

The Relationships among Type D Personality, Self-Resilience, and Health Promoting Behaviors in Nursing Students

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Abstract

The purpose of this study was to examine the relationships among type D personality, self-resilience, and health promoting behaviors in nursing students. Participants in this cross-sectional study were 517 nursing students from three universities in South Korea who completed a structured self-report questionnaire. Data were collected from March to June 2013, and were analyzed using multiple regression analysis with SPSS ver. 18.0. The mean scores of self-resilience ($t = -6.154, P < 0.001$) and health promoting behaviors ($t = -6.444, P < 0.001$) were significantly different between the Type D and non-Type D personality groups. Grade, self-esteem, Type D personality, and self-resilience were significant predictors of health promoting behaviors, accounting for 34.8% of its variance ($F = 25.714, P < 0.001$). Of these four variables, self-resilience was the most significant contributor to health promoting behaviors in nursing students. Health promotion programs for nursing students should be designed and developed with consideration of interventions for psychological variables such as Type D personality and self-resilience.

Keywords: Health promotion, nursing students, personality, resilience

1. Introduction

Nursing students struggle with the psychological pressure of needing to equip themselves with adequate nursing competencies by acquiring professional knowledge and skills in their theoretical and practical courses. They must pass the national examination for licensure at the time of their graduation in order to be a registered nurse [1-2].

Nursing students must overcome such pressures, adjust to school life, and should be able to deal with their current situation to achieve their desired goals. Faced with a crisis, nursing students require self-resilience to ensure a quick psychological recovery and problem resolution [3]. Those with a high degree of self-resilience tend to maintain a positive self-image, be pro-social, have a strong internal locus of control; consequently, they can respond flexibly to changing situational demands and adjust themselves to new circumstances successfully [4]. Hodges, Troyan, & Keeley [5] and Pines *et al.* [6] recommend the use of self-resilience by novice nurses who recently have graduated from school to adapt to the new work environment of nursing, in which various situations arise unexpectedly. In this context, nursing students need to have self-resilience to adjust to school life and to their future nursing jobs in the hospital and community.

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Type D personality is characterized by frequent experiences of negative emotional states such as anxiety, fear, and excitement, regardless of time and place, and long-lasting symptoms of somatization resulting from vascular, nervous, and endocrine reactions to such emotional states [7]. A study of female nursing students reported that those with Type D personality had lower levels of self-resilience than did non-D types; in other words, Type D personality was negatively related to self-resilience [2]. Particularly, people with a Type D personality have been reported to have low levels of perceived health status and of engaging in actual health behaviors compared to those with a non-D type personality [8]. It is important to determine whether nursing students have Type D personality in order for them, as future nurses, to strengthen their skills to cope with crisis situations, attain further knowledge and qualifications as professional nurses, and to minimize their own health problems [2].

Although college students have low morbidity and mortality rates relative to other groups [9], it is recommended that they correct their unhealthy daily habits and build a sound lifestyle at their age. However, many of them engage in risky behaviors, such as alcohol abuse, lack of physical activity, unhealthy eating habits, and irregular sleep and rest [10].

Health-related behaviors is an obvious possible mediator of the relationship between Type D personality and ill health [11]. Previous studies have reported that the level of health promoting behaviors in nursing students was lower than that of college students majoring in other subject areas [9]. As future professional nurses who will assume the role of a healthcare provider in the community, college nursing students should prepare themselves to exhibit exemplary health promoting behaviors in their daily lives [9,12]. Thus, it is worthwhile to measure their level of health promoting behaviors and to identify the factors affecting it.

Previous studies on the association between Type D personality and health promoting behaviors have been conducted mainly with middle-aged participants who often have health problems [7,8,13,14]. There are few studies on college students, particularly on nursing students' personality types and health-related behaviors and on the correlations among Type D personality, self-resilience, and health promoting behaviors.

College students are responsible for their own health, and must prepare themselves for starting a social life as a healthy worker by developing healthy habits. Given the importance of nursing students' psychological health status and their engagement in health promoting behaviors, it is necessary to examine the relationships among the three variables: Type D personality, self-resilience, and health promoting behaviors.

The purposes of this study were to examine comprehensively the relationship among nursing students' Type D personality, self-resilience, and health promoting behaviors, and ultimately to provide some basic knowledge about materials for the physical and psychological healthcare of nursing students, who will play key roles as healthcare providers in the future.

2. Methods

2.1. Study Design

This study was conducted as a cross-sectional descriptive survey using a questionnaire.

2.2. Data Collection and Participants

The sample size calculation using G*Power 3.0.10 [15] showed that a multiple regression analysis with ten predictors required a minimum sample size of 172 for an effect size of 0.15, with a significance of 0.05 and a power of 0.95 using *F* tests. To ensure the reliability of this study, data were collected across the country with

consideration of regional similarities and differences. The selected regions ranged from metropolitan areas to small and medium-sized cities. Nursing students from universities of three different cities were randomly selected to participate in the survey. The data were collected from March to June 2013, and 538 nursing students participated in this study. After excluding 21 incomplete questionnaires (valid response rate: 96.1%), data from 517 nursing students were analyzed. Therefore, the minimum sample size requirement to perform multiple linear regression was obtained.

2.3. Measures

2.3.1. Type D Personality. Type D personality was measured using the questionnaire developed by Denollet [16]; the Korean version was translated by Lim *et al.* [17]. We used this questionnaire with the Korean version and the original author's permission. This questionnaire consists of 14 items: 7 items on the domain of negative affectivity, indicating the tendency to experience negative affect, depending on the time and situation; and 7 items on the domain of social inhibition, indicating the tendency to inhibit the expression of emotion or behavior in social interactions in order to avoid rebuke. Each question was answered on a 5-point Likert scale ranging from 0 (No) to 4 (Yes); if the score of each domain was 10 or higher, the respondent was classified as having Type D personality. The Cronbach's α for this tool was .88 for negative affectivity and .86 for social inhibition during its development, and it was .82 and .85, respectively, for the present study.

2.3.2. Self-Resilience. Self-resilience refers to a tendency to respond flexibly to situational demands or stressful situations [18]. In this study, self-resilience was measured using the questionnaire developed by Wagnild and Young [18], for which we paid a copyright royalty to use; the Korean version was translated by Shin [19]. This questionnaire consists of 25 items: 17 items on personal self-resilience and 8 on the respondent's acceptance of his/her own life. Each item was answered on a 7-point Likert scale ranging from 1 (Not at all) to 7 (Absolutely yes) and the total score ranged from 25 to 175. A high score indicates a high level of self-resilience. The Cronbach's α for this tool was .91 during its development and .88 in this study.

2.3.3. Health Promoting Behaviors. Health promoting behaviors was measured using the Health Promotion Lifestyle Profile (HPLP) developed by Walker, Sechrist, and Pender [20] and translated into Korean and revised by Seo [21] with the original author's permission. This questionnaire consists of 47 items in 6 domains, including 11 items on spiritual growth, 10 on health responsibility, 5 on physical activity, 7 on nutrition, 7 on interpersonal relations, and 7 on stress management. Each item is answered on a 4-point scale, and the total score ranges from 47 to 188. A high score indicates a high level of health promoting behaviors. The Cronbach's α of this tool was .90 in Seo's [21] study and .90 in this study.

2.3.4. Other Variables. The general demographic characteristics that were measured were age, gender, grade, economic level, social support, student satisfaction levels with their courses, subjective health status, and self-esteem. These data were collected by using a structured questionnaire.

2.4. Procedures

Ethical approval was granted by the Ethics Committee of the institution. All of the participants agreed to participate in the study and signed a written consent form before the start of the study that assured them confidentiality. Data were collected using a self-report

questionnaire. Before starting this investigation, a feasibility test was conducted on ten nursing students who were not included in this study, to check if the questionnaire contained incomprehensible items.

3. Data Analysis

Data analysis was conducted using SPSS for Windows version 18.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were calculated for participants' demographic characteristics. Differences in the level of health promoting behaviors in relation to demographic characteristics were analyzed using the *t*-test, ANOVA, and Scheffé's method. In addition, independent-samples *t*-tests were used to assess self-resilience and health promoting behaviors between the two groups. Multiple regression analysis by the concurrent input method was used to derive factors affecting health promoting behaviors. The threshold for statistical significance was set at 0.05.

4. Results

4.1. Differences in the Level of Health promoting behaviors by Demographic Characteristics

The general characteristics of the participants are shown in Table 1. The average age of the participants was 20.50, and the age group under 23 accounted for 92.3% of the participants ($n = 477$); the gender ratio was 91.7% female ($n = 474$). With respect to grade, freshmen were 29.6% ($n = 153$), sophomores were 28.2% ($n = 146$), juniors were 26.9% ($n = 139$), and seniors were 15.3% of the participants ($n = 79$). In terms of economic level, middle-class nursing students accounted for 81.4% ($n = 421$), of the participants. Fifty-two percent ($n = 269$) of the participants rated their social support as "satisfactory," and student satisfaction levels with their courses was "average," for 61.5% ($n = 318$) of the participants. Regarding subjective health status, a rating of "good" accounted for 55.3% ($n = 286$) of the participants, and self-esteem was rated "high" by 8% ($n = 268$) of the participants.

The results of the analysis of the level of health promoting behaviors by demographic characteristics revealed a significant difference according to grade ($F = 2.675$, $P = .047$), economic level ($F = 8.382$, $P < .001$), social support ($F = 13.998$, $P < .001$), student satisfaction levels with their courses ($F = 13.059$, $P < .001$), subjective health status ($F = 6.556$, $P = .002$), and self-esteem ($F = 47.361$, $P < .001$) (Table 1). According to the results of the post-hoc analysis, the higher the grade, the more significantly the level of health promoting behaviors was high in nursing students ($F = 2.675$, $P = .047$). It was also significantly higher when the economic level was "high" than when it was "middle" or "low" ($F = 8.382$, $P < .001$). Furthermore, the level of health promoting behaviors was significantly higher when social support ($F = 13.998$, $P < .001$), student satisfaction levels with their courses ($F = 13.059$, $P < .001$), and self-esteem ($F = 47.361$, $p < .001$) were high, and there was a significant difference between those with good subjective health status and those with fair or poor status ($F = 6.556$, $P = .002$).

4.2. Differences in Self-Resilience and the Health promoting Behaviors by Type D Personality

The mean scores of self-resilience ($t = -6.154$, $P < 0.001$) and health promoting behaviors ($t = -6.444$, $P < 0.001$) were significantly different between the Type D and non-Type D personality groups (Table 2). In addition, there were significant differences between the two groups in their mean scores on the sub-categories of health promoting behaviors, including spiritual growth ($t = -7.417$, $P < 0.001$), health responsibility ($t = -2.760$, $P = 0.006$), physical activity ($t = -1.643$, $P = 0.101$), nutrition ($t = -3.441$, $P =$

0.001), interpersonal relationships ($t = -7.724, P < 0.001$), and stress management ($t = -3.052, P = 0.002$).

Table 1. Differences in the Level of Health Promoting Behaviors by Demographic Characteristics (N = 517)

Characteristics	Categories	Total		Health promoting behaviors			
		N	(%)	M	±	SD	<i>t</i> or <i>F</i> (<i>P</i>)
Age (years) (M ± SD: 20.50 ± 2.56)	≤ 23	477	(92.3)	2.64	±	0.31	-0.192 (.848)
	> 23	40	(7.7)	2.65	±	0.34	
Gender	Male	43	(8.3)	2.67	±	0.37	0.516 (.609)
	Female	474	(91.7)	2.64	±	0.30	
Grade [†]	1 ^a	153	(29.6)	2.59	±	0.34	2.675 (.047) (a < b < c < d)
	2 ^b	146	(28.2)	2.64	±	0.30	
	3 ^c	139	(26.9)	2.68	±	0.27	
	4 ^d	79	(15.3)	2.69	±	0.34	
Economic level [†]	High ^a	34	(6.6)	2.86	±	0.34	8.382 (< .001) (b, c < a)
	Middle ^b	421	(81.4)	2.65	±	0.29	
	Low ^c	62	(12.0)	2.53	±	0.38	
Social support [†]	Satisfactory ^a	269	(52.0)	2.71	±	0.31	13.998 (< .001) (c < b < a)
	Average ^b	214	(41.4)	2.58	±	0.29	
	Unsatisfactory ^c	34	(6.6)	2.33	±	0.25	
Student satisfaction levels with their courses	Satisfactory ^a	168	(32.5)	2.74	±	0.30	13.059 (< .001) (c < b < a)
	Average ^b	318	(61.5)	2.61	±	0.30	
	Unsatisfactory	31	(6.0)	2.50	±	0.36	
Subjective health status [†]	Good ^a	286	(55.3)	2.68	±	0.31	6.556 (.002) (c < a, b)
	Fair ^b	179	(34.6)	2.63	±	0.29	
	Poor ^c	52	(10.1)	2.51	±	0.35	
Self-esteem [†]	High ^a	268	(51.8)	2.75	±	0.29	47.361 (<.001) (c < b < a)
	Middle ^b	180	(34.8)	2.57	±	0.25	
	Low ^c	69	(13.4)	2.41	±	0.34	

[†]Scheffé's method

Table 2. Differences in Self-Resilience and the Health Promoting Behaviors by Type D Personality (N = 517)

	Type D	Non-Type D	Possible score	<i>t</i> (<i>P</i>)
	M ± SD	M ± SD		
Self-resilience	4.48 ± 0.56	4.82 ± 0.58	1-7	-6.154 (< 0.001)
Health promoting behaviors	2.52 ± 0.29	2.70 ± 0.30	1-4	-6.444 (< 0.001)
Spiritual growth	2.89 ± 0.33	3.13 ± 0.37	1-4	-7.417 (< 0.001)
Health responsibility	2.23 ± 0.44	2.35 ± 0.46	1-4	-2.760 (0.006)
Physical activity	1.69 ± 0.65	1.79 ± 0.70	1-4	-1.643 (0.101)
Nutrition	2.25 ± 0.57	2.44 ± 0.58	1-4	-3.441 (0.001)
Interpersonal relationships	2.97 ± 0.41	3.27 ± 0.42	1-4	-7.724 (< 0.001)
Stress management	2.77 ± 0.37	2.89 ± 0.43	1-4	-3.052 (0.002)

4.3. The Relationships among Type D Personality, Self-Resilience, and Health-Promoting Behaviors

Correlation coefficients between type D personality, resilience and health promoting behavior are presented in Table 3. There were statistically significant negative correlations between type D personality and resilience ($r=-0.410, p<.001$), health promoting behavior ($r=-0.377, p<.001$). There was statistically significant positive correlations between resilience and health promoting behavior ($r=0.536, p<.001$).

Table 3. The Relationships among Type D Personality, Self-Resilience, and Health Promoting Behaviors (N = 517)

Variables	Type D personality	Resilience	Health promoting behavior
	r(p)	r(p)	
Type D personality	1		
Resilience	-0.410 (<.001)	1	
Health promoting behavior	-0.377 (<.001)	0.536 (<.001)	1

4.4. Factors Affecting Health Promoting Behaviors

The assumptions of normality, independence of errors, and multicollinearity of data were examined to verify whether multiple regression analysis was appropriate. With the Durbin-Watson d of 2.000, which is between the two critical values of $1.5 < d < 2.5$, it can be assumed that there was no linear auto-correlation in the multiple linear regression data. The plot of the error terms also indicated that they were independent in the multiple linear regression analysis, with a tolerance of > 0.1 or a VIF < 10 for all variables, meaning that there was no multicollinearity in the regression models. Table 4 shows the results of the multiple linear regression model summary and overall fit statistics using the enter method. Demographic characteristics, Type D personality, and self-resilience were entered simultaneously. Grade ($\beta = 0.103, t = 2.307, P = 0.021$), self-esteem ($\beta = 0.115, t = 2.519, P = 0.012$), Type D personality ($\beta = -0.128, t = -2.932, P = 0.004$), and self-resilience ($\beta = 0.393, t = 8.617, P < 0.001$) significantly accounted for 34.8% of the variance in health promoting behaviors ($F = 25.714, P < 0.001$). Of these four variables, self-resilience was the most significant contributor to health promoting behaviors in nursing students.

5. Discussion

The Korean nursing students' average score on the single question concerning health promoting behaviors was 2.64, and this was relatively higher than the 2.38 for non-nursing students in Can *et al.* [10]. This result may be explained by the fact that, due to the characteristics of their courses, nursing students are exposed to themes related to health promotion more frequently than non-nursing students are.

In this study, the participants' health promoting behaviors was significantly different according to their grade, economic level, social support, student satisfaction levels with their courses, subjective health status, and self-esteem level. This result is consistent with the report of Kim and Park [22] that health promoting behaviors was significantly different according to economic status, social support, and perceived health status, and with the report of Yoon [23] that the level of health promoting behaviors was significantly different according to self-esteem scores. However, the current results of this study contradict the results of Park and Kang [24], who found that level of health promoting behaviors was not significantly different by grade or student satisfaction levels with their courses.

Table 4. Factors Affecting Health Promoting Behaviors (N = 517)

Predictors	Health promoting behaviors				
	Unstandardized coefficient		Standardized coefficient	t	p
	B	Standard error	β		
Constant	59.632	9.124		6.536	<.001
Age	-0.015	0.253	-0.003	-0.057	0.954
Gender	2.318	2.016	0.045	1.150	0.251
Grade	1.451	0.629	0.103	2.307	0.021
Economic level	1.812	1.530	0.046	1.184	0.237
Social support	1.062	1.178	0.038	0.902	0.368
Student satisfaction levels with their courses	1.196	1.092	0.045	1.095	0.274
Subjective health status	1.026	0.836	0.047	1.227	0.220
Self-esteem	2.351	0.933	0.115	2.519	0.012
Type D personality	-0.248	0.085	-0.128	-2.932	0.004
Self-resilience	0.386	0.045	0.393	8.617	<.001
F (p) = 25.714 (<.001)		R ² = .348, adj. R ² = .334			

Students with Type D personality showed relatively lower self-resilience and health promoting behaviors levels than did those with non-Type D personality. Those with high self-resilience tended to have a positive social orientation [25]. As the participants with Type D personality show negative affectivity and a tendency to be socially inhibited, they are believed to be low in self-resilience. A study by Hawks, Madanat, Merrill, Goudy, and Miyagawa [26] that compared health promoting behaviors between Americans and Japanese college students reported a score of 2.72 in American female students and 2.56 in their Japanese counterparts; these values were both higher than the 2.52 found for the Type D personality participants in this study. In the study by Williams *et al.* [11] with healthy adults, the participants with Type D personality were found to perform fewer health-promotion behaviors (dietary habits, exercise and activity, regular medical examinations, and stress management) than did those with non-Type D, and those results support the findings of the present study.

When the sub-categories of health promoting behaviors were compared between the Type D and non-Type D groups, the participants with Type D personality showed lower scores than did those with non-Type D personality in spiritual growth, health responsibility, physical activity, nutrition, interpersonal relation, and stress management; these findings were similar to the results of Bae *et al.* [8]. Compared to non-Type D personality, Type D personality is characterized by a tendency to engage in health-related behaviors less often, spend shorter periods doing outdoor activities, and be less likely to eat sensibly and have regular health examinations [11]. Accordingly, when planning health promotion and nursing intervention programs for them, it is required to use strategies such as online counseling and education in addition to face-to-face counseling, considering their tendency to be passive and unsociable in interpersonal relations. The sub-category of health-promotion behavior showing the highest score in the present study was interpersonal relationships in both groups (Type D personality and non-Type D

personality). The results of a study by Hawks *et al.* [26] also revealed that the scores on this sub-category were the highest among female students. The sub-category showing the lowest mean score in both groups was physical activity, and this finding is consistent with the results of Can *et al.* [10], who surveyed health promoting behaviors among nursing and non-nursing students using the same tool. Nursing students usually have a relatively heavy workload, given the coursework requirements of their major, when it was compared the coursework requirements of nursing with those in different disciplines such as humanities, social sciences, and liberal arts area; most of the students who are not engaged in exercise pursue non-active programs for enjoyment and self-development as part of their extracurricular activities. Nurses' roles include both the prevention of disease and the promotion of health, and as future nurses, nursing students should recognize the importance of health promoting behaviors and take responsibility for their own health [20]. Therefore, nursing educators should encourage nursing students to consider the relationship between their own life goals and their health. This is believed to help students maintain and promote health through healthy life habits and to lead a life of higher quality.

For the nursing students in the present study, the most significant factors affecting their health promoting behaviors were grade, self-esteem, Type D personality, and self-resilience, the last of which having the most pronounced effect. Everybody feels negative emotions such as distress and depression in crisis situations, but those with high levels of self-resilience are not overwhelmed by such situations, and their positive affect offsets their negative affect [27]. However, those with low self-resilience panic easily and have poorer coping ability. They tend to be susceptible to stress and are intolerant of frustration; consequently, they are not able to suppress their appetites for cravings that are harmful to their health, such as smoking or excessive food intake [28]. According to a survey of the relationship between nursing students' psychological factors and health promoting behaviors, psychological health is an important predictor of health promoting behaviors [29]. In a survey on the relationship between self-resilience and health work, self-resilience explained 30.2% of the variance in their health-promoting lifestyle practices (*i.e.*, active involvement in health matters, pursuit of health goals, and use of a problem-solving approach to manage health situations) [30]. This finding supports the results of the present study, in that self-resilience has a significant effect on changes in health behavior in response to a stressful environment or event.

Studies on the association between Type D personality and behavioral patterns have been fewer in number than those on the relation between Type D personality and health outcomes [31,32]. However, consistent evidence from well-controlled prospective studies indicates that neuroticism/negative affectivity and social inhibition are associated with both health behaviors and outcomes [33].

Health promoting behaviors are important determinants of health status and quality of life. In general, health experts do not prioritize efforts to promote health or to reinforce positive attitudes during healthy periods of life [34,35]. However, school life is a transitional stage that can provide opportunities to solidify a healthy lifestyle in adulthood. Therefore, when providing programs for health promotion and maintenance to those with Type D personality, it is necessary to pursue the practice of health behavior or the prevention of disease as outcomes by applying psychological interventions and by strengthening self-resilience.

6. Conclusion

This study is valuable in that it attempted to explain the associations among Type D personality, self-resilience, and health promoting behaviors as an effort to promote nursing students' healthy lifestyles. Although Type D personality has been suggested as a predictor of disease-related health outcomes in previous studies, this study confirmed that

it affects healthy college students' health promoting behaviors as well. Moreover, self-resilience was found to be the most significant factor affecting nursing students' health promoting behaviors. Students with high self-resilience have greater self-control and make better decisions about their futures by taking responsibility for health promotion for themselves and others. Accordingly, nursing faculty should emphasize the importance of psychological and physical health for their own life's goals. When colleges design health promotion programs for nursing students in the future, they need to include psychological interventions in the programs, and consider variables such as Type D personality and self-resilience.

A limitation of this study is the inability to generalize the results to all nursing students. This is because the participants of this study do not reflect the diversity of school systems and all of them were students at 4-year colleges. Furthermore, given its cross-sectional design, this study could not examine changes in the observations that might have occurred over the students' 4-year course of education. Finally, we cannot exclude the possibility that psychological variables such as depression might affect Type D personality and the health-related behaviors that were observed.

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