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## Gratitude influences happiness through mindfulness in Korean high school students: the moderated mediation model of grit

**Introduction.** There are many ways to enhance happiness for people. Recently, mindfulness, gratitude and grit contribute to several psychological areas such as wellbeing and success. In addition, Korean high school students suffer from hard work like university entrance examination. Therefore, it is important to study the new ways to increase happiness using recently emerging psychological variables.

*The purpose of the study* aimed to determine whether grit moderates the mediating effect of mindfulness in the association between gratitude and happiness targeting high school students in Korea.

**Study participants and methods.** The participants were 435 high school students purposively selected from four high schools at Seosan city, Chungnam province in Korea. There was 50.6% for males and 49.4% for females, and men and women were evenly distributed. In this case, the 3rd grade was 71.3%, more than 28.7% of 2nd grade, and 1st grade was not included in the survey. Data were analyzed using SPSS PC+ Win. Ver. 25.0 and SPSS PROCESS macro Ver. 3.5. The statistical techniques applied were frequency analysis, reliability analysis, correlation analysis and a moderated mediation effect analysis.

**Results.** First, as a result of correlation analysis, happiness was significantly positively correlated with gratitude ( $r=.494, p<.001$ ), grit ( $r=.299, p<.001$ ) and mindfulness ( $r=.452, p<.001$ ), and the correlation between happiness and gratitude showed the highest coefficient. Second, as a result of the moderated mediation effect analysis, the grit moderated the mediating effect of mindfulness in the link between gratitude and happiness (.6118, .0311~.1806).

**Practical significance.** Based on these findings, this study discussed methods for improving the happiness of high school students through the gratitude, grit and mindfulness. Therefore, this results will be useful to policy making and program development for happiness.

**Keywords:** gratitude, grit, mindfulness, happiness, high school student, moderating mediation model, conditional indirect effect

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## Introduction

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Happiness is the highest goal pursued by all human beings, and 'How can I lead a happy life?' is a problem that humanity has been contemplating for a long time. Academia is also constantly researching the causes of happiness as part of an effort to find an answer to this question. It has already been proven repeatedly that the level of happiness varies according to various factors, and this result is not an exception to high school students as well as adults. In particular, high school students in Korea have a low level of happiness as they have delayed their interest in happiness for a while due to their high educational enthusiasm and entrance exam-oriented educational environment, and are focusing on different goals from the cohort group of college entrance [1]. Therefore, research to explore new variables related to happiness for high school students in Korea is urgent.

In recent years, among the various methods for promoting happiness, the gratitude, especially, has been dealt with in many studies. The gratitude starts with the argument of academia that reducing the negative aspects of humans and strengthening the positive aspects are mutually independent. In other words, the gratitude is a concept derived from a new approach that reinforcing human strengths has an important impact on life beyond reducing negativity. It has already been consistently verified that gratitude has a positive effect on positive emotions [2] and improvement of life satisfaction [3]. This study also predicted that appreciation propensity would affect happiness and set it as an independent variable.

However, so far there is a limitation in that research has focused on the causality between gratitude and happiness. Therefore, in this study, mindfulness was assumed as a mediator and grit as a moderator, but there are few studies on a method of promoting happiness using mindfulness as a mediator or using grit as a moderator [4]. In particular, few studies have attempted to improve happiness through the integrated use of mindfulness and grit.

The reason for this study is: First, since the happiness of high school students has an important influence on their adult life, an integrated study on the happiness of high school students is necessary. Second, it is because specific research is needed to understand the mechanism by which gratitude, a powerful variable that can predict happiness, affects happiness through what kind of process. Third, if this study proves that the gratitude raises the level of mindfulness and increases happiness, it is because an expansion of research is required to identify the variables of alternative roles that can interfere with this process.

Therefore, this study aimed to determine the moderated mediation effect of grit on the association between gratitude and happiness through mindfulness targeting high school students in Korea.

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## Theoretical background

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### **1. Relationship between gratitude and happiness**

Happiness is defined as the degree to which an individual positively evaluates the quality of his or her life [5]. According to the study results of people who feel happy, happy people are more optimistic, more successful, and healthier [6], and have a very

high self-esteem, leading to a productive life even if it leads to negative results [7]. Also, relatively happy people think more positively about themselves [8], feel more personal control [9], and rate recent experiences in their lives as being more pleasant [10]. People who were happy tended to interpret life events more positively than those who were not [11; 12].

On the other hand, gratitude is the joyful emotion that comes from recognizing that you have received favor or help from another person, or a positive emotion that you feel after recognizing the value of a particular situation in life, from a person, received from an action, or gained from an object [2; 13]. People with high gratitude are known to have the ability to find positive attributes and reinterpret them in a good way, even in situations that are easily interpreted negatively because of their flexible attribution [14]. In addition, people with high gratitude appreciate external favorable attention [15] and have the ability to find positive aspects in stressful situations and reconstruct the event [16].

The results of previous studies on the relationship between gratitude and happiness showed that appreciation has a positive effect on personal physical and mental health, interpersonal relationships, pro-social behavior, and improvement of happiness [17; 18]. In general, the higher the gratitude, the higher the positive psychological state of happiness, makes it possible to maintain a positive mood even in negative situations, and leads to a more adaptive behavioral tendency in coping with the situation [19]. In addition, gratitude acts as a positive emotion necessary to pursue a psychologically healthy and happy life [2; 20] Therefore, there is no theory that appreciation propensity is a predictor that directly affects happiness.

## ***2. The mediating role of mindfulness***

Mindfulness is the attention and awareness that is a universal ability inherent in human beings, and it is to pay attention in a special way, intentionally, at the present moment, whereby being aware of circumstances around the person in a non-judgemental way [21]. Therefore, mindfulness gives a clear awareness of how you are moving, what you are saying, what you are feeling, and what you are thinking at this moment [23].

Mindfulness is effective in managing stress [24] because it reduces negative perceptions of the situation in the process of relieving stress and increases the willingness to adapt [22]. In addition, it was found that mindfulness lowered the level of psychological burnout [25], and emotional exhaustion and depersonalization, which are sub-factors of burnout [26]. It was also revealed that mindfulness is effective in various areas such as psychological well-being [27], job satisfaction [28], and work ability [29]. In addition, as a result of previous studies, it was reported that gratitude affected mindfulness, which is a variable that affects happiness, indicating that mindfulness plays a role as a mediator. For example, it was found through experiments that gratitude enhanced mindfulness [30] and mindfulness affect happiness [31]. The indirect association between stressful life events and internalizing symptoms through mindfulness was statistically significant [32]. Based on these prior studies, in this study, mindfulness was set as a mediating variable in the relationship between gratitude and happiness.

## ***3. The moderating role of grit***

Grit is defined as perseverance and passion for long-time goals [33]. People with high grit seek until success without changing their tracks, while people with low grit change their tracks with disappointment and boredom, or give up halfway [33].

In addition, "grit predicts high school graduation and high grade point better than IQ" [34], and it was also found to be the most influential variable in predicting the residual of cadets for military academy [35]. Therefore, grit predicts success in part by promoting self-control, thus allowing people to persist in repetitive, tedious, or frustrating behaviors that are necessary for success [36].

The inspection of literature indicates that grit has varied in the association between psychological factors. As a result of conducting a longitudinal study on university students, the interaction between gratitude and grit decreased suicidal thoughts [37], and in a study on adults, the interaction between authentic leadership and grit moderated organizational effectiveness [38]. In addition, it was explored that grit was a significant moderator of the feedback-shooting performance relationship, accounting for 3.9% of variance [39].

Based on these previous studies, this study established a moderating variable as grit, and tried to verify whether it plays a role of moderating between the independent variable, the gratitude and the mediating variable, mindfulness.

## Methods

### 1. Research model

The model of this study used the analysis procedure of Model 7 proposed by Hayes [40] to verify whether the grit moderates the path from gratitude to happiness through mindfulness.

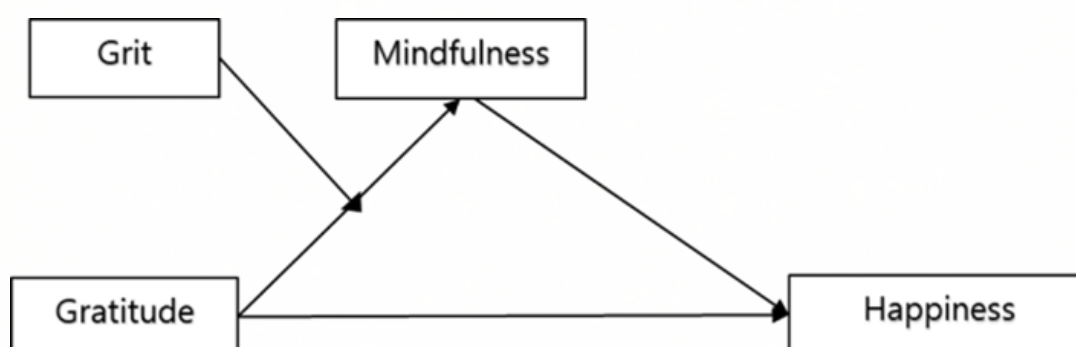


Figure 1 Conceptual model of research

### 2. Subjects and data collection

The study area was the S city of Chungnam province in Korea, which noted the factors considering the accessibility of the study and the applicability of the research results, and the high schools to be surveyed were the four high schools which randomly selected within the city.

The survey was conducted by the teacher in charge of explaining the purpose of the questionnaire, obtaining the consent of the students, distributing and collecting the questionnaire. The survey was conducted from April 24, 2019 to May 10, 2019. There were 435 participants for the final analysis, except for the questionnaire in which there were unfaithful responses.

The gender makeup of the participants was 50.6% for males and 49.4% for females, and men and women were evenly distributed. In this case, the 3rd grade was 71.3%, more than 28.7% of 2nd grade, and 1st grade was not included in the survey.

### **3. Research tools**

#### **3.1. Gratitude**

Here, we used the Korean version of the gratitude scale (K-GQ-6) developed by McCullough et al. [41], which was used by Kwon et al. [3]. It is noted that the scale consists of six questions: “There are so many things to thank in my life” and “If I list everything I've thanked so far, it will be very long.” Each item is a 5-point Likert scale from 1 point to “not at all” to 5 points to “very good”, and it was noted that the higher the score, the higher the level of gratitude. In this study, the reliability of gratitude Cronbach  $\alpha$  was .830.

#### **3.2. Mindfulness**

We used the mindfulness scale developed by Park [42]. This scale was developed to measure the degree of immediate current awareness, attention, non-judgemental acceptance, and decentered attention to internal and external experiences. This scale consists of 20 questions such as “It is difficult to focus on one task or thing (reverse question),” and “If others know that I have a feeling, I think that they will look at me strangely”. Furthermore, each item is a 5-point Likert scale from 1 point to “not at all” to 5 points to “very good”, and the higher the score, the higher the mindfulness. In this study, the reliability of mindfulness Cronbach  $\alpha$  was .900.

#### **3.3. Grit**

We used the Short Grit Scale (Grit-S) [43]. It consists of 8 items and includes two subareas of consistency of interests and perseverance of effort. This scale consists of 8 questions such as “New ideas and projects sometimes distract me from previous ones”, and ““Setbacks don't discourage me”. Each item is a 5-point Likert scale from 1 to “not at all” to 5 to “very good”, and the higher the score, the higher the grit. In this study, the grit reliability Cronbach  $\alpha$  was .784.

#### **3.4. Happiness**

In this study, we used a shortened happiness scale (COMOSWB) developed and justified by Koo and Seo [44]. This scale consists of 3 questions measuring personal, relational and group satisfaction, 3 questions measuring positive emotions, and 3 questions measuring negative emotions (inverse questions), and 9 questions in total. The item measuring satisfaction is a 7-point Likert scale from 1 point to “not at all” from 7 points to “very good”. The item measuring positive and negative sentiment is “not felt at all” from 1 point to “always felt” 7. It is a 7-point Likert scale, and the higher the score, the higher the happiness. In this study, the results note that the reliability of happiness Cronbach  $\alpha$  was .852.

### **4. Data analysis**

In this study, we analyzed the data using SPSS PC+ Win. Ver. 25.0 and SPSS PROCESS macro Ver. 3.4. First, frequency analysis was performed to identify trends in variables, and Cronbach's  $\alpha$ , an internal consistency reliability coefficient, was calculated to determine reliability. Second, a Pearson's correlation analysis was applied to understand the correlation between variables. Third, SPSS PROCESS macro models 7 were used to analyze the moderated mediation effect. In addition, when testing the effect, it was confirmed that the confidence level was set to 95%, and the number of bootstrap samples was set to 5,000. The conditions for confirming the conditional effect were set to 16th, 50th, and 84th percentiles, and the independent variable and the moderating variable were analyzed after the mean centering.

## Results

### 1. Correlation between main variables

As shown table 1, the correlation analysis showed that happiness was significantly positively correlated with gratitude, grit, and mindfulness, and happiness and gratitude showed the highest correlation coefficient ( $r = .494$ ,  $p < .01$ ).

**Table 1**

Results of correlation analysis and descriptive statistics

	1	2	3	4
1. Gratitude	1			
2. Grit	.258**	1		
3. Mindfulness	.188**	.368**	1	
4. Happiness	.494**	.299**	.452**	1
M	3.5613	3.1025	3.1387	4.3436
SD	0.73372	0.62097	0.60252	1.08364

\*\* $p < .01$

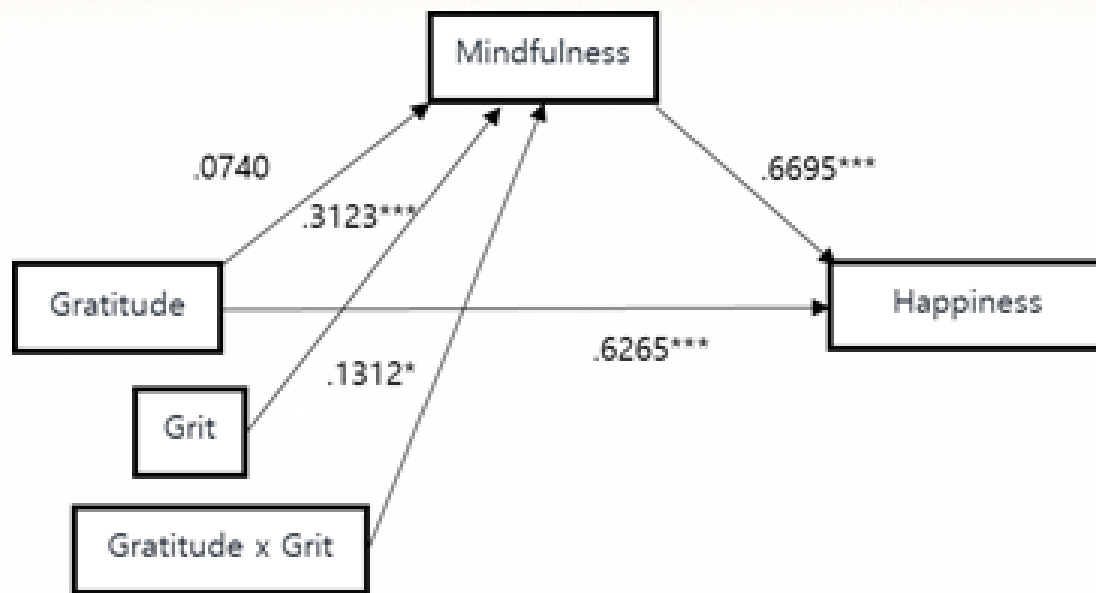
### 2. Moderated mediation effect of grit

To begin an analysis of the moderated mediation effect analysis of grit shown in Table 2 and Figure 2, first, we analyzed whether the grit moderates the association between gratitude and mindfulness. As a result of analysis, gratitude  $\times$  grit was significant ( $.1312$ ,  $p = .0105$ ), and test of highest order unconditional interaction was also significant ( $R^2 = .0194$ ,  $p = .0105$ ). Therefore, it is shown that the grit moderates the association between gratitude and mindfulness.

The conditional effects of the gratitude at values of the grit were significant in 84th percentiles ( $.1542$ ,  $p = .01$ ). That is, when analyzing the conditional effect more specifically, if the grit value is greater than  $.0008$ , the conditional effect of the gratitude, that is, the moderating effect was significant. This means that the effect of gratitude on mindfulness varies when the value of the grit is considered to be a large variable or factor. In other words, gratitude affects mindfulness in people with high grit, but gratitude does not affect mindfulness in people with low grit.

When analyzing the moderating effect through Figure 3, it was found that when the gratitude increased in the group with a high grit, the slope of increasing mindfulness was steeper than in the group with a low grit. Therefore, the effect of gratitude on mindfulness differed depending on the grit value of moderating variable, which indicated that grit moderated on the association between gratitude and mindfulness.

Finally, the results showed that the moderated mediation effect of the grit, that is, the conditional indirect effect of the grit (gratitude  $\rightarrow$  mindfulness  $\rightarrow$  happiness) was analyzed. As a result, the conditional indirect effect of grit was significant in in 84th percentiles ( $.1033$ ,  $.0311 \sim .1806$ ). In addition, index of moderated mediation was significant with  $.0878$  ( $0059 \sim 1670$ ). In other words, gratitude was found to affect happiness through mindfulness in people with a higher grit, but it did not affect happiness through mindfulness in people with lower grit.



\*p<.05, \*\*\*p<.001

**Figure 2** Conceptual diagram of moderated mediation effect of grit

**Table 2**

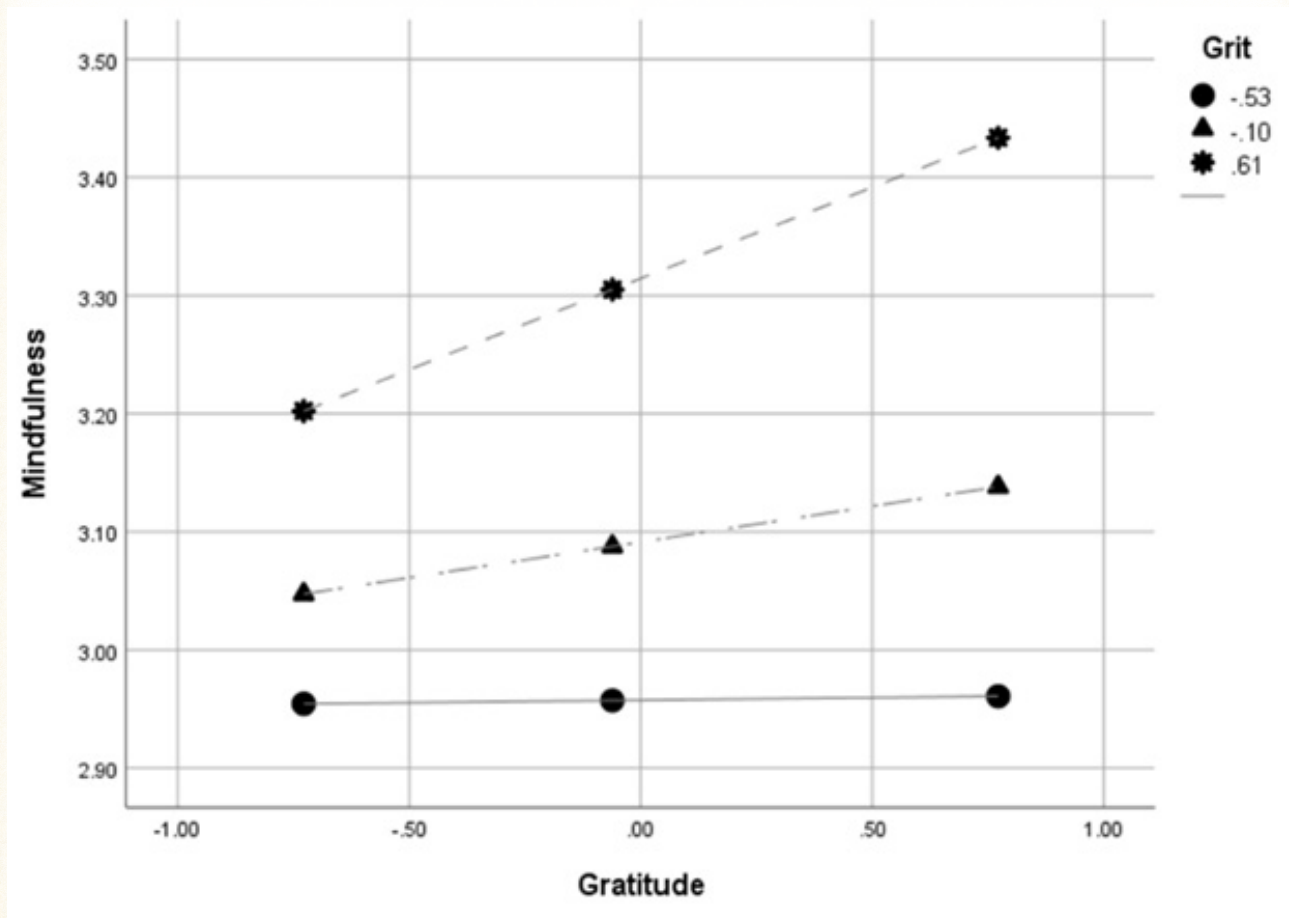
Analysis of moderated mediation effect of grit in relation to gratitude, mindfulness and happiness

Variables	Coeffect	SE	t-value	p	LLCI*	ULCI**
Mediating variable model (DV: Mindfulness)						
Constant	3.1234	.0273	114.5477	.0000	3.0698	3.1770
Gratitude	.0740	.0377	1.9626	.0503	-.0001	.1481
Grit	.3123	.0451	6.9304	.0000	.2238	.4009
Gratitude × Grit	.1312	.0515	2.5715	.0105	.0309	.2315
Test of highest order unconditional interaction:						
Interaction item	R <sup>2</sup>		F		p	
Gratitude × Grit	.0194		6.6128		.0105	
Conditional effects of the gratitude at values of the grit:						
grit	Effect	se	t-value	P	LLCI*	ULCI**
-.5310	.0043	.0482	.0895	.9287	-.0904	.0990
-.1025	.0605	.0385	1.5734	.1164	-.0151	.1362
.6118	.1542	.0469	3.2861	.0011	.0620	.2465
Conditional effects of the gratitude at values of the grit:						
Grit	Effect	se	t-value	P	LLCI*	ULCI**
-1.6739	-.1456	.0961	-1.5150	.1305	-.3345	.0433
			.			
			.			
			.			
-.0667	.0652	.0381	1.7108	.0878	-.0097	.1402
.0008	.0741	.0377	1.9655	.0500	.0000	.1482
.1118	.0887	.0377	2.3539	.0190	.0146	.1627

			.			
			.			
			.			
1.8975	.3229	.1010	3.1979	.0015	.1244	.5214
Variables	Coeffect	SE	t-value	P	LLCI*	ULCI**
Dependent variable model (DV: Happiness)						
Constant	2.2420	.2291	10.1017	.0000	1.8057	2.6782
Gratitude	.6265	.0571	10.9790	.0000	.5143	.7386
Mindfulness	.6695	.0695	9.6357	.0000	.5330	.8061
Direct effect of gratitude on happiness:						
Effect	se	t-value	p	LLCI*	ULCI**	
.6265	.0571	10.9790	.0000	.5143	.7386	
Conditional indirect effects of gratitude on happiness:						
Grit	Effect	Bootse	BootLLCI*	BootULCI**		
-.5310	.0029	.0366	-.0667	.0788		
-.1025	.0405	.0293	-.0159	.1002		
.6118	.1033	.0377	.0311	.1806		
Index of moderated mediation						
	Index	Bootse	BootLLCI*	BootULCI**		
Grit	.0878	.0409	.0059	.1670		

\*LLCI=lower limit within 95% confidence interval of boot indirect effect

\*\*ULCI=Upper limit within 95% confidence interval of boot indirect effect



**Figure 3** Moderating effect of grit on the association between gratitude and mindfulness



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## Discussion and conclusion

As a result of correlation analysis, gratitude, grit, mindfulness, and happiness all showed positive and significant correlations. In particular, gratitude and happiness showed the highest positive correlation, suggesting that gratitude may have the greatest influence on happiness among the four variables in this study. Therefore, in this study, it was confirmed that there is a basis for setting gratitude as an independent variable and happiness as a dependent variable.

As a result of descriptive statistics, the averages all exceeded the median value of 3 points. In particular, happiness scored high with 4.3 points. Many studies have reported that high school students have a low level of happiness due to entrance examination-oriented and grade-based education in Korea [4,45]. This result is interpreted as because the area to be surveyed is a small and medium-sized city, and the competitiveness for university entrance examination is not very high.

As a result of the analysis of the moderating effect of grit in the relationship between gratitude and mindfulness, as the increase in gratitude increases mindfulness, the increase in gratitude → mindfulness further increased due to the moderating effect of grit. Therefore, grit played an important role in promoting happiness. These results were in line with the results of the moderating effect of grit in the relationship between authentic leadership and grit [38] and the moderating effect of grit in the relationship between feedback-shooting and performance [39].

Analysis of the moderated mediating effect of grit as a conditional process analysis [40] showed that grit moderated the path of appreciation → mindfulness → happiness. As grit increased, the influence of gratitude on happiness through mindfulness increased. It is interpreted that grit's passion and perseverance for long-term goals contributed to this moderating effect.

Next, limitations of the study and suggestions for follow-up studies were made.

First, this study focused on analyzing the relationships among variables. In other words, as a result of analysis, gratitude, grit and mindfulness played a role in promoting happiness. However, studies on the timing and method of intervening in gratitude and mindfulness during counseling and its effects have not been made, and for this reason further research is needed. Second, research on the development of a program that can improve the happiness of high school students by improving gratitude, grit, and mindfulness, and through this lens further research is needed. Third, research is needed to verify the effects of counseling-related variables such as gratitude and mindfulness through experimental studies.

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