

The relationship between perceived social support and mental health among poor undergraduate students of local regular universities in China: The mediating role of psychological capital and the moderating role of left-behind experience

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Abstract: Poor undergraduate students are at increased risk of mental health problems due to persistent financial hardship and the related psychosocial stressors. Although perceived social support has been identified as a protective factor, the mechanisms through which it influences mental health and the potential impact of left-behind experience remain insufficiently understood. Therefore, this study examined whether psychological capital mediates the relationship between perceived social support and mental health among poor undergraduate students and whether their left-behind experience moderates this mediating pathway. A cross-sectional survey was conducted among 767 poor undergraduate students from three universities in China's Shaanxi Province. They completed validated measures of perceived social support, psychological capital, and mental health, and data analysis was done using PROCESS Model 14. The results indicate that perceived social support positively predicted psychological capital and negatively predicted mental health problems. Also, psychological capital significantly mediated the relationship between perceived social support and mental health, and left-behind experience significantly moderated the association between psychological capital and mental health. Thus, psychological capital emerged as a key psychological mechanism linking perceived social support to better mental health, while left-behind experience weakens this protective pathway. Interventions should strengthen psychological capital and provide tailored psychological support for poor undergraduate students with left-behind experience

Keywords: Perceived social support; psychological capital; mental health; poor undergraduate students; left-behind experience

1. INTRODUCTION

With the constant development in society and constant improvements in the system of government funding, the number of extremely poor students has significantly decreased. However, differences in development in different regions and varied economic situations within families have led to varied experiences of poverty for students [1]. The development of poor undergraduate students not only helps alleviate poverty but also helps prevent the intergenerational transmission of poverty and positively affects social development [2]. Therefore, the governments of different countries pay much attention to this vulnerable group, which has great potential for further development, and try to protect the physical and mental health of students. In China, the proportion of poor undergraduate students



makes up almost 20% of the whole student body; in some regions, it reaches 50%. Restrictions related to living conditions and economic situation, aggravated by many factors like social life, education, and job competition, can increase the vulnerability and tendency for crisis in poor undergraduate students [3][4]. The psychological well-being of poor undergraduate Chinese college students is noticeably worse than that of non-poor ones [5]. Financial help is not enough; it is crucial to attend to the motivation of students and psychological help as well [6].

As per the theory of causation, people who are constantly living in a state of poverty have an increased probability of mental health problems due to behavioral and emotional issues [7]. Long-term poverty of the family implies long-term economic distress, which, in comparison with other people, intensifies psychological stress and conflict and thus increases the chances of change in mental state. In particular, poor undergraduate students experience more issues in relation to emotional, social, educational, and possibly career problems than do other students [8]. The financial stress of such students affects their mental and educational state negatively.

Perceived social support, which is an external resource, is considered to have the potential to buffer against the effects of such negative impacts to a certain extent. In particular, it is noted that there is a considerable negative correlation between the perceived social support and anxiety, depression, and stress in college students.

The notion of positive psychological capital may be regarded as a kind of psychological resource that is possessed by a person. This term refers to a positive psychological condition that is developed through the process of growth and helps maintain psychological well-being. The positive psychological capital can help to cope with such mental health problems as anxiety, depression, and extremism. Being an inner drive, it pushes a person to constant progress and development and contributes to value creation [10]. Following the ideas of resource conservation theory, external social support received by a person can be considered a potential positive resource. By perceiving social support, a person transforms this resource into an available psychological resource, thus increasing his/her positive psychological capital [11]. It has been proved empirically that there is a considerable connection between perceived social support on one hand and sub-dimensions of psychological capital (optimism, self-efficacy) on the other. People with higher perceived social support usually have an optimistic attitude toward other people and are good at building relationships [12].

As per the literature review conducted, there is a negative relationship between each of the aspects of psychological capital of college students and each aspect of their mental health, and these aspects have a strong influence on mental health status. Thus, there is an inherent relationship between social support, psychological capital, and mental health in the sense that social support affects the latter via psychological capital. Hence, the study will propose Hypothesis 1 (H1): Psychological capital mediates the relationship between perceived social support and mental health.

Left-behind experience refers to the situation where an individual, at the age of 16 or 18, during their childhood or adolescence, one or both of their parents moved off to other regions for work and were cared for by their grandparents, maternal grandparents, or other relatives or friends, and were unable to live together with their parents for at least 0.5 years or more [14].

Left-behind experience is a type of long-term microsystem absence (absence of parents), which affects individual patterns of interaction with the surrounding world. Individuals who had been left behind do not have any stable emotional ties with their parents during the most important period of development, resulting in their different perception, processing, and use of the available social support in comparison with non-left-behind individuals [15]. Left-behind experience in childhood have a long-term impact that penetrates through time. Research results show that left-behind experience is associated with poor adult well-being via such pathways as health impairment (physical and mental) and a decrease in family social capital [16]. However, left-behind experience is not just an event that occurred in the past but rather an ongoing shaper of an individual's psychological functioning, so the same level of psychological capital may be associated with different outcomes for people with or without this background. As a result, left-behind experience may affect the efficiency of psychological resources (psychological capital) in action.

Taking into account this information, Hypothesis 2 (H2) is proposed: Left-behind experience moderates the mediating effect of psychological capital in the relationship between perceived social support and mental health.

This research focuses on college students from local universities with economic disadvantage and develops a moderated mediation model (Figure 1) to study interactions between positive psychological factors, perceived social support, and psychological capital in influencing mental health. The results can be used as a foundation for further research on mental health improvement among poor undergraduate students

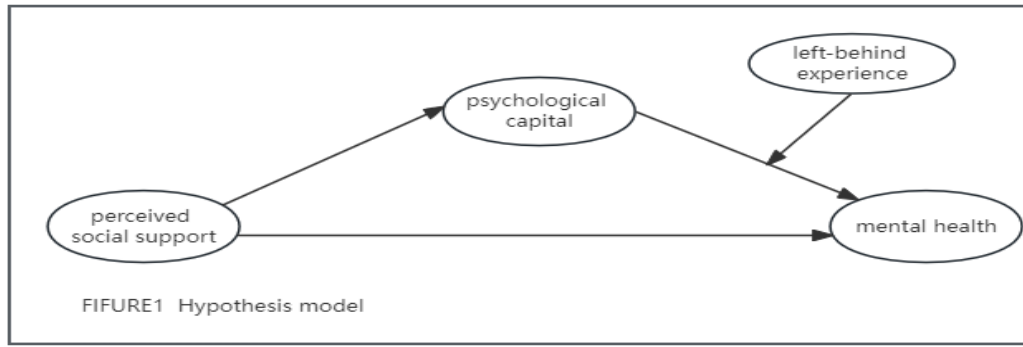


Figure 1. Hypothesis Model

2. METHODS

2.1 Study design and participants

This study used cluster sampling to distribute 800 questionnaires to poor undergraduate students from three universities in Shaanxi Province, China. After removing invalid questionnaires, 767 valid questionnaires were obtained. Among them, 258 were male. A cross-sectional study, conducted from October to November 2025, involved 800 poor undergraduate students from three universities in Shaanxi Province, China: Yan'an University, Xianyang Normal University, and Shangluo University. They were asked to address an online questionnaire survey on the Wenjuanxing platform, which included self-report questionnaires on demographic information, perceived social support, psychological capital, and mental health. The inclusion criteria were: (1) poor undergraduate students from disadvantaged families as identified by their schools (in accordance with the "Guiding Opinions of the Ministry of Education and other six departments on doing a good job in identifying poor undergraduate students from disadvantaged families"); (2) full-time undergraduate students (freshman to senior year); and (3) voluntary participation in the study.

Exclusion criteria were: (1) those with a history of serious mental illness or those currently receiving psychotherapy; and (2) those whose questionnaires were incomplete (missing rate $\geq 20\%$).

2.2 Measurement

2.2.1 Perceived social support

In this study, the Multidimensional Perceived Social Support Scale (PSSS), initially constructed by Zimet et al. (Zimet, GD; Dahlem, NW; Zimet, SG; Farley, 1988) and later modified by Jiang Ganjin (2001) to meet the requirements of the Chinese situation [17], will be used. This scale has a total of 12 questions divided into 3 aspects: support from family and friends, and even from elsewhere. The response range is a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Reverse scoring is not done; thus, the possible total scores are 12-84, where the higher total score corresponds to the more perceived social support. Excellent reliability was found for this measure, with Cronbach's $\alpha = 0.931$.

2.2.2 Psychological capital

For this research, a special Psychological Capital inventory was used, which is suited to groups such as teachers and college students. Zhang Kuo (2010) [18] created the Positive Psychological Capital Questionnaire, consisting of 26 questions that cover four aspects of psychological capital: self-efficacy, resilience, hope, and optimism. The answers to questions are given on a scale of 1-7, where 1 means “Strongly disagree,” and 7 means “Strongly agree.” Questions 8, 10, 12, 14, and 25 should be scored backwards. High total scores indicate high psychological capital and positive disposition.

2.3.3 Self-esteem

This research relied on the Chinese version of the Rosenberg Self-Esteem Scale that was translated and revised by Ji Fuyi and Yu Xin (1993) [19] to evaluate the overall feelings of self-acceptance and self-worth of an individual. The scale has 10 items, with 5 items each for self-denial and self-affirmation. The Likert scale is used with a four-point scale, where 1-4 represent “strongly disagree” to “strongly agree”. Among them, the five self-denial items are scored inversely, with items 3, 5, 8, 9, and 10 being scored inversely. Considering the differences between Chinese and Western cultures, item 8 was changed to be scored in the positive direction. The total score is between 10 and 40, with a higher score indicating a higher level of self-esteem of the participant. Here, the Cronbach's α is 0.864.

2.3.4 Mental health

The Symptom Checklist-90 (SCL-90), designed initially by Derogatis et al. (1973) and then adapted by Wang Zhengyu (1984) and modified further by Jin Hua and Wu Wenyuan (1986) [20], is used in this research to measure mental health and behavioral disturbances. The test is commonly used by Chinese scholars to analyze the mental health status of underprivileged university students. The test includes 90 questions concerning ten factors: anxiety, somatization, obsession-compulsions, interpersonal sensitivity, hostility, depression, phobic anxiety, psychosis, paranoid ideation, and other symptoms. A five-point Likert scale from 1 (not at all) to 5 (extremely) is used without any reverse-scored items. The higher the sum score, the worse the mental health of a person; lower scores stand for better mental health. The reliability coefficient is equal to 0.981.

3. RESULTS

3.1 Common Method Bias Test

Harman's one-factor test of common method bias was performed for all the variables [21]. The exploratory factor analysis showed 15 factors having eigenvalues greater than one, wherein the first factor alone explained 32.72% of the variance, which was less than 40%. Evidently, no common method bias is present among the variables studied.

3.2 Demographic characteristics of participants

In total, 800 questionnaires were used in this study. While 32 questionnaires were excluded since they were answered repeatedly 10 or more times or with too short a response time, 767 valid questionnaires were collected, with an effective rate recorded at 95.9%. Participants included poor undergraduate students from freshman to senior year (Table 1).

Table 1

Variables		<i>n</i>	%
Gender	Male	258	33.6
	Female	509	66.4
Year of study	Freshman	149	19.4
	Sophomore	229	29.9

	Junior	172	22.4
	Senior	217	28.3
Major	Humanities and social science	302	39.4
	Science and technology	273	35.6
	Art and physical education	192	25
Type of household registration	Rural	670	87.4
	Urban	97	12.6
Ethnicity	Han	730	95.2
	Non-Han	37	4.8
Political status	CPC Member	43	5.6
	CYLC Member	415	54.1
	Public	309	40.3
Student leader	Yes	283	36.9
	No	484	63.1
Have received honors at or above the university level	Yes	354	46.2
	No	413	53.8
Family structure	Nuclear family	572	74.6
	Single-parent family	141	18.4
	Reconstituted family	31	4.0
	Other	23	3.0
Only child	Yes	127	16.6
	No	640	83.4
Left-behind experience	Yes	376	49.0
	No	391	51.0
Poverty level	Generally poor	491	64.0
	Extremely poor	276	36.0

3.3 Descriptive statistics of each variable

The correlation matrix among the study variables is evident in Table 2. It can be observed from Table 2 that there seems to be a positive relationship between psychological capital and perceived social support, and its components, whereas there is a negative relationship between mental health and psychological capital. All correlations presented are statistically significant at the 0.01 level. The demographic variables ethnicity and political affiliation are

significantly correlated with mental health ($r=0.124$, $r=0.102$, $P<0.01$); therefore, these two variables were used as control variables in subsequent model tests.

Table 2 Results of Correlation Analysis

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Perceived social support														
2 Family support	.884**													
3 Friend support	.865**	.615**												
4 Other support	.903**	.702**	.701**											
5 Self-esteem	.409**	.363**	.380**	.343**										
6 Psychological capital	.519**	.463**	.449**	.465**	.642**									
7 Self-efficacy	.469**	.415**	.409**	.421**	.578**	.872**								
8 Resilience	.411**	.358**	.372**	.362**	.495**	.817**	.532**							
9 Hope	.434**	.412**	.328**	.406**	.467**	.769**	.626**	.475**						
10 Optimism	.345**	.305**	.310**	.301**	.529**	.746**	.597**	.456**	.529**					
11 Mental health	-.304**	-.251**	-.284**	-.274**	-.384**	-.435**	-.349**	-.422**	-.317**	-.269**				
12 Somatization	-.212**	-.164**	-.201**	-.199**	-.240**	-.277**	-.203**	-.285**	-.208**	-.172**	.841**			
13 Interpersonal sensitivity	-.299**	-.229**	-.292**	-.275**	-.402**	-.453**	-.360**	-.456**	-.318**	-.265**	.905**	.692**		
14 Depression	-.343**	-.302**	-.300**	-.309**	-.453**	-.474**	-.396**	-.423**	-.380**	-.298**	.920**	.722**	.860**	

15	-	-	-	-	-	-	-	-	-	-	.915	.781	.816	.829
Anxiety	.242 **	.198 **	.219 **	.226 **	.308 **	.373 **	.301 **	.369 **	.273 **	.214 **	**	**	**	**

**p<0.01(two-tailed).

3.4 Testing the Moderated Mediation Model

The hypothetical model was tested using Model 14 in the PROCESS plugin of SPSS 27.0, with ethnicity and political affiliation included as control variables. Regression analysis was performed after standardization of all continuous variables, and the results are presented in Table 3.

Predictor Variable	Outcome variable: Psychological Capital			Outcome variable: Mental Health		
	β	t	95% CI	β	t	95% CI
Perceived Social Support	0.511	16.541***	[0.568, 0.721]	-0.093	-2.486*	[-0.547, -0.064]
Psychological Capital				-0.449**a / -0.293**b	-9.832***	[-1.149, -0.766]
Left-behind Experience				-0.139	-3.236**	[-12.238, -2.997]
M×W				0.406	2.441*	[0.079, 0.732]
Ethnicity	-0.044	-1.448	[-6.929, 1.045]	0.095	2.987**	[5.600, 27.083]
Political Affiliation	-0.087	-2.831**	[-3.602, -0.652]	0.048	1.480	[-0.985, 7.010]
R^2		0.279			0.228	
F		98.652***			37.377***	

Table 3 Tests for the moderated mediation model

*p < .05, **p < .01, ***p < .001; a = without left-behind experience group, b = with left-behind experience group. The continuous variables were standardized before analysis, and standardized regression coefficients (β) are reported.

From Table 3, it is clear that when ethnicity and political party identification are held constant, the perceived social support has a considerable positive predictive impact on psychological capital ($\beta = 0.511$, $t = 16.541$, $p < 0.001$). On the other hand, psychological capital has a significant negative predictive impact on mental health ($\beta = -0.449$, $t = -8.965$, $p < 0.001$). Perceived social support has a significant negative direct predictive impact on mental health ($\beta = -0.093$, $t = -2.486$, $p = 0.013$). The interaction between psychological capital and left-behind experience has a significant predictive effect on mental health ($\beta = 0.406$, $t = 2.441$, $p = 0.015$, 95% CI [0.079, 0.732]). This means that left-behind experience significantly moderates the relationship between mental health and psychological capital.

To explain the interaction patterns clearly, a simple slopes test using the Bootstrap approach is used to examine the predictive impact of psychological capital on mental health based on two cases: with or without left-behind experience. The findings are shown in Table 3 below.

Table 4 Conditioning effect on mental health due to psychological capital, under different levels of left-behind experience.

Left-behind Experience	Effect	BootSE	t	p	BootLLCI	BootULCI
Without Left-behind Experience	-0.449	0.050	-8.965	<0.001	-0.547	-0.351
With Left-behind Experience	-0.293	0.049	-6.014	<0.001	-0.388	-0.197

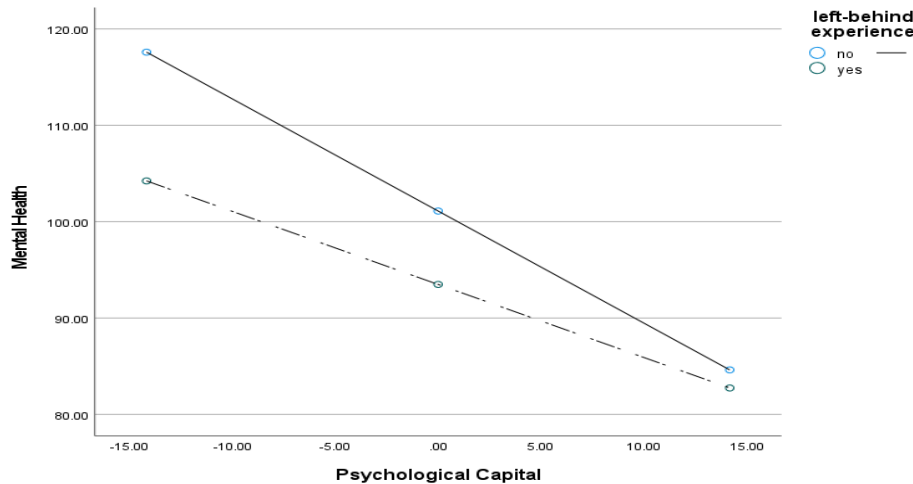
Psychological capital can significantly and negatively predict mental health regardless of whether the participant had been left behind before (Table 4). It should be pointed out that the standard coefficient of the group without any history of left-behind experience ($\beta = -0.449$) is greater than that of the other group ($\beta = -0.293$). In other words, psychological capital exerts more influence on the mental health of poor undergraduate students who do not have a left-behind experience. The moderated mediation model was examined by means of bootstrapping with 5000 samples.

Table 5 Conditional indirect effects and moderated mediating effect indices under different levels of left-behind experience.

Left-behind Experience	Indirect Effect	BootSE	BootLLCI	BootULCI
Without Left-behind Experience	-0.229	0.030	-0.292	-0.174
With Left-behind Experience	-0.150	0.024	-0.197	-0.104
Index of Moderated Mediation	Index	BootSE	BootLLCI	BootULCI
	0.261	0.109	0.061	0.482

As seen from Table 5, the mediating effect of psychological capital has become statistically significant for both groups: the non-left-behind one (indirect effect = -0.229, 95% CI [-0.292, -0.174]) and the left-behind one (indirect effect = -0.150, 95% CI [-0.197, -0.104]), since the 95% confidence intervals have not included zero values. The moderated mediation index equaled 0.261², BootSE = 0.109, 95% CI [0.061, 0.482], which does not include zero values, thus proving the existence of the moderated mediation effect. The indirect effects for the two groups were compared: the non-left-behind one (-0.229) had a greater indirect effect compared to the left-behind one (-0.150), proving the hypothesis that left-behind experience moderates the mediating effect of psychological capital between the studied variables.

To more effectively depict the moderating effect of left-behind experience, the simple slopes plot was created according to the regression results (Figure 2). As it is seen in Figure 2, regardless of whether left-behind experience exists or not, mental health problems tend to decrease as psychological capital increases. The decrease in mental health problems in the non-left-behind group is much bigger compared to that in the left-behind group, which means that psychological capital provides a stronger protection in the first case and has a lower impact in the second case.



To conclude, the moderated mediation analysis reveals that the presence of perceived social support is definitely a predictor of mental health problems in a negative direction; at the same time, it also has an indirect influence on mental health via the mediating construct of psychological capital. Left-behind experience serves as a moderator for the latter part of the mediation analysis, which means that the predicting effect of psychological capital on mental health is weakened in poor undergraduate students with left-behind experience.

4. DISCUSSION

This study has used a moderated mediation analysis approach to explore the influence of perceived social support on the mental health of poor undergraduate students. It has explored how psychological capital mediates the influence of perceived social support and also how left-behind experience moderates the influence of psychological capital on mental health. The results have shown that perceived social support has an inverse relationship with mental health problems faced by poor undergraduate students and also has an indirect influence on the mental health of the poor undergraduate students by mediating through psychological capital. Moreover, left-behind experience moderates the influence of psychological capital on mental health.

The relationship between mental health and perceived social support

The current study reveals a significant negative predictive association between perceived social support and the mental health of poor undergraduate students, where a greater amount of social support is linked to a lower number of people with mental health problems. The results obtained confirm previous studies [22]. Perceived social support is defined as the extent to which an individual feels understood, respected, and supported by other people in the social environment. In the context of positive psychology proposed by Seligman and Csikszentmihalyi, social institutions and social support play a vital part in the mental health of a person. Emotional support from family members, friends, and other individuals can be a buffer for negative emotional experiences caused by economic difficulties for students. Perceived social support has more influence on mental health than objective social support since an individual's perception determines whether a person considers that he/she has enough support resources. There is scientific evidence that shows that social support is an important protective factor for such conditions as depression, anxiety and low quality of life in college students [24]. For poor undergraduate students, perceived social support, together with self-esteem and psychological resilience, is a critical set of factors affecting mental health [25].

The mediating role of psychological capital

The study further shows that psychological capital acts as the mediator in the relationship between perceived mental health and social support. This is because the mediation process remains constant irrespective of the groups (with or without left-behind experience). Firstly, perceived social support increases psychological capital in poor

undergraduate students, and psychological capital reduces the risk of developing mental health problems. Psychological capital functions as a positive mental health resource and consists of four main elements – self-efficacy, optimism, hope, and psychological resilience. In this way, perceived social support is a crucial external resource fulfilling the psychological needs of poor undergraduate students to be cared about and to be understood, thus making their internal positive psychological resources. It has been demonstrated that the support that a student feels from others has a direct impact on depression, and an indirect one via psychological capital, where there exists a positive relationship between perceived social support and psychological capital for poor undergraduate students. A person with psychological capital will have the ability to handle the demands and stressors of life more easily, and hence minimize depression and anxiety. This research confirms the basic theory of positive psychology that an external positive environment develops internal positive resources, which help improve mental health and create an external resource → internal resources → mental health facilitation route.

The moderating effect of left-behind experience

First and foremost, the main finding of this study is that the left-behind experience acts as a moderator of the relation between psychological capital and mental health. Resultantly, the role played by psychological capital as a protective resource to enhance the mental health of college students is much more significant for the disadvantaged group of poor undergraduate students lacking left-behind experience compared to those having this experience. This means that even equal amounts of psychological capital will not provide similar protection to the subjects who have had left-behind experience. Indeed, previous literature shows that poor undergraduate students having left-behind experience demonstrate lower levels of self-efficacy, hope, optimism, and psychological capital overall in comparison to those students lacking this experience [29]; additionally, left-behind experience in childhood is considered a risk factor for the lack of psychological resources and internalizing/externalizing problems among adults [30]. According to the ecosystem theory, the family microsystem has the closest and most direct impact on individual development [28]. Individuals with left-behind experience lack stable parent-child emotional connections during critical growth periods, and this long-term parent-child separation may change the individual's psychological operating patterns and interpersonal trust tendencies. From the perspective of life course, left-behind experience has a long-term time penetration effect—it is not only an experience in the past, but also continuously shapes the individual's current psychological operating patterns [31], making the same level of psychological capital produce different effects in different individuals. This finding suggests that early developmental adversity may impair the efficiency with which an individual's internal psychological resources are transformed into positive and healthy outcomes.

Significance and Implications of the Study

The research presents multiple crucial practical implications for the education and intervention of mental health among poor undergraduate students. Firstly, it is crucial to recognize the importance of social support as an integral component of the mental health of the poor undergraduate students sample under discussion; collaboration between institutional and familial partners in creating a supportive environment is required. Secondly, the importance of the mediating role played by psychological capital means that enhancement of psychological capital among poor undergraduate students serves as an important avenue to improve their mental health. Universities can create necessary psychological capital through mental health courses and group counseling. Thirdly, the influence of left-behind experience as a moderator suggests diversity among poor undergraduate students. The process of transformation of psychological resources differs significantly depending on whether the individual is a left-behind person or not; increasing only psychological capital for left-behind people might be ineffective; special interventions are required. University mental health workers should fully assess students' backgrounds of left-behind experiences and implement differentiated and precise psychological support.

Research Limitations and Future Prospects

However, this research suffers from some shortcomings. Firstly, the use of a cross-sectional design hinders causal conclusions since a longitudinal design is used to confirm the causality between variables. Secondly, the information gathered is obtained from poor undergraduate students only; further research can be conducted to collect

data from different angles, including that of parents and peers. Thirdly, the research took into account left-behind experience only as a moderating variable, while other moderating variables, like self-esteem and self-worth, could have been explored.

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