

# The Research of Influence Factors that Possibly lead to Depression of Adolescents

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## Abstract:

Although many experts are now paying attention to the factors that will lead to adolescent depression, those previous studies have always limited the influencing factors to some simple and direct factors such as academic stress or family background. In fact, there are still many trivial influencing factors that have not been noticed. In this study, the regression model was used to process a dataset about various anxiety indicators and factors of 1100 students collected by two authors and an institution in 2023. The conclusion is that Study load and Bullying have positive impact on depression, and Sleep quality, Living conditions, Academic performance, Social support, and Teachers and students relationship have negative impact on depression. Among them, the positive impact of study load is the highest, which means that the greater the academic pressure, the more likely students are going to be depressed, while the negative impact of social support is the highest, indicating that the lower the social support, the more likely students are to be depressed. These factors have rarely been mentioned in previous studies, but this study provides insights for future research, and these results will raise concerns among parents and schools about these subtle factors.

**Keywords:** Adolescent depression; linear regression model; influencing factors; psychological disorders.

## 1. Introduction

Compared to the situation of insufficient awareness in the past, depression has now received more attention. However, most people do not notice that the proportion of young people in the depressed population is unimaginably huge, and those teenagers are active on various social networking sites and psychological counseling websites, seeking for comforts or expressing their sadness. In fact, the common belief is that the middle-aged with economic burdens and life pressures, as well as elderlies who face concerns about physical aging and death, are more likely to suffer from mental illnesses. However, those adolescents without mature thinking and rich experiences are more likely to be negatively affected by subtle things and develop mental illness. As the researcher Heller mentioned, 20% of young people during high school suffer the depression, and their average age is only 14 [1]. More importantly, the psychological trauma left in the Adolescence of people often affects their future lives. The professors Faris and Felmlee claimed that those depressed teenagers, especially the high school students, are going to be marginalized, and this effect is becoming larger as time passes [2]. Therefore, it is very important to identify the factors that can lead to depression in adolescents so that parents and schools can

avoid these factors and ensure the mental health of adolescents. Moreh and O'Lawrence had proved that depression is a very complex condition and may be the combination of various factors, such as genetics, biology, environmental risk factors, and even gender, but not only have one single reason.

Firstly, based on the survey and research, Professor Hollander gave the point that some risky behavior related to sex can affect the mental health of both boys and girls. He listed three typical behaviors: having sexual behavior too early, having drags after sex, and having more than 3 couples [3]. Besides sexual behavior, the unhealthy romantic relationship will also cause psychological harm to teenagers. Storrs proposed that both physical and psychological violence in a romantic relationship will lead to the depression of the victimized teenagers [4]. In less relevant fields, some weak abilities, such as Reading disorders, also let teenagers gradually become less confident and eventually depressed. Researchers Bender et al. cited many cases and concluded that teenagers with non-verbal barriers or academic disabilities are more likely to suffer from depression [5]. The other three researchers, Atlantis et al. also proved that some factors related to appearances, such as obesity, can also lead to depression. According to the data and study, obesity is not closely related to other mental

illnesses, but it has a significant impact on depression [6]. These special features will cause the teenagers bullied by other students in the school, and their relationship with teacher and classmates will become extremely dangerous. In addition, with the advancement of electronic products, a lot of messy information has entered the vision of the public, which seriously affects young people who cannot distinguish between good and bad and have low self-control. The researcher Sen used cases to point out that addiction to electronic products leads to depression in adolescents by weakening the concentration level of teenagers [7]. Moreover, many students are addicted to electronic devices and go to bed late, ultimately leading to lassitude and loss of vitality in their daily lives. Research demonstrated by the teachers and students Asarnow, McGlinchey, and Harvey in UCB shows that those who slept later than 11:30 p.m. perform worse in the class and gradually show symptoms of depression [8]. Also, Zdanow and Wright had proven that those negative emotions, such as sadness and depression, can be transmitted among teenagers, and many of the social networks and chat rooms are related to emo, or even promote the bad emotions and events about suicide, which play an immense role in the depression of teenagers [9]. Apart from these previous factors, finally, there is an extremely popular and recognized point: the family background of an adolescent. Professor Ross and Mirowsky pointed out the negative impact of parental divorce on children when they are young, and this influence will remain until the child becomes an adult [10]. Another five international researchers, Herrenkohl et al. proposed that parental violence has a significant influence on adolescent depression, too [10]. The factors are trivial and scattered, and they can be classified into several types:

academic performance, study load, teachers and students relationships, bullying, social support, sleep quality, and living conditions.

Therefore, the main purpose of this paper is to use regression model to study the relationship between adolescent depression and the seven factors. After reaching a conclusion, the public can avoid these factors and take good care of young people.

## 2. Methods

### 2.1 Data Source

The data for this literature is collected from the Kaggle website, which was collected and compiled by the author Ali Oraj, Zofija, and the organization of Chhabii. The dataset was published and update in 2023, with data on 1100 students, analyzing their stress levels through 20 factors, and this research focuses on the depression and another 7 factors.

### 2.2 Variable Selection

The data used in the paper count a total of 1100 students in the high school, recording the level depression level, and the level of other six variables, including academic performance, study load, teachers and students relationships, bullying, social support, sleep quality, and living conditions. The original dataset has large amount of data, and the level of depression is very detailed. The level of depression is between 0 and 27, so students with depression extent higher than level 14 will be defined as depressed teenagers. The levels of other factors are between 0 and 5, so level 3 is defined as the threshold value. Therefore, dataset is shown in table 1:

**Table 1. Variable introduction**

Factors	Symbol	Percentage	Range of level
Depression	Y	40.7%	14-27
Sleep quality	X1	50%	0-2
Living condition	X2	50%	0-2
Academic performance	X3	51%	0-2
Study load	X4	49.5%	3-5
Teachers and students relationship	X5	53.2%	0-2
Social support	X6	58.4%	0-2
Bullying	X7	50.8%	3-5

For the five factors includes sleep quality, living conditions, academic performance, teachers and students relationship, social support, levels less than 3 are considered problematic. For factors such as academic load, bullying,

levels equal to or above 3 are considered problematic.

### 2.3 Method Introduction

This paper uses a linear regression model, with depression

as the dependent variable and the other seven influencing factors as the independent variable, to study the relationship between X and Y, whether there is an influence relationship, the direction and degree of influence. Next, this article will use SPSSAU to organize data, analyze the VIF value, the tolerance, the significance, and the coefficients, and determine whether the resulting factors are related to depression.

### 3. Results and Discussion

#### 3.1 Analysis of Regression model

From the table 2, it can be proved that the formula of the model is:

$$depression = 17.908 - 1.157X_1 - 0.442X_2 + \dots - 0.808X_7 \tag{1}$$

Therefore, the final specific analysis shows that: The regression coefficient of sleep quality is -1.157, indicating that sleep quality has a significant negative impact on depression, which means that as the sleeping quality de-

creases, the level of depression will increase. The regression coefficient of living conditions is -0.442, indicating that the living conditions has an obvious negative impact on depression, and the bad living condition will cause depression. The coefficient of academic performance is -0.447, indicating that academic performance has a huge negative impact on depression, which means that low study performance will cause teenagers lose confidence and depressed. The regression coefficient value of study load is 1.076, indicating that study load has a positive impact on depression, and the level of depression will increase as study load increase. The regression coefficient of social support is -1.173, indicating that social support has a significant negative impact on depression, and the coefficient value for bullying is 0.612, indicating that bullying has a large positive impact on depression. Finally, the regression coefficient of teachers students relationship is -0.808, which means that teachers students relationship has a negative effect on depression, and terrible relationship with others will cause depression.

**Table 2. Linear regression analysis results**

	Non standardized coefficient		Standardized coefficient	t	p	Collinearity diagnosis	
	B	SE	Beta			VIF	Tolerance
Intercept	17.908	0.976	-	18.344	0.000**	-	-
Sleep quality	-1.157	0.148	-0.232	-7.837	0.000**	2.605	0.384
Living conditions	-0.442	0.162	-0.064	-2.725	0.007**	1.641	0.609
Academic performance	-0.447	0.155	-0.082	-2.889	0.004**	2.387	0.419
Study load	1.076	0.140	0.183	7.683	0.000**	1.692	0.591
Social support	-1.173	0.192	-0.159	-6.095	0.000**	2.027	0.493
bullying	0.612	0.150	0.121	4.070	0.000**	2.645	0.378
Teachers and students relationship	-0.808	0.172	-0.145	-4.707	0.000**	2.821	0.355
R 2	0.633						
Adjusted R 2	0.631						
F	F (7,1092) = 269.476, p=0.000						
D-W value	2.093						
* p<0.05 ** p<0.01							

#### 3.2 The Visible Relationships

According to table 2 and figure 1, analysis shows that study load and bullying have positive impact on depression, and sleep quality, living editions, academic performance, social support, teachers students relationship have

negative impact on depression. Based on the regression coefficient of each factor, the social support factor has the greatest negative impact on depression, and the factor of study load has the largest positive impact.

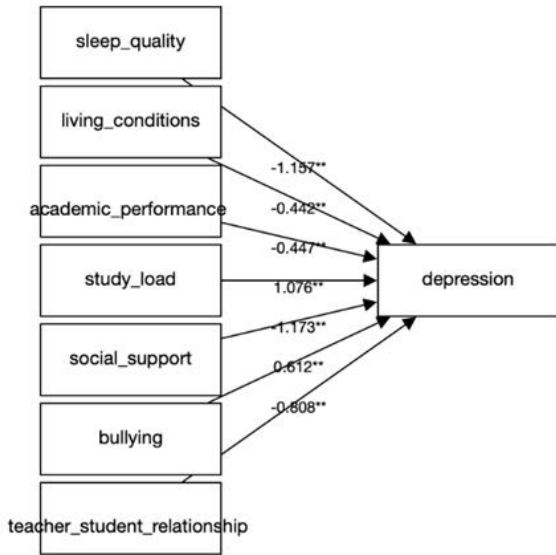


Fig. 1 The coefficient of each factor

### 3.3 Validity of the Model

Figure 2 is the regression coefficient plot of the dataset, with 95% confidence interval. According to the graph, the confidence intervals of all influencing factors do not include the number 0, which indicate that all items have a significant impact on the dependent variable of depression.

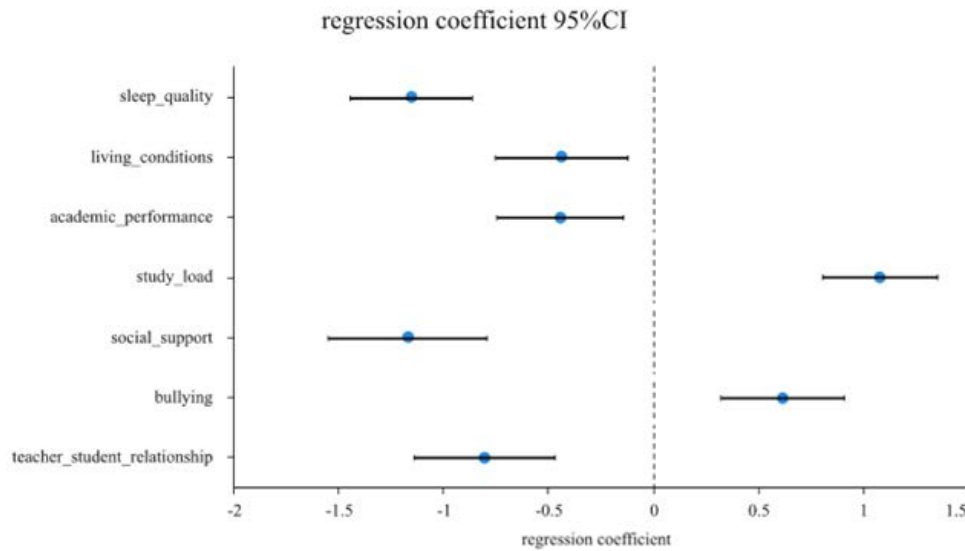


Fig. 2 The regression coefficient of 95% CI

Finally, according to the data in table 3, the R-squared value of the model is 0.633, which means that the seven influencing factors can explain 63.3% of the changes in depression of adolescents. When conducting the F-test of the model, it can be found that the  $F = 269.476$ , and  $p < 0.05$ , which means that at least one of the seven influencing factors has an impact on the depression. In addition, when testing for multicollinearity of the model, because

all the VIF values in the model in previous table 2 are less than 5, there is no collinearity problem. When conducting the linear regression, due to the sample size exceeds 1000, the model defaults to not having any outliers. The D-W value is 2.093, which is between the range of 1.7 to 2.3, and it is very close to the value of 2, which means that there is no correlation between the sample data, indicating that the model is valid.

**Table 3. Model Summary**

R	R 2	Adjusted R 2	DW value
0.796	0.633	0.631	2.093

#### 4. Conclusion

The current study selects a single dataset with 1100 samples and focuses on finding out the influencing factors that may be associated with developing depression or some mental diseases among high school teenagers by using the regression model, defining the depression as the dependent variable, and the other seven factors as independent variables. It was concluded that having depression may be related to Depression, Sleep quality, Living condition, Academic performance, Study load, Teachers and students relationship, Social support, and Bullying. Among these factors, most of them are not noticed before, such as Sleep quality and the Social support, but these factors indeed play a large role on leading to adolescent depression.

It cannot be denied that due to the insufficient sample size and the fact that the original dataset included more than 20 factors, there were some other factors that were not adopted may also have various impacts on those factors used in this research, such as the anxious level and stress level. Therefore, there are still some possible differences in the model, which leads to the inaccurate results to some extent. Also, without enough and exact datasets, some other factors such as abnormal romantic relationships between teenagers, the domestic violence, and some disabilities are not studied in this research. However, the importance and advantages of this research cannot be ignored. The results of this survey are very innovative because it considers IHFBK many factors that are often overlooked for research, such as living conditions and social support. After data processing and model analysis, the results show that these factors are indeed closely related to the adolescent depression. Therefore, in the future, more researchers need to pay attention to these trivial influencing factors. With more cases and data, more accurate results will be obtained. Ultimately, the parents and the school should be aware of the mental health of the students by paying atten-

tion to their sleeping time and quality, their academic performance, their relationships with others, and other factors to effectively help students alleviate suppressed emotions and solve psychological disorders.

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