

Mediating Effect of Hope in the Effects of Academic Stress on Depression in Adolescents

¹Ok-Geun Choi

²Collins T. Asangbeng

³Chang Seek Lee

^{1,2}Department of Lifelong Education, Hanseo University

³Department of Health, Counseling and Welfare, Hanseo University

Corresponding Author: Chang Seek Lee

ABSTRACT: This study was to prove the mediating effect of hope in the relationship between academic stress and depression in adolescents. To this end, a survey was conducted with 500 adolescents in 10 cities across the country. Data analysis is performed using SPSS Win.25.0 and SPSS PROCESS macro 4.0. Frequency analysis, reliability analysis, and correlation analysis, and mediating effect analysis were performed. For verification of indirect effect, bootstrapping was used. The results of the study were as follows. First, adolescents' academic stress showed a positive correlation with depression. Agency thinking and pathways thinking of hope had a significantly negative correlation with depression and academic stress. Second, agency thinking had a mediating effect in the link between academic stress and depression. Third, pathways thinking had a mediating effect in the link between academic stress and depression. This study suggested a way to reduce depression of adolescents with high academic stress by using agency thinking and pathways thinking.

KEYWORDS: Depression, Academic stress, Hope, Agency thinking, Pathways thinking, Mediating effect

Date of Submission: 02-04-2022

Date of Acceptance: 16-04-2022

I. INTRODUCTION

Depressive symptoms refer to maladaptive symptoms that significantly lower an individual's function due to physical and cognitive symptoms accompanied by sadness, emptiness, and irritability. Depression is known to be a major factor that makes it difficult to adapt to reality by lowering an individual's ability and motivation (Kwon, 2013). In modern times, depression among adolescents is very serious. According to the data of the National Statistical Office from 2005 to 2020, the number of adolescents who experienced depression (1st grade in middle school to 3rd grade in high school) was 20.3% in the first year of middle school to 29.0% in the third year of high school (Korea Statistics Office, 2021).

The cause of this is that Korean adolescents develop chronic stress as the burden of learning is prolonged, and there are prior studies that this chronic stress provides the basis for depression. In other words, continuous and excessive academic stress causes learning difficulties, and poor learning affects self-concept, causes delinquency due to frustration, derailment, and is also related to various psychotic symptoms such as depression, anxiety, and obsessive compulsive disorder (Im & Chae, 2005). In addition, a study on middle school students also revealed the pathway that academic stress affects suicidal ideation through depression (Lee, Choi & Gong, 2011). Therefore, research is needed to prevent depression caused by academic stress.

On the other hand, hope is one of the variables that can alleviate depression caused by academic stress in adolescents. Hope has been identified as a mediating variable in a number of studies (Hwang & Lee, 2020; Park & Lee, 2013). However, few studies have analyzed the mediating effect of hope on the effects of academic stress on depression by dividing it into agency thinking and pathways thinking which are subgroup of hope.

Therefore, this study aimed to prove the mediating effects of agency thinking and pathways thinking in the effects of adolescents' academic stress on depression.

In order to achieve the purpose of this study, the research questions are set: First, what is the correlation between academic stress, hope (agency and pathways thinking), and depression? Second, do agency thinking and pathways thinking mediate in the relationship between academic stress and depression?

II. THEORETICAL BACKGROUND

Academic stress and depression

Academic stress refers to stress caused by academic performance and academic-related factors (Kang & Lee, 2013). Academic stress is an uncomfortable psychological state, such as mental burden, tension, anxiety, fear, and nervousness experienced when studying is too difficult, unwilling or cumbersome due to academic performance and academic factors (Oh, & Chun, 1994).

As such, academic stress lowers academic motivation, academic achievement, and self-confidence, causes negative emotional difficulties (Lee & Yang, 2011). It has been found to be a variable that negatively affects academic achievement as well as psychological problems such as learned helplessness and depression and anxiety (Ang & Huan, 2006).

Adolescents are experiencing frustration and inferiority due to academic stress such as declining grades, and experiencing physical symptoms such as headache and indigestion due to test anxiety (Lee & Kim, 2000). Also, in a previous study targeting high school students, the higher the academic stress, the lower the self-esteem, and the depressed and anxious psychological state continued. (Park, 2006). As the experience of failure in school continues, they feel a sense of uncontrollability and helplessness that they cannot change their situation (Kim & Kang, 2002). Through previous studies, it can be predicted that the stress caused by schoolwork in adolescents will increase the problem behaviors related to depression.

Depression is explained on a single continuum from the psychological mind expressed in everyday life such as sadness and loneliness to depression in severe psychotic states such as the desire to die (Kim, 2009). Depression in adolescents can lead to suicide and also cause depression in adulthood (Lee & Huh, 2016).

It was said that the higher the academic stress of high school students, the higher the degree of depression (Shin, 2016; Kim & Park, 2013). It was found that academic stress increased rapidly as the grade level increased, which in turn led to a faster increase in depression (Kim, 2014).

Meanwhile, the effects of sub-factors of academic stress on depression differed. A study by Yoon and Chae (2016) found that career, class, and test stress had an effect on depression. In the study of Park and Kim (2008), it was found that among the sub-factors of academic stress, career stress had the greatest effect on depression. On the other hand, Kim et al. (2013) said that only grades and study stress affect depression.

These results directly show that academic stress has a great influence on the depression of high school students, and since the influence on depression is different according to sub-variables of academic stress, it is important to check which factors cause depression in relation to school work.

Mediating role of hope

Hope is defined as goal-oriented thinking, mind and mental energy that seeks continuous effort, various methods, and alternatives to achieve a desired goal (Snyder, 1994; Hwang & Lee, 2020).

In addition, hope is divided into pathway thought and agency thought, which means finding and using various methods to achieve a desired goal. Agency thinking refers to the perception of one's ability to use these methods to achieve goals (Snyder et al., 1998).

Looking at the previous studies on the mediating role of hope, in the relationship between social support and academic achievement of elementary school students, social support had an effect on hope, which had an effect on academic achievement. So, hope partially mediated in the relationship between social support and academic achievement (Cho, 2009). The mediating effect of hope was verified in the relationship between stress and suicidal ideation in adolescents. In other words, it was found that although suicidal ideation increased due to stress among adolescents, agency and pathways thinking offset the relationship between these variables (Kim & Lee, 2014).

By synthesizing the concepts and previous studies related to hope, it is expected that agency and pathways thinking of hope will play a mediating role in the effect of academic stress on depression, and this study was intended to examine the mediating effect of hope for adolescents.

III. RESEARCH METHOD

Research Model

A research model was set up as shown in Figure 1 to verify whether the agency thinking and pathways thinking of hope were mediated in the effect of academic stress on depression.

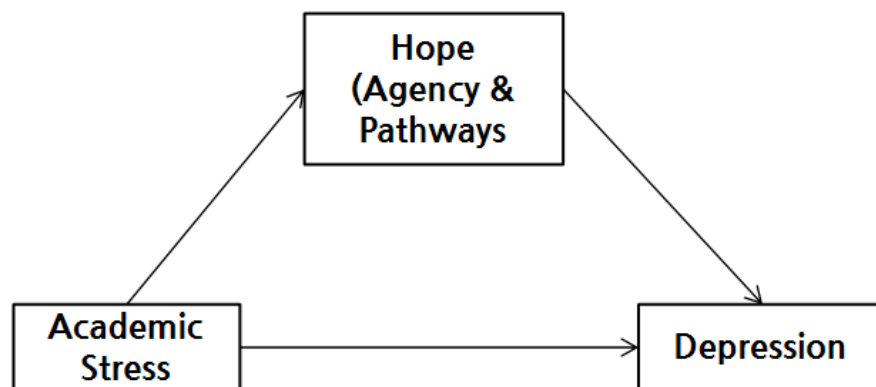


Fig. 1: Research model

Research subjects and data collection methods

The survey was conducted with 500 middle and high school students residing in 10 regions across the country. Participants were sampled using allocation sampling method based on gender, age, and place of residence. The survey was conducted after the researcher visited the school, explained the purpose of the questionnaire, and obtained consent. As a result of the survey, the data of 399 adolescents were finally used for the analysis, except for questionnaires with many non-response.

The gender distribution was 197 male adolescents (49.4%) and 202 female adolescents (50.6%), and the school-level distribution was confirmed as 161 middle school students (40.4%) and 238 high school students (59.6%). Also, their age distribution ranged from 12 to 19 years old, the average age of middle school students was 13.7 years (SD=1.0), and the average age of high school students was 17.0 years (SD=0.8).

Research tools

Academic Stress: In order to measure the academic stress of adolescents, this study used 9 items of study stressors out of 38 items on the academic stress scale of Oh and Cheon (1994). It consists of items such as 'I have to study but I don't like to do it' and 'I have too many homework or assignments', and a higher score means higher academic stress. The reliability of this scale was Cronbach's alpha value of .74.

Hope: To measure hope, the Korean version of the Hope Scale (K-DHS), validated by Choi et al. (2008), which was developed for the hope scale of Snyder et al. (1991). It consists of 4 items of agency thinking that measure whether or not goals are set, such as "I pursue my goals enthusiastically," and 4 items of pathways thinking that measure how to reach goals, such as "I can think of many ways to get out of difficult situations." The measurement is on a 5-point Likert scale, with a higher score indicating a higher level of hope. In this study, the reliability Cronbach α of the agency thinking was .79, and the reliability of the pathways thinking Cronbach α was .831.

Depression: To measure depression in adolescents, a scale adapted from the Zung Depression Inventory (ZDI) by Shin et al. (1990) was used. A total of 10 items consisting of 'I feel lonely' and 'I am sad and depressed' were to be answered with 'yes' and 'no', but in this study, a 5-point Likert scale was modified. Higher scores indicate higher levels of depression. The reliability of the scale was Cronbach's alpha value of .91.

Data analysis

Using SPSS PC+ Win. 25.0, frequency analysis, reliability analysis, and correlation analysis between major variables were performed. Using SPSS PROCESS macro 4.0, mediating effect analysis was performed, and bootstrapping was used to verify the indirect effect (the number of samples was 5,000, and the confidence interval was 95%).

IV. RESEARCH RESULTS

Correlation and descriptive statistics

Pearson's correlation analysis was performed to determine the correlation between academic stress, depression, and hope in adolescents in Table 1.

Depression showed a significant positive correlation with academic stress ($r=.389$, $p<.01$), and a significant negative correlation with agency thinking ($r=-.375$, $p<.01$) and pathways thinking ($r=-.267$, $p<.01$).

Academic stress showed a significant negative correlation with agency thinking ($r=-.248, p<.01$) and pathways thinking ($r=-.204, p<.01$). Hope's agency thinking and pathways thinking showed the highest correlation coefficient ($r=.762, p<.01$).

As a result of descriptive statistics, the mean value of depression was 2.5027, which was slightly below the median of 3, and the academic stress was 3.1396, which was higher than the median.

		Academic stress	Agency	Pathways	Depression
Academic stress		1			
Hope	Agency	-.248**	1		
	Pathways	-.204**	.726**	1	
Depression		.389**	-.375**	-.267**	1
M		3.1396	3.2605	3.3097	2.5027
SD		0.66306	0.71881	0.71687	0.85204

** $p<.01$

Table 1: Correlation and Descriptive Statistics

The mediating effect of hope between academic stress and depression in adolescents

Agency thinking: In order to verify the mediating effect of agency thinking in the relationship between academic stress and depression, model 4 of the PROCESS macro was used, 5,000 bootstrap samples were designated, and the confidence interval was set at 95% for analysis.

As a result of the analysis, academic stress had a significant effect on agency thinking ($-.2692, p<.001$) and agency thinking had a significant effect on depression ($-.3503, p<.001$). Also, the total effect of academic stress on depression was .4968 (.3808 ~ .6129), but the direct effect of academic stress on depression decreased to .4025 (.2887 ~ .5164) when the agency thinking of mediating variable was input. As a result of verifying the indirect effect of academic stress on depression through agency thinking using bootstrapping, there was no 0 between the upper and lower limits of bootstrap (.0943, .0391 ~ .1653), so the indirect effect of agency thinking was verified.

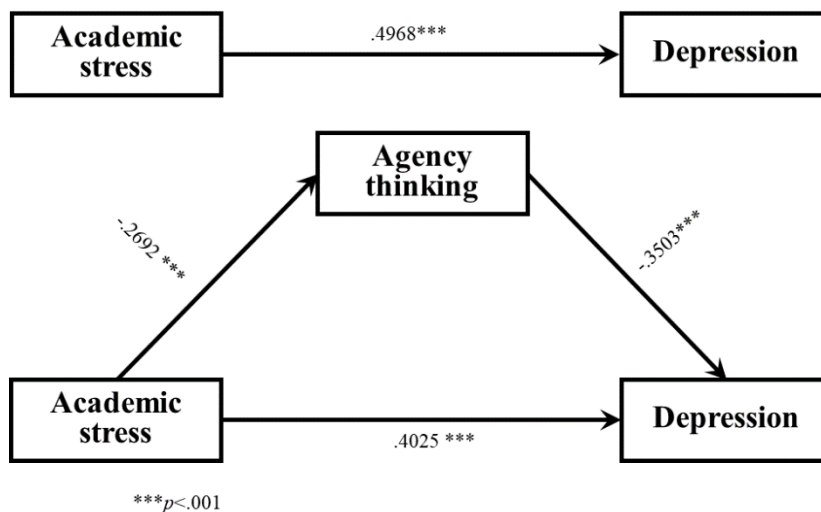


Fig. 2: Mediating effect of agency thinking

Classification		Mediating variable model(DV: agency thinking)			Dependent variable model(DV: depression)		
		Coeffect	SE	t-value	Coeffect	SE	t-value
Constant		4.1059	.1696	24.2042***	2.3754	.2836	8.3752***
I.D.	Academic stress	-.2692	.0529	-5.0896***	.4025	.0579	6.9485***
M.D.	Agency	-	-	-	-.3503	.0534	-6.5608***

	thinking		Confidence	
Classification	Effect	SE	LLCI	ULCI
Total effect	.4968	.0590	.3808	.6129
Direct effect	.4025	.0579	.2887	.5164
Indirect effect	.0943	.0323	.0391	.1653

*** p<.001

Table 2: Mediating effect of agency thinking in the relationship between academic stress and depression

Pathways thinking: In order to verify the mediating effect of pathways thinking in the relationship between academic stress and depression, model 4 of the PROCESS macro was used.

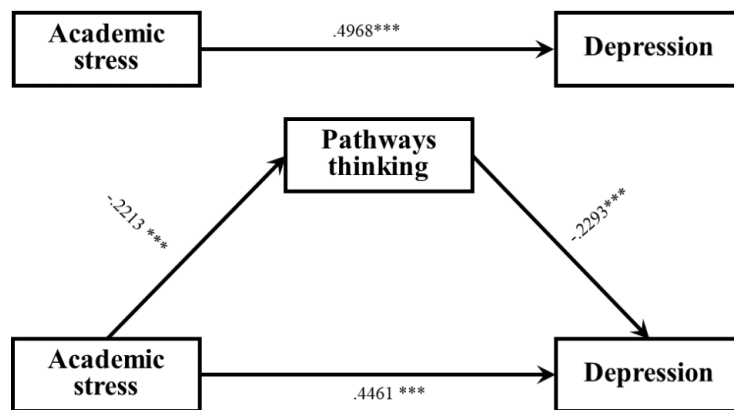
As a result of the analysis, academic stress had a significant effect on pathways thinking (-.2213, p<.001), and pathways thinking had a significant effect on depression (-.2293, p<.001). Also, the total effect of academic stress on depression was .4968 (.3808 ~ .6129), but when the pathways thinking was input, the direct effect of pathways thinking on depression decreased to .4461 (.3300 ~ .5622). As a result of verifying the indirect effect of academic stress on depression through pathways thinking using bootstrapping, there was no 0 between the upper and lower limits of bootstrap (1.0191, .0141 ~ .1061), so the indirect effect of pathways thinking was verified.

Classification		Mediating variable model(DV: pathways thinking)			Dependent variable model(DV: depression)		
		Coeffect	SE	t-value	Coeffect	SE	t-value
Constant		4.0049	.1709	23.4290***	1.8577	.2867	6.4727***
I.D.	Academic stress	-.2213	.0533	-4.1518***	.4461	.0591	7.5512***
M.D.	Pathways thinking	-	-	-	-.2293	.0546	-4.2006***

Classification	Effect	SE	Confidence	
			LLCI	ULCI
Total effect	8.0272	.7425	.3808	.6129
Direct effect	7.0081	.7562	.3300	.5622
Indirect effect	1.0191	.3032	.0141	.1061

*** p<.001

Table 3: Mediating effect of pathways thinking in the relationship between academic stress and depression



***p<.001

Fig. 3: Mediating effect of pathways thinking

V. DISCUSSION AND CONCLUSION

The purpose of this study was to investigate the mediating effect of hope in the effects of adolescent academic stress on depression.

First, as a result of Pearson's correlation analysis, there was a positive correlation between academic stress and depression, and there was a negative correlation between depression and hope in adolescents. This is in line with the research results of Kim and Park (2013), and Jwa (2014) that the higher the academic stress, the higher the level of depression.

Second, in the effect of academic stress on depression, agency thinking and pathways thinking played a mediating role, and therefore, the effect of academic stress on depression decreased. This is consistent with the research results (Kang & Lee, 2013) that hope partially mediated in the relationship between adolescent academic stress and psychological well-being. Furthermore, it was consistent with the research results (Kim & Lee, 2014) that agency thinking and pathways thinking mediated in the relationship between stress and suicidal ideation of adolescents. At this time, agency thinking and pathways thinking contributed to the reduction of depression by offsetting the positive effect of academic stress on depression. Therefore, this study suggested an intervention method for reducing adolescent depression through hope.

The conclusion of the study is as follows.

First, the academic stress of adolescents showed a positive correlation with depression. On the other hand, agency thinking and pathways thinking had a significant negative correlation with depression and academic stress.

Second, agency thinking had a mediating effect on the relationship between academic stress and depression.

Third, pathways thinking had a mediating effect on the relationship between academic stress and depression.

Finally, the limitations of the study and suggestions for follow-up studies are as follows.

First, this study was conducted on adolescents, but in subsequent studies, it is necessary to expand the study to various population groups, such as multicultural families, the elderly, women, and delinquent adolescents.

Second, this study had difficulties in grasping specific contents based on quantitative research. In future research, it is necessary to conduct qualitative research to secure more specific research contents.

Third, this study investigated the mediating effect of hope on the effects of adolescent academic stress on depression. In a follow-up study, it is necessary to study the process of identifying the dynamics of the moderating variables that moderate the relationship between these variables.

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Chang Seek Lee, et. al. "Mediating Effect of Hope in the Effects of Academic Stress on Depression in Adolescents." *International Journal of Humanities and Social Science Invention (IJHSSI)*, vol. 11(04), 2022, pp 31-37. Journal DOI- 10.35629/7722