteem, social support and coping strategies among LBC group. Our research confirms that there is a positive relationship between self-esteem and social support and positive coping strategies. That is, the self-esteem was significant positively correlated with subjective support, objective support, problem solving and help-seeking. The correlation between self-esteem and subjective support and problem solving is more obvious. The results indicate that self-esteem and social support are related to the coping styles adopted by adolescents in life, that is, the lower self-esteem, lower social support in adolescence, the more likely they are to adopt immature or negative coping styles. Some research results are consistent with our conclusions. Two study found a significant correlation between the positive coping strategies of such children and their own mental health [17, 38]. Zhao and colleagues concluded that the experience of being left behind made these children use more negative coping strategies to deal with difficulties, which could result in mental health problems [40].

Another purpose of this study is to investigate the possible mediating role of social support (including subjective support and objective support) between adolescents' self-esteem and problem-solving tendency and effectiveness. As far as we know, this is the first time anyone has come to this conclusion, that is, subjective support has a significant intermediary effect between self-esteem and problem-solving tendency and effectiveness, accounting for 26.23% of the total effect, while objective support has no significant intermediary effect. The problem-solving coping strategies has attracted more and more attention. Previous researchers have found that confidence in solving problems is a protective factor for depression [41]. Lack of confidence and defects in problem solving are related to the risk of suicide [42, 43]. The ability to solve problems rationally can reduce the negative effects of physical abuse on women's suicidal ideation [44]. If the status of problem-solving tendency and effectiveness of the LBC are not changed, it will produce a series of adverse consequences. Our results suggest that we can consider changing the coping strategies of LBC in rural China by changing self-esteem or subjective support. However, there are not many effective ways to change self-esteem, but it is gratifying that the subjective support around LBC is easy to change. Our results provide a scientific understanding that in Chinese LBC, subjective support resources can improve the existing disadvantage (rather than objective support resources). If social work is carried out properly to enhance the subjective support felt by LBC, it can

break the bad causal chain that lower self-esteem leads to lower problem-solving tendency and effectiveness. Further reduce the suicidal ideation or tendency of LBC and improve their level of mental health. These social works include high-quality services among high-risk young people to improve parent-child communication, psychological counseling participated by teachers, colorful extracurricular activities, and so on.

Our study has several limitations. First, our survey is a cross-sectional study, so it cannot interpret cause-effect relationship among self-esteem, social support, and cope strategy. Second, the participants were selected from three cities in Anhui Province. Although our survey adopted the method of cluster sampling, the results could be cautiously generalized to whole LBC in China.

5. Conclusions

Compared with NLBC, the LBC group had lower levels of self-esteem and social support, and lower tendency and effectiveness of using mature coping strategies. In LBC group, self-esteem was significant positively correlated with subjective support, objective support, problem solving and help-seeking. Subjective support played an intermediary role in the relationship between adolescents' self-esteem and problem-solving tendency and effectiveness. It is hoped that these findings will have some implications on how to improve LBC coping strategies (problem-solving ability).

Abbreviations

LBC

left-behind children; **NLBC**:non-left-behind children; **SES**:Rosenberg Self-esteem Scale; **SSRS**:The Chinese version of Social Support Rating Scale; **CSQ**:The Coping Strategies Questionnaire

Declarations

Ethical statement and consent to participate:

The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All the procedures performed was approved by the ethical standards of the Ethics Committee of Chaohu Hospital, Anhui Medical University (No. 201901-kyxm-02) and followed the tenets of the Declaration of Helsinki. Written informed consents have been obtained from all participants.

Consent for publication: Written informed consent for publication was obtained from all participants

Availability of data and materials: All the data supporting our findings have been presented in the manuscript; the datasets used and/or analyzed during the current study are available from the corresponding author on

reasonable request.

Competing interests: The authors declare that they have no competing interests.

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References

1. Fan F, Su L, Gill MK, Birmaher B. Emotional and behavioral problems of Chinese left-behind children: a preliminary study. *Soc Psychiatry Psychiatr Epidemiol.* 2009;45(6):655–64. doi:10.1007/s00127-009-0107-4.
2. Graham E, Jordan LP. Migrant Parents and the Psychological Well-Being of Left-Behind Children in Southeast Asia. *J Marriage Fam.* 2011;73(4):763–87. doi:10.1111/j.1741-3737.2011.00844.x.
3. Jingzhong Y, Lu P. Differentiated childhoods: impacts of rural labor migration on left-behind children in China. *Journal of Peasant Studies.* 2011;38(2):355–77. doi:10.1080/03066150.2011.559012.
4. Fellmeth G, Rose-Clarke K, Zhao C, Busert LK, Zheng Y, Massazza A, Sonmez H, Eder B, Blewitt A, Lertgrai W, Orcutt M, Ricci K, Mohamed-Ahmed O, Burns R, Knipe D, Hargreaves S, Hesketh T, Opondo C, Devakumar D. Health impacts of parental migration on left-behind children and adolescents: a systematic review and meta-analysis. *The Lancet.* 2018;392(10164):2567–82. doi:10.1016/s0140-6736(18)32558-3.
5. Zhou C, Sylvia S, Zhang L, Luo R, Yi H, Liu C, Shi Y, Loyalka P, Chu J, Medina A, Rozelle S. China's Left-Behind Children: Impact Of Parental Migration On Health, Nutrition, And Educational Outcomes. *Health Aff (Millwood).* 2015;34(11):1964–71. doi:10.1377/hlthaff.2015.0150.
6. Federation A-CWs. (2013) The research report of left-behind children and migrant children in rural China.

7. Tang D, Choi WI, Deng L, Bian Y, Hu H. Health status of children left behind in rural areas of Sichuan Province of China: a cross-sectional study. *BMC Int Health Hum Rights*. 2019;19(1):4. doi:10.1186/s12914-019-0191-9.
8. Tang W, Wang G, Hu T, Dai Q, Xu J, Yang Y, Xu J. Mental health and psychosocial problems among Chinese left-behind children: A cross-sectional comparative study. *J Affect Disord*. 2018;241:133–41. doi:10.1016/j.jad.2018.08.017.
9. Wang F, Lu J, Lin L, Zhou X. Mental health and risk behaviors of children in rural China with different patterns of parental migration: a cross-sectional study. *Child Adolesc Psychiatry Ment Health*. 2019;13:39. doi:10.1186/s13034-019-0298-8.
10. Tang W, Wang G, Hu T, Dai Q, Xu J, Yang Y, Xu J. (2018) Mental health and psychosocial problems among Chinese left-behind children: A cross-sectional comparative study. 241:133– 141. doi:10.1016/j.jad.2018.08.017.
11. 10.1016/j.chiabu.2016.08.002.
12. Jing SJ, Bin Z, Xiao T, journal *DYEJcmh* (2017) Mediating effect of self-esteem in relationship between parental cohesion, peer acceptance and loneliness in left-behind children.
13. Yan L, Xiaowei, Li, Li, Chen, Zhiyong P QJIJo (2015) Perceived positive teacher– student relationship as a protective factor for Chinese left-behind children's emotional and behavioural adjustment.
14. Valtolina G, Colombo C. Psychological well-being, family relations, and developmental issues of children left behind. *Psychol Rep*. 2012;111(3):905–28. doi:10.2466/21.10.17.PR0.111.6.905-928.
15. Gao Y, Li L, Chan EY, Lau J, Griffiths SM. Parental migration, self-efficacy and cigarette smoking among rural adolescents in south China. *PLoS One*. 2013;8(3):e57569. doi:10.1371/journal.pone.0057569.
16. Yan H, Chen J, Huang J. School Bullying Among Left-Behind Children: The Efficacy of Art Therapy on Reducing Bullying Victimization. *Front Psychiatry*. 2019;10:40. doi:10.3389/fpsy.2019.00040.
17. Gao F, Yao Y, Yao C, Xiong Y, Ma H, Liu H. The mediating role of resilience and self-esteem between negative life events and positive social adjustment among left-behind adolescents in China: a cross-sectional study. *BMC Psychiatry*. 2019;19(1):239. doi:10.1186/s12888-019-2219-z.
18. Fellmeth G, Rose-Clarke K, Zhao C, Busert LK, Zheng Y, Massazza A, Sonmez H, Eder B, Blewitt A, Lertgrai W, Orcutt M, Ricci K, Mohamed-Ahmed O, Burns R, Knipe D, Hargreaves S, Hesketh T, Opondo C, Devakumar D. Health impacts of parental migration on left-behind children and adolescents: a systematic review and meta-analysis. *The Lancet*. 2018;392(10164):2567–82. doi:10.1016/s0140-6736(18)32558-3.
19. Xu W, Yan N, Chen G, Zhang X, Feng T. Parent-child separation: the relationship between separation and psychological adjustment among Chinese rural children. *Qual Life Res*. 2018;27(4):913–21. doi:10.1007/s11136-017-1776-1.
20. Man Y, Mengmeng L, Lezhi L, Ting M, Jingping Z. The psychological problems and related influential factors of left-behind adolescents (LBA) in Hunan, China: a cross sectional study. *Int J Equity Health*. 2017;16(1):163. doi:10.1186/s12939-017-0639-2.

21. Wang X, Ling L, Su H, Cheng J, Jin L, Sun YH. Self-concept of left-behind children in China: a systematic review of the literature. *Child Care Health Dev.* 2015;41(3):346–55. doi:10.1111/cch.12172.
22. Karaca A, Yildirim N, Cangur S, Acikgoz F, Akkus D. Relationship between mental health of nursing students and coping, self-esteem and social support. *Nurse Educ Today.* 2019;76:44–50. doi:10.1016/j.nedt.2019.01.029.
23. Enns A, Eldridge GD, Montgomery C, Gonzalez VM. Perceived stress, coping strategies, and emotional intelligence: A cross-sectional study of university students in helping disciplines. *Nurse Educ Today.* 2018;68:226–31. doi:10.1016/j.nedt.2018.06.012.
24. El-Ghoroury NH, Galper DI, Sawaqdeh A, Bufka LFJT, Psychology EiP. (2012) Stress, Coping, and Barriers to Wellness Among Psychology Graduate Students. *6 (2):122–134.*
25. Cheng C, Lau HP, Chan MP. Coping flexibility and psychological adjustment to stressful life changes: a meta-analytic review. *Psychol Bull.* 2014;140(6):1582–607. doi:10.1037/a0037913.
26. Wang H, Liu TJCJoHP. (2018) Life Events and Mental Health of Left-behind Children in Shanbei Region:The Intermediary Effect of Coping Style.
27. Abdollahi A, Talib MA, Yaacob SN, Ismail Z. Problem-solving skills appraisal mediates hardiness and suicidal ideation among malaysian undergraduate students. *PLoS One.* 2015;10(4):e0122222. doi:10.1371/journal.pone.0122222.
28. Song X, Wang S, Wang R, Xu H, Jiang Z, Li S, Zhang S, Wan Y. (2020) Mediating Effects of Specific Types of Coping Styles on the Relationship between Childhood Maltreatment and Depressive Symptoms among Chinese Undergraduates: The Role of Sex. *Int J Environ Res Public Health* 17 (9). doi:10.3390/ijerph17093120.
29. Jun-Feng W. (2015)Relationship between social support and life satisfaction in left-behind children:Multiple mediation effects of hope and coping style[J]. *chinese mental health journal.*
30. Wu YL, Chen MSJ, Yang LS, Ding XX, Sun YH. Change and associated factors of self-esteem among children in rural China: A two-year longitudinal study. *Psychology Health Medicine.* 2014;20(8):1–10.
31. Liu W, Li J, Huang Y, Yu B, Qin R, Cao X. (2020) The relationship between left-behind experience and obsessive-compulsive symptoms in college students in China: the mediation effect of self-esteem. *Psychol Health Med:*1–12. doi:10.1080/13548506.2020.1748667.
32. Gao L, Chan S, Mao Q. Depression, perceived stress, and social support among first-time Chinese mothers and fathers in the postpartum period. *Res Nurs Health.* 2009;32(1):50–8. doi:10.1002/nur.20306.
33. Shi Y, Yu B, Shen Y, Kenny K, Rozelle SJC, Economy W. (2016) Effects of Parental Migration on Mental Health of Left-behind Children: Evidence from Northwestern China. *024 (003):105–122.*
34. Hayes AF, Rockwood NJ. Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behav Res Ther.* 2017;98:39–57. doi:10.1016/j.brat.2016.11.001.

35. Preacher KJ, Hayes AF. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behav Res Methods*. 2008;40(3):879–91. doi:10.3758/brm.40.3.879.
36. Jogdand SS, Naik J. Study of family factors in association with behavior problems amongst children of 6–18 years age group. *Int J Appl Basic Med Res*. 2014;4(2):86–9. doi:10.4103/2229-516X.136783.
37. Dai Q, Chu R. Anxiety, happiness and self-esteem of western Chinese left-behind children. *Child Abuse Negl*. 2018;86:403–13. doi:10.1016/j.chiabu.2016.08.002.
38. Wang S, Xu H, Zhang S, Yang R, Li D, Sun Y, Wan Y, Tao F. (2020) Linking Childhood Maltreatment and Psychological Symptoms: The Role of Social Support, Coping Styles, and Self-Esteem in Adolescents. *J Interpers Violence*:886260520918571. doi:10.1177/0886260520918571.
39. Wang S, Xu H, Zhang S, Yang R, Li D, Sun Y, Wan Y, Tao F. Linking Childhood Maltreatment and Psychological Symptoms: The Role of Social Support, Coping Styles, and Self-Esteem in Adolescents. *Journal of Interpersonal Violence*:886260520918571. 2020. doi:10.1177/0886260520918571.
40. Zhao S, Liao CJP. (2016) Mental Health and Life Events of Overseas Children Left-Behind in China. 7.
41. Chow SK, Chan WC. Depression, Problem-solving appraisal and self-rated health among Hong Kong Chinese migrant women. *Nurs Health Sci*. 2010;12(3):352–9. doi:10.1111/j.1442-2018.2010.00537.x.
42. Chu C, Walker KL, Stanley IH, Hirsch JK, Greenberg JH, Rudd MD, Joiner TE. (2018) Perceived problem-solving deficits and suicidal ideation: Evidence for the explanatory roles of thwarted belongingness and perceived burdensomeness in five samples. 115 (1):137–160. doi:10.1037/pspp0000152.
43. Abdollahi A, Talib MA, Yaacob SN, Ismail Z. Problem-solving skills appraisal mediates hardiness and suicidal ideation among malaysian undergraduate students. *PLoS One*. 2015;10(4):e0122222. doi:10.1371/journal.pone.0122222.
44. Kwok SY, Yeung JW, Low AY, Lo HH, Tam CH. (2015) The roles of emotional competence and social problem-solving in the relationship between physical abuse and adolescent suicidal ideation in China. 44:117–129. doi:10.1016/j.chiabu.2015.03.020.

Figures

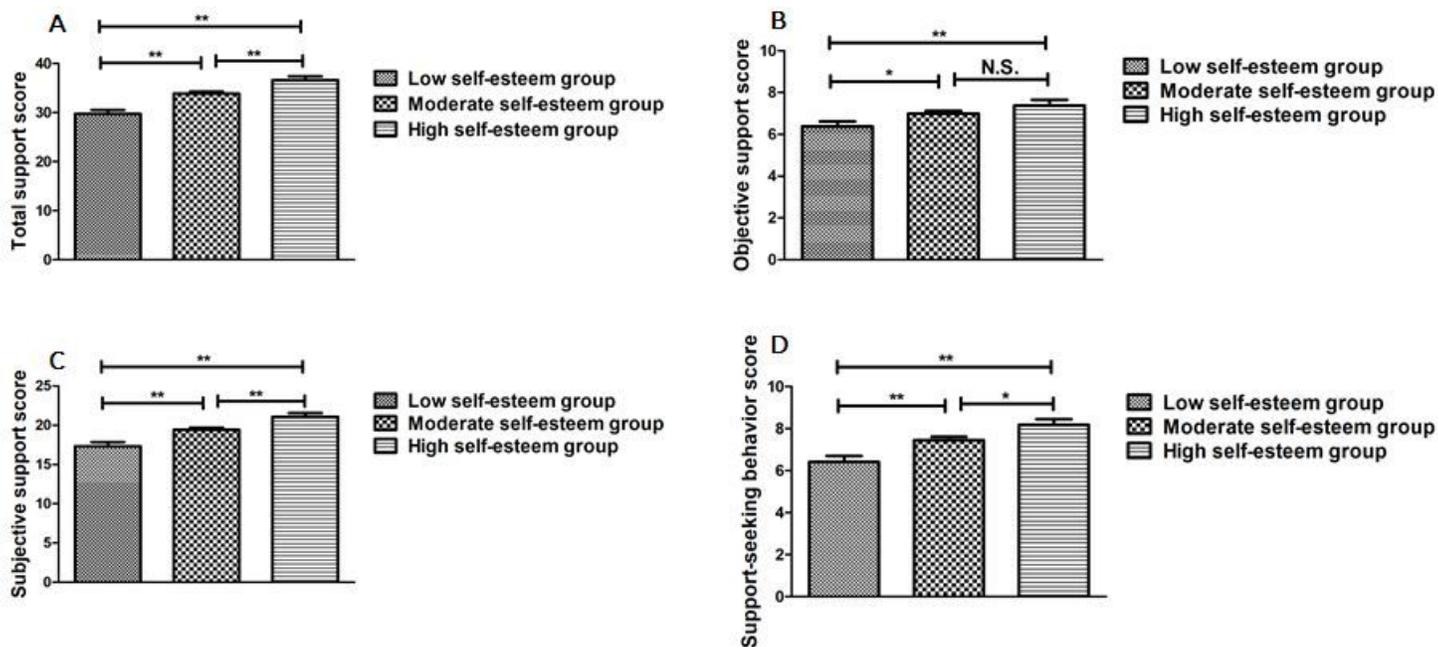


Figure 1

Comparison of social support among left-behind children group (A): High self-esteem left-behind children had more total support than low and moderate self-esteem left-behind children. (B): High self-esteem left-behind children had more objective support than low and moderate self-esteem left-behind children. (C): High self-esteem left-behind children had more subjective support than low and moderate self-esteem left-behind children. (D): High self-esteem left-behind children had more support-seeking behavior than low and moderate self-esteem left-behind children. * $p < 0.05$; ** $p < 0.01$, N.S., no significant.

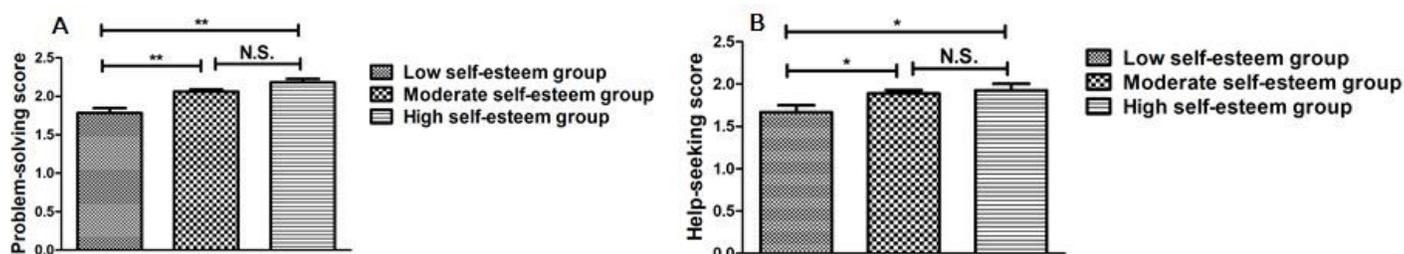


Figure 2

Comparison of coping strategy among left-behind children group (A): High self-esteem left-behind children had more problem-solving scores than low and moderate self-esteem left-behind children. (B): High self-esteem left-behind children had more help-seeking scores than low and moderate self-esteem left-behind children. * $p < 0.05$; ** $p < 0.01$, N.S., no significant.

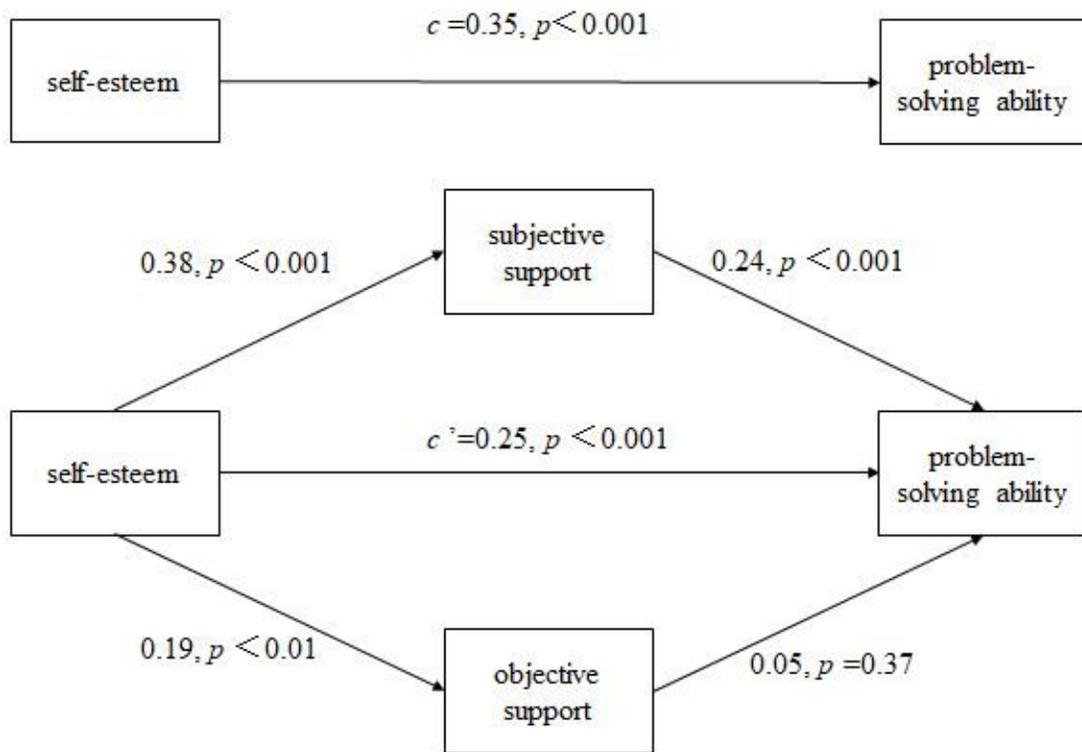


Figure 3

Multiple mediation analyses of direct effect of the self-esteem on the problem-solving for the mediators (subjective support and objective support). * $p < 0.05$. ** $p < 0.001$.