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## Research Article

# The Mediating Effects of Social Support and a Grateful Disposition on the Relationship between Life Stress and Anger in Korean Nursing Students

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## ABSTRACT

**Purpose:** Anger management is a very important issue for nursing education. However, there is a lack of research identifying related factors. This study examined the mediating effects of social support and a grateful disposition on the relationship between life stress and anger in nursing students.

**Methods:** The participants were 172 nursing students recruited from two universities in cities in South Korea. Baron and Kenny's regression method and the Sobel test were used to analyze the mediating effects of social support and a grateful disposition on the association between life stress and anger.

**Results:** There were significant correlations between life stress, social support, a grateful disposition, and anger. In addition, social support and a grateful disposition exerted full mediating effects on the relationship between life stress and anger.

**Conclusion:** Based on this study's results, enhancing social support and grateful disposition could help nursing students who experience anger resulting from life stress to manage their anger effectively. This finding suggests that, as specific strategies for anger management, nursing educators should encourage nursing students to use sources of social support and to engage in various gratitude activities.

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## Introduction

During their college years, students encounter various developmental tasks pertaining to their studies, career, interpersonal relationships, and value judgments and undergo continual stress, which often leads to anger [1–3]. Anger is a normal, natural emotion that people experience in everyday life. However, high levels of anger could lead to mental health problems, such as somatization and suicidal ideation, damage interpersonal relationships, and induce antisocial behavior; therefore, college students with high levels of anger could experience difficulties in completing developmental tasks successfully [4–6].

Nursing students faced with demanding and difficult conditions have been shown to experience anger in healthcare environments [7]. Previous studies reported that anger was one of the negative

emotions displayed by nursing students in response to stress [3]. According to a study involving female college students in Korea, levels of anger in nursing students were significantly higher relative to those observed in other college students [8]. Moreover, nursing students' anger requires effective management as it could exert a negative impact on the quality of nursing, which could affect patients, the students, and future healthcare providers [4,6,9]. In this context, it is imperative that nursing educators identify the factors influencing anger in nursing students and consider these factors in the development of intervention programs involving effective anger management.

Anger is an emotional response to stress, and numerous previous studies have shown that social stress increased levels of anger [3,8]. Therefore, stress could be regarded as an important factor that requires consideration in efforts to understand individuals' anger. It is not surprising that nursing students experience high levels of stress. According to the results of a study involving nursing students in Jordan [2], more than half of the participants experienced above-average stress levels. Moreover, nursing students' stress was shown to induce negative emotions including anxiety, dread, anger, and depression [3,10]. Therefore,

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stress is likely to be significantly associated with anger in nursing students. However, further research is required to confirm this speculation as no previous studies have demonstrated a clear correlation between nursing students' perceived life stress and anger.

In addition, identification of mediating factors that alleviate the impact of stress on anger could be an effective strategy for anger management. Most previous studies have placed a strong emphasis on anger as an independent variable or focused on correlations between anger and risk factors such as stress and negative emotion [4–6,9]. Therefore, it is crucial to identify protective factors that reduce anger levels, to ensure effective anger management.

One such protective factor, social support, has been shown to mitigate the negative impact of stress on individuals' physical and psychological health [11,12]. Previous studies have identified practice stress as a predictor of social support in nursing students [13] and a need for social support as a buffer against adolescents' stress in effective anger management [14]. For example, individuals who received strong social support under stressful circumstances have been shown to experience greater psychological well-being and lower levels of anger relative to those who did not receive this support [3,10,14]. However, a study involving Korean college students [15] reported that social support was not significantly correlated with anger. In view of the conflicting findings of previous studies, additional research examining the relationship between these variables in nursing students is required to determine the feasibility of the provision of social support as an intervention strategy for anger management in nursing students.

A grateful disposition, which is one of the characteristics of positive psychology, is another protective factor for stress and anger. In addition, it has recently attracted increased attention as a positive internal resource that contributes to physical, psychological, and social health [16,17]. According to the results of previous studies, people with a grateful disposition had positive interpersonal relationships, displayed prosocial behavior within their social networks [16,18], experienced few psychological problems such as depression and anxiety, and exhibited positive characteristics such as optimism and friendliness [19,20]. Moreover, in a study involving nursing students in Korea, life stress significantly affected grateful disposition [21], which in turn was negatively associated with anger [22]. In view of these findings, a grateful disposition is likely to play a crucial role in reducing angry reactions to stress.

Consequently, anger could be considered an emotional aspect of mental health; however, it is also connected to cognition and spiritual well-being [22]. Therefore, the identification of various relevant factors is imperative in clarifying the relationships between these factors, to ensure effective anger management. In addition, although the number of studies examining nursing students' anger has increased, further research is required. Moreover, no studies have been conducted to examine the mediating effects of protective factors, such as social support and a grateful disposition, on the relationship between anger and stress, which has been shown to be the main risk factor for anger.

The present study sought to examine the mediating effects of a grateful disposition and social support on the relationship between life stress and anger in nursing students. The first aim was to determine the levels of stress, social support, and anger of the nursing students and the strength of their grateful disposition. The second aim was to identify the relationships between life stress, social support, a grateful disposition, and anger. The third aim was to verify the mediating effect of a grateful disposition and social support on the relationship between life stress and anger.

## Methods

### Study design

The study involved a descriptive research design.

### Setting and sample

Convenience sampling was used to recruit 180 nursing students enrolled at two different 4-year nursing colleges located in Daegu and Busan city. The required sample size was calculated as 166, with a significance level of .05 in multiple regression analysis, a medium effect size of .15, power of 95.0%, and nine predictors (i.e., six demographic characteristics, life stress, social support, and a grateful disposition), using the G-power 3.1.5 software program (Heinrich Heine University, Dusseldorf, Germany).

### Ethical considerations

Ethical approval for the study was granted by the ethics review board for life science of Keimyung University (Approval no. 40525-201508-HR-62-02), and permission to collect data was granted by the deans of the colleges. The researcher visited students during their breaks to explain the purpose and content of the study, assure students that participation was voluntary and anonymous, and inform them that they could withdraw from the survey at any time without penalty if they no longer wished to participate. All participants understood the purpose of the study, participated voluntarily, and provided written informed consent.

### Measurement

#### Life stress

Life stress was measured using the Revised Life Stress Scale for College Students developed by Chon et al [23]. The scale consists of 50 items divided among the following eight subcategories pertaining to stress resulting from negative life events experienced by students during their time at college: same-sex peer relationships (five items), opposite-sex peer relationships (six items), family relationships (six items), relationships with faculty members (six items), academic problems (seven items), financial problems (seven items), concerns regarding future careers (eight items), and problems involving personal values (five items). Responses are provided using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and higher scores indicate higher levels of life stress. Cronbach  $\alpha$  for the subcategories ranged from .75 to .88 in the study by Chon et al [23] and .85 to .92 in the present study. In addition, Cronbach  $\alpha$  for the overall scale was .90 in the present study.

#### Social support

Social support was measured using the 12-item Multidimensional Scale of Perceived Social Support developed by Zimet et al [24] and translated into Korean by Shin and Lee [25]. Responses are provided using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and higher scores indicate higher levels of perceived social support. Cronbach  $\alpha$  for the scale was .85 at the time of development, .89 in the study by Shin and Lee [25], and .92 in the present study.

#### Grateful disposition

The strength of each student's grateful disposition was measured using the Gratitude Questionnaire-6, which was originally developed by McCullough et al [18] and translated into Korean by Kwon et al [19]. The scale consists of six questions pertaining to the experience and expression of gratitude in daily life. Responses

are provided using a 7-point Likert scale, and higher scores indicate a stronger grateful disposition. Cronbach  $\alpha$  for the scale was .85 in the study by Kwon et al [19] and .88 in the present study.

### Anger

Anger was measured using the State-Trait Anger Expression Inventory, which was developed by Spielberger et al [26] and revised and translated into Korean by Chon et al [27]. The experience of anger is measured using 20 items divided equally between the following two subcategories: state anger and trait anger. The expression of anger is measured using 24 items divided equally among the following three subcategories: anger suppression, anger expression, and anger control. The present study used only the 10 items in the trait anger subcategory, to assess participants' general tendency toward anger. Responses are provided using a 4-point Likert scale ranging from 1 (not at all) to 4 (very much so). Total scores for the subcategory range from 10 to 40, and higher scores indicate higher levels of anger. Cronbach  $\alpha$  for the trait anger subcategory of the scale was .82 in the study by Chon et al's [27] and .85 in the present study.

### Data collection

Data were collected between October 5 and October 20, 2015. A research assistant distributed 180 self-report questionnaires and retrieved them simultaneously once they had been completed by the participants. Of these, eight were excluded because they were incomplete, and 172 (96.0%) were included in the analysis.

### Data analysis

Data were analyzed using the SPSS 18.0 software program (IBM Corp., Armonk, NY, USA). Means and standard deviations were calculated for life stress, social support, a grateful disposition, and anger. Differences in participants' anger levels according to their demographic characteristics were analyzed using the *t* test and an analysis of variance. Scheffé test was used in the *post hoc* analysis. Correlations between variables were analyzed using Pearson's correlation coefficients. The mediating effects of social support and a grateful disposition on the relationship between life stress and anger were analyzed using three-stage simple and multiple regression analysis, as proposed by Baron and Kenny [28]. Fulfillment of all the following three conditions was required to demonstrate a mediating effect. In the first stage, the independent variable was required to exert a significant effect on the mediating variable. In the second stage, the independent variable was required to exert a significant effect on the dependent variable. In the third stage, the mediating variable was required to exert a significant effect on the independent variable, and a reduction in the effect of the independent variable on the dependent variable, in comparison to that observed in the second stage, was required. In addition, if the correlation between the independent and dependent variables was not significant, the mediating variable was considered to exert a full mediating effect on this relationship. However, if the correlation between the independent and dependent variables was significant, the mediating variable was considered to exert a partial mediating effect on this relationship. The Sobel test was performed to determine the statistical significance of the effect size for the mediating variable.

## Results

### Participants' demographic characteristics

The participants included 147 female students (85.5%) and 25 male students (14.5%); of these, 37 (21.5%), 39 (22.7%), 55 (32.0%),

and 41 (23.8%) were first-, second-, third-, and fourth-year students, respectively. In addition, 110 (64.0%) students were not religious. With respect to monthly household income, the proportion of students (38.4%,  $n = 66$ ) who reported incomes of  $\geq 4$  million South Korean won was the largest. Moreover, the proportions of students who selected "neither good nor bad" to describe their interpersonal (54.7%,  $n = 94$ ) and family relationships (50.0%,  $n = 86$ ) were the largest (Table 1).

### Life stress, social support, a grateful disposition, and anger scores

Participants' mean life stress score was 2.13 of 5. The mean score for the academic problems subcategory was the highest (3.05), followed by the means for future career (2.51), problems involving personal values (1.98), financial problems (1.97), family relationships (1.72), relationships with faculty members (1.70), same-sex peer relationships (1.58), and opposite-sex peer relationships (1.55). Participants' mean social support, grateful disposition, and anger scores were 4.16 of 5, 5.42 of 7, and 2.13 of 4, respectively (Table 2).

### Relationships between life stress, social support, a grateful disposition, and anger

Anger was significantly positively correlated with life stress ( $r = .31$ ,  $p < .001$ ) and significantly negatively correlated with social support ( $r = -.50$ ,  $p < .001$ ) and a grateful disposition ( $r = -.49$ ,  $p < .001$ ) (Table 3).

**Table 1** Participants' Demographic Characteristics ( $N = 172$ ).

Characteristics	Categories	$n$ (%)
Gender	Woman	147 (85.5)
	Man	25 (14.5)
College year	First	37 (21.5)
	Second	39 (22.7)
	Third	55 (32.0)
	Fourth	41 (23.8)
Religion	Yes	62 (36.0)
	No	110 (64.0)
Monthly family income (USD)	<2,000	26 (15.1)
	2,000–2,990	37 (21.5)
	3,000–3,990	43 (25.0)
	$\geq 4,000$	66 (38.4)
Perceived interpersonal relationships	Good	58 (33.7)
	Average	94 (54.7)
Perceived family relationships	Poor	20 (11.6)
	Good	66 (38.4)
	Average	86 (50.0)
	Poor	20 (11.6)

Note. USD = United States dollar(s).

**Table 2** Descriptive Statistics ( $N = 172$ ).

Variable	Range	Mean $\pm$ SD	Min	Max
Life stress	1–5	2.13 $\pm$ 0.48	1.18	4.20
Same-sex peer relationships	1–5	1.58 $\pm$ 0.85	1.00	4.57
Opposite-sex peer relationships	1–5	1.55 $\pm$ 0.79	1.00	4.50
Family relationships	1–5	1.72 $\pm$ 0.43	1.00	4.33
Faculty relationships	1–5	1.70 $\pm$ 0.56	1.00	3.83
Academic problems	1–5	3.05 $\pm$ 0.94	1.00	5.00
Financial problems	1–5	1.97 $\pm$ 0.87	1.00	4.71
Concerns regarding future career	1–5	2.51 $\pm$ 0.91	1.00	5.00
Personal value problems	1–5	1.98 $\pm$ 0.91	1.00	5.00
Social support	1–5	4.16 $\pm$ 0.73	2.42	5.00
Gratitude	1–7	5.42 $\pm$ 1.14	2.67	7.00
Anger	1–4	2.13 $\pm$ 0.43	1.40	3.50

Note. SD = Standard deviation

**Table 3** Correlations between Variables ( $N = 172$ ).

Variable	Anger
	$r(p)$
Life stress	.31 (<.001)
Social support	-.50 (<.001)
Gratitude	-.49 (<.001)

### Mediating effects of social support and a grateful disposition on the relationship between life stress and anger

The results of the first stage of the regression analysis examining the mediating effect of social support showed that life stress exerted a significant effect on social support ( $\beta = -.41, p < .001$ ). The results of the second stage showed that life stress exerted a significant effect on anger ( $\beta = .31, p < .001$ ). The results of the third stage, with life stress and social support as predictor variables and anger as the dependent variable, showed that only social support exerted a significant effect on anger ( $\beta = -.45, p < .001$ ). In other words, social support exerted a full mediating effect on the relationship between life stress and anger. The results of the Sobel test verified the statistical significance of the mediating effect of social support ( $Z = 4.31, p < .001$ ).

The results of the first stage of the regression analysis showed that life stress exerted a significant effect on a grateful disposition ( $\beta = -.49, p < .001$ ). The results of the second stage showed that life stress exerted a significant effect on anger ( $\beta = .31, p < .001$ ). The results of the third stage, with life stress and a grateful disposition as predictor variables and anger as the dependent variable, showed that only a grateful disposition exerted a significant effect on anger ( $\beta = -.45, p < .001$ ). In other words, a grateful disposition exerted a full mediating effect on the relationship between life stress and anger. The results of the Sobel test verified the statistical significance of the mediating effect of a grateful disposition ( $Z = 4.44, p < .001$ ) (Table 4, Figure 1).

## Discussion

The present study identified life stress, social support, and a grateful disposition as factors affecting nursing students' anger and examined the effects of these variables on anger. Nursing students' mean life stress score was 2.12, which was below the median score. In a study conducted by Behere et al [1], nursing students' stress levels were lower relative to those reported by medical and engineering students; however, they denied the experience of stress more strongly relative to medical and engineering students. Nursing students' mean life stress score was lower relative to the median score; however, considering that they could have ignored

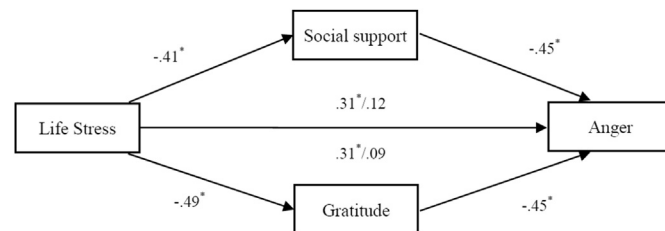


Figure 1. Mediation model of the effects of social support and gratitude on the relationship between life stress and anger. \* $p < .001$ .

the existing stress, an in-depth examination of nursing students' experiences of stress is required.

In the examination of the subcategories of life stress, the mean score for the academic problems subcategory was the highest at 3.05 of 5, which was higher relative to the median score. This finding is understandable as nursing students experience a heavy academic burden because their curricula demand simultaneous theoretical study and clinical practice. Moreover, Shaban et al [2] suggested that stress related to heavy workloads and assignments, particularly that involving dreading the receipt of a low grade, was the main cause of stress in nursing students in Jordan. Therefore, nursing instructors should reduce students' workloads and ensure that they do not have overlapping assignment deadlines, to improve the efficiency of educational programs.

Participants' social support score was 4.16 of 5, which indicated strong social support. Given that a previous study showed that clinical instructors and nursing peers could function as nursing students' support systems [3], the strong social support reported in the present study could have occurred because clinical practices are taught mainly in small groups, and students receive timely feedback from clinical instructors and form close relationships with their peers as they face shared challenges [3].

The mean grateful disposition score (5.42 of 7) was higher relative to the median score and similar to the score of 5.56 observed for nursing students in a study conducted by Park and Wee [22]. In addition, it was higher relative to the scores of 4.89 in research involving Chinese college students [11]. Considering that a grateful disposition plays a crucial role in the recognition and understanding of relationships and connections, which is required in person-centered care, it is an essential characteristic for caregivers such as nursing students [29]. Consequently, the awareness of a grateful disposition as a nursing skill has increased in the field of nursing education [29]. This could have been reflected in the stronger trend toward a grateful disposition observed in the nursing students in the present study, relative to those observed in other college students in previous studies.

**Table 4** Mediating Effects of Social Support and Gratitude on the Relationship between Life Stress and Anger ( $N = 172$ ).

Variable	Step	B	SE	$\beta$	t	p	Adjusted $R^2$	F	p
SS	1. LS $\rightarrow$ SS	-.46	.08	-.41	-5.89	<.001	.17	34.74	<.001
	2. LS $\rightarrow$ An	.20	.05	.31	4.19	<.001	.09	17.54	<.001
	3. LS, SS $\rightarrow$ An						.25	30.06	<.001
	LS $\rightarrow$ An	.08	.05	.12	1.66	.100			
	SS $\rightarrow$ An	-.26	.04	-.45	-6.22	<.001			
Sobel test: $Z = 4.31, p < .001$									
Gr	1. LS $\rightarrow$ Gr	-.86	.12	-.49	-7.41	<.001	.24	54.92	<.001
	2. LS $\rightarrow$ An	.20	.05	.31	4.19	<.001	.09	17.54	<.001
	3. LS, Gr $\rightarrow$ An						.24	27.32	<.001
	LS $\rightarrow$ An	.06	.05	.09	1.11	.270			
	Gr $\rightarrow$ An	-.17	.03	-.45	-5.81	<.001			
Sobel test: $Z = 4.44, p < .001$									

Note. An = anger; Gr = gratitude; LS = life stress; SE = standard error; SS = social support.



Nursing students' mean anger score was 2.13 of 4, which was slightly higher relative to the median score and the score of 2.04 observed in medical students in a study conducted by Agha Yusefi et al [6]. Anger is significantly associated with serious mental health problems such as addiction and suicidal ideation, which are common during the college years [4,6,30]. In this context, the results regarding the students' anger is of concern as their anger could lead to secondary mental health problems, and their anger level was higher relative to the level (2.11) observed in participants in a study conducted by Song [30], in which 50.0% and 79.0% of Korean college students were at risk of alcohol abuse and excessive Internet use, respectively. Moreover, because caregivers' anger could increase the occurrence of behaviors that could harm care recipients [9], it is imperative to assess and manage nursing students' anger levels proactively.

The results regarding the mediating effects of social support and a grateful disposition on the relationship between life stress and anger showed that both variables exerted a mediating effect. This finding indicated that higher levels of life stress reduced the levels of perceived social support and the strength of participants' grateful dispositions, which ultimately led to high levels of anger. This finding is consistent with the findings of a study in which social support functioned as a buffer between stress and anger in Korean adolescents [14]. In addition, this finding provides partial support to a study conducted by Park and Wee [22], in which nursing students' anger was significantly negatively correlated with a grateful disposition, and a study conducted by Sapmaz et al [17], in which Turkish college students with a strong grateful disposition reported a stronger sense of well-being.

The finding that social support and a grateful disposition exerted full mediating effects on the relationship between life stress and anger requires particularly close attention as it indicates that it is possible to reduce the impact of stress on anger by promoting social support or a grateful disposition. In other words, it could be more effective to procure resources for social support or promote positive psychological traits, such as a grateful disposition, rather than dealing with stress itself, in the management of nursing students' anger.

Furthermore, social support could help people who experience stress-related anger to express their anger appropriately [14]. Moreover, talking to someone about stress problems and obtaining support could purge negative emotions caused by stress [12,14]. The study by Reeve et al [3] identified nursing students' anger as a reaction to stress resulting from clinical practice; in addition, the results showed that talking about stressful clinical experiences with clinical instructors or nursing peers was an effective means of managing stressful situations. Therefore, to ensure that nursing students receive strong social support, nursing educators should create an atmosphere in which the students feel comfortable expressing their difficulties and receive empathetic feedback, by implementing junior–senior mentoring programs or small group study programs led by nursing instructors.

The present study revealed that social support is a mediating variable when life stress has an influence on anger. This finding indicates that life stress influences social support. Conversely, some previous studies [11,12] have reported that social support influences life stress. In this regard, future research is needed to clarify the causal relationship between these variables.

In addition, as people with a grateful disposition tend to discover positive aspects of situations even under stressful circumstances, manage difficulties proactively, and consider the world pleasant and amicable [19,20], positive psychological traits, such as a grateful disposition, should be developed to increase the effectiveness of anger management for nursing students. Moreover,

it would be beneficial to encourage nursing students to engage in various activities that would allow them to make gratitude habitual (e.g., creating a list of things for which they are grateful and writing thank you letters) or provide them with opportunities to share experiences involving positive outcomes of gratitude.

### Limitations

Because convenience sampling was used to recruit nursing students from only two colleges in two metropolitan cities in Korea, the findings cannot be generalized to all nursing students. Furthermore, the study used self-report questionnaires to measure the variables, and participants could have provided defensive or socially acceptable responses. Therefore, future studies should adopt various measurement methods, including interviews and observation, to increase data reliability. In addition, our study failed to consider differences according to the anger level. This might limit the availability of hard evidence to support definite correlations among study variables.

### Conclusion

Anger is a major emotional problem that arises in response to stress. The results of the study showed that a grateful disposition and social support could reduce the impact of stress on anger by functioning as full mediators of the relationship between these variables. Therefore, it is necessary to implement strategies to increase the provision of social support and the strength of nursing students' grateful disposition in managing their anger. The findings also enhance understanding of nursing students' anger and provide for specific strategies for anger management. In addition, they could contribute to the development of anger management programs for nursing students and provide directions for future research. Moreover, the generalizability of the findings should be increased through repetition of the present study with larger and more diverse samples. Furthermore, unlike the present study, which examined only stress, social support, and a grateful disposition as factors affecting nursing students' anger, future studies should include various psychosocial variables and identify the causal relationships between them according to the anger level via comprehensive structural equation modeling. A follow-up study involving the development and assessment of an anger management program based on the findings of the present study should also be conducted.

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### Conflicts of interest

The authors have no conflict of interest to declare.

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