The Influence of Depression on Learning Motivation among Chinese High School Students

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Abstract. Mental health problems, like depression, have long been a subject that has attracted researchers from a diverse range of fields, including psychology and education. Depression could lead to worse academic performance and suicidal behaviours. In China's background, high school students are in a critical stage of development and need to prepare for Gaokao. Keeping a high learning motivation is crucial. Previous research was focused on adults and university students and seldom looked at high school students. Also, the influence of depression on learning motivation is unknown. This research aims to find out the relationship between depression and learning motivation among Chinese high school students. The SDS and MAAT survey was used to gather data from high school students, and 171 students participated in the study. The SPSS was used to analyse data. Notably, results indicated a significant negative correlation between depression and learning motivation among Chinese high school students. Importantly, depression has a negative influence on learning motivation. Additionally, this research did not consider locations and other external effects on students. The results provided straightforward implications for schools, teachers, students and parents to prevent or intervene in students' mental health problems to increase high school students' learning motivation.

Keywords: High school student; depression; learning motivation.

1. Introduction

Mental health problems are essential disease factors in the world. Depression affects about 300 million individuals worldwide [1]. Depression has gradually become a significant public health issue in China in the past 20 years [2]. In 2022, about 95,000,000 Chinese are suffering from depression, and about 30% are under 18 years old [3].

Gaokao is an exam for Chinese senior high school students to enter universities. Approximately 12,910,000 students participated in gaokao in 2023, but only about 12% could enter the topic universities in China. Therefore, significant levels of learning motivation are required for senior high school students. People suffering from depression will have detrimental effects on their academic achievement, work productivity, relationships with family and friends, and capacity to participate in community activities [1]. Hence, understanding how depression influences learning could help people pay more attention to students' mental health problems.

Research found out that depression is correlated with suicidality among university students [4]. Also, student with depression will have negative impact on school performance, and GPA is correlated with depression [5]. However, recent research seldom looks at how depression impact student's learning motivation, and research usually focus on university students, not senior high school students.

Also, the influence of depression on learning motivation is unknown. Motivation is the energy that drives students to persevere in the face of adversity [6], and motivation is the kickoff and behaviour behind the strength [7]. Preparing for gaokao is tough. Students need to review the knowledge they studied previously. With high motivation, students could revive the positivism energy and apply it to revision studies at school [6]. Furthermore, students' motivation is among the fundamental factors for practical and valuable learning and achievement [6]. Hence, maintaining a high motivation for learning is crucial for senior high school students in China. Researchers mentioned that teachers' appropriate assessment techniques could help generate learning motivation [8]. Also, researchers found that flipped classrooms positively impacted students' learning motivation [9]. This research

successfully indicates factors that could improve students' learning motivation. Classroom assessment and flipped classrooms are external factors or environments, but seldom research focused on internal factors, which are students themselves.

Therefore, the study aims to investigate the influence of depression on learning motivation among senior high school students in China.

There are three objectives: to understand depression in young people in China, to investigate the correlation between depression and learning motivation, and to discover potential implications and help students improve learning motivation.

There are two hypotheses for the results. Hypothesis 1 is there is a significant correlation between depression and learning motivation. Hypothesis 2 is their depression will negatively impact learning motivation.

2. Methods

2.1. Design

A survey will be used in this study to provide quantitative data about depression and students' learning motivation. The survey is consisting with two parts: the SDS and MAAT. All survey questions will be written in Chinese, which will be easier for Chinese students to understand and complete.

Self-rated Depression Scale (SDS) will be used to measure depression. It consists of 20 items with a Likert scale, and each item ranges from 1 (a little of the time) to 4 (most of the time). The total scale ranges from 20 to 80. Depression level will be understood by the scale's total score for each participant.

Learning motivation will be tested through the MAAT, a 92-items scale that measures the motivation of success, exam anxiety, self-responsibility (G), and expectation level (H). Students must choose from always to 3 never. The motivation of success is consisting of four parts: knowledge learning (1A), skills (1B), sports (1C) and social (1D). The exam anxiety is consisting of two parts: promoted tension (2E) and avoidance of failure (2F).

2.2. Sample Description

Total 171 students participated in this research,. The gender of participants were nearly equal, with 82 male participants and 89 female participants respectively. Convinence sampling was used to gather data. Participants were moslty come from Beijing and north part of China. Only a few partcipants were study in south part of China. As participants were gathered by convenience sample online, the number of participants who withdrew from the survey was unknown.

2.3. Analytical Method

To analyse the data, the score scale for SDS and MAAT [10] was used to categorise the level of depression and learning motivation for high school students. To analyse the correlation and regression between depression and learning motivation, SPSS was used.

3. Results

3.1. The Depression Level of High School Students

The depression for high school students were not in a severe level. Based on the result, the depression score ranged from 20 to 74. Seventeen students scored above 53, including 13 students who scored between 53 to 62, 3 who scored between 63 to 72, and 1 who scored above 72. The result indicated that about 90% of participants were standard. The MAAT categorised learning motivation into four sections: motivation of success (1A to 1D), exam anxiety (2E and 2F), self-responsibility (G), and expectation level (H). The split-half reliability is between 0.83~0.89, and the test-retest reliability is between 0.79~0.86 [11].

Table 1. Mean and Standard Diviation for Depression and Learning Motivation (n=171)

Gender		Depression Score	1A	1B	1C	1D	2E	2F	G	H
Male	M	39.00	27.52	28.85	28.27	28.18	26.91	24.05	8.78	19.21
	SD	11.070	4.673	4.470	4.4740	4.366	4.816	6.110	2.326	3.981
Female	M	42.98	25.53	27.21	25.11	25.99	24.53	25.02	8.07	18.82
	SD	10.144	5.411	6.228	6.883	6.100	6.220	5.741	2.270	3.924
Totoal	M	41.07	26.49	28.00	26.62	27.04	25.58	24.56	8.41	19.01
	SD	10.753	5.153	5.502	6.142	5.437	5.721	5.923	2.318	3.994

Table 1 represents primary data gathered from the survey, indicating each sector's mean and standard deviation. The average depression score for high school partipants was 41.07. It was obviouse that the average depression score is below 53, which indicate the depression among Chinese high school participants are not severe. Male students reported lower average depression scores than female students, with 39.00 and 42.98, respectively. Also, Male participants have higher average scores in learning motivation except F part.

3.2. The Learning Motivation of High School Students

Table 2. MAAT level for senior high school

scale		level 1	2	3	4	5
motivation of success	1A	7(4.1%)	14(8.2%)	68(39.8%)	56(32.7%)	26(15.2%)
	2B	8(4.7%)	13(7.6%)	80(46.8%)	46(26.9%)	24(14.0%)
	3C	13(7.6%)	21(12.3%)	79(46.2%)	42(24.5%)	16(9.4%)
	4D	9(5.2%)	54(31.6%)	56(32.8%)	52(30.4)	0
Exam anxiety	E	15(8.8%)	8(4.7)	81(47.4%)	31(18.1%)	36(21.0%)
	F	35(20.5%)	42(24.5%)	67(39.2%)	19(11.1%)	8(4.7%)
Self-responsibility	G	1(0.5%)	34(19.9%)	106(75.1%)	22(12.8%)	8(4.7%)
Expectation level	H	16(9.4%)	21(12.3%)	93(54.4%)	41(23.9%)	0

The learning motivation for high school students were normal. The learning motivation was categorised based on the standard of MAAT for senior high school students in Table 2, from 1 very weak to 5 very strong. Most students had normal learning motivation in each section, and the number of students with strong and very strong learning motivation (levels 4 and 5) was greater than students with low learning motivation (levels 1 and 2). It was notable that no students have very strong learning motivation in the motivation of success (4D) and expectation level (H).

3.3. Correlation and Regression between The Depression Level and Learning Motivation among High School Students

Table 3. The correlation between

		Depression score	1A	1B	1C	1D	2E	2F	G	H
Depression score	Pearson correlation	1	-.350**	-.312**	-.374**	-.398**	-.311**	.093	-.455**	-.317**
	Sig, (double tailed)		.000	.000	.000	.000	.000	.000	.000	.000

This paper examined the correlation and regression between depression and learning motivation among Chinese high school students. There was a significant correlation between depression and learning motivation. The result of pearson correlation test indicated that the depression score was correlated with all sections of learning motivation, except section 2F. This might suggest that depression was correlated with learning motivation, but not correlated with avoidance of failure.

Also, Table3 showed the R values was less than 0, which means there was a negative significant correlation between depression score and learning motivation, including the motivation of success (1A to 1D), exam anxiety (2E), self-responsibility (G) and expectation level (H). The depression score has the strongest negative significant correlation with self-responsibility (G) compared to other sections. It was notable that for 1A to 2E and H, the absolute R-value is between 0.2~0.4, which indicated that the significant correlation is weak. For G, the absolute R-value is between 0.4~0.6, which suggests depression score and self-responsibility are moderately significantly correlated. However, the depression score is not significantly correlated with avoidance of failure (2F). Therefore, hypothesis 1 is accepted as there is a significant correlation between depression and learning motivation.

After the correlation was confirmed, linear regression model was used to test casual-effect. As Table 4 showed below, expect section F, there were a significant regression between depression and learning motivation ($P<0.001$). The result implies that depression level will influence learning motivation. However, the R is lower than 0.7, and the R^2 is lower than 0.5, indicating that the goodness of fit for linear regression is not well. To improve it, factors including living environment, parenting style or other external effects can be considered in furture research.

Table 4. Linear regressioin

	R	R2	Sig.
1A	.350a	.123	.000b
2B	.312a	.097	.000b
3C	.374a	.140	.000b
4D	.398a	.159	.000b
2E	.311a	.097	.000b
2F	.093a	.009	.226b
G	.455a	.207	.000b
H	.317a	.100	.000b

a. dependent variable

b. independent variable: depression score

4. Discussion

Based on the result, depression could have negative impact on high school students' leanring motivation. Under the key stage of preparing Gaokao, maintaining a high learning motivation for students could help them gain higher academic achievement. Also, under the stage of puberty, high school students are experiencing rapid mood change. Hence, preventing students away from depression is crucial to maintain high learning motivation.

4.1. Implications for Teachers and Schools

First, teachers from high school should not only focus on student performance at school or academic achievement, but also on mental health status. Unlike physical impairment, mental health problems are harder to detect by others. Teachers could pay more attention on students' unusal behaviour or emotions, for example, sadness, loss of interest or pleasure, guilt or low self-worth, disturbed sleep or appetite, tiredness, and poor concentration [12]. Have an immedialty conversation with students who have unusal behavior or emotional change could help teacher to know what student's are experiencing and thinking, and could provide support in time.

Also, schools can hold lectures or psychology courses for both students and teachers, which could increase awareness of mental health problems. Teachers are then more easily to detect students unusal behviors. Moreover, the counselling room can be provided for students to assist them in expressing their feelings to overcome their difficulties. Teachers could contact with student's parents frequently to understand their life after school, which could support teachers be more familiar with students.

In addition, health behaviors such as eating may promote emotion regulation and reduce distress associated with stressful circumstances and depressive symptoms [13]. Hence, schools could provide healthy lunch or snacks for students during school time. Having a meal might help them to reduce stress and depressive behaviors.

4.2. Implications for Students and Parents

Students could participate in mental health classes to study the symptoms of depression. If students are familiar with the symptoms of depression, they can identify their symptoms if they are not feeling well. Then, they could seek help immediately. Also, students need to keep regular daily exercise. Exercise could help students maintain physical health and also increase dopamine. Dopamine could release students' stress from studying and maintain a high sleep quality. Students with a stable mental health state could better prevent getting depression. In addition, learning self-saving is essential. Reading self-saving books, going to public counsellors or seeking help from teachers or parents are good ways to help students when they feel bad.

Except for school time, parents stay with students most of the time. Providing a warm family atmosphere is essential, and it might let students feel they are being loved. During this stage of development, high students are usually experiencing fluctuating modes. Hence, parents could learn to talk with their children and try not to raise arguments with them. Also, talking to teachers frequently could help parents to know their children better. Providing solutions or support for their children could help them overcome the difficulties they are experiencing.

5. Conclusion

A total of 171 high school students participated in the study, 82 males and 89 females. Gender was almost balanced. Data was gathered from the SDS and the MAAT online. SPSS was then used to analyse correlation and regression. Fundings suggest a negative correlation between depression and learning motivation among high school students. Also, depression can negatively influence learning motivation. Notably, section F of learning motivation, the avoidance of failure, did not exhibit a significant correlation and regression with depression. The reason for this was unknown. Future research could discover why avoidance of failure does not correlate with depression. There was a slight gender difference in depression mean score and learning motivation. Importantly, this research has generated a few implications for schools, teachers, parents and students to increase learning motivation, reducing depression among high school students. Providing healthy food and a warm atmosphere, holding psychology courses or lectures, communicating with students, and keeping daily exercises are effective methods to release pressure and prevent depression. Moreover, interventions, including seeking help immediately, and going to counselling, are helpful ways to intervene in depression. Furthermore, this study has not examined the influence of age, gender and living environment. For future research, external effects might be considered factors influencing learning motivation.

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