

Relation Between Leisure Time and Depression among Adolescents

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Abstract: Depression is one of the key topics in today's research, and researchers have demonstrated the effect of adult feelings of time pressure on depression, however, there is a research gap in the area of adolescents. Therefore, the research topic of this paper is the relationship between various leisure time and depression among secondary school students. The research methodology of this paper is as follows, firstly the time spent by each person under different leisure activities, and the level of depression of each person were collected. The descriptive, correlation and regression statistics were performed. It was found that the time spent watching television on rest days significantly reduced the level of depression among secondary school students. This study suggests that to reduce the middle school students' depression level, the students should decrease the time on playing video games at working days and the time on conversation at rest days. The students should increase the time on television on both working days and rest days.

Keywords: Leisure time, depression, adolescents.

1. Introduction

Factors influencing depression have been one of the focuses of attention in previous studies. Cheng et.al. conducted a survey to examine the influencing factors of depression tendency among high school students. They used Multi-stage cluster random sampling method to collected a sample consist of middle school students that are between 13 to 18 years old. The total number of questionnaires with valid responses was 6197. The questionnaires include Survey of Sociodemographic Characteristics, Home Environment Factors Survey, School Environmental Factors Survey, Mental Health Literacy Survey and Youth Mental Health Status Survey. The Youth Mental Health Status Survey have two parts, Symptom check list 90 (SCL-90) and Beck depression inventory (BDI). The whole questionnaire's reliability and validity is eligible, Cronbach's coefficient is over 0.7 averagely.

Cheng et.al performed in the R software (Version i386 4.0.2). Missing data were supplemented and estimated separately from each survey center database, and then using conditional logistic regression to analysis. Finally, they have found that the adolescents with religious, thin or overweight or obese, family history of mental illness, mother's religious beliefs, not raised by both parents, poor family relationships, boarding, only child, below average academic performance, burdened by school, learning problems, bullied, not accepting criticism, history of counseling, history of mental health education had a higher prevalence of depressive tendencies [1].

Lansford et.al conducted a study of 585 children over a 12-year period (1987-1999), 11.8% have had a history of physical abuse in the family prior to enrollment, and compared to non-maltreated adolescents, adolescents who were maltreated in their early years missed 1.5 more days of school, had a lower projected likelihood of attending college, and had on average more than three-quarters of a standard deviation higher levels of aggression, anxiety/depression, dissociation, PTSD symptoms, social problems, ideological problems, and social withdrawal than their non-maltreated peers. So abuse at a young age can affect a child's mental health in the future [2].

Another study from Wang et.al. also stated that adolescents with depressive symptoms have higher age and academic stress, poorer self-rated health, higher rates of smoking, alcohol use, and hospitalization in the past 12 months, and lower levels of parental literacy, per capita family income, trust in parents, frequency of dinners with family members, and larger family size to those adolescents without depressive symptoms [3].

Two of the studies have shown that depression on middle school student are related to the relationship with parents and two of the studies shown the relationship with the pressure on study. One study shown that the children that get abuse when they are young tend to have higher risks of mental health when they are grown. Especially in a country like China where many children get physical punishment and generations live together and where there is tremendous academic pressure on adolescents. It is very practical and meaningful to examine the influence of the relationship with parents and the pressure on study to adolescents' mental health since such studies will become valuable for numerous families.

2. The Relationship between Physical Activity and Depression in Middle School Students

Marianne et al did a survey to examine the effects of physical activity relationships on adolescents. She collected a sample consisted of 924 children with an age of 13 and follow them for ten years. The questionnaire of leisure time physical activity was measured by the number of times per week each participant did activities that cause them to sweat or lose their breath. So this questionnaire can orient the answers to the activities that are moderate to vigorous. The seven-item inventory developed by Alsaker and Olweus is used to measure the depression level, the answers are settled by six-point Likert scale. If subjects answered only four to six of the questions, the unanswered questions were estimated using their mean scores.

Marianne et.al. used latent curve modeling to analysis the data, and in the correlation matrix, it shows that there are weak but generally statistically significant negative correlation between leisure-time physical activity and depressed mood [4].

Another conclusion from Annette and Eivind confirmed that in Norwegian adolescents, both sports club and non-organized activities was associated with lower odds of depressive symptoms and among youths in Norway, any level of organized activities are effective to mental health [5].

The study from Xu claimed that social anxiety as a mediator of the transition from emotional abuse to depression among Chinese secondary school students, and physical activity plays an important moderating role in the transition from social anxiety to emotional abuse to depression. The association between emotional abuse and depression and the association between emotional abuse and social anxiety are both stronger for low physical activity than for sufficient physical activity [6]. Other studies also examined the relation between physical activity and depression [7-9].

3. Method

3.1. Subject

This paper examines the relationship between leisure time and depression in middle school students. The subject group focus on the middle school students from 12 to 18. In order to save time and cost,

this study collects data mostly by means of network questionnaire. Moreover, twelve valid questionnaires are collected in the author's school's psychology class with this course's teacher's permission. A total of 124 questionnaires were collected, and 111 valid questionnaires were collected after excluding those with inconsistent and not serious answers, with an effective recovery rate of 89.5%, which met the requirements of statistical analysis in this study.

3.2. Measurement Methods

The method of questionnaire survey is adopted, and the questionnaire contains two parts, namely, the statistical question of leisure duration and the measurement scale of depression (BDI-II) [10].

Statistical questions of leisure time includes the questions that were adopted from Susan's questionnaire defined as leisure time more than 80% [11]. And because of the change of time and due to the change of the main work the study population, this questionnaire has added and modified some questions based on this. The questionnaires posted online having the questions with same answer options. The answers are ranged in 0.5 hours and are from 0 hours up to 6 hours and with an open-ended answers left for more than six hours for these questions. The questionnaires posted on psychology class are having all open-ended answers. In this study, responses with a single digit are counted as an interval from that digit up to that digit plus 0.5, while responses with an interval are counted in the interval that can contain that response if the interval is less than 0.5 hours, in the interval that can contain that response if the interval is equal to 0.5 hours, and then as a single digit response if the interval is greater than 0.5 hours. After converting all the responses to intervals of 0.5 hours, all the responses were modified to the midian of their intervals for statistical purposes.

The measurement scale of depression(BDI-II) was developed by Beck, Steer and Brown in 1996. The scale consists of twenty one questions. Each question has four answers and the answers are given a score from 0-3 from mild to severe. The higher the total score, the higher the symptoms of depression. Considering that the subjects are mainly Chinese, the Chinese version of the Beck depression inventory is used. Cronbach's α coefficient of the scale is 0.906. Therefore, the reliability of this scale met the requirement.

In the analysis part, the questions are abbrevate as q1 to q18, the questions of the leisure time statistics on working days is q1 to q9, the questions of the leisure time statistics on rest days is q10 to q18.

3.3. Analytical Methods

Descriptive statistical analysis, reliability analysis, correlation analysis and regression analysis were used to analyze the data in this study. The gathered sample data, consisting of 111 observations, were processed and subjected to analysis utilizing the SPSS 27.0 version software.

4. Results

4.1. Descriptive Results

Results of descriptive statistical analysis are shown in Table 1.

Table 1: Results of Descriptive Statistics.

	N	mean	Standard deviation
Total score	104	14.75	10.971
q1	104	.5865	.95897
q2	104	1.0000	1.29037

Table 1: (continued).

q3	104	.9519	.95154
q4	104	1.5817	1.32124
q5	104	1.0865	1.12008
q6	104	.7933	.67590
q7	104	2.2019	1.73977
q8	104	1.5240	1.41229
q9	104	.5817	.80233
q10	104	.6250	.80276
q11	104	.9087	.90378
q12	104	1.1731	1.15071
q13	104	2.4279	1.76387
q14	104	1.8606	1.61900
q15	104	.9615	1.11628
q16	104	3.5385	2.19299
q17	104	1.9471	1.76043
q18	104	1.0337	1.03989
Number of active cases	104		

According to Table 1, from the perspective of average leisure time on work days and weekends, the average leisure time on work days are 10.3 hours and the average leisure time on weekends are 14.5 hours. Rest days' average leisure time is 40.7% over working days'. The rest days' average leisure time is remarkably higher than working days'.

4.2. Correlation Analysis

The correlation analysis was conducted for the leisure duration and the level of depression(The total score level) (See Table 2-5).

Table 2: Pearson Results of the correlation analysis between questions 1 to 5 and questions 1 to 19.

	Total score	q1	q2	q3	q4	q5
Total score	1	-.189	-.074	-.032	.131	.170
q1	-.189	1	.188	.119	.264**	.280**
q2	-.074	.188	1	.476**	.090	-.015
q3	-.032	.119	.476**	1	.325**	.163
q4	.131	.264**	.090	.325**	1	.440**
q5	.170	.280**	-.015	.163	.440**	1
q6	-.080	.030	.065	.628**	.174	.211*
q7	.122	.254**	.019	.214*	.587**	.372**
q8	.113	.234*	-.017	.229*	.478**	.332**
q9	.128	.260**	.121	.659**	.429**	.261**
q10	-.212*	.528**	-.014	.014	.234*	.242*
q11	-.055	-.040	.623**	.267**	.079	.091
q12	.055	.079	.155	.644**	.247*	.128
q13	.135	.168	-.055	-.017	.630**	.268**
q14	.141	.296**	-.010	.104	.412**	.638**

Table 2: (continued).

q15	-.038	.094	.207*	.492**	.066	.090
q16	.113	.049	-.141	-.013	.280**	.221*
q17	.177	-.050	.070	.108	.259**	.101
q18	.136	.108	.187	.449**	.159	.026

* p<0.05 **p<0.01

Table 3: Pearson Results of the correlation analysis between questions 6 to 11 and questions 1 to 18.

	q6	q7	q8	q9	q10	q11
Total score	-.080	.122	.113	.128	-.212*	-.055
q1	.030	.254**	.234*	.260**	.528**	-.040
q2	.065	.019	-.017	.121	-.014	.623**
q3	.628**	.214*	.229*	.659**	.014	.267**
q4	.174	.587**	.478**	.429**	.234*	.079
q5	.211*	.372**	.332**	.261**	.242*	.091
q6	1	.163	.206*	.488**	.023	.112
q7	.163	1	.413**	.323**	.105	.150
q8	.206*	.413**	1	.332**	.285**	-.017
q9	.488**	.323**	.332**	1	.140	.020
q10	.023	.105	.285**	.140	1	-.043
q11	.112	.150	-.017	.020	-.043	1
q12	.476**	.157	.288**	.564**	.060	.049
q13	.042	.395**	.350**	.099	.102	-.120
q14	.264**	.281**	.376**	.257**	.061	.014
q15	.483**	.058	.155	.314**	.038	.154
q16	.034	.611**	.245*	.118	.015	-.047
q17	.164	.120	.660**	.170	-.044	.032
q18	.165	.154	.148	.482**	.014	.037

* p<0.05 **p<0.01

Table 4: Pearson Results of the correlation analysis between questions 12 to 17 and questions 1 to 18.

	q12	q13	q14	q15	q16	q17
Total score	.055	.135	.141	-.038	.113	.177
q1	.079	.168	.296**	.094	.049	-.050
q2	.155	-.055	-.010	.207*	-.141	.070
q3	.644**	-.017	.104	.492**	-.013	.108
q4	.247*	.630**	.412**	.066	.280**	.259**
q5	.128	.268**	.638**	.090	.221*	.101
q6	.476**	.042	.264**	.483**	.034	.164
q7	.157	.395**	.281**	.058	.611**	.120
q8	.288**	.350**	.376**	.155	.245*	.660**
q9	.564**	.099	.257**	.314**	.118	.170
q10	.060	.102	.061	.038	.015	-.044
q11	.049	-.120	.014	.154	-.047	.032
q12	1	.113	.106	.706**	.094	.198*

Table 4: (continued).

q13	.113	1	.476**	-.028	.310**	.373**
q14	.106	.476**	1	.191	.214*	.350**
q15	.706**	-.028	.191	1	-.020	.124
q16	.094	.310**	.214*	-.020	1	.210*
q17	.198*	.373**	.350**	.124	.210*	1
q18	.558**	.036	.084	.412**	.288**	.177

* p<0.05 **p<0.01

Table 5: Pearson results of the correlation analysis.

	q18
Total score	.136
q1	.108
q2	.187
q3	.449**
q4	.159
q5	.026
q6	.165
q7	.154
q8	.148
q9	.482**
q10	.014
q11	.037
q12	.558**
q13	.036
q14	.084
q15	.412**
q16	.288**
q17	.177
q18	1

* p<0.05 **p<0.01

The correlation between the time used on watching television on weekends and depression level(the total score) is -.0212, which indicates that watching television and depression level has significant negative correlations.

4.3. Linear Regression Analysis

The linear regression analysis was conducted for the leisure duration measurements (See Table 6).

Table 6: Results of the linear regression analysis.

Model	Unstandardised coefficient		Standardised coefficient	t	Significance
	B	Standard error	Beta		
1	Constant	14.935	2.918	5.119	.000
	q1	-2.946	1.552	-.257	.061

Table 6: (continued).

q2	.677	1.407	.080	.481	.632
q3	-2.694	2.457	-.234	-1.096	.276
q4	.045	1.398	.005	.033	.974
q5	2.500	1.395	.255	1.793	.077
q6	-2.415	2.462	-.149	-.981	.329
q7	.780	1.064	.124	.734	.465
q8	.220	1.331	.028	.165	.869
q9	3.288	2.191	.240	1.501	.137
q10	-2.607	1.741	-.191	-1.498	.138
q11	-1.175	1.673	-.097	-.703	.484
q12	.248	1.758	.026	.141	.888
q13	.224	.968	.036	.232	.817
q14	-.095	1.103	-.014	-.086	.932
q15	-.195	1.542	-.020	-.127	.899
q16	-.512	.707	-.102	-.725	.471
q17	.531	1.004	.085	.529	.598
q18	1.545	1.449	.146	1.066	.290

Table 7: Result of model fits.

Model	R	R ²	Adjusted R-square	Errors in standard estimates
1	.479	.230	.067	10.599

The R-square value of the model is 0.230, which means that leisure time level can explain 23% of the change of depression level (see Table 7).

The regression coefficient of q1, q5, q9 and q10 are the most significant four factors, indicating that the time that watched television on whatever working days or weekends and the time to hang out during the work days have positive correlation to the depression level. The time that used on video games on working days have negative correlation to the depression level.

5. Conclusion

This paper used correlation and linear regression analysis to study the relationship between leisure time and depression on middle school students. The amount of time used on video games during working days, on conversations during rest days have a relatively remarkably positive correlation while the amount of time spent on televisions on both working days and rest days have significantly negative correlation with depression level on middle school students. An increase in leisure time on rest days generally increases depression levels more than on weekdays. This paper can better analyze and help research on how to better promote the mental health of adolescents based on the relationship between the time spent in different leisure modes and the level of depression among middle school students.

Based on the results of the study, the following recommendations were made on how to better improve the depression level of secondary school students: (1): Secondary school students should reduce the amount of time spent on video games on working days, reduce the amount of time spent on chatting and increase the amount of time spent on watching television on their days off. (2): It is

recommended that secondary school students should reduce leisure time on rest days and have more physical activities.

This study focuses on middle school students, but not the whole group of adolescents, and there are still more factors like the relationship with parents and the academic pressure that can affect adolescents' mental health, which need to be studied in the future.

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