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**Effects of depression on suicidal ideation of adolescents: indirect effect of gratitude and conditional direct effect of mindfulness**

**Introduction.** In Korea, the number one cause of death among adolescents aged 10 to 19 is suicide (intentional self-harm), which is gradually increasing. This suggests that efforts to identify the causes of suicide and provide educational and counseling interventions to resolve it should continue. *This study aims* to suggest ways to alleviate the effect of adolescent depression on suicidal thoughts through gratitude and mindfulness.

**Study participants and methods.** The research subjects were 609 intentionally sampled Korean middle and high school students. The survey subjects were 58.9% male, 41.1% female, 49.0% middle school students, and 51.0% high school students. As for residence, 80.7% lived in small and medium-sized cities, followed by 17.2% in rural areas. Data were collected through the survey method and analyzed using SPSS PC+ Win. Ver. 26 and PROCESS macro ver. 4.2. The statistical methods applied to the analysis are frequency analysis, reliability analysis, correlation analysis, and conditional direct effect analysis.

**Results.** First, as a result of correlation analysis, depression showed a negative correlation with mindfulness ($r=-.501$, $p<.01$) and gratitude ($r=-.403$, $p<.01$) and a positive correlation with suicidal ideation ($r=.666$, $p<.01$). Mindfulness showed a positive correlation with gratitude ($r=.423$, $p<.01$) and a negative correlation with suicidal ideation ($r=-.318$, $p<.01$). Second, depression had a significant negative effect on gratitude, and gratitude had a significant negative effect on suicidal ideation. The indirect effect of gratitude was significant as there was no zero between the lower and upper bounds of the bootstrap, and it played a mediating role. Third, the conditional direct effect was significant in all three conditions of mindfulness. As mindfulness increased, the positive effect of depression on suicidal ideation decreased, so mindfulness played a buffering role. It was confirmed that the effect of depression on suicidal ideation was reduced by intervening with mindfulness and gratitude in adolescents with high levels of depression.

**Practical significance.** These results can be used as important data for schools and counseling organizations to provide counseling to adolescents with high levels of suicidal thoughts due to depression.

**Keywords:** depression, suicidal ideation, gratitude, mindfulness, adolescent

**For Reference:**
INTRODUCTION

An estimated 3.8% of the population experience depression, which indicates that approximately 280 million people in the world have depression. Depression is about 50% more common among women than among men. More than 700,000 people die due to suicide every year. Suicide is the fourth leading cause of death in 15–29-year-olds (https://www.who.int/news-room/fact-sheets/detail/depression, 2023).

According to the Korea National Statistical Office’s cause of death statistics, the number one cause of death among adolescents ages 10 to 19 is suicide (intentional self-harm), and the number one cause of death among people ages 10 to 39 is suicide. The high rate of suicide is different from other age groups. Moreover, the number of youth suicides has tended to increase recently. The number of youth suicides, which was 744 in 2016, showed a slight downward trend to 722 in 2017 but then turned to an increasing trend to 827 in 2018 and 876 in 2019 (https://kosis.kr/, 2023).

On the other hand, depression increases as children grow from preschool to adolescence, rising sharply between the ages of 13 and 15, and reaching its peak at the ages of 17 and 18 [1]. In particular, it is concerned about depression because high school students in Korea are in the age group where depression is most severe and the burden of going to college and finding a job is at its peak.

Depression is more problematic because it directly affects suicidal ideation. It is pointed out that studies targeting youth [2] and studies examining longitudinal studies from youth to adults [3] all show a relationship between depression and suicidal ideation.

The problem is that depression has a direct effect on suicidal ideation across all age groups, so the intervention of variables that offset or buffer the relationship between these two variables is necessary. However, research on this suggests that there is still a lack of research to reduce youth suicide, as suicide is still on the rise. For this purpose, it was attempted to use gratitude as a mediating variable and check whether it offsets the relationship between depression and suicidal ideation. In previous studies, depression was reported to have a negative effect on gratitude [4; 5], and gratitude was also reported to have a negative effect on suicidal ideation [6; 7]. As gratitude was predicted to mediate between these two variables, it is sought to confirm whether gratitude offsets the relationship between the two variables to some extent.

When gratitude plays a mediating role, it was attempted to apply mindfulness as a variable that buffers the impact of depression on suicidal ideation by enhancing this mediating role. Mindfulness has been reported to play this buffering role in many studies [8; 9], but there is a lack of research examining its buffering role in the relationship between suicide and depression. Therefore, it was sought to determine whether mindfulness buffers the relationship between depression and suicidal ideation. Therefore, this study aimed to test whether gratitude offsets the impact of depression on suicidal ideation in adolescents and whether mindfulness simultaneously buffers it. The research questions to achieve this research objective are: First, what is the correlation between major variables? Second, does gratitude play a mediating role in offsetting the relationship between depression and suicidal ideation? Third, does mindfulness play a role in buffering the relationship between depression and suicidal ideation when gratitude plays a mediating role?
1. Relationship between depression and suicidal ideation

Depression is a serious mental illness that causes a series of physical and psychological problems [10]. It is a state of mind that negatively affects a wide range of areas, including perception, judgment, cognition, thinking, and attitude, as well as interpersonal relationships [11]. A sense of depression refers to a feeling of depression, guilt, worthlessness, and despair. As the feeling of depression persists, symptoms such as psychomotor delay, decreased appetite, and sleep disorders appear [12].

Depression during adolescence hurts the development of adolescents [13] and causes antisocial behavior such as delinquency [14]. Additionally, it hurts social competence and the ability to form interpersonal relationships, resulting in maladaptation in academics and peer relationships [15]. And the impact of depression during adolescence can be very serious in that it can persist into adulthood [16; 17].

Suicidal ideation is defined as a preoccupation with thoughts of ending one's life [18]. Suicide involves a continuous concept ranging from suicidal ideation, suicide plan, and suicide attempt [19], and suicidal ideation is the starting point of behavior leading to suicide, making it an important subject of academic interest. Suicidal ideation or suicide attempts during adolescence are serious in that they hurt the subsequent life course. In a longitudinal study, Reinherz and his associates [3] found that the group that had suicidal ideation at age 15 had higher levels of suicidal ideation, depression, and problem behavior in adulthood, and lower self-esteem and interpersonal network than the group that did not have suicidal ideation.

Many studies have been conducted showing that depression affects suicidal ideation and suicide attempts. Depression is not only common in adolescence, but is also the most important factor in predicting suicidal ideation, and is especially the best predictor of high-risk groups for suicide attempts [2]. Additionally, college students with high depression had high suicidal ideation [20]. Therefore, research is needed to break this problematic chain by finding variables that offset or buffer the direct effect of depression on suicidal ideation.

2. The mediating role of gratitude

One of the variables that reduces suicidal ideation and suicidal behavior is gratitude. Gratitude is a happy emotion that arises when one recognizes that one has received favor or help from another person, and is a positive emotion felt after recognizing the value of a specific situation, person, action, or object [21]. Gratitude is defined as a generalized tendency to recognize the goodwill of others in one's own positive experiences and outcomes and to respond with positive emotions [22].

People high in gratitude appreciate the favorable attention of others [23] and have the ability to find positive aspects even in stressful situations and restructure them [24]. People who are often grateful have higher positive emotions and life satisfaction and lower negative emotions than those who are not grateful [25].

Depression was found to hurt gratitude. In a longitudinal study targeting college students, gratitude affected reducing depression [4]. In a study targeting Italian adults, gratitude also affected reducing depression [5]. On the other hand, gratitude was found to contribute to lowering suicidal ideation. In a study of 814 college students, gratitude contributed to a decrease in suicidal ideation [7], and in a study of Chinese adolescents, gratitude also
contributed to a decrease in suicidal ideation [6]. Considering these previous research results, it would be predicted that gratitude mediates the relationship between depression and suicidal ideation. Therefore, this study aimed to determine whether gratitude plays a mediating role in the relationship between depression and suicidal ideation among Korean middle and high school students.

3. The moderating role of mindfulness

Mindfulness, whose etymology comes from ‘Vipassana’, is a core concept of meditation. ‘Vipassana’ is a compound word of the Pali words ‘vi’ and ‘passana’, where ‘vi’ means ‘various’ and ‘passana’ means ‘see through’. ‘Vipassana’ means ‘an effort to clearly understand the physical, mental, and physical phenomena that appear in one’s body’ [26]. Kabat-Zinn [27], who led the research on mindfulness, said that mindfulness is an innate ability of humans and that everyone is capable of some degree of mindfulness at any moment.

Mindfulness is a mode of awareness, an attitude toward the present moment guided by one’s experience with self-regulation, openness, and acceptance [28], and it is only in this moment that one becomes fully aware. Not only is it a state of being, and the mind is expressed in a tamed way, but this phenomenon also means psychological capabilities that can vary depending on the person and situation [29]. Unlike attentional meditation, where one is instructed to focus one’s attention only on the object of meditation and ignore all other stimuli, mindfulness does not selectively judge the value of all stimuli operating in one’s surroundings or within oneself and emphasizes openness to accept everyone [30]. Additionally, mindfulness refers to an inherent state of consciousness that consciously pays attention to moment-to-moment experiences, rather than a special skill [31].

Some studies have reported that the influence relationship between variables varies depending on the high or low level of mindfulness. In a study targeting college students, depression increased as materialism increased, and depression increased more steeply in the group with low mindfulness than in the group with high mindfulness [9]. In another study targeting nurses, as stress increased, turnover intention increased, and turnover intention increased more steeply in the group with low mindfulness than in the group with high mindfulness [8]. In a study targeting university students in Hong Kong, it was reported that stress increases as life hassles increase and that stress increases more steeply in the group with low mindfulness than in the group with high mindfulness [32]. These results verified that mindfulness moderates the relationships between various variables. Therefore, this study aimed to test whether mindfulness would play a moderating role in alleviating the relationship between depression and suicidal ideation among middle and high school students.

RESEARCH METHOD

1. Research model

The model for this study is presented in Figure 1. The research model that analyzes the conditional direct effect, model number 5 in PROCESS macro ver.4.2. was adopted. In the research model, the relationship between depression and suicidal ideation is mediated by gratitude and moderated by mindfulness, and in this case, mindfulness shows a conditional direct effect. Gender and grade, which affect gratitude and suicidal ideation, were controlled during the analysis.
2. Study participants

The study area was randomly selected from three cities and counties in South Chungcheong Province. The middle schools and high schools targeted for the survey were selected from two cities and counties in three cities and counties so that they were evenly distributed across school levels, genders, and grades. A total of 650 questionnaires were distributed, and a final 610 questionnaires were collected and analyzed.

Data was collected through an offline survey, and the researcher visited the school, explained the purpose of the survey to the school principal and homeroom teacher, and received their consent. Next, the purpose of the survey was explained to the students, and after receiving their signatures on the offline research consent form, the questionnaires were distributed to students who agreed and collected using a method of immediate collection. Students who responded were given a gift worth 5,000 won. Additionally, IRB approval was obtained prior to the survey.

The survey participants were 58.9% male, 41.1% female, 49.0% middle school students, and 51.0% high school students. The majority of participants (80.7%) lived in small and medium-sized cities, and 17.2% lived in rural areas. As for family composition, families consisting of two parents and children were the most common (84.8%), and families consisting of single parents and children were 7.6%. 46.7% of respondents said that their family income was medium, and 35.7% said that they were wealthy. 63.5% of participants said that their parents were both working and 36.5% said that they did not.

3. Research tools

3.1. Depression

For depression, a scale adapted by Choi [33] was used among the subscales of the SCL-90, and consists of 10 items such as “I worry too much about things that I don’t need to worry about,” and “I feel like I’m at a dead end.” Each item is on a 5-point Likert scale, from 1 “not at all true” to 5 “very much so”, with higher scores indicating higher levels of depression. In this study, Cronbach’s α of reliability for depression was .902.

3.2. Mindfulness

For mindfulness, a scale developed by Feldman [34] was used, which was developed to measure awareness, attention, and acceptance. This scale consists of 12 items, including “I can easily concentrate on what I am doing,” and “I can accept things as they are that I cannot
change.” Each item is on a 5-point Likert scale, from 1 for “not at all” to 5 for “very much,” with higher scores indicating higher mindfulness. In this study, the reliability of Cronbach’s $\alpha$ of mindfulness was .653.

### 3.3. Gratitude

For gratitude, the Korean version of the Gratitude Scale (K-GQ-6) which was validated by Seonjung Kwon et al. [35], which was developed by McCullough et al. [36] was used. This scale consists of 6 items, including “There are so many things in my life to be grateful for,” and “If I were to write a list of everything I was grateful for so far, it would be very long.” Each item is on a 5-point Likert scale from 1 “not at all” to 5 “very much so”, with higher scores indicating higher gratitude. In this study, the reliability of Cronbach’s $\alpha$ of gratitude was .858.

### 3.4. Suicidal ideation

The suicidal ideation scale which was developed by Harlow et al. [37; 38], adapted by Hyungsoo Kim [39], and used by Yunjeong Kim and Changsik Lee [40] was used. This scale consists of a total of 5 questions, including “I have ever thought about suicide” and “I have ever thought that my life would end in suicide,” with each item ranging from 1 “never” to 5 “always yes.” It was measured on a 5-point Likert scale, with higher scores indicating more experience with suicidal ideation. In this study, the reliability of gratitude, Cronbach’s $\alpha$, was .925.

### 3.5. Control variables

Gender and grade, which were found to have an effect on the mediating and dependent variables, were controlled during the analysis.

### 4. Data analysis

Data analysis for this study was performed using SPSS PC+ Win. 25.0 and PROCESS macro for SPSS version 4.2. Frequency analysis, reliability analysis, and correlation analysis were performed using SPSS PC+ Win. 25.0, and conditional direct effects were analyzed using PROCESS macro 4.2. When analyzing the conditional direct effect, bootstrap was used for verification, the confidence interval was set at 95%, the number of samples was set at 5,000, and the independent and moderating variables were mean-centered.

## RESEARCH RESULTS

### 1. Correlation analysis results

The results of Pearson correlation analysis and frequency analysis are presented in Table 1. Depression was negatively correlated with mindfulness ($r=-.501$, $p<.01$) and gratitude ($r=-.403$, $p<.01$) and positively correlated with suicidal ideation ($r=.666$, $p<.01$). Mindfulness showed a positive correlation with gratitude ($r=.423$, $p<.01$) and a negative correlation with suicidal ideation ($r=-.318$, $p<.01$). The overall correlation coefficient was lower than .7, so there was no problem with multicollinearity.

As a result of frequency analysis, the average scores for depression (M=2.5315) and suicidal ideation (M=1.8184) were lower than the median score (3 points), and the average scores for mindfulness (M=3.1844) and gratitude (M=3.8406) were higher than the median score.
Table 1

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Mindfulness</th>
<th>Gratitude</th>
<th>Suicidal ideation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mindfulness</td>
<td>-0.501**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gratitude</td>
<td>-0.403**</td>
<td>0.423**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td>0.666**</td>
<td>-0.318**</td>
<td>-0.380**</td>
<td>1</td>
</tr>
<tr>
<td>M</td>
<td>2.5315</td>
<td>3.1844</td>
<td>3.8406</td>
<td>1.8184</td>
</tr>
<tr>
<td>SD</td>
<td>0.84622</td>
<td>0.46939</td>
<td>0.73831</td>
<td>0.97161</td>
</tr>
</tbody>
</table>

**p<.01

2. Indirect effect of gratitude and conditional direct effect of mindfulness

When gratitude mediates in the relationship between depression and suicidal ideation, in order to analyze whether mindfulness moderates the relationship between depression and suicidal ideation, that is, the conditional direct effect of mindfulness, Model No. 5 of the PROCESS macro proposed by Hayes [41] was applied. Bootstrap was used for verification during analysis, the confidence interval was set at 95%, the number of samples was set at 5,000, and the independent and moderating variables were mean-centered. The analysis results are presented in Figure 2, Figure 3, Tables 2, and Table 3.

In the mediating variable model, depression had a significant negative effect on gratitude (B=-0.3618, p<.001) and a significant positive effect on suicidal ideation (B=0.7109, p<.001). In the dependent variable model, gratitude had a significant negative effect on suicidal ideation (B=-0.2183, p<.001), but mindfulness did not have a significant effect on suicidal ideation (B=0.1373, p>.05). Depression had a significant effect on gratitude, and gratitude had a significant effect on suicidal ideation, so gratitude mediated in the relationship between depression and suicidal ideation.

The interaction term between depression and mindfulness had a significant negative effect on suicidal ideation (B=-0.2116, p<.001). The R2 change (highest order test) due to the addition of the interaction term was significant (.0110, p<.001). Therefore, mindfulness moderated the effect of depression on suicidal ideation.

Since the moderating effect was significant, the conditional effect of depression according to the three conditions of mindfulness (M, M±SD) was analyzed. As a result of the analysis, the conditional effect was significant in all three conditions of mindfulness, and as mindfulness increased from M-SD to M+SD, the conditional effect decreased. In other words, as mindfulness increased, the positive impact of depression on suicidal ideation decreased. As a result of checking the Johnson-Neyman conditional effect significance level area, the conditional effect was significant in the entire area.

A graph showing the moderating effect of mindfulness on the impact of depression on suicidal ideation is shown in Figure 3. The slope was found to increase more gently when mindfulness was high (M+SD) than when it was low (M-SD).

The conditional direct effect of mindfulness and the indirect effect of gratitude are presented in Table 3. In the three conditions of mindfulness, the conditional direct effects of depression on suicidal ideation were all significant, and in this case, the results were the same as the conditional effects. As mindfulness increased from M-SD to M+SD, the impact of depression on suicidal ideation decreased. Additionally, the indirect effect of gratitude
was significant at B=.7990, as there was no zero between the lower and upper bounds of the bootstrap (.0435 ~ .1156). These results suggested that the impact of depression on suicidal ideation could be reduced through the intervention of mindfulness and gratitude.

![Figure 2 Statistical model of conditional direct effect of mindfulness](image)

### Table 2

<table>
<thead>
<tr>
<th>Coeffect</th>
<th>Mediating variable model (DV: Gratitude)</th>
<th>Dependent variable model (DV: Suicidal ideation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>Constant</td>
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<td>IV</td>
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<tr>
<td>Mediator</td>
<td>Gratitude</td>
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</tr>
<tr>
<td>Moderator</td>
<td>Mindfulness</td>
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</tr>
<tr>
<td>Interaction</td>
<td>Depression x Mindfulness</td>
<td>-.2116</td>
</tr>
<tr>
<td>Highest order test</td>
<td>R² change</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covariates</td>
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</tr>
<tr>
<td></td>
<td>Grade</td>
<td>.1167</td>
</tr>
<tr>
<td>Model summary</td>
<td>R²</td>
<td>.1780</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>43.742***</td>
</tr>
</tbody>
</table>

**Conditional effects of depression according to mindfulness**

<table>
<thead>
<tr>
<th>Mindfulness</th>
<th>Effect(B)</th>
<th>Se</th>
<th>t value</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>-.4690(M-SD)</td>
<td>.8101</td>
<td>.0469</td>
<td>17.2586***</td>
<td>.7180</td>
<td>.9023</td>
</tr>
<tr>
<td>.0000(M)</td>
<td>.7109</td>
<td>.0412</td>
<td>17.2742***</td>
<td>.6301</td>
<td>.7917</td>
</tr>
<tr>
<td>.4690(M+SD)</td>
<td>.6117</td>
<td>.0524</td>
<td>11.6681***</td>
<td>.5087</td>
<td>.7147</td>
</tr>
</tbody>
</table>

**Conditional effect of depression at values of the mindfulness**

<table>
<thead>
<tr>
<th>Mindfulness</th>
<th>Effect(B)</th>
<th>Se</th>
<th>t value</th>
<th>LLCI</th>
<th>ULCI</th>
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<tbody>
<tr>
<td>-1.8522</td>
<td>1.1028</td>
<td>.1132</td>
<td>9.7402***</td>
<td>.8804</td>
<td>1.3252</td>
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<tr>
<td>1.8145</td>
<td>.3270</td>
<td>.1202</td>
<td>2.7196**</td>
<td>.0909</td>
<td>.5632</td>
</tr>
</tbody>
</table>

**p<.01, ***p<.001
DISCUSSION

This study aims to determine whether mindfulness moderates the relationship between depression and suicidal ideation when gratitude mediates in the relationship between depression and suicidal ideation in adolescents and to devise a plan to prevent suicidal ideation by intervening between mindfulness and gratitude. The results of the study are discussed and the conclusions are presented as follows.

First, depression was positively correlated with suicidal ideation, and depression and suicidal ideation were negatively correlated with gratitude and mindfulness. These research results are not different from those of other researchers. The finding that depression is proportional to suicidal thoughts and a cause of suicide supported the results of a study conducted by the Korea National Youth Policy Institute [2]. On the other hand, the result of a negative relationship between gratitude and depression also supported the research results of Wood et al. [4], and Petrocchi and Couyoumdjian [5]. In other words, as gratitude increases, it changes negative experiences or emotions into a positive state, contributing to the reduction of suicidal ideation. In addition, research results that showed a negative correlation between mindfulness and suicidal ideation were consistent with the research results of Li et al. [6] and Lee et al. [8].
Second, gratitude played a mediating role in the relationship between depression and suicidal ideation. Depression hurt gratitude, and gratitude harmed suicidal ideation, so gratitude played a mediating role. At this time, gratitude played a mediating role in offsetting the positive effect of depression on suicidal ideation. These results differ from Park et al.’s result that gratitude mediates the relationship between self-esteem and career decision self-efficacy. In this study, gratitude is a different finding in that it offsets the problematic link of depression's influence on suicidal ideation. These results are easy to apply to prevent suicide by increasing gratitude in students at high risk of suicide due to depression in counseling or educational settings. Therefore, Schools should develop programs to increase gratitude and help teenagers with high levels of depression participate.

Third, it was analyzed whether mindfulness moderates the relationship between depression and suicidal ideation when gratitude mediates in the relationship between depression and suicidal ideation targeting adolescents. As a result, gratitude played a mediating role in the relationship between depression and suicidal ideation, and mindfulness played a role in moderating the relationship between depression and suicide in situations where gratitude played a mediating role. In particular, mindfulness played a buffering role in the relationship between depression and suicide. These results were consistent with the results showing that mindfulness plays a buffering and moderating role in relationships with other variables [8; 9]. However, what makes this study different from other studies is that it examined the buffering role of mindfulness along with the mediating role of gratitude. The finding that mindfulness plays a buffering role in the relationship between depression and suicidal ideation is similar to the results of other studies. However, this study is a new development in that it simultaneously analyzed mediating and moderating roles using Model 5 proposed by Hayes [41].

CONCLUSION

In conclusion, this study confirmed that gratitude and mindfulness play a role in counteracting and buffering the positive relationship between depression and suicidal ideation. In this study, gratitude primarily counteracts the positive effect of depression on suicidal ideation through its mediating role. Next, mindfulness, a moderating variable, played a role in buffering the effect of depression on suicidal ideation. Therefore, when depression and suicidal ideation increase in adolescents, gratitude and mindfulness act as protective factors, so it is important to promote gratitude and mindfulness in adolescents with high levels of depression.

The limitations of the study and suggestions for further study are as follows. First, this study dealt with the relationships between variables and overlooked the characteristics of the subjects. Further study is needed to find out who is high or low in depression, suicidal ideation, gratitude, and mindfulness, identify problematic subjects, and suggest solutions. Second, adolescents, especially high school students who are stressed about college entrance exams and worried about their careers, have severe depression and high levels of suicidal ideation. Considering this, practical measures to prevent suicide should be presented, but this study limited itself to suggesting measures. Therefore, in future research, it is necessary to develop specific programs and study the effectiveness of suicide prevention using gratitude and mindfulness.

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REFERENCES


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