

Structural Relationship between Depression and Happiness in Korean High School Students

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Abstract

Background/Objectives: The purpose of this study was to investigate the multi-mediated effects of self-esteem, growth mindset, school life adjustment, and grades in 456 high school students in Korea in relation to depression and happiness.

Methods/Statistical Analysis: For the analysis, SPSS WIn.21.0 and SPSS MACRO program were used and reliability analysis, descriptive statistics, correlation analysis, average comparison analysis, path analysis, bias correction bootstrap were performed.

Findings: The results of the study are as follows. First, depression was negatively correlated with happiness, self-esteem, growth mindset, school life adjustment, and grades. Happiness was positively correlated with all variables except depression. Second, in the macro PROCESS analysis, depression negatively affects happiness, self-esteem, growth mindset, school life adjustment and grades, and self-esteem and school life adjustment have a positive effect on happiness. However, grades had a negative impact on happiness.

Third, as a result of bootstrapping, self-esteem, school life adjustment and grades were found to be mediating in the relationship between depression and happiness.

Improvements/Applications: This result will be used to reduce depression in adolescents by using several variables.

Key Words : Depression, Happiness, Growth Mindset, Self-Esteem, Multiple Mediation Effect, SPSS Macro PROCESS

1 Introduction

Depression means a negative state of mind that affects a wide range of things, from perception, judgment, cognition, thinking and attitudes to interpersonal relationships ¹. In addition, depression is accompanied by cognitive symptoms such as feelings of sadness, loneliness and emptiness, emotional symptoms that lose interest and joy, self-condemnation, guilty consciousness, lack of worth. It is also a state of physiological symptoms such as insomnia, loss of appetite, weight loss, and fatigue ². The World Health Organization (WHO) says that the worst disease of humanity in the 21st century is depression and four out of every 100 people in the world are depressed by 2015, and the elderly, women, and adolescents who are social weak are particularly vulnerable to depression. In particular, Korean adolescents are under stress due to the pressure of entrance examination competition and academic pressure resulting from strict educational reality ³, which leads to depression. The reason why we should be interested in the depression of adolescents is that depression is related to suicidal behavior of adolescents ⁴, and it causes decrease in happiness. Therefore, it is necessary to grasp the process of depression to be able to go through happiness, not to use depression only as a result variable.

A serious problem such as depression in Korean youth is happiness level. According to the report of the International Comparison Study on Children and Youth in Korea ⁵, the happiness index of Korean children and youths is the lowest among OECD member countries from 2009 to 2016 except for 2015 every year. It is natural that admission-oriented educational environment, exces-

sive academic enthusiasm, and stress from here stimulate negative psychology such as depression, anxiety, and suicidal tendency of adolescents and negative evaluation about their life. Happiness is defined as 'a happy state in which there is ample joy and satisfaction in life'. Happiness has been studied in terms of subjective well-being, life satisfaction, welfare, and well-being. However, in general happiness is defined as a state of peaceful well-being, in which human beings express positive emotions about their lives ^{6,7}.

The happiness of adolescence is very important because it affects the healthy physical and mental development as well as the life of adulthood ⁸. In particular, there is a meta-analysis ⁹ that self-esteem, school adaptation, depression and stress coping are influenced by the psychological well-being of adolescents. Among them self-esteem is self-respect ¹⁰ and the degree of respect and self-worthiness of oneself ¹¹. The self-esteem of adolescents affects grades and affects individuals' future career maturity ¹². The self-esteem of early adolescents has a negative correlation with depression, a positive correlation with happiness, and a negative correlation between depression and happiness ¹³. Therefore, it is necessary to understand the relationship between these variables.

On the other hand, there is a growth mindset as another variable to consider in order to understand depression and happiness more deeply. Growth mindset is a belief that their talents can be developed with effort. A person who has given 35% weight to natural talent and 65% weight to his / her effort on the success factors of a task is considered as a person with a strong growth mindset. Conversely, if a person gives a 65% weight to his natural talent and a 35% weight to his effort, he can be seen as a person with a fixed mindset ¹⁴. In addition, a person with a fixed mindset tries to focus on areas that he or she can do well because of his failure, and a person with a growth mindset enjoys challenging, constantly striving without being conscious of others, and not afraid of failure ¹⁵. Students who had increased growth mindset by mindset training increased their academic value and academic satisfaction, and found that growth mindset had a statistically significant effect on academic value and academic satisfaction ¹⁶. And there is a positive correlation between mother's growth mindset and happiness ¹⁷, and growth mindset has been studied as a predictor of success or achievement. However, the study on growth mindset is still in

its infancy, there is a lack of research into the relationship between depression and happiness of adolescents.

In addition to depression, self-esteem, and growth mindset, school life adjustment and school grades can be associated with the happiness of adolescents. Adjustment is generally the result of psychological processes and coping that manage or cope with the various demands and pressures that are imposed on human daily life¹⁸. School adjustment refers to internal and external behaviors of students who adapt to school environment or change and manipulate the environment in order to reasonably satisfy academic, social, and positive needs of school life¹⁹. The grades of adolescents have merely the meaning of academic achievement and the significance of comparative status²⁰. In the previous studies, there was a positive correlation between school life adjustment and happiness²¹, and positive relationship between adolescent academic achievement and subjective happiness²². In addition, the study found that the happiness of adolescents with high academic achievement levels was relatively higher than those of adolescents with low academic achievement levels²², and that the subjective happiness of adolescents with high academic grades was relatively higher than the subjective happiness of adolescents with low academic grades^{23,24,25}. Therefore, school life adjustment and grades are predicted to affect adolescent's happiness.

Based on these previous studies, depression affects happiness and predicts multiple mediation of self-esteem, growth mindset, school life adjustment, and grades in the relationship between depression and happiness.

There are many studies on the relationship between happiness and depression, but studies on the relative size of the mediators and the mediating variables are very scarce.

Thus, this study was conducted to determine whether the relationship between the depression and happiness of adolescents is mediated by self-esteem, growth mindset, school life adjustment, grades. To achieve this goal, the following research questions were set. First, what is the correlation between depression, happiness, self-esteem, growth mindset, school life adjustment, and grades? Second, what is the path coefficient between each variable? Third, do self-esteem, growth mindset, school life adjustment, and grades mediate in the relationship of happiness and depression?

2 Methods

2.1 Research Model

The main analytical method of this study is the multiple mediation effect analysis of model 4 of the MACRO process. The conceptual study model is shown in [Figure 1].

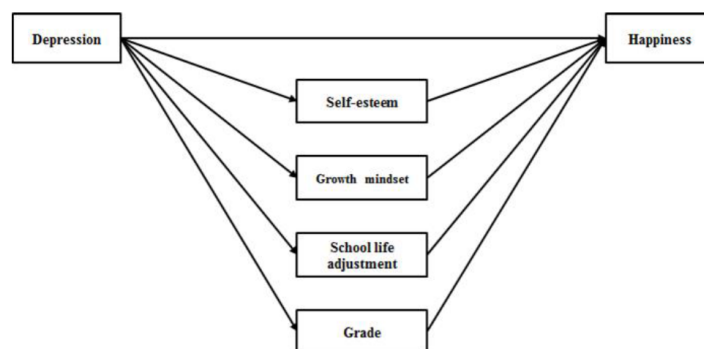


Figure 1. Research Model

2.2 Survey subjects and methods of data collection

The subjects were selected by the convenience sampling method. The questionnaire was distributed to 480 high school students in D city, Chungnam province, from April 15 to May 15, 2016, and the questionnaire was collected. Except for the unfair questionnaire, 456 data were used in the actual analysis.

The subjects were 37.8% of male students and 62.2% of female students. The most common type of family composition was with 74.2% of both parents, 11.0% with single parent, 9.5% with grandparents and parents, 3.0% with others, and 2.3% with grandparents. Their grades were 52.5% in middle, 31.7% in poor, and 15.8% in good grades.

2.3 Research tools

For research tools, depression, happiness, self-esteem, growth mindset and school life adjustment scales were used.

2.3.1 Depression

This study used the depression scale developed by Choi²⁶ as a subscale of SCL-90. The scale consists of 10 items, which were measured with a 5-point Likert scale ranging from 'not at all' (1 point) to 'highly agree' (5 points). The higher the score, the higher the depression level. The overall reliability Cronbach's α in this study was very high at .914.

2.3.2 Happiness

This study used the shortened happiness scale developed by Seo et al.²⁷ to measure happiness. The three items that measure the satisfaction of the individual aspects (personal accomplishment, personality, health, etc.), relational aspects (such as relationships with others), and collective aspects (my group-workplace, community, etc.) were measured with a 7-point Likert scale ranging from 'not at all' (1 point) to 'highly agree' (7 points). In addition, the six questions asking about feelings during the past month consisted of the Likert 7 point scale ranging from 'not at all' (1 point) to 'highly agree' (7 points). The higher the score, the higher the level of happiness. The reliability of happiness in this study was Cronbach's $\alpha = .877$.

2.3.3 Self-esteem

This study used the Self-Esteem Scale (RSES) developed by Rosenberg¹¹. This scale consisted of five positive and five negative questions for the adolescents and a total of 10 questions. These items were measured with a 5-point Likert scale ranging from 'not at all' (1 point) to 'highly agree' (5 points). The higher the score, the higher self-esteem. The reliability of self-esteem in this study was Cronbach's $\alpha = .830$.

2.3.4 Growth mindset

This study used growth mindset scale (RSES) developed by Dweck²⁸ and translated by Lee et al.²⁹ The scale consisted of four items measuring beliefs about change in intelligence and four items measuring beliefs about personality change. These items were measured with a 5-point Likert scale ranging from 'not at all' (1 point) to 'highly agree' (5 points). The higher the score, the higher the growth mindset. The reliability of the growth mindset in this study was Cronbach's $\alpha = .830$.

2.3.5 School life adjustment

This study used the scale produced by Kim³⁰ based on the school life adjustment scale of Lee³¹ and Cho³². This scale consisted of 4 sub-domains of teacher relations, peer relations, school classes, and school rules, total 20 items. These items were measured with a 5-point Likert scale ranging from 'not at all' (1 point) to 'highly agree' (5 points). The higher the score, the better the adjustment to school life, and the overall confidence in Cronbach's α in this study was .895.

2.4 Data Analysis

In this study, SPSS Win. 21.0 and SPSS macro PROCESS (<http://www.afhayes.com>) proposed by Hayes³³ were used. SPSS Win. 21.0 were utilized for reliability analysis, descriptive statistics, and correlation analysis. The SPSS macro protocol was used to analyze the multiple mediation effect, which was verified by applying bootstrapping.

3 Results and Discussion

3.1 Correlation and Descriptive Statistics

[Table 1] shows the results of Pearson's correlation analysis. Depression was negatively correlated with happiness, self-esteem, growth mindset, school life adjustment, and grades, especially with a high

level of negative correlation with happiness. Happiness had a significant positive correlation with self-esteem, growth mindset, school life adjustment, and grades.

These results are consistent with the studies that the self-esteem of early adolescents has a negative correlation with depression, a positive correlation with happiness, and a negative correlation between depression and happiness³⁴. This is supported by the study that the mother's growth mindset and happiness are positively correlated³⁵. The results of this study also in the same context that there is a positive correlation between the happiness of the child and the school life adjustment²¹, and that the academic achievement and subjective happiness of the adolescent have a positive relationship²².

The mean of depression and grades was below the middle point (3 points), and the average of happiness, self-esteem, growth mindset, and school life adjustment was above the middle point (3 points).

Table 1: Correlation and Descriptive Statistics

	Depression	Happiness	Self-esteem	Growth mindset	school life adjustment	grades	M	SD
Depression	1						2.4952	.82552
Happiness	-.626**	1					4.5666	1.09600
Self-esteem	-.598**	.577**	1				3.4576	.61543
Growth mindset	-.232**	.255**	.341**	1			3.4703	.69671
school life adjustment	-.257**	.438**	.570**	.333**	1		3.5437	.52235
grades	-.161**	.103*	.313**	.175**	.342**	1	1.8403	.67105

* $p < .05$, ** $p < .01$

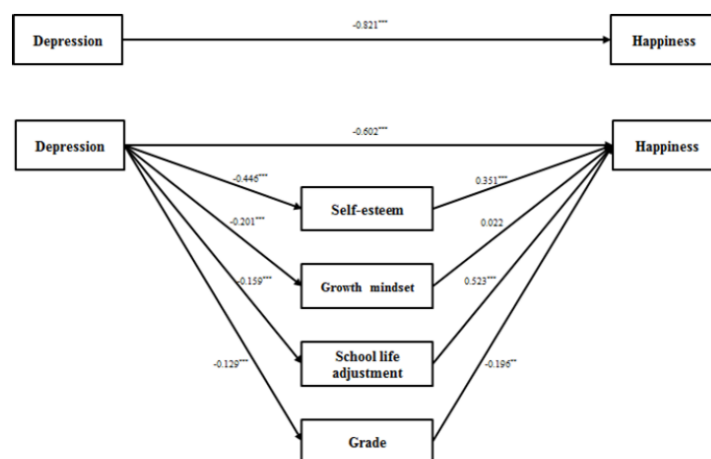
3.2 Effects of path

In order to grasp the coefficients for each path, we used the SPSS macro PROCESS and analyzed by Hayes model 4, and the results are shown in [Figure 2].

Depression had significantly negative effect on happiness ($\beta = -.602$, $p < .001$), self-esteem ($\beta = -.446$, $p < .001$), growth mindset ($\beta = -.201$, $p < .001$), school life adjustment ($\beta = -.159$, $p < .001$) and

grades ($\beta = -.129$, $p < .001$). However, self-esteem had significantly positive effect on happiness ($\beta = .351$, $p < .001$). Growth mindset did not have a significant effect on happiness. In addition, school life adjustment had a statistically significant effect on happiness ($\beta = .523$, $p < .001$), while grades had a negative effect on happiness ($\beta = -.196$, $p < .01$).

This is in the same context as the study that children's school life adjustment affects happiness²¹ and the study that school grades affects happiness²⁰. It might be thought that this is because the grades of the adolescents perceived by the adolescents in the educational reality centered on the entrance examination are not merely the meaning of their achievements and results, but the meaning of relative status comparable to others²⁰. However, the relationship between grades and happiness did not appear in the West or appeared only in the upper grades, but the relationship between grades, quality of life, and happiness in East Asian countries including Korea was clearly reported^{22,34}. Therefore it is necessary to pay attention to interpretation, because it is a study of Korean youth. This results were also supported by the studies that the self-esteem of early adolescents has a statistically significant effect on happiness¹³ and school grades have a negative effect on subjective happiness³⁵.



** $p < .01$, *** $p < .001$

Figure 2. Size of effect for each path

In order for self-esteem and school life adjustment and grades to

be established as mediators, both the influence of the independent variable on the dependent variable and the effect of the independent variable on the mediators should be statistically significant and the impact of these variables on dependent variables should be reduced^{36,37}. When depression directly affects happiness, the effect size ($\beta = -.821$, $p < .001$) reduced rather than when self-esteem, school life adjustment, and grades were added to the effect of happiness ($\beta = -.602$, $p < .001$). Therefore self-esteem, school life adjustment and grades in the relationship between depression and happiness mediated.

Because the existing studies mostly use depression as the outcome variable, mediating effects of self-esteem, school life adjustment, and grades in the relationship between depression and happiness can not be compared with other studies. However, a study in which self-esteem mediated the relationship between stress and happiness³⁸, is consistent with these results.

3.3 Verification of Multiple Mediation Effect

[Table 2] shows the results of bootstrapping using SPSS macro PROCESS to verify the multiple mediating effects of self-esteem, school life adjustment and grades in relation to depression and Happiness.

The SPSS macro developed by Preacher & Hayes³⁹ is useful for verifying multiple or dual-mediated models by suggesting an indirect path between independent and dependent variables and elaborating the analysis of mediating effects³⁹.

In this study, 5,000 bootstrapping tests were performed to determine whether there is a multiple mediation effect of self-esteem, school life adjustment and grades in relation to depression and Happiness, and the confidence interval was set to 95%.

As a result, the total mediation effect size was -0.219 ($-0.3082 \sim -0.1397$), and there was no 0 in the 95.0% confidence interval. Therefore, mediated effects were significant. However, M2 ($X \rightarrow M2 \rightarrow Y$) is $-.0045$ ($-.0295 \sim .0174$), and it is judged that there is no mediation effect because 0 exists in the confidence interval of 95%. In addition, M3 ($X \rightarrow M3 \rightarrow Y$) was $-.0833$ ($-.1370 \sim -.0454$) and M4 ($X \rightarrow M4 \rightarrow Y$) was 0.0252 ($.0087 \sim .0542$), and there was no 0 in the 95.0% confidence interval. Therefore, mediated effects

were found to be significant in both M3 and M4.

Table 2: Correlation coefficient of main variables

Classification			β	Boot SE	BootLLCI	BootULCI
Total effect			-.8214	.0529	-.9253	-.7174
Direct effect			-.6023	.0673	-.7345	-.4702
Total mediation effect			-.2190	.0430	-.3082	-.1397
Depression(X) →	Self-esteem (M1) →	Happiness (Y)	-.1564	.0426	-.2459	-.0800
Depression(X) →	Growth mindset (M2) →	Happiness (Y)	-.0045	.0115	-.0295	.0174
Depression(X) →	School life adjustment (M3) →	Happiness (Y)	-.0833	.0229	-.1370	-.0454
Depression(X) →	Grade (M4) →	Happiness (Y)	.0252	.0112	.0087	.0542

Boot LLCI = boot The lower bound of the indirect effect within the 95% confidence interval

As a result of analyzing the differences in the magnitude of the mutual mediating effect between self-esteem, school life adjustment and grades in the relationship between depression and happiness, grades had the highest mediating effect, followed by school life adjustment, and self-esteem, and all were statistically significant. This showed that self-esteem, school life adjustment, grades are multiple mediated in the relationship between depression and happiness. Thus, happiness is not only affected by depression but also is influenced by self-esteem, school life adjustment, and grades.

Table 3 : Specific Mediation Effect Size

Specific Mediation Effect Size			β	Boot SE	BootLLCI	BootULCI
self-esteem	-	Growth mindset	-.1519	.0442	-.2467	-.0731
Self-esteem	-	School life adjustment	-.0731	.0539	-.1828	.0311
Self-esteem	-	Grade	-.1816	.0436	-.2756	-.1045
Growth mindset	-	School life adjustment	.0788	.0264	.0325	.1366
Growth mindset	-	Grade	-.0298	.0163	-.0674	-.0026
school life adjustment	-	grade	-.1086	.0285	-.1750	-.0608

Boot LLCI = boot The lower bound of the indirect effect within the 95% confidence interval

4 Conclusion

This study was conducted to investigate the multiple mediating effects of self-esteem, growth mindset, school life adjustment, and

grades on the relationship between depression and happiness in Korean high school students.

First, depression was negatively correlated with happiness, self-esteem, growth mindset, school life adjustment and grades, and happiness was positively correlated with all variables except depression.

Second, in macro PROCESS analysis, depression affected negatively on happiness, self-esteem, growth mindset, school life adjustment and grades, and self-esteem and school life adjustment had a statistically significant effect. Grades also had a negative impact on happiness.

Third, as a result of bootstrap, self-esteem, school life adjustment and grades were found to be multiple mediated in the relationship between depression and happiness. The magnitude of the mediator effect was the largest mediating effect of grades, followed by school life adjustment, and self-esteem. High school students' depression directly affects happiness, but it also affects happiness through multiple mediated path of self-esteem, school life adjustment, and grades.

This study identified significant mediators in the relationship between depression and happiness as a cause of depression. Suggestions for follow-up research are as follows. First, in this study, we did not show the mediating effect of growth mindset in the relationship between depression and happiness, but studies should be followed to determine whether growth mindset plays a role other than mediating role. Second, it should concentrate on finding moderating and mediating variables that can go to happiness even if depression is high, even though we know the fact that depression is universally experienced emotion of the world.

This study has significant implications for Korean adolescents in identifying effective multi-mediated effects that can enhance happiness in an entrance-oriented educational setting.

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