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Mediating effect of major satisfaction on the influence of critical thinking disposition on disaster recognition

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Abstract

The purpose of this study was to identify mediating effect of major satisfaction in the effect of critical thinking disposition on disaster recognition. For this study, 237 students of nursing students from universities in Jeollanam do participated in the study. The data collection was collected on Dec 1 to 7, 2017. The descriptive statistics was used to analyze general characteristics of participants, the differences in disaster recognition according to general characteristics were analyzed by t-test or ANOVA. Regression analysis was conducted to confirm the effect of critical thinking disposition on disaster recognition and Baron, R.M. And Kenny, D.A.'s mediation effect statistic analysis was used to confirm the mediating effect of major satisfaction in critical thinking disposition on disaster recognition. As a result, the critical thinking disposition affects the disaster recognition, and it was judged that the major satisfaction was mediating role. intellectual fairness sub-factor showed perfect mediating effect and confidence and general truth sub-factor showed partial mediating effect. Based on the above findings, it can be seen that not only critical thinking but also satisfaction with the major should be considered in order to increase the recognition of the sudden disaster. In this case, research for linking critical thinking disposition and major satisfaction is likely to be meaningful. Through the results of this study, we suggest the program development of a linkage between critical thinking disposition and major satisfaction to increase the recognition of disaster.

Keywords: *Critical thinking disposition, Disaster recognition, Major satisfaction.*

1. Introduction

In recent years, disaster patterns including natural disasters have become increasingly larger and diverse in modern society. According to Disaster and Safety Management Basic law, disasters include not only natural disasters but also social disasters such as fire, explosion, and traffic accidents [1]. Furthermore, new diseases that modern society has not anticipated are also recognized as social disasters. The National Security Agency has prioritized the safety of disaster and safety management when national and local governments protect the lives and physical safety of the people and their property. In modern society, however, it is difficult to deal effectively with disasters by government-level disaster management alone. Therefore, mutual cooperation

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between the government and the private sector is more important than anything else. In other words, the efforts of government agencies and individuals must be complemented to be effective in coping with disasters. Unexpected disasters exist in many ways in our surroundings and occur suddenly. Unexpected disasters exist in many ways in our surroundings and occur suddenly. For example, the types of incidents include natural gas accidents, fire accidents, natural disasters such as floods, earthquakes, and landslides. People who have experienced serious disasters experience serious damage such as post-traumatic stress disorder as well as physical damage to property in reality. These disasters, can be hurting not only to the people who got into the disasters but also to the people around them, both in property and in personnel. Therefore, the recognition of an unavoidable disaster can be said to be the most effective way to minimize the loss by making the disaster predictable. In other words, to cope with this is to recognize the social phenomenon and to develop the ability to cope with it. In general, it is known that problem solving ability and inquiry ability about social phenomena are achieved through critical thinking. Critical thinking is the basis of other thinking and at the same time is an eye to see social phenomena correctly.

[2-3] used critical thinking in the reason to consciously seek good interests by considering the rationality of the thinking of oneself and others. This can be interpreted as an intentional, purposeful pursuit of critical thinking. And [4] defined the definition of critical thinking in the study as follows. Critical thinking is defined as questioning the validity of the phenomenon and verifying reliability, suitability, etc. by evaluating it on an objective basis. This can be interpreted as applying the logistic criterion to the event phenomenon in a comprehensive way. In addition, [5] defined the function of critical thinking as follows. Critical thinking is a process of examining why facts occur. OO also said that critical thinking is actively prejudiced against the phenomenon and makes fair and neutral judgment. Furthermore, [6] can select information that is more reliable by comparing and analyzing a lot of information through critical thinking. In summary, critical thinking is the recognition of intellectual enthusiasm, prudence, confidence, systematic, intellectual fairness and general facts about the phenomenon. In other words, by linking critical thinking to disasters, critical thinking is a necessary characteristic to deal with disasters around oneself. In this respect, the purpose of education is to cultivate critical thinking in the field of nursing, which aims at human physical, mental, social and spiritual health.

Currently, the Department of Nursing is a practical department that provides health nursing services to cope with the health needs of various subjects and plays a role as an expert not only in the hospital but also in the community. Therefore, there is an obligation to nurture talented people who have more critical knowledge and ability to cope with sudden disasters than the general people. However, even students enrolled in the nursing department will have a great difference in their perception of disasters depending on their degree of satisfaction with their major in nursing. Also, depending on how rational and fair the knowledge and attitude of the phenomenon is, it can be predicted that there will be many differences in dealing with the phenomenon. According to OO, individual and social support is important in dealing with the case, and self-openness is needed. Like this [7-8] suggested that personal traits also have a significant impact on disaster recognition.

To date, studies in the field of nursing have shown that disaster research is primarily about patient safety. [9] studied about safety culture perception of patient, [10] conducted attitude study on patient safety, [11] studied patient safety management ability. In other words, they studied how nurses perceive safety and how attitude toward safety is. In addition, disaster was analyzed as social risk perception in the social science field. Research on social risk perceptions is based on scientific data and studies on objective social risk factors [12-13]. They insisted that in their research the disasters can be happened when natural and physical events and risks are serious, such as natural disasters and social disasters, which are caused by weak

management of human beings [14]. Smit and Wandel emphasize that the vulnerability of disaster response capacity is as much a source of disaster as the external situation in which the disaster occurred [15]. The cause of the disaster can be said to be the human factor that is caused by the insufficient response of the human being to the disaster [16]. Safety can be said to be the beginning of safety to quickly find something that is not safe as in the SB Choi's research. In other words, the degree of awareness of disasters is the beginning of disaster management. Therefore, this study confirms the effect of critical thinking ability on disaster awareness, and confirms whether the major satisfaction of students in nursing science plays a mediating role. The specific objectives of this study were as follows.

First, identify general characteristics of nursing students.

Second, analyze the difference of disaster awareness according to general characteristics.

Third, analyze factors influencing critical thinking disposition on disaster recognition.

Fourth, analyze the mediating effect of majors' satisfaction on the influence of critical thinking disposition on disaster recognition.

2. Research Method

2.1 Research design

The purpose of this study was to analyze the mediating effect of majors' satisfaction on the influence of critical thinking disposition on disaster recognition for nursing students. The study design is the same as figure 1.

Figure 1. Mediating effect of Major satisfaction on the influence of critical thinking disposition on disaster recognition

2.2 Data collection

For this study, the data collection was collected on Dec 1 to 7, 2017 for the nursing students attending the C University in Jeollanam Do, in Korea. The data were all 255. However, except for the poor data, 237 data were used for the final analysis. The questionnaire consisted of 10 in general questions, questions about Major satisfaction in 9 questions, about Critical thinking disposition in 24 questions, about disaster recognition in 13 questions. Questionnaires took about 20 minutes to complete. The researchers described the questionnaire before filling out the questionnaire and instructed not to use it for other purposes. And only those participants voluntary agree to the study were asked to respond to the questionnaire. The grade of participants ranged from 1st to 4th grade.

2.3 Research tool

2.3.1 Major satisfaction

Major satisfaction was the evaluation of the department of the current major compared with the standard of career or occupation set by the individual. This tool was focused on the cognitive aspect and utilizes the tools that JH Hwang used on the reliability in the research [17].The self-efficacy questionnaire consists of 9 items and was self-reported 5-point Likert scale (1 point = not at all, 2 points = not, 3 points = usually, 4 points =yes, 5 = very much yes). The higher the score, the higher the majors' satisfaction. The reliability of this tool was cronbach alpha = .911.

2.3.2 Critical thinking disposition

Critical thinking disposition was Critical thinking disposition means the personal characteristics, habits, attitudes, and emotional tendencies necessary for critical thinking. This tool is The sub-components of this tool are intellectual enthusiasm, prudence, confidence, systematic, intellectual fairness, and general truth and utilizes the tools that SY Yoo and JH Hwang used on the reliability in research [18-19]. The self-efficacy questionnaire consists of 9 items and was self-reported 5-point Likert scale (1 point = not at all, 2 points = not, 3 points = usually, 4 points =yes, 5 = very much yes). The higher the score, the higher the majors' satisfaction. The reliability of the sub-components of the critical thinking disposition is as follows: intellectual enthusiasm's cronbach alpha = .834, prudence=0.767, confidence=0.793, systematic=0.743, intellectual fairness=0.924, and general truth=0.730.

2.3.3 Disaster recognition

Disaster recognition was confirms the degree of subjective perception of disaster perception and was a reliable tool in HJ Kim s research [20]. This tool is focused on the cognitive aspect. The Disaster recognition consists of 13 items and was self-reported 5-point Likert scale (1 point = not at all, 2 points = not, 3 points = usually, 4 points =yes, 5 = very much yes). The higher the score, the higher the disaster recognition. The reliability (cronbach alpha) of this research tool was 0 .906.

2.4 Data analysis

The collected data were analyzed using SPSS 18.0. The techniques for data analysis are as follows: First, Frequency analysis of descriptive statistics was used to analyze general characteristics of participants. Second, Differences in disaster recognition according to general characteristics were analyzed by t test or ANOVA. Third, Regression analysis was conducted to confirm the effect of critical thinking disposition on disaster recognition. Fourth, In order to confirm mediating role of major satisfaction in the effect of critical thinking disposition on disaster recognition, Baron, R.M. And Kenny, D.A.'s mediation effect statistic analysis [21].

3. Result

3.1 Information of demographic characteristics

General characteristics of the participants were analyzed (Table 1). As a result, 57(24.1%) were male and 180(75.9%) were female. 25(10.5%) in the 1st grade, 85(35.9%) in the 2nd grade, 120(50.6%) in the 3rd grade

and 7(3.0%) in the 4th grade. 149(62.9%) had experience of disaster education even once and 88(37.1%) had no experience. In addition, 73(30.8%) experience disaster and 164(69.2%) never experienced it. The most preferred nursing subject was Maternal Nursing (59.9%), followed by others (53.4%).

Table 1. Demographic Characteristics

N=237

Variable		Freq. (N)	%	Variable		Freq. (N)	%
Gender	Male	57	24.1	Grade	1st	25	10.5
	Female	180	75.9		2nd	85	35.9
Disaster Education	Yes	149	62.9		3rd	120	50.6
	No	88	37.1		4th	7	3.0
Preferred Nursing	Adult	35	14.8	Disaster Experience	Yes	73	30.8
	Maternity	59	24.9		No	164	69.2
	Psychiatry	18	7.6	Religion	Protestant	61	25.7
	Pediatric	21	8.9		Catholic	8	3.4
	Community	9	3.8		Buddhism	10	4.2
	Basic	5	2.1		Others	2	0.9
	Others	53	22.4		None	156	65.8
	None	37	15.6	School GPA	High	22	9.3
Resisdence Type	Dormitory	78	32.9		Middle	174	73.4
	Commute	100	42.2		Lower	41	17.3
	Living alone	58	24.5	Team Role	Leader	50	21.1
	Lodging	1	0.4		Member	187	78.9

3.2 The average difference test of disaster recognition according to general characteristics

The difference of disaster recognition according to general characteristics was analyzed (Table 2). As a result, there was no difference in gender, religion, grade, and team role ($p > 0.05$). There was a significant difference in grade at the significance level ($p < 0.05$). The average disaster recognition per grade was 3.76, which was the highest in 4th grade, 3.53 in 2nd grade, 3.48 in 3th grade, and 3.35 in 1st grade. There was a significant difference in the experience of disaster education having experience ($p < 0.01$). In other words, experienced students showed 3.64, while inexperienced students showed 3.42.

Table 2. The average difference test of disaster recognition according to general characteristics

N=237

Classification	Type	N	Mean (SD)	t/F	p
Gender	Male	57	3.53 (.331)	.780	.436
	Female	180	3.48 (.371)		
Grade	1st	25	3.35 (.280)	3.061	.029*
	2nd	85	3.53 (.303)		
	3rd	120	3.48 (.408)		
	4th	7	3.76 (.232)		
Religion	Protestant	61	3.48 (.380)	.849	.495
	Catholic	8	3.30 (.458)		
	Buddhism	10	3.58 (.241)		
	Others	2	3.65 (.163)		
	None	156	3.50 (.357)		
School GPA	High	22	3.50 (.384)	.391	.677
	Middle	174	3.48 (.382)		
	Lower	41	3.54 (.248)		
Team Role	Leader	50	3.46 (.363)	-.672	.503
	Member	187	3.50 (.362)		
Disaster Education Experience	Yes	149	3.62 (.288)	7.870	.000**
	No	88	3.28 (.374)		
Disaster Experience	Yes	73	3.64 (.326)	4.388	.000**
	No	164	3.42 (.359)		

3.3 The effect of critical thinking disposition on disaster recognition

The impact of critical thinking disposition on disaster recognition was analyzed (Table 3). The results showed that systematic (P<0.05), cautiousness (p< 0.01), intellectual fairness (P<0.05) and confidence (p<0.01). However, intellectual enthusiasm (p> 0.05) and general truth (p> 0.05) did not appear to have any effect.

As a result of the analysis of variance, p = 0.000, the regression equation was suitable for analysis. All of the tolerance limits were not less than 0.01, indicating that there was no problem with multi-collinearity. The Durbin-Watson value is 1.559, which is close to 2, indicating independence between the residuals.

Table 3. The effect of critical thinking disposition on disaster recognition

N=237

Dependent factor	Independent factor	Non standardization factor		β	t	p	Tolerance limit
		B	SD				
Disaster recognition	constant	.646	.370		1.749	.082	
	intellectual enthusiasm	-.007	.065	-.007	-.111	.912	.725
	systematic	.157	.066	.158	2.394	.017*	.680
	cautiousness	.223	.055	.237	4.051	.000**	.862
	intellectual fairness	.135	.067	.118	2.026	.044*	.876
	confidence	.358	.066	.332	5.449	.000**	.797
	general truth	-.014	.081	-.010	-.172	.864	.871
	R^2=.322, Modified R^2=.305, F=18.155, p=.000, Durbin-Watson=1.559						

*.p<0.05, **.p<0.01

3.4 Mediating effect of major satisfaction on the influence of critical thinking disposition on disaster recognition

The Baron, R.M. And Kenny, D.A.'s mediation effect statistic analysis [21] was used to confirm the mediating effect of major satisfaction in the effect of critical thinking disposition on disaster recognition (Table 4). As a result of analysis, intellectual enthusiasm, systematic, and general truth were omitted in the first stage from the analysis as having no effect on the mediating effect analysis. In the second stage, intellectual fairness (p <0.05), confidence (p <0.05) and general truth (p <0.05) were significant. In the third stage, self-efficacy was found to be mediating effect (p <0.05) because the standardization factor was 0.158, which was smaller than the second level 0.205. And the intellectual fairness was not significance in the third stage (P> 0.05), which means major satisfaction can be complete mediating effect in the intellectual fairness. Also, partial mediation effects on disaster recognition were found in confidence and general truth for major satisfaction.

Table 4. Mediating effect of major satisfaction on the influence of critical thinking disposition on disaster recognition

Classification	Level 1 Major satisfaction	Level 2 Disaster recognition	Level 3 Disaster recognition	Tolerance limit
Constant	.492	2.024	1.977	
Intellectual enthusiasm	.007(.006)	-.044(-.066)	-.045(-.067)	.725
Systematic	.116(.115)	-.014(-.022)	-.025(-.039)	.672
Intellectual fairness	.178(.153)*	.097(.131)*	.080(.107)	.850
Confidence	.338(.309)**	.144(.205)*	.111(.158)*	.719
General truth	.018(.013)	.182(.201)*	.181(.199)**	.870
Cautiousness	.229(.240)**	.048(.079)	.026(.042)	.804
Major satisfaction			.097(.151)*	.695
R^2	.305	.148	.164	
Modified R^2	.287	.125	.138	
F	16.767**	6.616**	6.370**	

**p<.001, *p<.005, ( ) is Standardized regression coefficient.

4. Conclusion

This study was conducted to analyze mediating effect of major satisfaction. For this study, 237 students of nursing students from universities in Jeolla nam do participated in the study. The data collection was collected on Dec 1 to 7, 2017. The researchers explained the purpose of the research and the content of the questionnaire in an easy to understand way, and distributed the questionnaire to students who voluntarily participated in the research. The purpose of this study was to identify mediating effect of major satisfaction in the effect of critical thinking disposition on disaster recognition. Therefore, the tools for questionnaires consisted of general characteristics, critical thinking disposition, major satisfaction, and disaster recognition. The collected data were analyzed using SPSS 18.0. The techniques for data analysis are as follows: First, Frequency analysis of descriptive statistics was used to analyze general characteristics of participants. Second, Differences in disaster recognition according to general characteristics were analyzed by t test or ANOVA. Third, Regression analysis was conducted to confirm the effect of critical thinking disposition on disaster recognition. Fourth, In order to confirm mediating role of major satisfaction in the effect of critical thinking disposition on disaster recognition, Baron, R.M. And Kenny, D.A.'s mediation effect statistic analysis.

As a result of the analysis, 62.9% of students had experience of disaster education at least once, and 37.1% of students who did not receive disaster education. And 30.8% of students experienced disaster so far and 69.2% of students never experienced disaster. There were many more disaster education students and there were fewer students who experienced disaster than students who did not. These results are the same as those of [22]. However, even though unexpected disasters such as sudden earthquakes frequently occurred in our country, 37.1% of them did not receive disaster education at all shows that they are neglected in serious disaster preparedness. This reality is much different from the fact that disaster education is mandatory on a regular basis in the United States. Although disaster education can't be avoided because of disaster education, it is meaningful that it can minimize the damage. So what were the factors that affect disaster recognition? In order to know the difference of the factors affecting the disaster awareness, the average difference analysis was conducted with the factors that have been studied so far. As a result of the difference of disaster recognition according to general characteristics, there was no difference in gender, religion, grade, and team role ($p > 0.05$). There was a significant difference in grade at the significance level ($p < 0.05$). The average disaster recognition per grade was 3.76, which was the highest in 4th grade, 3.53 in 2nd grade, 3.48 in 3th grade, and 3.35 in 1st grade. These results suggest that the recognition of disaster has increased due to the nature of nursing education. Also there was a significant difference in the experience of disaster education having

experience ($p < 0.01$). In other words, experienced students showed 3.64, while inexperienced students showed 3.42. It is natural that students who experienced disaster education once have high recognition of disaster. Nevertheless, it is a concern that there are students who have not yet received disaster education. Disaster awareness starts with discovery that it is not safe. It is only in education that people discover something unsafe in their own environment. OO emphasized that critical thinking is the most basic in phenomenon recognition. It is known that the critical thinking tendency consists of 6 sub-elements; confidence, intellectual fairness, intellectual enthusiasm, systematic, cautiousness, and general truth. As a result of the impact of critical thinking disposition on disaster recognition, there were meaningful relationship in the systematic ($P<0.05$), cautiousness ($p< 0.01$), intellectual fairness ($P<0.05$) and confidence ($p<0.01$). However, intellectual enthusiasm ($p> 0.05$) and general truth ($p> 0.05$) did not appear to have any effect. Among the six subcategories of critical thinking disposition, four components except for intellectual enthusiasm and general truth were found to be causal in recognition of disaster. In other words, systematic, cautiousness, intellectual fairness and confidence are related to disaster recognition. Currently, nursing education curriculum in Korea is making a lot of efforts to develop critical thinking disposition. However, there are many students who have entered the school without considering the nursing aptitude along with the awareness of the recent employment. Therefore, even if critical thinking is high, disaster perception may be different depending on the major satisfaction. Therefore, this study analyzed the mediating effect of major satisfaction in the effect of critical thinking disposition on disaster awareness. The Baron, R.M. And Kenny, D.A.'s mediation effect statistic analysis [20] was used to confirm the mediating effect of major satisfaction in the effect of critical thinking disposition on disaster recognition. As a result of analysis, major satisfaction can be complete mediating effect in the intellectual fairness. Also, partial mediation effects on disaster recognition were found in confidence and general truth for major satisfaction.

Based on the above results, the following conclusions can be drawn. The critical thinking disposition that was emphasized in the nursing education curriculum affects the disaster recognition, and it was judged that the major satisfaction was mediating role. Particularly, intellectual fairness sub-factor showed perfect mediating effect and confidence and general truth sub-factor showed partial mediating effect. Based on the above findings, it can be seen that not only critical thinking but also satisfaction with the major should be considered in order to increase the recognition of the sudden disaster. In this case, research for linking critical thinking disposition and major satisfaction is likely to be meaningful. Through the results of this study, we suggest the program development of a linkage between critical thinking disposition and major satisfaction. However, the limit of this study is one university. In the future, it will be desirable to expand the more general reasoning by conducting research on more university nursing students.

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