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The Effect of Second Language Motivation on Depression in International Students: The Mediating Role of Language Preference

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Abstract. Psychological well-being among international students has received increasing attention. Although some research has indicated a strong correlation between psychological adjustment and second language (L2) motivation, little is known about the links between L2 motivation, language use preference, and mental health. This study surveyed 178 international students and conducted correlation analysis, and mediation analysis. The findings demonstrated a negative correlation between depressed symptoms and the Ideal L2 Self, a subdimension of L2 motivation, and no mediating effect of language preference was observed between L2 motivation and depression. These findings suggest that a strong ideal self in L2 may provide psychological support for international students in multilingual contexts and help alleviate depressive tendencies, offering useful insights for cross-cultural mental health interventions in higher education. Future research could consider increasing the sample size and explore how learning motivation and language preference relate to various mental health indicators. These could offer deeper insights into the mechanisms of cross-cultural adaptation and psychological well-being.

Keywords: Second Language Motivation, Depression, International Students, Language Preference, Mediator

1. Introduction

Recently, the mental health of international students has received attention. Among the many factors that affect mental health, how to learn and use a second language (L2) in an unfamiliar country is crucial. Many studies have examined second language motivation and the psychological adaptation status of international students, but the potential connection between second language learning motivation and language use behavior and mental health outcomes has not been fully explored.

For many international students, L2 motivation is not limited to academic settings, but often affects their willingness to use the language in daily life. According to the L2 Motivational Self System(L2MSS) theoretical framework, learners' ideal self and ought self guide and influence their language use behaviors [1]. The connection between L2 motivation and language choice behavior, as well as the possible predictive value of motivation in language choice, have been investigated in previous studies using structural equation modeling [2]. These studies show that L2 motivation not

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only affects learners' language choice but may also predict their language use behavior. In addition, L2 motivation is significantly positively correlated with learners' behavioral preferences in feedback situations and target language communication frequency [3]. This suggests that higher motivation levels may predict higher engagement and readiness to use the target language for communication, which supports the view that L2 motivation has a broader impact on language use behaviors.

Difficulties related to language use are one of the most significant adaptation challenges faced by international students. Studies have shown that language-related identity and usage preferences may be related to emotional adaptation, and adaptation problems can significantly predict the mental health level of international students [4]. Additionally, students who are more concerned with their language performance (e.g., linguistic accent, fluency) may show higher depressive symptoms and anxiety [5]. In multilingual environments, students' use of different languages will also affect their psychological well-being through their positioning in the cultural community [6]. These studies collectively indicate that language preferences and language self-awareness not only have social interaction functions, but can also be viewed as a psychological reflection of individual emotional well-being. The above research conclusions indirectly support the hypothesis that an individual's choice to use or avoid a second language in daily life may have an important impact on his or her mental health.

Beyond influencing language use behavior, L2 motivation may also affect learners' psychological well-being through mediating factors such as cultural adaptation and emotional resilience. Some studies have linked motivational structures to emotional states (such as stress, anxiety, or depression) in language learning situations. For example, when cultural adaptation is used as a mediating mechanism, L2 motivation and goals can promote students' cultural adaptation, thereby affecting mental health outcomes. When emotional variables (such as resilience) are used as mediators, motivation and mental health are also significantly correlated [7,8]. Furthermore, studies have shown that emotional outcomes and reactions in second-language learning environments are intimately linked to the L2MSS, indicating that L2 motivation may have potential psychological relevance [9].

In summary, although many studies have explored the individual relationships between L2 learning motivation, language use preference, and psychological health, few studies have attempted to examine how these constructs interact within an integrative framework. In view of the potential relationship between L2 motivation, language preference and mental health, this study proposed a mediation model. The model assumes that language preference mediates the relationship between L2 motivation and depression levels. In order to more thoroughly investigate the possible connections among them, this study utilized both direct path and mediation path analysis. By introducing language preference as a behavioral variable, this study hopes to further reveal the possible mechanisms and expressions of the impact of L2 motivation on psychological state, thereby offering insights into the psychological mechanisms of language learning motivation. The study will use questionnaire surveys to collect data and use path analysis to verify the mediation effect.

2. Methods

2.1. Participants

International students pursuing a bachelor's degree or above participated in this study. 178 questionnaires in all were sent out. A valid response rate of 97.19% was obtained by keeping 173 valid surveys after eliminating invalid responses that took less than 100 seconds to complete. Of the respondents, 113 were female (65.3%) and 60 were male (34.7%). Participants' educational

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backgrounds were current undergraduate students (37%), current postgraduate students (46%), graduates (12%), and those on a gap period (5%). All participants were native Chinese speakers. Their second languages included English (78%), Korean (10%), Japanese (7%), German (3%), and French (2%).

2.2. Measurements

The measurement tool for Second Language Motivation Self-System is the Chinese version of the L2MSS questionnaire compiled by Taguchi et al., based on the theory proposed by Dörnyei [1,10]. From the complete items listed in its appendix, 5 items on the Ideal L2 Self dimension (α=0.83) and 7 items on the Ought-to L2 Self dimension (α=0.78) that are actually used in Chinese samples were extracted for measurement [10]. The questionnaire uses a six-point rating system, where "strongly disagree" is represented by 1 and "strongly agree" by 6.

This study first calculated the mean of the Ideal L2 Self dimension and the Ought-to L2 Self dimension as the subject's score in this dimension, and then merged the two dimensions and used the weighted average according to the number of questions to form an overall L2 motivation score for path analysis. The questionnaire was administered in English, and provided the subjects with auxiliary translation of the Chinese-English comparison to ensure consistency of understanding and accuracy of the answers.

The Patient Health Questionnaire-9 (PHQ-9) scale was utilized in this study to gauge the participants' degree of depression. The scale was consists of 9 items to measure the frequency of depression in an individual in the past two weeks [11].

Cronbach's α = 0.89 was the scale's internal consistency reliability in the primary care sample of the original study, indicating that it has good internal consistency [11]. In addition, the scale also showed good reliability and construct validity in samples from Chinese-speaking regions.

Regarding the measurement of language preference, this study constructed a language preference index based on two self-report items in the Language Experience and Language Proficiency Questionnaire (LEAP-Q) developed by Marian et al.: Question 3 (the percentage of time the subject is currently exposed to each language) and Question 4 (the preferred language to use in reading scenarios) [12].

To quantify the degree of individual language preference, the Language Preference Index (LPI) in this study was calculated as follows: LPI = the proportion of native language used in reading scenarios – the proportion of native language used in daily life. This index aims to reflect the language selection behavior of individuals in selectable input scenarios, that is, in situations where a second language is not required, whether they tend to actively choose native language input relative to the frequency of daily exposure, thereby showing a stronger preference for native language use.

2.3. Research process and data processing

This study used SPSS 27.0 for statistical analysis and the PROCESS macro plug-in for mediation effect test. In the data preprocessing stage, the quality of the returned questionnaires was first screened, and invalid samples with less than 100s of filling time were eliminated, and 173 valid samples were retained. SPSS was used to perform descriptive statistics on the main variables, and the sample's general distribution was examined by testing the mean and standard deviation. The relationship between the variables was then tested by Pearson correlation analysis.

Next, to investigate the mediation function of language preference and the connection between depression level and second language motivation, the study used Model4 in the PROCESS v4.2

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macro to conduct mediation analysis on the sample. Ideal L2 Self average score, Ought-to L2 Self average score, and weighted combined L2 motivation total score were all included in the analysis. The dependent variable was the total depression score, while the mediating variable was the LPI. The study used Bootstrap to set up 5000 repeated samplings, and the confidence interval (CI) was 95% for mediation path testing.

3. Results

3.1. Data processing

The study selected the Likert 6-point scoring method to score L2 self-motivation. Based on the Ideal and Ought-to dimensions, the average scores of the subjects in the two sub-dimensions were obtained, and then the overall L2 self-motivation score was calculated by weighted average.

3.2. Descriptive statistics

First, descriptive statistical analysis was performed on the main variables of this study.

The mean total score of L2 motivation was M = 4.34 (SD = 0.88), the mean total score of PHQ-9 was M = 19.44 (SD = 5.43), and the mean language preference index (LPI) was M = -1.21 (SD = 24.55).

The results show that the proportion of subjects using their native language in reading situations closely resembles the proportion of their daily contact, but due to the large standard deviation, substantial individual variability was observed.

3.3. Correlation analysis

Second language motivation, LPI, and depression level were tested using Pearson correlation analysis to further investigate the link between the variables in this research (see Table 1). The correlation between the total score of L2 motivation and the total score of PHQ-9 was not significant ($r = -0.118$, $p = .122$), indicating that there was no obvious linear correlation between the overall motivation level and the depression level of the subjects. Therefore, on this basis, the motivation dimension was further split for correlation analysis.

The data suggest that Ideal L2 Self was significantly negatively correlated with PHQ-9 ($r = -0.170$, $p = .025$), while Ought-to L2 Self was not significantly correlated with PHQ-9 ($r = -0.045$, $p = .554$). Furthermore, the two sub-dimensions showed a strong positive correlation ($r = .474$, $p < .001$), and both were highly positively correlated with the total score of L2 motivation (Ideal: $r = .826$, Ought: $r = .888$, $ps < .001$), further verifying their construct consistency.

As for LPI, there is no significant correlation with each dimension and total score of L2 motivation ($r = -0.014 \sim 0.003$, $p > .85$), and it shows a marginally significant negative correlation with the total score of PHQ-9 ($r = -0.148$, $p = .052$). Although it did not reach the significance level in the traditional sense, it is close to the statistical boundary, and combined with its large individual differences (SD = 24.55), it is still worth paying attention to in subsequent analysis.

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Table 1. Results of pearson correlations (2-tailed)

		LPI	Ideal	Ought-to	PHQ-9	L2 Total
LPI	Pearson Correlation	1	-0.014	0.003	-0.006	-0.148
	Sig.		0.852	0.970	0.942	0.052
Ideal	Pearson Correlation		1	.474**	.826**	-.170*
	Sig.			0.000	0.000	0.025
Ought-to	Pearson Correlation			1	.888**	-0.045
	Sig.				0.000	0.554
PHQ-9	Pearson Correlation				1	-0.118
	Sig.					0.122
L2 Total	Pearson Correlation					1
	Sig.					

3.4. Mediation analysis

To test whether language preference plays a mediating role between L2 motivation and depression level, PROCESS macro (Model 4) was used to conduct mediation analysis, and the number of bootstrap resampling was conducted with 5000 iterations.

First, the total score of L2 motivation was used as the independent variable for analysis. The total effect of the total score of L2 motivation on the total score of PHQ-9 was not significant (total effect = -0.915, p = .122). After the language preference index (LPI) was introduced, its direct effect was also not significant (direct effect = -0.922, p = .117). The indirect effect value was 0.0065, and the 95% bootstrap CI was [-0.1935, 0.2060], which included zero, indicating that LPI was not a significant mediator between the two.

Considering that Ideal L2 Self was significantly negatively correlated with PHQ-9, this study further conducted a mediation analysis with Ideal L2 Self as the independent variable. The analysis results showed that the total effect of Ideal L2 Self on the total score of PHQ-9 was -1.055, which was significant (p = .025, 95% CI [-1.976, -0.134]), indicating that the stronger the ideal language motivation, the lower the level of depression. After controlling for language preference, the direct effect of Ideal L2 Self on depression was -1.068, which was still significant (p = .022, 95% CI [-1.981, -0.155]). However, its indirect effect estimate is 0.013, and the corresponding bootstrap confidence interval is [-0.145, 0.174], which includes 0 and does not reach statistical significance, indicating that language preference does not play a mediating role.

In summary, the total L2 motivation did not show a significant correlation with the depression level in this study sample, but Ideal L2 Self showed a significant negative predictive effect. LPI did not show a significant mediating effect in either path. Given that there was no significant correlation between the total L2 score and the level of depression, and that there was a stable negative correlation between the sub-dimension Ideal L2 Self and depression, this study further reconstructed the mediation model with Ideal L2 Self as the main predictor variable (see Figure 1).

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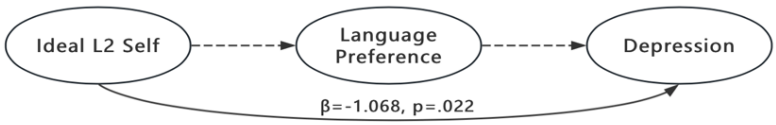

Figure 1. Mediation model of ideal L2 self, language preference and depression (picture credit: original)

4. Discussion

First, based on the correlation analysis between L2 motivation level and depression level, the sub-dimension of L2 motivation, ideal self-motivation, and depression level showed a significant negative correlation. This indicates that the stronger the learner's intrinsic and positively self-driven language learning motivation is, the lower the likelihood of experiencing depressive symptoms. According to research on the impact of motivation and goal consistency on psychological adaptation, if L2 learners can maintain consistency between their motivation and long-term goals in cross-cultural situations, it will be more helpful for them to resist adaptation problems and emotional distress caused by culture and academic challenges [7]. When L2 learning is not only a task-based behavior, but is closely related to an individual's longer-term self-expectations, it reflects the consistency between motivation and goals. In other words, the negative correlation between ideal self-motivation and depression levels may be due to the inclusion of the ideal expectation of one's own L2 learning results. This expectation may become a protective mechanism for the individual's mental health.

Secondly, in the analysis, the individuals' degree of depression did not significantly correlate with their ought-to self-motivation or overall L2 motivation score. This finding echoes the trichotomous model of L2 selves proposed by Teimouri, which states that different types of L2 self-discrepancies will lead to different emotional responses in L2 learners [9]. Therefore, analyzing L2 motivation at the sub-dimensional level may provide more insights into its true relationship with mental health. Finally, although the hypothesis proposed in the study attempted to explore the mediating role of language preference, the findings indicated that depression, L2 motivation, and LPI did not significantly correlate. This may be due to the lack of systematic conceptualization and validation of the language preference index (LPI) set up in the study as a self-constructed indicator. In addition, there are large individual differences in language preference in the research sample (SD = 24.55), which may lead to instability in the statistical results on the one hand, and in addition, it may reflect the limitations of LPI, making the variable insufficient in reflecting real behavioral tendencies.

To sum up, it can be found that in the context of studying abroad or multilingual learning, an individual’s ideal motivation may not only exist as a driving force for learning, but also as a psychological support and self-protection for an individual to resist stress, loneliness or cultural disruption. From the perspective of positive psychology, motivation is closely related to learners’ sense of well-being, and ideal self-motivation may be an important factor in providing psychological support for individuals when facing stress [8]. For international students, the depth of the ideal self is not limited to reaching the fluent level of a native speaker, but also a psychological projection of who they want to be. The clearer it is, the more likely the individual will avoid falling into psychological difficulties and maintain a stable mental state. This further demonstrates that in a real analysis, the ideal self and the ought-to self should be viewed as distinct motivational types, rather than mixing them into an overall indicator.

Based on the above research results, this study believes that helping students connect their goals with their personal visions and aspirations in language teaching may help enhance students'

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adaptability in cross-cultural environments. Note that there are certain limitations to this study. First, data was gathered online using a self-report questionnaire, which made it impossible to clarify the causal path between variables, which may cause errors between the data and the actual situation. Second, although the self-built language preference index attempts to quantify the individual's language preference behavior, it lacks systematic theoretical support while also lacking rigorous design and validated measurement properties. Further verification is necessary in future studies. Finally, the mediation model established in this study only examined one indicator, depression level. In the future, other indicators such as anxiety, stress, and psychological adaptation can be further introduced to more comprehensively understand the association mechanism between motivation, language preference, and psychological state.

5. Conclusion

This study explored the association between L2 motivation and international students' mental health, as well as the mediating role of language preference. The study found that the ideal self dimension of L2 motivation was significantly negatively correlated with depression levels, indicating that self-oriented, positive ideal language motivation may provide certain psychological support and self-protection for international students in cross-cultural adaptation. However, the relationship between the overall L2 motivation level and the ought self motivation dimension and depression was not significant, which further revealed the necessity of dividing L2 motivation into dimensions. The findings demonstrate the importance of learning motivation as a new reference perspective in language teaching and psychological support for international students. Future research may further expand the sample size and detect the effect of learning motivation and language preference under different mental health indicators to provide a basis for in-depth research on cross-cultural adaptation and mental health.

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