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A Study on the Regional SAFETY Status in Gangwon-Do Injury Prevention

Jaesung Nam

Wonju Halla University, Wonju, Republic of Korea

Abstract

Purpose: Recently Safety Promotion Policies and Programs at the local government level have been spreading around the world. However, In order for these policies to work, objective analysis of factors that threaten the safety of local residents, such as the scale of injuries caused by internal and external factors, should be preceded, and the resident participatory safety promotion program based on them should be expanded.

Method: This study looked at the safety status of Gangwon-do through various safety indicators, including the regional safety index and death from injuries, and based on this, contemplated policy measures to secure safety and reduce the risk of injuries in Gangwon-do in the future.

Results: Analysis of the regional safety index showed that Gangwon-do was vulnerable in the areas of safety in daily life, suicide, and infectious diseases. In addition, an analysis of the current status of deaths from injuries showed that intentional self-harm, transport accidents, and falls were the man risk factors.

Conclusion: To enhance safety and reduce deaths from injuries in Gangwon-do. first, the damage monitoring system at the province level should be operated to produce injury indicators, and second, an integrated safety network and disaster response center involving all related agencies should be established. Third, participation of residents, and fourth, supports programs for the vulnerable in the community should be expanded.

[Keywords] Gangwon-Do Province, Safety, Iinjury, Injury Mortality, Regional Safety Index

1. Introduction

Recently, the issue of safety has spread and shared not only in Korea but also around the world. As many societies have been highly industrialized, the number of natural disasters such as heavy snow, heavy rain, and earthquakes has been increasing due to climate change around the world, and human-made disasters have also increased to explosive levels, increasing also the number of deaths caused by various external injury factors other than disease and crime.

Meanwhile, these problems are raising citizens' expectations for a safe life and a high level of quality of life. And the increase in the number of people who are vulnerable to safety issues due to aging is increasing social demand for safety in daily life, which is common not only in large cities but also in small and medium-sized cities and rural areas.

Therefore, safety promotion policies and programs at the local government level as well as the nation have been spreading not only in Korea but also around the world, and many local governments have recently selected them as their top policy priority. And through this, the role of local governments and residents as those who with the primary responsibility for safety is gradually expanding.

However, in order for these policies to work, objective analysis of factors that threaten the safety of local residents, such as the scale of injuries caused by internal and external factors, should be preceded, and the resident participatory safety promotion program based on them should be prepared.

Therefore, this study looked at various safety indicators, including deaths from injuries in Gangwon-do, and based on this, diagnosed safety-related problems in the region, and contemplated policy measures to ensure the safe lives of the residents in the future.

2. Concept of Safety and Injury

2.1. Concept of safety

The generally discussed concept of safety refers to a condition in which there is no risk of danger or accident. In this regard, Yang(2015) defines safety as "a state free from current legal and interest infringement, and a state safe from risks with high potential for future legal and interest infringement," which is said to be functionally differentiated or reintegrated in modern society and used in a much more comprehensive sense than in the past[1]. In addition, Kim(2014) presents the concept of safety as one that is contrary to risk: "Free from danger or threat that violates personal legal interests, such as life, health, body, and property[2]. And again, he divides it into broad and narrow meanings, emphasizing national responses and responsibilities including "security" and "safety" in a broad sense, and describing the concept of safety in a narrow sense as mainly related to individual duty of care or compliance.

And Lee(2013) emphasizes the importance of protecting the people's basic rights and interests in the present and future, while Jeong(2007) defines safety as protecting the people's lives and body from danger, and that ensuring the nation's safety is justifying the establishment of a nation and protecting the people's human rights[3][4]. In addition, Lee(2017) defines safety as an activity by constitutional responsibility to protect the lives of the people and explains that safety management to realize it goes beyond responding to risks and disasters at a personal level and is managed and dealt with at a national and community level[5]. Han(2003) also defined safety as a state of mind that does not feel threatened in the course of one's life, while Seo(2018) proposed the prevention of disasters and accidents as a concept of safety[6][7].

On the other hand, Article 3 paragraph 4 of the Framework Act on the Management of Disasters and Safety, which is the most basic law on the basis of safety in Korea, indirectly presents the concept of safety through the definitions of the terms "safety management" and "safety standards." Safety management is here defined as "all activities to ensure the safety of a person's life, body, and property from disasters or other accidents." In addition, safety standards stipulate that "the technical standards to be applied to ensure safety in the process of manufacturing and maintaining various facilities and materials, etc."

2.2. Concept of injury

Injury is defined as a health hazard to the body or mind that results from intentional or unintentional events. Thus, injuries are divided into two concepts, intentional injuries and unintentional injuries. Intentional injuries are damage caused by causes other than diseases, that is, damage caused by intentional self-harm, suicide, or act of violence. On the other hand, unintentional injuries are defined as a negative result of physical damage caused by unintended accidents, such as traffic accidents, fire, fall, unintentional poisoning, etc[8].

Therefore, recently, in order to reduce the consequences of injuries, active responses are required, including the establishment of governance for injuries and cooperative systems among related agencies, the enhancement of awareness of safety, the enactment of safety laws,

and the creation of a safe environment. In addition, a proactive approach to preventing injuries is being emphasized in the entire community, including home, work, and school.

3. Status of Regional Safety and Injury Occurrence in Gangwon-do

3.1. Regional safety index of Gangwon-do

As of 2019, according to the Regional Safety Index released by the Ministry of Public Administration and Security every year[9], the overall safety index of Gangwon-do was class 3 in traffic accidents, fire, and crimes, class 4 in safety in daily life and suicide, and class 5 in infectious diseases, indicating that the overall safety index is worse than other metropolitan city areas and provinces.

According to the regional safety index of local governments in Gangwon-do, Taebaek-si, Hwacheon-gun, and Goseong-gun are the most vulnerable in traffic accidents with class 5, while Hongcheon-gun and Cheolwon-gun were class 2, which indicates a relatively high level of safety.

For fire, Taebaek-si and Samcheok-si were class 5 while Hwacheon-gun and Yanggu-gun were rated excellent with class 1 and 2, respectively. For crime, Sokcho-si, Hongcheon-gun, Jeongseon-gun, and Yangyang-gun were class 5, being considered highly vulnerable compared to other indicators, while Taebaek-si is the only one with class 2 rating.

In terms of safety in daily life, Samcheok-si and Pyeongchang-gun were rated class 5, and Cheolwon-gun, Hwacheon-gun, and Yanggu-gun were rated as class 2. For suicide, Taebaek-gun and Jeongseon-gun were the most vulnerable with class 5, while Hoengseong-gun and Hwacheon-gun were shown relatively safe with class 2.

Lastly, Samcheok-si ranked the lowest in the infectious disease category where Gangwon-do was rated as class 5 among metropolitan and provincial governments, but Yeongwol-gun, Hwacheon-gun, and Yanggu-gun were ranked as class 1, indicating that the ability of local governments to respond to infectious diseases is significantly different. As shown in the following <Table 1>.

Table 1. Regional safety index(Gangwon-do, 2019).

(Unit: class)

Type / Region	Traffic accident	Fire	Crime	Safety in daily life	Suicide	Infectious disease
Gangwon-do	3	3	3	4	4	5
Chuncheon-si	3	3	3	3	4	4
Wonju-si	3	4	4	3	3	3
Gangneung-si	4	3	4	4	4	4
Donghae-si	3	3	3	3	4	4
Taebaek-si	5	5	2	4	5	3
Sokcho-si	3	3	5	4	4	4
Samcheok-si	3	5	4	5	4	5
Hongcheon-gun	2	4	5	3	4	2
Hoengseong-gun	4	3	3	4	2	3

Yeongwol-gun	4	4	3	3	4	1
Pyeongchang-gun	4	3	4	5	4	3
Jeongseon-gun	3	4	5	4	5	3
Cheolwon-gun	2	3	3	2	4	3
Hwacheon-gun	5	1	4	2	2	1
Yanggu-gun	3	2	3	2	4	1
Inje-gun	4	3	3	3	4	2
Goseong-gun	5	3	3	5	3	4
Yangyang-gun	4	3	5	5	3	4

3.2. Status of deaths from injuries in Gangwon-do

The Cause of Death Statistics published by KOSIS of the National Statistical Office classifies the causes of death into a total of 50 categories. Among them deaths from injuries only refer to deaths caused by those classified as "External causes of morbidity and mortality: V01-Y98"according to "Korean Standard Classification of Diseases, KCD"[10].

"External causes of morbidity and mortality: V01-Y89" include Accidents, Transport accidents(Pedestrian injured in transport accident, Pedal cyclist injured in transport accident, Motorcycle rider injured in transport accident, Occupant of three-wheeled motor vehicle injured in transport accident, Car occupant injured in transport accident, Occupant of pick-up tuck or van injured in transport accident, Occupant of heavy transport vehicle injured in transport accident, Bus occupant injured in transport accident, Other land transport accidents, Water transport accidents, Air and space transport accidents, Other and unspecified transport accidents, Other external causes of accidental injury, Falls, Exposure to inanimate mechanical forces, Exposure to animate mechanical forces, Accidental drowning and submersion, Other accidental threats to breathing, Exposure to electric current, radiation and extreme ambient air temperature and pressure, Exposure to smoke, fire and flames, Contact with heat and hot substances, Contact with venomous animals and plants, Exposure to forces of nature, Accidental poisoning by and exposure to noxious substances, Overexertion, travel and privation, Accidental exposure to other and unspecified factors, Intentional self-harm, Assault, Event of undetermined intent, Legal intervention and operations of war, Complications of medical and surgical care, Drugs, medicaments and biological substances causing adverse effects in therapeutic use, Misadventures patients during surgical and medical care, Medical devices associated with adverse incidents in diagnostic and therapeutic use, Surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure, Sequelae of external causes of morbidity and mortality, Supplementary factors related to causes of morbidity and mortality classified elsewhere.

Looking at the injury mortality in Gangwon-do as of 2019, the number of deaths caused by "External causes of morbidity and mortality" in Gangwon-do totaled 1,145, 21.8% higher than that of the nation per 100,000. Also, in terms of age-standardized deaths, Gangwon-do was 9.8% higher than that of the nation, indicating that Gangwon-do had a higher risk of deaths from injuries compared to the nation.

When it comes to type-specific injury mortality, for intentional self-harm and suicide, the mortality rate per 100,000 people is 6.4% higher than the nation, and the age-standardized mortality rate is 3.8% higher than the nation, indicating that it is the most serious type of injury caused.

For, transport accidents, the death rate per 100,000 people in Gangwon-do is 4.9% higher than the nation, and the age-standardized mortality rate is 3.1% higher than the nation. For fall accidents, it also showed a 3.3% higher death rate per 100,000 people and 0.9% higher age-standardized mortality rate than the nation. In addition, for accidental drowning and submersion, the mortality rate per 100,000 people is 1.1% higher and the age-standardized mortality rate is 0.6% higher than that of the nation. Thus, measures to prevent suicide, transport accidents, falls, and drowning are urgently needed. The data are shown in the following <Table 2>.

Table 2. Status of deaths from injuries(Gangwon-do, 2019).

Description	Region	Number of deaths (person)	Mortality rate (per 100K people)	Age-standardized mortality rate (per 100K people)
External causes of morbidity and mortality(V01-Y89)	Nation	27,282	53.1	39.3
	Gangwon-do	1,145	74.9	49.1
Transport accidents (V01-V99)	Nation	4,221	8.2	5.8
	Gangwon-do	200	13.1	8.9
Falls (W00-W19)	Nation	2,665	5.2	3.2
	Gangwon-do	130	8.5	4.1
Accidental drowning and submersion (W65-W74)	Nation	470	0.9	0.7
	Gangwon-do	30	2.0	1.3
Exposure to smoke, fire and flames(X00-X09)	Nation	238	0.5	0.3
	Gangwon-do	3	0.2	0.1
Accidental poisoning by and expsure to noxious substances(X40-X49)	Nation	221	0.4	0.3
	Gangwon-do	7	0.5	0.3
Intentional self-harm (X60-X84)	Nation	13,799	26.9	22.6
	Gangwon-do	509	33.3	26.4
Assault (X85-Y09)	Nation	408	0.8	0.7

| | Gangwon-do | 10 | 0.7 | 0.5 |

4. Safety Assurance and Injury Prevention Measures in Gangwon-do

An analysis of the regional safety index shows that Gangwon-do is very vulnerable in the areas of safety in daily life, suicide, and infectious diseases. In addition, intentional self-harm, transport accidents, and falls were the main risk factors in the current status of deaths from injuries. Therefore, Gangwon-do needs to come up with quick safety measures in these areas in order to secure the safety of local residents and improve their quality of life.

4.1. Operation of the permanent injury monitoring system

In order to improve Gangwon-do's weak safety index and secure the safety of the local residents, a provincial-level injury monitoring system should be operated. For effective injury monitoring, programs that focus clearly on the cause of injuries, specific risk factors, risk population groups, geographical location, and temporary problems should be planned, which requires a sufficient understanding of the injury problems[11].

Therefore, Gangwon-do should systematically and continuously collect and analyze the status of injuries in the region to produce injury indicators and use them as a basis for establishing, performing, and evaluating injury prevention programs. In particular, the relevant statistics to be continuously collected and managed by Gangwon-do include the status of deaths from injuries, damage injuries, injury risk environment, and injury risk behaviors related to harmful health consequences to the body or mind as a result of intentional or unintentional accidents. Therefore, in order to collect such statistics systematically, Gangwon-do will have to strengthen cooperation with safety-related agencies such as police and fire departments, as well as health and medical institutions, academia, and private organizations.

4.2. Building an integrated safety management system

4.2.1. Building an integrated safety network

In order to ensure the safety of local residents in Gangwon Province, efforts to cooperate with each other in various fields, including fire fighting and police, health sector institutions, schools, NGOs, community organizations, and private companies, as well as Gangwon-do and other local governments, are essential. Therefore, an integrated safety management network involving all related agencies should be formed around Gangwon-do and each local government, and a program should be developed and operated in which all related agencies jointly participate in responding to various safety threats[12].

As a concrete measure of such an integrated network, it is necessary to form a working organization, such as the tentatively named Gangwon-do Safety Council, in which all the local community members participate, and to establish a specialized division on suicide prevention, fall prevention, life safety, and traffic safety, so that specialized injury prevention programs can be implemented in each area.

In particular, since the suicide rate in Gangwon-do is very high compared to the national average, the government and the private sector should form a joint committee through the suicide prevention division within the tentatively named Gangwon-do Safety Council, to seek the direction of suicide prevention and respect for life, and to present policy measures to promote efficient suicide prevention projects.

In order to control the death caused by fall, especially for the elderly, a fall prevention and life

safety division consisting of senior welfare institutions and related and organizations should be organized to provide education on the prevention of falls, publicity, and support for items to prevent falls. In addition, through the department specializing in traffic safety, it is necessary to improve the traffic system to reduce the number of deaths from traffic accidents, to produce promotional materials to improve residents' awareness including both drivers and pedestrians, and to carry out projects to improve facilities[13][14].

4.2.2. Establishment of an integrated disaster response center

In August 2020, a ship capsized in Uiam Lake in Chuncheon-si, Gangwon-do, killing five people and leaving one missing. Then, the main cause of the damage was that the safety control tower, which could be integrated and systematically dealt with from the reporting of the accident to the post-recovery, was not operated properly due to the lack of cooperation between the police, the fire department, and the Chuncheon-si government.

Therefore, it is necessary to establish a response system in the form of an integrated disaster response center that allows all procedures from initial reporting to prompt response, lifesaving, and post-recovery in case of a disaster to be carried out quickly and systematically by participating related agencies such as local governments headed by the Gangwon-do government, police, and fire stations. In addition, these integrated disaster response centers should utilize smart technologies such as big data and IoT sensors to establish an intelligent reporting and response system that can more easily identify and respond quickly to situations in the event of a disaster to minimize the risk of deaths from injuries caused by various accidents or disasters[15][16]. In addition, assuming a situation of disasters or accidents, it is necessary to maintain their expertise by conducting joint simulation training at least twice a year, which is linked to the police and fire departments in Gangwon-do, and conducting joint safety professional training for the public officials in charge.

4.3. Expansion of resident-participating safety promotion programs

In order to overcome Gangwon-do's weak safety index and secure the safety of the local residents, cooperation between each local government and the residents is essential. For example, Seongbuk-gu, Seoul, actively participates in the development and execution of various policies to secure the safety of the region through residents-led and resident-participating consultative bodies such as the Local Autonomous Disaster Prevention Group and the Safety Watch Group of Our Neighborhood[17].

Therefore, Gangwon-do and each local government should form a kind of safety council in which various entities of the community participate for the safety of the residents and allow a large number of ordinary residents to participate in the council to gather and reflect their opinions. In particular, organizations like this should listen directly to the safety threats perceived by the residents and ensure that the local residents play a leading role in developing policies that address those risks.

In addition, various safety-related campaigns and residents' awareness-raising campaigns should be carried out to prevent safety accidents and strengthen the disaster response capabilities of the vulnerable through customized safety education centered on the vulnerable groups such as children and the elderly.

4.4. Expanding welfare support programs for the vulnerable

In order to curb the high suicide rate in Gangwon-do and reduce various safety threats such as falls and traffic accidents, welfare programs for senior citizens, women, children, and low-income families should be expanded.

First, in order to curb suicide, which contributes to the most serious cause of deaths from

injuries in Gangwon-do and to a fall in the regional safety index, economic and social approaches, as well as psychiatric approaches, should be made comprehensively. In general, when analyzing the causes of suicide, economic problems as well as personal mental or physical illness are discussed as important factors.

Therefore, considering the characteristics of Gangwon-do, which has a long slump in the local economy and a high proportion of the elderly population, economic and medical support for the poor elderly should be prioritized, and for the young population who can attempt suicide due to economic problems, a system should be established to identify and support suicide high-risk groups captured by the employment and welfare administration network early, including those who are eligible for unemployment benefits. In addition, the local governments should expand the budget for suicide prevention projects to increase the number of professionals in charge of mental and physical health and welfare benefits[18][19].

In order to strengthen the ability to respond to infectious diseases, which are ranked as class 5 in the regional safety index, each local government in Gangwon-do should expand its organization and manpower dedicated to managing infectious diseases and establish a joint response system with the government, medical community, universities, or health and medical research institutes in the region so that medical supplies such as various vaccines can be secured smoothly. In addition, for senior citizens, children, and low-income residents who are frequently exposed to fall accidents, traffic accidents, and other safety accidents due to their professional characteristics, related budgets should be secured by Gangwon-do and each local government to carry out various safety equipment support projects to reduce or prevent injuries from traffic accidents, falls, and crime, including "speed limit bag covers."

Finally, for the people of Gangwon-do who have suffered deaths or injuries due to various accidents, mental and physical recovery programs and financial support should be provided to ensure rapid recovery. In addition, support at the Gangwon-do level should be provided to all local governments in Gangwon-do to subscribe to the life safety insurance policy, which allows local governments to receive compensation from insurance companies in the event of unexpected disasters or accidents.

5. Conclusion

Safety or safety management is an important policy area that has a profound impact on our survival or quality of life, not only on the personal level of preventing or minimizing the risk of physical and mental injuries, but also on the safety of the social system. Therefore, it has recently emerged as the most important function of the role of each local government as well as the state[20][21].

In response, the study examined the safety status of Gangwon-do through various safety indicators, including the regional safety index and the deaths from injuries, and examined policy measures to secure the safety and reduce the injury mortality in Gangwon-do in the future.

The study showed that Gangwon-do is very vulnerable in the areas of safety in daily life, suicide, and infectious diseases in the regional safety index. The main causes of deaths from injuries were found to be intentional self-harm, transport accidents, and falls.

Therefore, Gangwon-do and its affiliated local governments should, first, operate an injury monitoring system at the provincial level to produce objective injury indicators so that they can plan, implement, and evaluate injury prevention programs.

Second, an integrated safety network involving all related agencies in Gangwon-do should be established and an integrated disaster response center involving local governments, police, and

fire-fighting agencies should be established so that it can respond quickly and effectively in the event of various disasters and accidents.

Third, a kind of safety consultative body involving various entities in the community should be formed so that residents themselves can participate in various policy development and enforcement to ensure safety.

Fourth, the government should expand support programs for senior citizens, women, children and low-income families, which are considered vulnerable to safety issues, to reduce suicide. In addition, it is deemed necessary to establish a joint response system with the government, the medical community, universities, or health and medical research institutes in the region to strengthen their ability to respond to infectious diseases.

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7. Appendix

	Initial name	Contribution
Author	JSN	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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What Makes People Satisfy the POLICE?

Woosuk Yun[1*]
Keimyung University, Daegu, Republic of Korea

Juhee Kim[2]
Keimyung University, Daegu, Republic of Korea

Abstract

Purpose: The purpose of this study is to identify factors affecting police satisfaction. There are four models explaining police satisfaction. Demographic model, quality of life model, police contact model, and a community context model exist. These models are important explanatory models that predict police satisfaction. There four models are used to predict police satisfaction in this study.

Method: The data used in this study was obtained from 924 citizens living in Daegu, Korea. The survey was conducted on adults aged 18 and older. Participants in the survey were informed of the purpose of the survey and agreed. The collected survey was analyzed using the SPSS. The statistical techniques were descriptive statistics, T-test, ANOVA, correlation, and multiple regression.

Results: According to the study, among the four explanatory models, the community context model had the highest ability to explain. Police satisfaction was higher for those who responded to be positive about community, live closely with residents, and intervene in local problems. In addition, the more police officers witness deviations, the less satisfied they are, and the more they are required to train police officers in their behavior. Finally, physical disorder of the community was also shown to predict police satisfaction.

Conclusion: The most important conclusion in this study is that the context of the community and the behavior of the police officer have a very important effect on police satisfaction by citizens. Therefore, the police should consider the role they can play to strengthen community social cohesion and informal social control. It will also be necessary to learn the importance of each police officer's right behavior.

[Keywords] Police Satisfaction, Social Cohesion, Informal Social Control, Police Deviance, Police Contact

1. Introduction

One of the important criteria for assessing the effectiveness of police activities is to investigate citizens' perception of the police[1][2]. In particular, citizens' satisfaction with police activities is a representative measure of police evaluation. Police satisfaction is being emphasized as modern police activities have changed from criminal control model to crime prevention and community oriented policing model[3]. Until recently, many innovative police activities have been proposed, and these police activities have shown in common seeking to solve crime problems in the community with local residents[4][5][6]. It is valuable to form a positive relationship with citizens in order to draw cooperation from citizens to solve community problems[5][6][7]. Traditional police activities, however, tended to cause conflicts and misunderstandings with citizens[8]. Thus, innovative police activities were developed to increase informal police contacts and accommodate diverse needs of citizens in order to form close relationships with citizens[5][6]. Many police researchers conducted research on police

satisfaction[9][10][11][12][13][14][15][16][17][18][19][20][21][22][23]. Previous studies sought to identify citizens' perceptions of the police under various themes, including police trust, police legitimacy, police competence, police image, police satisfaction and etc. In addition, many studies have sought to identify factors affecting citizens' perception of the police[24][25][26][27][28][29]. According to existing discussions, the demographic model, the police contact model, the quality of life model, and the community context model were presented as factors affecting police satisfaction. The demographic model explains that the gender, race, age, and socioeconomic status of citizens affect police satisfaction[20][21]. The police contact model is a model that identifies the impact of police and citizens' contact experience on police satisfaction[14][15][18][19][21]. The quality of life model identified the effects of disorder and fear on police satisfaction in the community[9]. Finally, the community context model is to identify the impact of community characteristics on police satisfaction[9][23]. There were not many previous attempts to consider all four models simultaneously. Of course, recent studies have continued to take these models into account all together and use advanced statistical techniques to verify them. The purpose of this study is to verify the effects of four models that describe police satisfaction. In particular, the research aims to provide evidence that can contribute to establishing the direction of police activities by identifying the effects of quality of life police activities and community policing emphasized in the modern era of policing. In order to achieve the objectives of the study, the study aims to analyze the survey data collected by the city of Daegu, Korea in 2015. Those who participated in the survey were adults aged 18 or older living in Daegu.

2. Theoretical Background

2.1. Police satisfaction

Police satisfaction is a typical measure of assessing police activities[11]. Previous police studies have attempted to use various methods to identify citizens' perceptions of police activities[9][10][16][17]. Similar terms such as police image, police competence, police trust, police satisfaction, and police legitimacy were frequently used in relation to police perception of residents[10]. However, there is a limitation that the use of many terms has made it difficult to clearly distinguish concepts. Mainly, police perception is determined by the police's ability to deal with crime and perception of the safety of residents[2]. Therefore, police satisfaction means the level of overall satisfaction with police activities.

2.2. Theoretical models for police satisfaction

2.2.1. Demographic model for police satisfaction

The demographic and sociological model for police satisfaction explains that an individual's demographic and sociological characteristics affect police perception of citizens[12][13][14][16][20][21]. Among individual characteristics, age is the most reliably consistent outcome in prediction the police satisfaction. Existing studies show that the older the person is, the more satisfied the plice area. Perhaps the trust and belief in the police are high, as the middle-aged rather than the younger are more receptive to social norms and order[24]. Next, the relationship between gender and police satisfaction is not clear. Some studies have reported that gender does not affect police satisfaction[12][13][14][16]. However, other studies have shown that women trust the police more than men[1][9]. This is because women are less exposed to coercive contact with the police than men[30]. The demographic trait that has the greatest interest in police awareness is race. Previous studies have consistently shown that minorities and emigrants were less satisfied with the police than whites[9][12][13][14][15][16]. Next is the difference in police satisfaction according to individual education level and economic

level. Many previous studies have shown that educational and income levels are not clearly related to police satisfaction[24].

2.2.2. Police contact model for police satisfaction

The police contact model explains that there is a difference in satisfaction with the police as a result of the experience of direct or indirect contact with the police[9][14]. If a contact is made in the process of requesting service or help from the police, the satisfaction of the contact will be more affected than the contact itself will affect police perception[9]. There are interaction effects between experience with the police and satisfaction with the police contact process. Many studies have shown that police officers' attitudes and actions in the process of contacting police can affect their satisfaction and trust in the police whether involuntary or voluntary[9][14][18][19][21][26] In the result of previous studies, the more dissatisfied or unfair the police were in contact, the more likely citizens were to maintain a negative perception of the police[18][19]. Meanwhile, in most cases, satisfaction with the police was perceived negatively if they had involuntary contact with the police. It was also found the effect of hearsay experience without direct contact.

2.2.3. Quality of life model for police satisfaction

The quality of life model for police satisfaction explains that residents' awareness of the safety of their residential areas is an important factor in police satisfaction assessment. Many studies are concerned with the contextual environment of residential areas such as disorder, criminal experience, fear of crime, and perceived victimization[11][31]. According to previous studies, the more disorder and victimization local residents face, the less satisfied and trusted they feel the local police fail to control the crime[9]. Community residents who perceive physical or social disorder as pervasive can criticize the police's incompetence while questing why they should adhere to laws and social norms that others do not follow[11]. Community's disorder and crime problems recognize the lack of police resources to deal with community problems, which, as a result, citizens can recognize that the area where they live is isolated and not socially supported by the unequal distribution of resources by the police[2].

2.2.4. Community context model for police satisfaction

The community context model suggests that the characteristics of the community affect police satisfaction[9][11][15][30]. The community context model typically maintains a view of the social disorganization theory. Social disorganization theory argues that poverty, racial heterogeneity and residential migration in the community weaken social cohesion and informal social control, causing criminal problems[2]. In the same context, it is assumed that the structure and functional characteristics of the community will affect the assessment of the police[9]. Residents living in areas where communities are poor, ethnically disparate, and residential instable is frequent are often less satisfied with the police[7][21]. Many researchers argue that this is because the police are likely to distribute police resources and services to underprivileged communities and engage in use of force or negative behavior[2][9][21]. Among the influencing factors, community cohesion and informal social control are expected to affect police satisfaction. It is argued that in areas where there is solidarity and trust among local residents and where there is much interest in community problems, there is a high possibility of more active cooperation and positive awareness of police activities in the community[2].

3. Research Method

3.1. Data

This study aims to verify the influencing factors on police satisfaction with considering the major four theoretical model in the literature for police satisfaction. In order to accomplish the goals, the data used in this study were collected from 923 respondents living in Daegu, Korea in 2015. The respondents were all adults over the age of 18. The respondents targeted citizens living in Daegu for at least six months. After explaining the purpose of the study to the respondents and seeking their consent, they responded to the survey. 950 questionnaires were retrieved and 924 were used for analysis, except for the 26 poorly answered.

3.2. Measurement

3.2.1. Dependent variable

Police satisfaction is a dependent variable in this study. The police satisfaction level was measured by three questions, including overall satisfaction with police activities, ability to prevent crime, and ability to deal with crime. The internal reliability coefficient(Cronbach's Alpha coefficient =.912) for police satisfaction was .912. which was suitable for the standard(over .60).

3.2.2. Independent variable

3.2.2.1. Demographic variables

The demographic model for police satisfaction often uses age, gender(1=male, 2=female), education(1=middle school, 2= highschool, 3= college, 4=university, 5=graduate school), income, and homeowner(0=tenant, 1=homeowner). In addition, personal experience of victimization also represents important individual characteristics. As a result, there are six demographic model variables used in this study.

3.2.2.2. Police contact variables

The police contact model variables were measured by police deviant behaviors witnessed by citizens and experience regulated by the police because of drunken driving, traffic violation, parking violation, etc. Police deviant behaviors were measured by 7 questions. The content of the seven questions is about police bribery, excessive use of force, unfair law enforcement, etc(Cronbach's Alpha coefficient =.917). Involuntary police contacts due to misdemeanor were measured by traffic violations, drunk driving violations, jaywalking, parking violations and smoking in non-smoking areas(Cronbach's Alpha coefficient =.679). The levels of police deviant behaviors and involuntary police contacts were measured using the sum of all the questions.

3.2.2.3. Quality of life variables

The quality of life variables were measured by disorder and fear of crime. Disorder was measured by physical disorder and social disorder. Physical disorder was identified as four questions that measure a physically disorderly environment, such as dark, rear-end, and garbage disposal. Social disorder was measured by six questions, including drunkenness, fighting sounds, police sirens, etc. Meanwhile, fear of crime was measured by three questions in the residential area, expressing fear that families, neighbors, and children in the neighborhood might be victimized. The reliability coefficients for physical disorder(.731), social disorder(.837), and fear of crime(.936) were met the standard.

Table 1. Factor analysis and reliability test for disorder.

Factor		Question	Coefficient
Physical disorder	PD1	Street mess	.704
	PD2	House and building were old and unmanaged	.835

			Coefficient	
	PD3	Darkness of the night		.854
	Eigen Value=1.089; Cronbach's Alpha coefficient =.731			
	SD1	Drunken people	.663	
	SD2	Delinquent youth	.740	
	SD3	Night disorder	.790	
	SD4	Illegal parking etc	.506	
	SD5	Loud shout	.745	
	SD6	Police sirens	.800	
	Eigen Value=4.670; Cronbach's Alpha coefficient =.837			

3.2.2.4. Community context variables

   In community context model, the major variables used in this model are normally structural characteristics of community and functional factors of residents living in community. In this study, structural characteristics of community were measured by 2 questions. Respondents were asked to answer how many people in their area had good jobs and lived long. Originally, structural characteristics of community in the literature of disorganization theory usually are measured by negative components of community including poverty, emigrant, residential turn-over. However, in this study, the author attempted to ask them reversely. Functional character-istics of community were also measured by social cohesion and informal social control. In col-lective efficacy theory, social cohesion and informal social control constitute collective efficacy. However, these concepts are bound by one factor, but also separated. Many Korean studies have shown that two concepts are separated. Factor analysis has shown that social cohesion and informal social control are separated(table 2). Social cohesion were measured by six ques-tions measuring the cohesion between local residents(Cronbach's Alpha coefficient=.864). In-formal social control was also measured in six questions indicating local residents' intention to intervene in social problems in their community(Cronbach's Alpha coefficient =.886).

Table 2. Factor analysis and reliability test for social cohesion and informal social control.

Factor		Question	Coefficient	
Social Cohesion	SC1	Residents' trust each other		.812
	SC2	Getting along well together		.814
	SC3	Having similar interests		.782
	SC4	Helping each other		.764
	SC5	Worrying about each other's problems		.629
	SC6	Can borrow about 30,000won		.597
	Eigen Value=1.333; Cronbach's Alpha Coefficient =.864			
	ISC1	Admonishing the children if they don't go to school	.637	

ISC2	Stopping the children when children scribble	.784	
ISC3	Admonishing the children when they behavior disrespectfully to the local elders	.799	
ISC4	Intervening In Matters Related To Community Safety	.718	
ISC5	Trying To Protect Other Residents' Property	.780	
ISC6	Stopping A Fight In The Community	.759	
Eigen Value=6.287; Cronbach's Alpha Coefficient =.886			

3.3. Analytic plan

The purpose of this study is to identify the effects of demographic model, police contact model, quality of life model, and community context model on police satisfaction. A survey was conducted on 924 residents of Daegu City to achieve their research objectives. The statistical analysis was intended to be performed using the collected survey data. Statistical analysis is analyzed using SPSS. Frequency analysis and descriptive analysis were performed for describing variables. In addition, T-test and ANOVA were conducted to identify differences in police satisfaction according to demographic variables. The correlation analysis between the major variables was then conducted. Finally, a multiple regression analysis was conducted to predict police satisfaction.

4. Results

4.1. Descriptive statistics

The results of descriptive statistics for the major variables are shown in table 3. Gender of the participants in survey was 460 males and 463 females, almost the same number. The average age of the respondents was 42.3years old, and they participated in the survey from 19 to 82. Among the respondents, 28.5 percent were tenants, with an average monthly income of less than 2 million won. The education level was the most participants among high school graduates, followed by college graduates and junior college graduates. Of the respondents, 16.3 percent said they had been victimized over the past year. In addition, the results of descriptive statistics for the major variables are as follows. The structural characteristics of the community were relatively above the median score of 6.4399. In other words, there were slightly more respondents who said neighbors had a good job and lived in their residence for a long time. The scores of social cohesion and informal social control also seem to be slightly more positive. On the other hand, the respondents' perception of physical and social disorder were below average. In addition, fear of crime also showed that the score was lower than the median, indicating relatively low fear in community. Many respondents responded that the level of police deviance was very low. Moreover, contact with the police because of misdemeanor behaviors also hits a very low level. Finally, overall satisfaction with police activities was high.

Table 3. Descriptive statistics for demographic variables.

Variable		Frequency	Percent		Variable	Frequency	Precent
Gender	Male	460	49.8	Education	Under middle school	107	11.6
	Female	463	50.2		High school	335	36.3

Homeownership	Owner	660	71.5		College	140	15.2
	Tenant	263	28.5		University	316	34.2
Income	Under 1million won	304	32.9		Graduate school	25	2.7
	1million to2million	206	22.3		18~29	221	23.9
	2million to3million	172	18.6		30~39	182	19.7
	4million to5million	122	13.2	Age	40~49	190	20.6
	5million to6million	62	6.7		50~59	179	19.4
	Over 6million	49	5.3		Over 60	151	16.4
				Victim	Yes	150	16.3
					No	773	83.7

Variable	Mean	Max	Min	S.D
Structural characteristics of community	6.4399	10	2	1.3358
Social cohesion	15.7833	25	5	3.3418
Informal social control	19.1636	30	6	4.3257
Physical disorder	8.0087	15	3	2.2471
	12.1278	24	5	3.4280
Fear of crime	6.8722	15	3	2.4368
Police deviant behavior	7.7248	29	7	2.4534
Misdemeanor police contact	6.2828	20	4	2.6874
Police satisfaction	9.7768	15	3	2.1277

4.2. Differences in police satisfaction by demographic variables

T-test and ANOVA were conducted to identify differences in police satisfaction due to demographic and socioeconomic variables. According to the analyses, statistically significant differences in police satisfaction according the demographic variables were found in victimization, homeowner, and age variables. Gender, educational level and income did not differ in police satisfaction. Those who were victimized were less satisfied with the police than those who were not. The homeowners were relatively more satisfied with the police than tenants. The older the age group is in their 50s or older, the higher the police satisfaction level is compared to other age groups.

Table 4. Differences in police satisfaction across demographic variables.

Variables		Mean	T/F	p
Gender	Male	9.6826	-1.341	.180
	Female	9.8704		
Victim	Yes	9.0467	-4.643***	.000
	No	9.9185		
Homeownership	Owner	10.0167	5.511***	.000
	Tenant	9.1749		
Age	18~29	9.5520	2.697*	.030
	30~39	9.5714		

	40~49	9.7368		
	50~59	9.9888		
	60 over	10.1523		
	Under middle school	10.1869		
	High school	9.8060		
	College	9.7500	1.547	.187
	University	9.6076		
	Graduate school	9.9200		
Income	Under 1 million	9.7928		
	1 to 2 million	9.8495		
	2 to 3 million	9.5349		
	3 to 4 million	9.7541	.937	.456
	4 to 5 million	10.1774		
	Over 5 million	9.7551		

Note: *p<.05, **p<.01,***p<.001.

4.3. Correlation analysis

The correlation analysis was conducted to analyze linear correlations among major variables. It is an analysis of the relationship between quality of life model, community context model, and police contact model and police satisfaction, except for demographic model among models that describe police satisfaction. As a result of correlation analysis, police satisfaction showed significant correlation with all major variables. This is the result of supporting the three explanatory models at a certain level. First of all, the more positive the structural characteristics of the community were, the more positive the police satisfaction was. In other word, those who have lived with people with good jobs for a long time were also satisfied with the police. Community social cohesion have been found to be closely related to police satisfaction. Of course, it can be a controversy in the establishment of a prior- and later-level relationship, but basically, local residents with strong social cohesion also had high police satisfaction. Informal social control also showed results similar to social cohesion. People living in community with a high willingness to participate informally in community affairs also had high satisfaction with the police. Community disorder has been shown to reduce police satisfaction. Both physical disorder and social disorder showed a negative relationship with police satisfaction. The opposite relationship between fear of crime and police satisfaction has also been identified. Moreover, police deviant behaviors and involuntary police contacts due to misdemeanor used to verify police contact models have been shown to reduce police satisfaction as expected.

Table 4. Differences in police satisfaction across demographic variables.

Variables	SCC	SC	ISC	PD	SD	FC	PDB	MC	PS
Structural characteristics(SCC)	1								
Social cohesion(SC)	.381***	1							
Informal social control(ISC)	.340***	.652***	1						
Physical disorder(PD)	-.070*	-.117***	-.111***	1					
Social disorder(SD)	-.063	-.118***	-.129***	.592***	1				
Fear of crime(FC)	-.068*	-.070*	-.067*	.392***	.457***	1			

Police deviant behaviors(PDB)	-.145***	-.131***	-.084*	-.007	.102**	.115***	1		
Misdemeanor contact(MC)	-.054	-.075*	-.050	.124***	.162***	.115***	.160***	1	
Police satisfaction(PS)	.283***	.339***	.324***	-.125***	-.101**	-.106**	-.225***	-.108**	1

Note: *p<.05, **p<.01,***p<.001.

4.4. Predicting police satisfaction

The regression analyses were conducted to predict police satisfaction(table 5, 6). Among the four explanation models, community context models were found to be the most explanatory power, followed by police contact model, demographic model, and quality of life model. Significant predictors in the demographic model were age, homeowner, and victimization. The higher the level of age, the higher the satisfaction level of the police, and the lower the satisfaction level in the case of victimization. All the predictors used in the community context model had a significant impact on police satisfaction. The quality of life model showed that only physical disorder had a significant effect. Finally, in the police contact model, the level of police satisfaction decreased significantly when the police deviant behaviors were witnessed. Involuntary contact with the police also showed a reductive effect on police satisfaction. As a result, police satisfaction is most affected by the community context model.

Table 5. Multiple regression model for police satisfaction.

Variables	Demographic model		Community context model		Quality of life model		Police contact model	
	b	Beta	b	Beta	b	Beta	b	Beta
Gender	.115	.027						
Age	.129*	.086						
Homeowner	.700***	.149						
Education	-.07	-.056						
Income	.006	.005						
Victimization	-.827***	-.143						
Structural characteristics(SCC)			.261***	.164				
Social cohesion(SC)			.112***	174				
Informal social control(ISC)			.075***	.153				
Physical disorder(PD)					-.085*	-.089		
Social disorder(SD)					-.012	-.020		
Fear of crime(FC)					-.054	-.062		
Police deviant behaviors(PDB)							-.185***	-.213
Misdemeanor contact(MC)							-.058*	-.074
F	10.110***		56.624***		6.157***		27.233***	
R^2	.063		.156		.020		.056	
Adjust R^2	.056		.153		.017		.054	

Note: *p<.05, **p<.01,***p<.001.

A multiple regression analysis was performed taking into account all independent variables. The analysis revealed that the relative superiority of the community context variable was greater. All demographic and socioeconomic variables have been shown to be insignificant predictors. In the quality of life model, only physical disorder turned out to be significant. Meanwhile, the police contact model showed that only deviant behavior by the police was a

significant predictor. On the other hand, all community contexts were found to be significant, demonstrating the excellence of the community context model was found to have the most consistent effect on police satisfaction. However, as a result of comparing standard regression coefficients to compare the effects of individual variables, the variable that had the greatest impact on police satisfaction was police deviant behavior. In other words, in order to improve citizens' satisfaction with police officers, it seems necessary to control police officers so that they can refrain from deviant behaviors by individual police officers.

Table 6. Multiple regression model for predicting police satisfaction with 4 explanatory models.

Variables	Full model			
	b	SD	Beta	T
Gender	-.098	.143	-.023	-.690
Age	.075	.050	.050	1.518
Homeowner	.171	.151	.036	1.132
Education	-.095	.064	-.050	-1.497
Income	-.019	.050	-.013	-.383
Victimization	-.227	.192	-.039	-1.184
Structural characteristics(SCC)	.218***	.053	.137	4.148
Social cohesion(SC)	.086**	.026	.135	3.258
Informal social control(ISC)	.074***	.020	.150	3.780
Physical disorder(PD)	-.084*	.03	-.089	-2.323
Social disorder(SD)	.029	.024	.047	1.192
Fear of crime(FC)	-.030	.030	-.034	-.995
Police deviant behaviors(PDB)	-.136***	.028	-.157	-4.835
Misdemeanor contact(MC)	-.037	.025	-.046	-1.465
F	16.511***			
R^2	.204			
Adjust R^2	.192			

Note: *p<.05, **p<.01, ***p<.001.

5. Conclusion

Police satisfaction is an important indicator of police activity. This study was conducted to identify factors affecting police satisfaction. To achieve the purpose of this study, the researcher analyzed the survey data obtained from 924 Daegu citizens. Statistical analyses have produced results that are quite different from previous police studies. It is valuable to discuss the significance and lessons of the results. First, among demographic and socioeconomic variables, there are differences in police satisfaction depending on the experience of victimization, homeowners, and age. However, when considering other models, the demographic model was not significant. In other words, other external factors, rather than individual demographic characteristics, have a more important effect on the judgment of police satisfaction. The results provide an important lesson in the development of police policies to improve police satisfaction. Many studies have shown that existing discussions may differ in police satisfaction depending on individual characteristics. If police satisfaction is due to individual demographic and socioeconomic characteristics rather than to police activities themselves, efforts to improve police satisfaction will be

put where it has nothing to do with police activities. Therefore, based on this study, which found that the impact of police satisfaction based on demographic characteristics was insignificant, it would possible to seek ways to improve police satisfaction through police activities. Second, as a result of this study, the most influential variable in police satisfaction was the police officer'deviant behavior. Citizens always witness the police officer's activities. Fair and equitable law enforcement should take place, whether police officers make direct contact with citizens or not. In addition, unnecessary use of force and authority should be restrained. At the same time, police officers should communicate with citizens in a friendly manner as service providers[32]. Third, physical disorder has been shown to reduce police satisfaction. Meanwhile, social disorder and fear of crime had no significant impact on police satisfaction. Many previous studies focused on the negative effects of citizens' fear of crime on police satisfaction. But as a result of this study, police satisfaction is not affected by fear of crime. Therefore, more police work is required to resolve physical disorder in community. Finally, in this study, the community context model was proved to be the best explanatory model for police satisfaction. Therefore, it is necessary to come up with measures to increase police satisfaction through community oriented police activities. As a result of the study, positive perception of the community contributed to the improvement of police satisfaction. In addition, social bond between local residents has had a positive impact on police satisfaction. Therefore, it is necessary to find ways for the police to contribute to make the community better and more united. Police satisfaction could also be improved by helping local residents improve their ability to solve local problems on their own.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Lead Author	WSY	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑
Co-Author*	JHK	-Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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Differences in Leaders' Followership in the KOREAN SECURTY POLICE Organization According to Gender and Age

Hoyeun Youn[1]

Daewon University College, Jecheon, Republic of Korea

Jaesung Nam[2*]

Halla University, Wonju, Republic of Korea

Sunggu Jo[3]

Kyungwoon University, Gumi, Republic of Korea

Abstract

Purpose: In this study, the perception toward leaders' followership by gender and age was analyzed for police officers working at the security police organization, which are recognized as the most closed police organization among young or female police officers. And through this, we would like to discuss policy measures to create a security police organization with a new followership culture in line with the changing security environment.

Method: In this study, 100 police officers working for the security police organization with experience in handling North Korean defector affairs were surveyed via self-administration method to analyze their perception toward leaders' followership according to gender and age.

Results: According to the analysis, male security police officers are more positive about their leaders' followership than female police officers for most of the questions that have been statistically significant in terms of gender. And in terms of age, most of the questions are considered to be more positive among older people, while among those who are in their 20s, there is a relatively high level of negative perception. When it comes to gender and age connections, men in their 50s and women in their 30s have the most positive attitude toward their leaders.

Conclusion: In conclusion, the culture inside the security police organization should improve so that it can actively accept female security police officers, who account for only 4.6% of the total police force, including external affairs police officers, and thus turn it into a security police organization where female police officers can fully demonstrate their potential and creativity. Second, in order to be reformed as a new security police organization in response to the rapidly changing security environment, a developmental organizational culture of the security police organization should be created, expanding the number of young security police officers, drawing fresh ideas from them and making themselves leaders.

[Keywords] Security Police, Police Officers, Gender, Age, Followership

1. Introduction

The leadership of organizational managers is often said to be the most important factor that determines the success or failure of an organization. However, in recent years various organizational and police officers management theories, followership is emphasized as more important than leadership. Professor Kelly at Carnegie Mellon University stresses that it is the role of followers, not a leader, to lead the organization with 20% of the leader's contribution and 80% of the followers' contribution to the organization's success[1].

Thus, the organization's leaders must have leadership to maximize the voluntary followership of its members, thereby operating the organization efficiently. If resignation and helplessness by blind obedience instead of voluntary followership prevails among the members of the

organization, the organization will naturally have a strong tendency to rely on the power of the leader and these organizations will inevitably turn into passive and unproductive ones. In other words, to be an outstanding leader in an organization, one must have leadership that can garner voluntary followership from its members[2][3][4].

This kind of leaders' followership applies equally to police organizations. In particular, amid changes in security conditions and the inter-Korean relations under the Moon Jae-in government, the security police organization is facing an organizational crisis with its manpower reduced by 23.8% from 625 people in 2016 to 476 as of the end of August this year and total budget also reduced by 26% from 9.1 billion to 6.7 billion won during the same period. Therefore, the leadership of managers and the positive followership of its members are required more than any other police organizations[5][6].

Until now, the security police had a strong tendency to deploy a number of veteran male police officers with experience and knowledge in security affairs, as the security police have maintained a very specialized separate department. And according to this organizational characteristic, the security police organization tended to have a rather closed organizational culture compared to other organizations.

Therefore, the security police organization requires more active, voluntary, and open followership than other police organizations. Only then can the security police be reborn as a new, more open and active organization that implements various new security activities according to changing security realities, rather than just arresting spies and other security criminals as in the past.

This study aims to analyze the perception toward leaders' followership among police officers working at the security police organization. In particular, it focuses on gender and age among various variables because the security police organization may be the most closed organization for young and female police officers.

And through this, we would like to verify the differences in the leaders' followership by gender and age and discuss the leaders' followership that can create a new security police organization that responds to the changing security environment.

2. Research Method

2.1. Research subjects and sampling method

In this study, among police officers in the security department as of 2020 who had experience in work related North Korean defectors, 100 trainees in the Police Human Resources Development Institute were surveyed via self-administration method. Among the collected survey questionnaires, 91 were selected as valid samples, excluding those whose answers were incomplete or missing.

Table 1. Research subjects.

	Description	N(%)	Total
Gender	Male	61(67.0%)	91
	Female	30(33.0%)	
Age	20s	7(7.7%)	91
	30s	28(30.8%)	
	40s	30(33.0%)	
	50s or older	26(28.6%)	

Education	High school	14(15.4%)	91
	Junior college	30(33.0%)	
	College	43(47.3%)	
	Graduate school	4(4.4%)	
Rank	Policemen/women	1(1.1%)	91
	Senior policemen/women	19(20.9%)	
	Assistant inspector	18(19.8%)	
	Inspector	29(31.9%)	
	Senior inspector	14(15.4%)	
	Superintendent	10(11.0%)	
Employment path	General recruitment	75(82.4%)	91
	Special recruitment	5(5.5%)	
	Police academy	2(2.2%)	
	Police cadet	9(9.9%)	
	Other	0(0.0%)	
Police work period	5 years or less	13(14.3%)	91
	6~10 years	32(35.2%)	
	11~15 years	13(14.3%)	
	16~20 years	13(14.3%)	
	Longer than 20 years	20(22.0%)	
Security depart-ment work period	2 years or less	16(17.6%)	91
	3~5 years	56(61.5%)	
	6~10 years	17(18.7%)	
	Longer than 10 years	2(2.2%)	
Number of police officers in the organization	10 or less	18(19.8%)	91
	11~15	42(46.2%)	
	15~20	24(26.4%)	
	21 or more	7(7.7%)	
Work location	Tier 1 areas (big cities)	80(87.9%)	91
	Tier 2 areas (small/medium-sized cities)	11(12.1%)	
	Tier 3 areas(rural areas)	0(0.0%)	

2.2. Measuring instrument

In this study, the appropriate method for each verification method was chosen to increase the content validity and verify the construct validity of the questionnaire. Content validity was validated through consultation with relevant experts to adopt survey questions suitable for the purpose of the study, and the reliability of the survey questions was shown to be Cronbach's α coefficient .930.

In addition, open-ended questions were included to obtain data that were not included in the closed questions.

Table 2. The questions.

	Questions
Q-1	My leader's work helps me achieve social goals or personal dreams.
Q-2	My leader does not wait for instructions from the police organization, but acts by firsthand determining what is most important to achieve the organization's goals.
Q-3	My leader independently creates and actively presents new ideas that can contribute to the goals of the police organization.
Q-4	My leader tries to solve difficult problems on his/her own rather than relying on others.
Q-5	My leader helps superiors and colleagues review their ideas or plans once again, even if they express opposition.
Q-6	My leader actively and frankly acknowledges his/her strengths and weaknesses rather than avoiding the assessment on him/her.
Q-7	My leader has a habit of evaluating himself how wise the judgment was made by superiors such as superintendent or senior superintendent, rather than just taking orders.
Q-8	My leader often refuses when a superior asks him/her to do something that conflicts his/her personal interests.
Q-9	My leader decides and acts according to his/her ethical standards, not by the standards imposed by superiors and others.
Q-10	My leader insists on his/her views on important issues, even if they cause conflicts with superiors or give a bad impression to the organization.
Q-11	I think my leader's personal goal is in good harmony with the police organization's top goal.
Q-12	My leader works very devotedly as well as providing the best ideas and abilities for the organization.
Q-13	My leader enlivens colleagues with enthusiasm for work.
Q-14	My leader actively exerts his/her ability to become a more valuable member in the police organization.
Q-15	My leader tries hard to do better in the work that the police organization considers important.
Q-16	My leader takes the initiative in finding and taking the lead in his/her duties to successfully complete the work that are even outside the scope of a given task.
Q-17	My leader does and contributes more than what is given when he/she is not given the role of accountability.

		Q-18	My leader helps colleagues get good reviews even if he/she is not recognized.
		Q-19	My leader understands the police organization's needs or goal constraints and tries hard to meet them.

2.3. Data processing and analysis method

The data processing of this study was performed by using the SPSS 23.0, a statistical package program, to perform statistical verification for the purpose of data analysis as follows:

First, frequency analysis was conducted to identify general characteristics using the SPSS/PC+23.0 program.

Second, the Cronbach's α coefficient was calculated for the reliability verification of the questionnaire.

Third, t-test was conducted to identify differences in leaders' followership according to gender.

Fourth, One Way ANOVA was conducted to identify differences in leaders' followership according to age.

Fifth, Chi-Square was conducted to identify differences in leaders' followership according to gender and age.

3. Research Results

3.1. Differences in leaders' followership according to gender

<Table 3> shows the differences in leaders' followership by gender. For Q-2(3.8033±.51054) men were found to be at a significant level of 1% higher than women.

As results of differences in leaders' followership by gender, looking at the mean(M) and standard deviation(SD) of Q-1, Q-2, Q-4, Q-6, Q-7, Q-9, Q-10, Q-11, Q-12, Q-14, Q-15, Q-16, Q-17, and Q-18, women were found to be higher than men.

Table 3. Differences in leaders' followership according to gender.

	Gender	N	M	SD	T-value	Sig.
Q-1	Male	61	3.8197	.56297	.935	.271
	Female	30	3.7000	.59596		
Q-2	Male	61	3.8033	.51054	1.050	.007
	Female	30	3.6667	.71116		
Q-3	Male	61	3.4918	.64866	-.497	.439
	Female	30	3.5667	.72793		
Q-4	Male	61	3.6557	.65537	.561	.082
	Female	30	3.5667	.81720		
Q-5	Male	61	3.5246	.69777	1.005	.978
	Female	30	3.3667	.71840		
Q-6	Male	61	3.5410	.67265	1.594	.027
	Female	30	3.2667	.94443		
Q-7	Male	61	3.6393	.68393	1.894	.400
	Female	30	3.3333	.80230		

Q-8	Male	61	3.3934	.73663	-1.265	.857
	Female	30	3.6000	.72397		
Q-9	Male	61	3.3115	.69620	.277	.428
	Female	30	3.2667	.78492		
Q-10	Male	61	3.5082	.69816	1.116	.837
	Female	30	3.3333	.71116		
Q-11	Male	61	3.4754	.67346	.929	.969
	Female	30	3.3333	.71116		
Q-12	Male	61	3.5410	.69699	.482	.874
	Female	30	3.4667	.68145		
Q-13	Male	61	3.5082	.69816	.464	.540
	Female	30	3.4333	.77385		
Q-14	Male	61	3.5574	.64613	.847	.777
	Female	30	3.4333	.67891		
Q-15	Male	61	3.5902	.69227	.845	.246
	Female	30	3.4667	.57135		
Q-16	Male	61	3.3770	.71096	1.747	.154
	Female	30	3.1000	.71197		
Q-17	Male	61	3.4754	.64824	.273	.196
	Female	30	3.4333	.77385		
Q-18	Male	61	3.5246	.76608	.742	.793
	Female	30	3.4000	.72397		
Q-19	Male	61	3.4754	.62200	-1.433	.168
	Female	30	3.6667	.54667		

3.2. Differences in leaders' followership according to age

<Table 3> shows the differences in leaders' followership by age. For Q-1, Those in their 50s and older were higher than those in their 30s. For Q-4, those in their 50s and older were higher than those in their 20s and 30s. For Q-7, those in their 50s and older were higher than those in their 30s and 40s. For Q-11, those in their 50s and older were higher than those in their 30s and 40s. For Q-13, those in their 50s and older were higher than those in their 20s, 30s, and 40s. For Q-16, those in their 30s were higher than those in their 20s, and those in their 50s and older were higher than those in their 20s and 30s. For Q-17, those in their 30s were higher than those in their 20s, and those in their 50s and older were higher than those in their 30s. For Q-18, those in their 50s and older, 40s, and 30s were higher in that order. For Q-19, those in their 50s and older were higher than those in their 20s.

Table 4. Differences in leaders' followership according to age.

		N	M	SD	F	Sig.	Post-hoc
Q-1	20s	7	4.0000	.57735	4.896	.003	D>B
	30s	28	3.5000	.50918			
	40s	30	3.7667	.43018			
	50s and older	26	4.0385	.66216			

Q-2	20s	91	3.7802	.57353	3.468	.020	
	30s	7	3.4286	.78680			
	40s	28	3.6429	.62148			
	50s and older	30	3.7000	.46609			
Q-3	20s	26	4.0385	.52769	3.072	.032	
	30s	91	3.7582	.58387			
	40s	7	3.1429	.69007			
	50s and older	28	3.3571	.73102			
Q-4	20s	30	3.5000	.57235	4.407	.006	D>A, C
	30s	26	3.8077	.63367			
	40s	91	3.5165	.67268			
	50s and older	7	3.1429	.69007			
Q-5	20s	28	3.5357	.83808	1.100	.354	
	30s	30	3.5000	.50855			
	40s	26	4.0000	.63246			
	50s and older	91	3.6264	.70943			
Q-6	20s	7	3.4286	.53452	1.896	.136	
	30s	28	3.2857	.71270			
	40s	30	3.5333	.57135			
	50s and older	26	3.6154	.85215			
Q-7	20s	91	3.4725	.70460	5.269	.002	D>B, C
	30s	7	3.2857	.75593			
	40s	28	3.2143	.87590			
	50s and older	30	3.5000	.68229			
Q-8	20s	26	3.6923	.73589	.673	.571	
	30s	91	3.4505	.77837			
	40s	7	3.2857	.48795			
	50s and older	28	3.2500	.64550			
Q-9	20s	30	3.5000	.73108	1.483	.225	
	30s	26	3.9615	.72004			
	40s	91	3.5385	.73496			
	50s and older	7	3.5714	.53452			
Q-10	20s	28	3.3929	.73733	2.814	.044	
	30s	30	3.3667	.76489			
	40s	26	3.6154	.75243			
	50s and older	91	3.4615	.73496			
Q-11	20s	7	3.1429	.69007	3.256	.025	D>B, C
	30s	28	3.1071	.68526			
	40s	30	3.3333	.80230			
	50s and older	26	3.5000	.64807			
Q-12	20s	91	3.2967	.72256	1.765	.160	
	30s	7	3.0000	.57735			
	40s	28	3.3214	.61183			
	50s and older	30	3.4333	.67891			
Q-13	20s	26	3.7308	.77757	4.942	.003	D>A, B, C
	30s	91	3.4505	.70338			
	40s	7	3.2857	.48795			
	50s and older	28	3.1786	.66964			

Q-14	20s	30	3.4333	.67891	1.381	.254	
	30s	26	3.7308	.66679			
	40s	91	3.4286	.68545			
	50s and older	7	3.2857	.48795			
Q-15	20s	28	3.3214	.72283	1.517	.216	
	30s	30	3.6000	.56324			
	40s	26	3.6923	.78838			
	50s and older	91	3.5165	.68900			
Q-16	20s	7	2.8571	.69007	7.713	.000	C>B D>A, B
	30s	28	3.2500	.70053			
	40s	30	3.6000	.56324			
	50s and older	26	3.7692	.76460			
Q-17	20s	91	3.4835	.72053	5.598	.001	C>B D>B
	30s	7	3.1429	.69007			
	40s	28	3.4286	.57275			
	50s and older	30	3.5667	.56832			
Q-18	20s	26	3.6538	.79711	4.275	.007	D>C>B
	30s	91	3.5165	.65596			
	40s	7	3.2857	.75593			
	50s and older	28	3.3929	.49735			
Q-19	20s	30	3.6333	.61495	3.343	.023	D>B
	30s	26	3.6923	.78838			
	40s	91	3.5495	.65428			
	50s and older	7	2.8571	.69007			

Note: A: 20s, B: 30s, C: 40s, D: 50s and older.

3.3. Connection of the differences in leaders' followership according to gender and age

As shown in <Table 4>, an analysis of the connection between gender and age showed that "x2=14.499, p=0.002, indicating that there was a connection between gender and age at a significance level of <0.01.

The highest frequencies were shown as 24(39.3%) in their 50s for men and 13(43.3%) in their 30s for women.

Table 5. Connection between gender and age.

Description	Frequency (%)				Total
	20s	30s	40s	50s and older	
Male	2(3.3)	15(24.6)	20(32.8)	24(39.3)	61(100.0)
Female	5(16.7)	13(43.3)	10(33.3)	2(6.7)	30(100.0)
x^2(p)	14.499(0.002)**				

Note: p* < 0.05, p** < 0.01, p*** < 0.001.

4. Conclusion and Discussion

As mentioned above, this study analyzed the perception attitude of leaders' followership by gender and age among police officers working for the security police organization. This is

because the nature of work of the security police can cause rather closed organizational culture for young police officers and female police officers, and it can negatively affect leadership and followership within the organization.

According to the analysis, most of the questions that have been statistically significant in gender first showed that male security police officers were evaluating the leaders' followership more positively. And for most of the questions whose statistical significance has been confirmed in terms of age, the overall positive perception of the leaders' follow-up was evenly distributed among those in their 50s or older. Also, for the connection between gender and age , men in their 50s and women in their 30s showed the highest positive attitude toward the leaders' followership.

Therefore, these analyses indicate that female security police officers are relatively more difficult to adapt to and perform their duties in the organization than male police officers. In addition, the fact that security police officers, who are in their 20s, rate their leaders' followership relatively low in many questions also suggests that the security police organization is mainly run by veteran male police officers with long years of experience in the security field.

In other words, since the proportion of traditional security police activities such as investigating security related criminals and arresting spies is still high among security police duties, there may be resistance to female police officers or young police officers within the security police organization. It also means that even if female or young police officers are assigned to the security police department, it is not easy for them to demonstrate their abilities within the organization.

Therefore, the following policy discussions will be necessary to improve this organizational culture and to become a future-oriented security police organization in line with the new security environment:

First, the organizational culture inside the security police should be improved so that they can actively accommodate female security police officers. As of the end of 2018, only 618, or 4.6% of the total, were female police officers working in the security and foreign affairs departments[7].

However, the recent changes in the security environment and security demand require the role of female police officers in many areas and, by extension, rational and balanced police officers management policies including transfer and promotion. For example, areas such as protection and support for North Korean defectors and cyber security are new security police areas where women can achieve more positive results[8][9].

And the security police should be transformed into an organization where female police officers can fully demonstrate their potential and creativity. To this end, active gathering of opinions and participation in various policy decisions from female police officers assigned to the security police organization should be encouraged. In addition, it is necessary to create an open organizational culture by placing female police officers in major security affairs and clearly assigning their roles and duties so that female security police officers can have active followership.

Second, in order for the security police to be reborn as a new organization in response to the rapidly changing security environment, policy changes are needed to actively accommodate and nurture young security police officers. This is because young security police officers can be important security assets that can effectively respond to changes in the future security environment.

And a developmental organizational culture should be created in which high and mid-level managers in the security police organization cultivate sound leadership to draw fresh ideas from young police officers and enable young police officers to become leaders themselves. Stiffening communication channels by forming a thick wall of age, rank, and work experience with misguided leadership will make young police officers reluctant to communicate and interact within the organization. And this could be the most important factor in hindering the development of the security police[10][11][12].

Despite the importance of its work and role, the security police have faced frequent organizational changes depending on the administration's political orientation and are exposed to pressure to reduce the police officers, which is the most important security asset, as well as the budget because of a false climate in which the tendency of political power determines the fate of the security police.

However, the security police too will never be free from the comment that they have not been able to enhance their adaptability to the rapidly changing security environment and have failed to find new security areas. There is also no denying the closedness of the organization run by a narrow pool of manpower based on the security division.

Recently, however, not only national security from a traditional perspective, but also personal security, human security, and all issues that could harm national interests in various areas, including politics, economy, society, and the environment, have become a comprehensive security concept. That is why the role of women and the young with new perspectives and access to security is becoming more emphasized[13].

Therefore, the security police should be reborn as the backbone of maintaining the national security from various security risk forces through a new and comprehensive approach to the rapidly changing international order and security risks in the 21st century, avoiding the bias of security focusing on arresting ideological security criminals[14][15].

Also, by being reborn as an organization where female or young police officers are evenly placed, it should be transformed into an active organization where there is a healthy criticism, not blind consent to the boss, in which the leadership of the leader and the followership of its members are balanced and vibrant.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Lead Author	HYY	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑
Corresponding Author*	JSN	-Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑
Co-Author	SGJ	-Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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The CORRECTIONAL Orientation and Role Conflict of Correctional Officers

Seungjoo Lee

Halla University, Wonju, Republic of Korea

Abstract

Purpose: The recent correctional administration emphasizes not only aspects of detention-security focused on the execution of prisoners in the past but also the rehabilitation ideology through personality education. A correctional officer who must pursue these two conflicting ideologies at the same time has no choice but to feel a role conflict. Therefore, the focus of this study is to examine role conflicts based on the contradictory role expectations of "punishment ideology" and "rehabilitation ideology" required of correctional officers from the perspective of role conflicts.

Method: This study is based on a survey that targeted 431 current correctional officers and the collected questionaries were analyzed by the statistics program of SPSS 22.0. For specific research methods, factor analysis, reliability analysis and correlation analysis were conducted to verify the reliability and validity of each variable. In addition, ANOVA analysis was conducted for the purpose of proving the research hypothesis to verify the differences in the correctional concepts and role conflicts by the socio-demographic characteristics of correctional officers and the differences in role conflicts according to the correctional orientation.

Results: Although the punishment orientation of correctional officers differed depending on age, period of service and first department of work, the rehabilitation orientation differed only in the first department of work, this means that the first department of work was the only common link reinforcing either a punishment and rehabilitation ideology. Also, the more the punishment ideology was followed, the greater the chance that role conflict could be experienced. However, there are no difference in role conflicts according to the socio-demographic characteristics, such as gender, age, period of service, current and first department of work.

Conclusion: In order to further examine role conflicts of correctional officers, various approaches such as in-depth interviews and panel research will be required. It is also necessary to study various forms of organizational culture to reduce the role conflicts of correctional officers and to efficiently accept contradictory ideologies of punishment and rehabilitation simultaneously.

[Keywords] Correctional Officer, Ideology of Korean Correctional Service, Punishment Ideology, Rehabilitation Ideology, Role Conflict

1. Introduction

As society's understanding and interest towards human rights issues in correctional facilities has increased recently, correctional programs, such as improvement of prisoners' rehabilitation, returning to society and human rights security, are being improved to cope with increasing demands. In addition, the social and academic interests for the management plan of correction organizations are also increasing in trend.

As such, the effort of each part of the correctional environment calls for the transformation of the correction organization into a new one. However, the reality of correctional officers who actually work in these facilities is that they cannot properly keep up with the new role

changes. For correctional officers, security work to prevent incidents and accidents in correctional facilities is still more important than improving the correctional system. Thus, correctional officers who must pursue both conflicting ideologies of punishment and rehabilitation at the same time are naturally bound to feel a role conflict. If this role conflict intensifies, correctional officers will become confused about their duties and make dealing with prisoners more difficult[1].

According to the Prison Study(prisonstudies.org), which records the correction status of OECD member countries, Korea has the second highest number of prisoners held by one correctional officer after the United States. However, the U.S. government injects 10 billion dollars per year that all American correctional officers use innovative technologies to manage prisoners smoothly, such as Telehealth which is a health system for remote analysis with long-distance taser guns, shotguns and CCTVs[2]. On the other hand, in the case of Korea, the responsibility of security, such as maintaining order in prisons and the management of prisoners and the role of the inmates' rehabilitation are all up to the correctional officers. It is not easy to expect correctional officers to carry out their role to help rehabilitate and re-socialize prisoners in a situation when they are under a heavy workload just by monitoring prisoners. Therefore, the key point of this study is to explore the differences in role conflicts depending on the correctional orientation of correctional officers.

2. The Correlation Orientation and Role Conflict of Correlation Officers

2.1. The notion of role conflict

First of all, the role defined as a pattern of behavior perceived by individuals as expected behavior[3]. Secure & Bacman defined the role "a combined act of a position and an expected given to its position"[4] and Goffman defined it as "a typical reaction seen by an individual in a particular situation"[5].

From the reciprocal perspective, Maccoby & Newcomb defined roles as "the normative behavior that an organization expects in performing its duties[6]."

Integrating the definitions found above regarding role, role can be called "the attitude, value, and behavior given to a person in a position by an organization, the expectation of people interacting with those who occupy a particular position." Also, according to the 'Role Theory', members of an organization experience stress and dissatisfaction when the behaviors expected of them contradict each other. And when role expectations collide with each other, job efficiency is also reduced[7].

2.2. The cause of role conflict

Katz & Kahn defined the role conflict as "simultaneously occurring two or more role expectations that result in conflict by failing to adapt to one thing by adapting to another." In particular, the discrepancy of mutual role expectation affects role conflict together with personal, interpersonal, and organizational factors. Specifically, they argued that personal factors include personal values, motivation, and morale, organizational factors include organizational size, formalization, and complexity of organizational structure, and interpersonal factors include communication, interpersonal relationships between roles, interdependencies and positions[8]. These factors have been shown to affect the role conflict between the members of the organization and organizational effectiveness.

Perks argued that role conflicts were caused by three major causes. The first is the structural aspects of the role. Role-receivers experience role conflicts due to structural inconsistencies that perform two structurally conflicting roles at the same time. In this regard, correctional officers are likely to experience a role conflict in terms of performance of two or more contradictory roles of the responsibility of security such as maintaining order in prisons and

the management of prisoners, the responsibility of rehabilitation and re-socialization for in-mates' at the same time. The second cause is that power imbalance can also lead to role conflicts. The third cause states that the difference in expectations causes a role conflict[9].

In this respect, the role conflict in the role theory can be understood from the point of view of role ambiguity. In general, role ambiguity is when the role expectations are not clear, or the results of the role performance are not predicted. This phenomenon can even occur when official task contents are not clear[10][11].

2.3. The definition of role conflict

Role conflict occurs when there is a difference between the role expectations of the members according to the organizational concept and the actual role behavior of the members. Kahn[12] and Quinn & McGrath[13] argued that role conflicts occur when members of an organization have to play a role that is inconsistent with their value system or two or more conflicting roles and when individuals are not given enough information to perform their roles[14]. In addition, role conflicts affect low confidence in the organization [12], low job Satisfaction[15], low organizational effectiveness[16], and unfriendly attitudes toward the organization and the boss[17][18].

2.4. The role conflict of correctional officers

Correctional officials control and monitor prisoners to maintain order in prisons. Simulta-neously, the correctional officers labor for rehabilitating prisoners to help them adapt to society after being released from prison. Because of these incompatible job characteristics of punishment and rehabilitation, correctional officers feel a role conflict[19].

Tewksbury & Mustaine's research shows that correctional officers feel a role conflict in the conflicting correctional ideologies of security and rehabilitation and a negative impact on job satisfaction and job performance[20].

Although the individual's conflict responsibility falls on the individual, the conflict experi-enced by public official are personal and also have a significant impact on both the organiza-tion and the people. In this regard, the role conflict of public official also has important impli-cations on an organizational level. Therefore, in order to increase the efficiency of the correc-tional organization and the overall performance of organization, the role and task descriptions must be clearly presented. In addition, as professional public officials, correctional officers should perform conflicting roles in a balanced manner. Balanced role expectations and role behavior will enable correctional officials to be personally satisfied with the organization and socially provide efficient service to the people.

2.5. The correctional orientation of correctional officers

Correctional ideology is divided according to the legitimacy of punishment and the purpose of correction. Firstly, 'correction for punishment' has its rationality in both retributive and utilitarian justification. Unlike the retributive justification, which emphasizes fair punishment for crimes, the utilitarian justification emphasizes the achievement of goals such as incapaci-tation and suppression through punishment. On the contrary, 'correction for rehabilitation' is part of the utilitarian justification, which emphasizes the successful return of prisoners to society through changes in prisoners' behavior and acceptance of local communities[21].

It is common to argue that the professional attitude of correctional officers toward prison-ers is largely rehabilitation centered. But even if the ultimate goal of correction is to rehabil-itate prisoners and bring them back to society soundly, the successful securing of custody and detention must still be an important value of correctional administration.

As such, correctional officials are required to satisfy these goals at the same time, even though the two goals pursued by the correctional organization are contradictory, and they suffer from role conflicts and job stress depending on their support of the correctional

ideology orientation[22]. For example, one research shows that correctional officers who accept the punishment ideology are experiencing more role conflicts[23][24]. Thus, the more correctional officers support the punishment ideology, the more duty related stress they will experience.

Focusing on the research by Lee Chang-han[25], this study will look at the correctional orientation of correctional officers by two sub-categories: 'punishment orientation' that agrees punishment as correctional orientation and 'rehabilitation orientation' that agrees the improvements of rehabilitation methods.

3. Methodology

3.1. Target

Subject to the study are incumbent correctional officers, and a total of 439 questionnaires were submitted in a survey of all of them in May 2018 through cooperation with the Ministry of Justice. A total of 431 questionnaires were used for analysis, excluding those that were not suitable for analysis, such as many unanswered items or marked with one number.

3.2. Hypothesis and research method

The research hypotheses set on the basis of theoretical discussion and literature review discussed earlier are as follows:

Hypothesis 1: Is there a difference in the correctional orientation according to the general characteristics of the correctional officers?

1-1: According to the general characteristics of correctional officers, the punishment orientation varies.

1-2: According to the general characteristics of correctional officers, the rehabilitation orientation varies.

Hypothesis 2: Are there differences in role conflicts depending on the rehabilitation orientation?

The socio-demographic characteristics of correctional officials were identified to verify the above research theories. ANOVA analysis was conducted to verify the differences in the correctional orientation and role conflicts by the socio-demographic characteristics and the differences in role conflicts according to the correctional orientation.

3.3. Measuring tools and operating definition

3.3.1. The socio-demographic characteristics of correctional officers

From a number of precedent researches, the socio-demographic variables that have been inferred to be related to the correctional orientation of correctional officers are race, gender, age, education, work environment and so on. However, the analysis showed that all variables except races were found to have no meaningful effect on the correctional orientation of correctional officers[26][27]. On the other hand, a study by Farkas showed that gender and age had a significant influence on the correctional orientation of correctional officers[28].

In a study by Lee Chang-han in Korea, the work characteristics of correctional officials were divided into security and other positions. Since the nature of security positions is punishment-oriented and other positions is rehabilitation-oriented[25]. The study of McIlwain[29] found that each department has a differentiated subculture, based on a strictly separate survey of non-security and security officials.

Based on the above precedent research results, this study was specified the general characteristics of correctional officials as gender, age, period of service, current department, and first department, which are likely to affect correctional work rather than private factors of correctional officials.

3.3.2. The correctional orientation

The correctional orientation of this study is divided into punishment orientation and rehabilitation orientation. To measure this correctional orientation, the questionnaire used by Cullen was used by translating[30] and adapting to Korean circumstance. The measurement is based on a Likert five-point scale, and the higher the score, the higher the degree of the each correctional orientation of the correctional officer.

First, the reliability of 'correctional ideology pursuing punishment' was Cronbach's α=.64 in Cullen's study[30], and Cronbach's α=.71 in Robinson's study[31]. Then, the reliability of 'correctional ideology pursuing rehabilitation' was Cronbach's α=.79 in Cullen's study[30], Cronbach's α=.79 in Van voorhis's study[32], and Cronbach's α=.80 in Robinson's study[33].

3.3.3. Role conflict

Role conflicts in this study can be defined as "the psychological state when the role managers feel conflicting role expectations occurred on a single position during the process of performing their roles."

Lee Bong-seop(1991)'s measurement tool, translated the question of role ambiguity developed by Rizzo[7], was used to measure the role conflict of correctional officers in this study. The measurement is based on a Likert five-point scale, and the lower the score means the correctional officers experiencing a lot of role conflicts in their work.

The reliability of the tool Cronbach's α=.71 in Joo DJ's study which looked at the causal relationship between public officials' immersion in duties and role conflicts[34].

4. Results

4.1. Factors and reliability analysis

The factor and reliability analysis of the correctional orientations and role conflict are as shown in <Table 1>. The correctional orientation of correctional officers consists of two sub-factors: punishment orientation and rehabilitation orientation, and accounts for 67.108% of the total variance.

The KMO value of the variables being measured is shown as '.797', which is suitable as a question for factor analysis. The value of Bartlett's sphericality test was 1239.997, and the significance level was 0.000, so it was suitable for analysis. In the reliability analysis results for each variable, the reliability of punishment orientation is shown for '.624', and the reliability of rehabilitation orientation was found to be '.853'. Therefore, it was shown that the Cronbach's α value of the last selected question for each variable was above 0.6, which was confirmed a measure of high internal consistency.

For variables that measure role conflict of correctional officers, the KMO values was '.744' and the value of Bartlett's sphericality test was 865.744, so the significance level was 0.000. Therefore, it has been identified as a common factor in which a factor analysis is possible. The Cronbach α value of the measurement variable is .907, which is available to use in the analysis due to its high considerable reliability of the variable.

Table 1. Validity and reliability of utilization variables.

Variable		The questionnaire	Factor loadings	Cronbach's α
Correc-tional orientation	Punishment ideology	The only way to reduce crime in our society is to punish offenders.	.667	.624
		Prison should be strict with prisoners.	.719	
		I am not interested in the rehabilitation of prisoners.	.612	
		My main concern is to prevent prisoners cause problems.	.690	
	Rehabilita-tion ideology	Rehabilitation programs for prisoners should be expanded further.	.791	.853
		The policy of refinement will work if sufficient budget is secured.	.793	
		The rehabilitation program works for adult prisoners.	.857	
		A policy that focuses on the rehabilitation of prisoners is a successful policy.	.834	
	KMO= .797 / Bartlett's X2= 1239.997***			
	Various analysis power : 67.108			
The role of conflict		I know what my responsibilities are at work.	.897	.907
		I can predict what others expect of my task.	.923	
		The task I take charge for has the clear purpose.	.934	
	KMO= .744 / Bartlett's X2= 865.744***			

Note: *p<.05, **p<.01,***p<.001.

4.2. Correlation analysis

The result conducted by the Pearson correlation analysis is shown <Table 2>. According to the analysis, the correlation coefficient of all variables was 0.8 and thus there was no multi-collinearity. And the correlation between the punishment orientation, the rehabilitation ori-entation and role conflict of correctional officers all turned out to be negative(-).

Table 2. Correlation analysis.

	1	2	3	4	5	6	7	8
1. Gender	1							
2. Age	.298**	1						
3.Period of service	.277**	.741**						
4.Current department of work	.144**	.152**	.126**	1				
5.First department of work	.194**	.112*	.226**	.067	1			
6.Punishment ideology	.000	151**	.204**	-.015	-.116*	1		
7.Rehabilitation ideology	.044	.030	.082	.081	.259**	-.363**	1	
8.Role conflict	.050	.050	.015	.011	-.031	.121*	.233**	1

4.3. The analysis of the differences between correctional orientation and role conflict

4.3.1. Differences in punishment orientation by socio-demographic characteristics

<Table 3> is the result of an analysis 't-test' and 'Anova-test' to see if there is a difference in the punishment orientation by the socio-demographic characteristics of correctional officers.

First, the t-value of gender is -.004 and the t-values for working department dividing into the security and the non-security division were found to be .320, there was no difference in the punishment orientation of correctional officers according to gender and working department.

On the other hand, since the F value for age was 3.348, the F value for the period of service was 5.486, and the t value for the first department of work was 2.292 punishment ideology for correctional officers differed according to their age, period of service, and first department of work.

Specifically, the average value of correctional officers' the punishment ideology in the group of '20-29 years' was 3.96, which was aimed at the punishment ideology under a statistical significance level than that of correctional officers in other age groups. However, as a result of the Scheffé test which is the post-hoc analysis in order to identify significant differences between groups, there was no significant difference between groups. In the case of the period of service, the average value of the punishment ideology of correctional officers who worked for 'less than 5 years' was 3.85, which was the most aimed at punishment ideology under the statistical significance level. And it was shown that the longer the period of service, the lower the average value of the punishment ideology. In particular, as a result of the Scheffé test, the correctional officers who are working in 'less than 5 years' or '5–9 years' are found to be aiming for more punishment ideology by a more significant difference than the correctional officers who are involving in '10-14 years','15-19 years' and 'over 20 years'.

For the first department of work, the average value of correctional officers working in the security department was 3.72, which was more aimed at punishment ideology than those working in the non-security department under a statistical significance level. This appears to be the result of being influenced by the duties of the department of security, which put top priority on the prisoners' detention, the security of correctional facilities, and maintaining order.

Table 3. Differences in punishment orientation by socio-demographic characteristics.

Categories		Average	Standard deviation	t / F	Scheffe
Gender	Male	3.69	0.56	-.004	-
	Female	3.69	0.63		
Age	20 - 29	3.96	0.21	3.348*	-
	30 - 39	3.80	0.61		
	40 - 49	3.66	0.57		
	50 - 59	3.57	0.52		
Period of service	Less than 5 years	3.85	0.53	5.486***	a,b>c,d,e

	5 − 9 years	3.87	0.63		
	10 − 14 years	3.66	0.61		
	15 − 19 years	3.59	0.47		
	Over 20 years	3.57	0.52		
Current department of work	Security	3.79	0.56	.320	-
	Non-security	3.68	0.58		
First department of work	Security	3.72	0.56	2.292*	-
	Non-Security	3.53	0.59		

Note: *p<.05, ***p<.001.

4.3.2. Differences in rehabilitation orientation by socio-demographic characteristics

<Table 4> is the result of an analysis 't-test and Anova-test' to see if there is a difference in the rehabilitation orientation by the socio-demographic characteristics of correctional officers.

First, the t-values for gender and current department of work were -.919 and −1.687 respectively, while the F values for age and the period of service were 2.485 and 1.905 respectively. Thus, there was no difference in the rehabilitation orientation based on gender, age, period of service and current department of work. In particular, the result of this study that there is no gender difference is different from the precedent study that female correctional officers pursue the rehabilitation ideology over male correctional officers.

On the other hand, the t-value of the first department of work was −5.542, indicating that the rehabilitation orientation was found to be different depends on the first department of work. Specifically, the average value of the rehabilitation orientation for correctional officers who had worked in the non-security department, which was mainly responsible for the rehabilitation work, was 3.37. So, this was aimed more the rehabilitation ideology than the correctional officers who had worked in the security department under the statistical significance level. This seems to have affected the correctional ideology of correctional officers by the non-security department, which emphasizes more aspects of offenders' rehabilitation and re-socialization, through education, refinement and living guidance of them.

Table 4. Differences in rehabilitation orientation by socio-demographic characteristics.

Categories		Average	Standard deviation	t / F	Scheffe
Gender	Male	3.69	0.56	-.004	-
	Female	3.69	0.63		
Age	20 - 29	3.96	0.21	3.348*	-
	30 - 39	3.80	0.61		
	40 - 49	3.66	0.57		
	50 - 59	3.57	0.52		
Period of service	Less than 5 years	3.85	0.53	5.486***	a,b>c,d,e
	5 − 9 years	3.87	0.63		

	10 – 14 years	3.66	0.61		
	15 – 19 years	3.59	0.47		
	Over 20 years	3.57	0.52		
Current department of work	Security	3.79	0.56	.320	-
	Non-security	3.68	0.58		
First department of work	Security	3.72	0.56	2.292*	-
	Non-security	3.53	0.59		

Note:***p<.001.

4.3.3. Differences in role conflict by socio-demographic characteristics

<Table 5> is the result of an analysis 't-test and Anova-test' to see if there is a difference in role conflict by the socio-demographic characteristics of correctional officers. First, the t-values for gender is -1.044, while the F value for age and the period of service were 2.555 and .643 relatively. Then the t-values for current department of work and first department of work were -.217 and .624 relatively. Therefore, there were no differences in role conflicts depending on gender, age, the period of service, current department of work and first department of service. As with the findings of Tewksbury & Mustane[20], it can be demonstrated that the role conflict of correctional officers is more affected by the correctional orientation than by socio-demographic factors.

Table 5. Differences in rehabilitation orientation by socio-demographic characteristics.

Categories		Average	Standard deviation	t / F	Scheffe
Gender	Male	2.45	0.83	-1.044	-
	Female	2.59	0.98		
Age	20 - 29	1.86	0.52	2.555	-
	30 - 39	2.54	0.91		
	40 - 49	2.45	0.81		
	50 - 59	2.56	0.92		
Period of service	Less than 5 years	2.37	0.98	.643	-
	5 – 9 years	2.54	0.97		
	10 – 14 years	2.45	0.76		
	15 – 19 years	2.40	0.78		
	Over 20 years	2.54	0.79		
Current department of work	Security	2.46	0.78	-.217	-
	Non-security	2.48	0.94		
First department of work	Security	2.49	0.85	.624	-
	Non-Security	2.41	0.87		

4.3.4. Differences in role conflict by the correctional orientation

<Table 6> is the result of an analysis 't-test' to explore if there is a difference in role conflict by the correctional orientation. To look specifically, the average value of the correctional officers pursued by punishment ideology was 3.23, which was more experienced the role conflict than those pursued at rehabilitation ideology under a statistical significance level. This is the same result as precedent studies, and at the same time, it can be inferred that the current ideology of Korean correction service more emphasizes the aspects of the rehabilitation and

re-socialization of prisoners from the old direction of security and punishment orientation in the past. And it can prove that the paradigm shift from punishment to rehabilitation can effect on role conflict of correctional officers who pursuing the punishment ideology.

Table 6. Differences in role conflict by the correctional orientation.

Categories	Average	Standard deviation	t
Punishment orientation	3.23	0.87	3.562*
Rehabilitation orientation	2.76	0.81	

Note: *p<.05.

5. Discussion

Correctional officers are responsible for security in correctional facilities that accommodates offenders who are isolated from society. And the rehabilitation of prisoners for bringing them back to society soundly is also their responsibility[35]. The duties that require conflicting organizational concepts of this punishment-rehabilitation cause role conflicts of correctional officers. The role conflict of correctional officers is likely to lead to adverse functions on the organizational and national level further from personal problems.

Therefore, in order to manage efficiently correctional officials who experience role conflicts between conflicting roles of punishment-cultivation within the correctional organization, it is necessary to consider ways to enhance their expertise in each role by separating the role of security and rehabilitation. As a solution to this, it is necessary to consider ways to allow professionals, such as social workers and professional counselors, to work in the correctional area in light of the specificity of correctional jobs rather than uniform test-based recruitment. This is because professional personnel who have been verified in the selection process are likely to wisely overcome role conflicts and stress that can be felt in the field and deal professionally with.

However, there are limitation to approach and interpret through just two-dimensional way and relations on between ideological orientation and role conflict[36]. It is because it is not a dichotomous issue of whether correction members simply seek punishment or reform in the role conflict of correctional officers, as in previous prior studies. Therefore, in order to take a closer look at role conflicts of members within the organizational culture, it will be necessary to research on various approaches, such as in-depth interviews and panel research.

In addition, research on various forms of organizational culture is needed to reduce the role conflict of correctional officials and to efficiently accommodate conflicting ideologies of punishment and refinement simultaneously. This is because the resolution of the role conflict of correctional officers and role ambiguity will soon lead to the establishment of an efficient organizational culture. However, since changes in organizational culture occur over a long period of time[37], it is hoped that follow-up research will continue to focus on the goals of the correctional organization culture and examine the trend of change.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Author	SJL	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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RISK ANALYSIS in Mongolian Central Region Coal Mines

Nandintsetseg Sosorbaram[1]
Soongsil University, Seoul, Republic of Korea

Seungbum Ryoo[2]
Soongsil University, Seoul, Republic of Korea

Chongsoo Cheung[3*]
Soongsil University, Seoul, Republic of Korea

Abstract

Purpose: The mining industry is a highly risky field where risk factors impact each other much. Mining is the leading branch of the economy of Mongolia. Rural areas in Mongolia isn't well developed and the country's population is not crowded mining industry is so risky. And also the risk factors in the Mongolian mining field are highly impacted by each other made me study a detailed and staged method of risk management.

Method: To define mining risk factors we studied the classifications of international experts and made a survey among the mining specialists of Mongolia. Then we defined the risks into 8 factors and 31 subfactors. By the survey research, the logical principle of impact factors was defined. After that, we made a systematic analysis of the dependence between the impact factors and their impacting levels. As the result, we found out a staged design of risk analysis.

Results: The result of the Risk Matrix risk analysis showed that the central region mines in Mongolia have a high-risk level and they need a detailed risk assessment. While the WSM analysis result says that most mines have got high management risk, DEMATEL analysis results mines have high risks in subfactors such Organizational structure adaptation, Human error failure.

Conclusion: The research result shows that this comprehensive risk method is suitable for making detailed risk analysis in companies liable to high risk and has many influencing impacted risk factors. In this paper, we offered a comprehensive risk analysis method and it was also tested to analyze common risks in Mongolian Central Region Coal Mines. The results of applying the proposed method in a real case study demonstrate that it can effectively handle risk assessment when implementing risk analysis in a Mining organization.
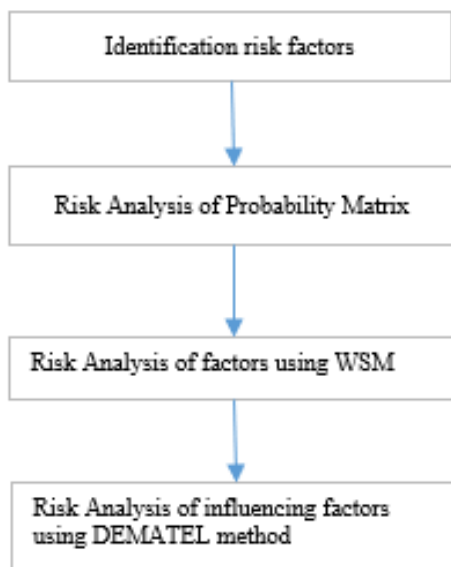
[Keywords] Field Action Manual, Manual Operation Key, Mission, Decision, Disaster Site Information

1. Introduction

The Mine enterprise is renowned for being one of the most hazardous sectors in the world due to its complex work environment and environmental and social impact[1]. The application of risk assessment in mines has become important not only for Business Continuity Plans but, also, it is now a legal requirement[2]. The area of risk analysis in business continuity plans highlight the need for implementation of the latest robust techniques of risk assessment in the mine enterprise[3]. With the increasing complexity of the working environment, it is mandatory to look at the system in a holistic manner; the assessment of the company should not be carried out solely on the basis of external data or post major accident reviews but rather taking into consideration leading indicators of vulnerability and resiliency. Catastrophic events are those which are low in probability but high in consequences. These days, catastrophic events occur to a greater extent, especially in process industries, giving rise to heavy monetary as well as production losses[1][4].

An extent that the accident analysis techniques to be adopted should be capable enough to thoroughly investigate accidents. The risks for the Mine enterprise plant were highlighted and it is suggested that there is not one general method for dealing with the problem but a combination of methods is required that can solve complex setups and systems[3][5][6]. The comprehensive risk analysis method proposed in this study is shown in <Figure 1>.

Figure 1. Flow diagram of the proposed risk assessment framework.

2. Risk Identification

Risk identification is defined as ''the process of finding, recognizing and recording risks"(ISO 31010, 2009). The Risk identification of mine accidents is to promote uniformity and comparability of mine accidents statistics, risk analysis, which has as an ultimate goal to prevent accidents. The capability of a risk assessment process depends on the hazard identification phase, as unidentified hazards may lead to unknown and unmanageable risks. Therefore, it is essential to identify all the potential hazards to manage the risks in mines[2]. Although mine accidents are very complex realizations and many factors can contribute to their occurrence, much thought has been given to the study of causes and consequences of the accidents and many investigations have been carried out on the subject, as shown in <Table 1>.
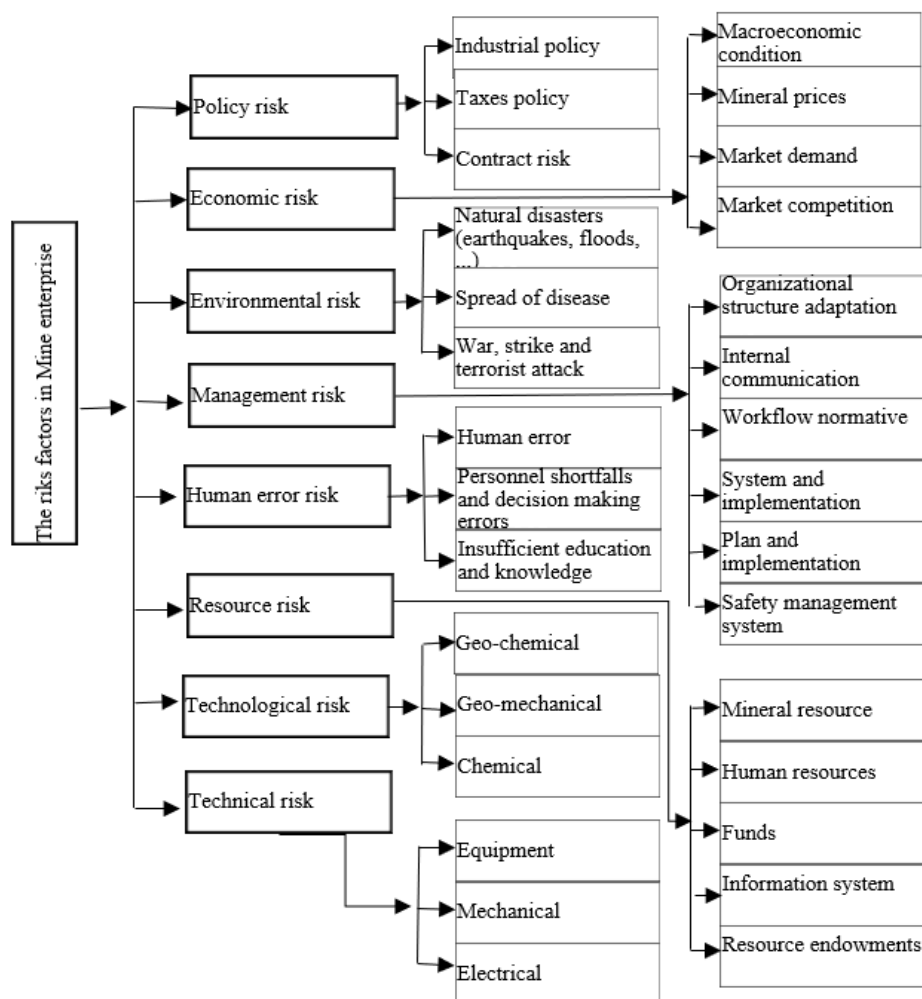
Table 1. Research on common mine enterprise risks.

Risk factors	Source
Emergency management strategy of nurse during disaster in Republic of Korea[7]	Park(2016)
CPTED cases and policy proposals for safe cities[8]	Park(2020)
Transnational security threat and change of counterterrorism intelligence environment[9]	Yu(2016)
The implications of corporate philosophy and shared value for social value creation[10]	Kim(2020)

Analysis of the healing effect of walking activities according to the difference in forest environment[11]	Sung(2014)
Effect of flexible obstacles on gas explosion characteristics in underground coal mine[12]	Gao(2021)
Environmental impact and potential use of coal fly ash and sub-economical quarry fine aggregates in concrete[13]	Roy(2018)
Research on 10-year tendency of China coal mine accidents and characteristics of human factors[14]	Hong(2012)

The risk index system framework was established based on an in-depth analysis of the risks of the professional operation at coal enterprises and research on traditional mine risks and investigation conduct a survey for mining risks, as shown in <Figure 2>.

Figure 2. Index system of risk factors in mine enterprise.

3. Risk Analysis Model

A consequence/probability matrix is used to define which risks need further or more detailed analysis, which risks need treatment first, or which need to be referred to a higher level of management(ISO 31010, 2009). The risk matrix incorporates the pre-determined risk acceptance

threshold and is used to determine which risks require treatment and the priorities that should be applied[15][16].

The probability(P) criteria for risk occurrences are first determined, classified into five grades and the risk severity of the consequences(C) is classified into five grades, respectively. The risk evaluation, r=P*C, are then divided into I-IV grades{(1≤ r ≤ 4), (5≤ r ≤ 10), (10 ≤ r ≤ 15), (16≤ r ≤ 25)} based on the risk matrix study of Bo Luo[17], as shown in <Figure 3>.

Figure 3. Risk rating matrix for mining.

Likelihood rating	5-Frequent	II	III	IV	IV	IV
	4-Probable	II	II	III	IV	IV
	3-Rare	I	II	III	III	IV
	2-Remote	I	II	II	III	IV
	1-Improba-ble	I	I	I	II	III
		1-Minor	2-Medium	3-Significant	4-Major	5- Severe
		Consequence rating				

Using the consequence/probability matrix at first to make risk analysis gives the advantage to define further detailed analysis is needed or not.

3.1. Analysis of factors using WSM

The calculation process of Weight sum method: The likelihood is defined as the ''chance of a risk occurring, whether defined objectively or subjectively and can be stated quantitatively or qualitatively"(BS 25999, 2007).

This study uses an expert Delphi method and the objects were professional experts working in industries. Data collected from the experts was analyzed with the fuzzy WSM method. The major 4 steps were conducted as the following.

3.2. Analysis of influencing factors using DEMATEL method

The DEMATEL method is a methodology that can be used for researching and solving complicated and intertwined problem groups. The most important property of the DEMATEL method used in the multi-criteria decision-making field is to construct interrelations between criteria [11][12][18][19].

The combination of DEMATEL can be used to analyze the relations between various factors that affect risk factors in the coal mine enterprise.

4. A Policy Suggestion

Mongolian central region coal mines risk probability matrix.

Figure 4. Risk matrix of the coal mines in central Mongolia.

Likelihood		1 Minor	2 Medium	3 Significant	4 Major	5 Severe
	5 Frequent					
	4 Probable			III: F51	IV: F21, F22, F23, F52, F53	
	3 Rate			II: F11, F12, F13, F24, F46, F61, F81		
	2 Remote	I: F71, F73	II: F42, F43, F62, F64, F65, F72, F82, F83	II: F31, F32, F44, F45, F63		
	1 Improbable		II: F33, F41			
		1 Minor	2 Medium	3 Significant	4 Major	5 Severe
				Consequence		

Therefore, according to the principle of maximum membership degree, the overall risk at coal mines in the Central Region of Mongolia was determined to be level IV.

Figure 5. Impact of identified risk in the Mongolian central region coal mines(risk level of factors).
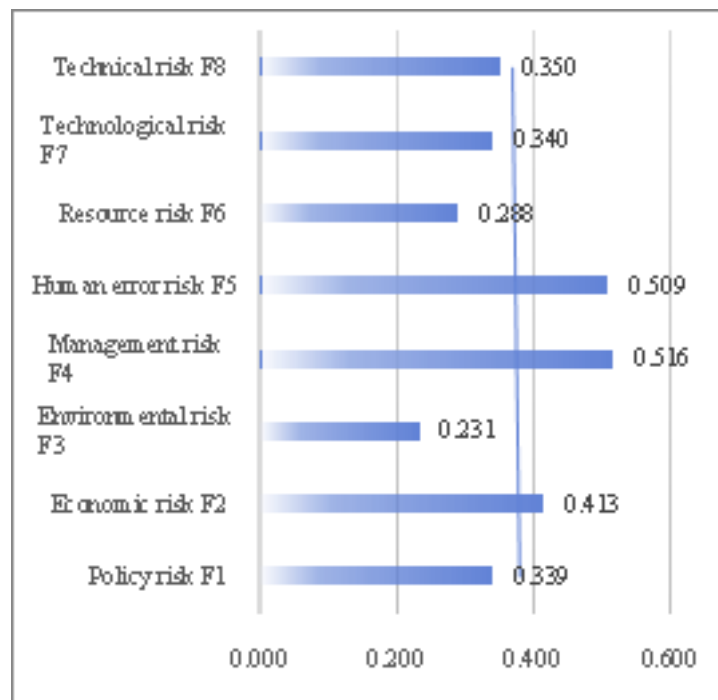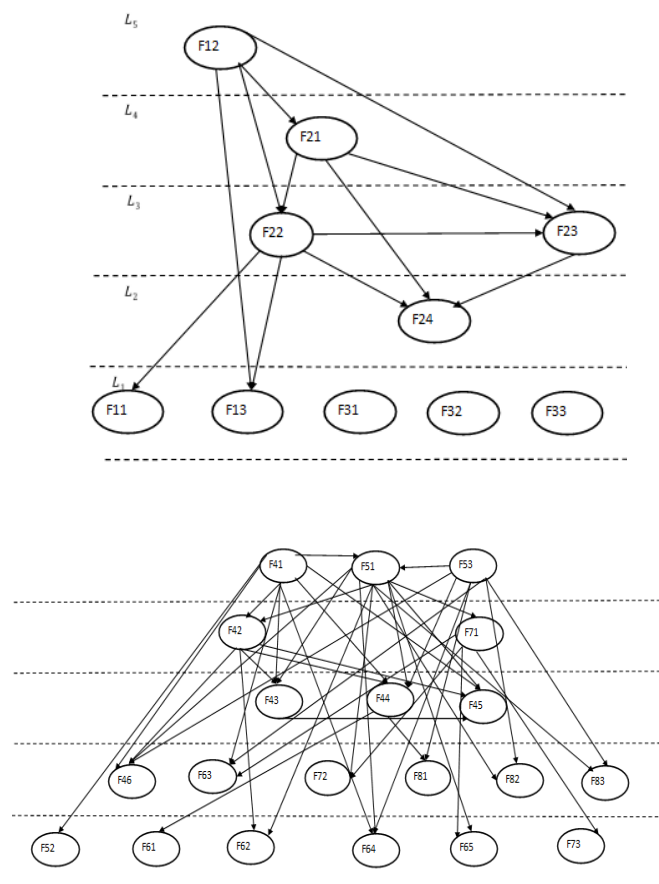
Table 2. Impact of identified risk in the Mongolian central region coal mines(risk level of factors).

sub-factors	Pessimistic scenario	Realistic scenario	Optimistic scenario
Human error F51	0.582	0.654	0.735
Plan and implementation F45	0.535	0.601	0.676
Safety management system F46	0.524	0.588	0.661
Workflow normative F43	0.514	0.577	0.648
System and implementation F 44	0.510	0.573	0.643
Insufficient education and knowledge 53	0.413	0.464	0.522
Mineral prices F22	0.410	0.460	0.517
Industrial policy F11	0.398	0.447	0.502
Market demand F23	0.393	0.441	0.496
Natural disasters(earthquakes, floods, …) F31	0.373	0.419	0.471
Funds F63	0.369	0.415	0.466
Personnel shortfalls and decision making errors F52	0.364	0.409	0.460
Geo-mechanical F72	0.364	0.409	0.459
Geo-chemical F71	0.350	0.393	0.442
Taxes policy F12	0.344	0.387	0.435
Internal communication F42	0.341	0.384	0.431
Market competition F24	0.340	0.382	0.429
Organizational structure adaptation F41	0.332	0.373	0.419
Macroeconomic condition F21	0.329	0.370	0.416
Equipment F81	0.327	0.367	0.412
Mechanical F82	0.306	0.344	0.386
Electrical F83	0.302	0.339	0.381

Mineral resource F61	0.289	0.325	0.365
Information system F64	0.288	0.323	0.363
Chemical F73	0.194	0.218	0.245
Resource endowments 65	0.186	0.209	0.235
Contract risk F13	0.163	0.183	0.206
War, strike and terrorist attack F33	0.162	0.182	0.204
Human resources F62	0.152	0.171	0.192
Spread of disease F32	0.083	0.093	0.105

The study shows that Management risk, Human error risk, and Economic risk need to be addressed as a matter of priority in the Mongolian Central Region Coal Mines.

Figure 6. Influencing mechanisms of various factors in Mongolian central region coal mines.

In the Mongolian Central Region, L5 the most influential sub factors include for Coal Mines external factors included Taxes policy F12, while internal factors include Organizational structure adaptation F41, Human error F51, Insufficient education and knowledge F53.

5. Conclusion

In this research paper, a model of a comprehensive mining risk method was introduced. For the experimental risk analysis, Coal Mines in the Central Region of Mongolia were chosen and the data were calculated by using the Delphi method. As the first step of risk assessment risk factors were defined by studying 8 external and internal factors and 30 sub-factors of coal mines. The result of Consequence matrix method analysis shows that Coal Mines in the Central Region of Mongolia commonly have the following 4th level risk sub-factors: Macroeconomic condition, Mineral prices, Market demand, Personnel shortfalls, and decision-making errors, Insufficient education, and knowledge. And it means all the coal mines have level 4 high risks and detailed risk analysis is needed.

WSM and DEMATEL model is used for making the risk analysis and sorting risks into external and internal made the results more accurate. As a result of the WSM analysis method Management risk, Human error risk and Economic risk are the highest risks in the coal mines. Human error, Plan and implementation, Safety management system are seen as the leading risk sub factors but the Spread of disease is defined as the least risky factor. The result of the DEMATEL model analysis shows that Policy risk is which is an external risk factors of coal mines, Organizational structure adaptation, Human error, Insufficient education and knowledge which are the sub-factors of internal risks of mines impact each other the most.

In conclusion the above suggested comprehensive risk analysis model defines risk parameters in details for developing a Business Continuity Plan.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Lead Author	NS	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑
Corresponding Author*	CSC	-Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑
Co-Author	SBR	-Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

7.2. Acknowledgement

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A Study on the Judicial Discussion and Improvement of the POLICE Line in the Assembly Demonstration

Gunwoong Yeom

U1 University, Asan, Republic of Korea

Abstract

Purpose: As rallies inevitably have a direct impact on social order as a collective freedom of expression, the need for autonomy inherent in basic rights and the need for batting average regulation to maintain social order need to be harmonized with each other.

Method: To Study the judicial discussion and improvement of the police line in rellies and demonstrations

Results: If a rally, demonstration group, or individual intentionally staged violent demonstrations to carry out their demands and claims by any means, collide with the police, and as a result, the public fully bears the social costs of violent protests, it will only undermine the nation's external image with huge economic losses.

Conclusion: For the police responsible for the order of well-being of the nation and the people, strict legal action and concrete countermeasures are required against illegal and violent rallies and demonstrations that turn violent beyond their original intentions, and it is time to review judicial discussions and improvement tasks on the police line.

[Keywords] *Police Line, Gathering, Protests, Freedom of Assembly, Control of Assembly Demonstration*

1. Introduction

Freedom of assembly is a basic constitutional right, a form of freedom of expression, and refers to the freedom of assembly or union in an atmosphere where the majority are trying to resolve common purposes. If the press and publication are in the form of personal expression, assembly and association are a method of collective expression[1]. On the other hand, Korea is so used to rallies that it is called a rally republic. In the past, rallies and demonstrations in our country have been a trigger for democratization, with political power being replaced by rallies and demonstrations led by students and citizens against dictatorships, but as our society was democratized, rallies and demonstrations centered on political and ideological struggles in the past have lost their validity and have recently been held due to conflicts of interest, ranging from individuals and local citizens to national policies, and only through rallies are the so-called "collectionalism" and the so-called collectivism and the law[2].

The police are exercising police power for the purpose of maintaining order, but in the process, it is amplified by serious social conflicts that cause mutual clashes and even deaths, including tear gas and firebombs. And these social conflicts are causing a decline in the international credibility of our country and a decline in national competitiveness, and the increase in social and economic costs caused by rallies and demonstrations is also a big burden on our economy. In addition, recent rallies and demonstrations have emerged in the form of international violent protests in connection with foreign labor organizations. In Toronto, Canada, where the G20 Summit was held in June 2010, more than 10,000 people from international labor

organizations and non-governmental organizations(NGOs) attacked banks and stores, and several international conferences attended by world leaders were canceled at the London Conference in April 2009, killing one citizen and wounding one after another.

As above, rallies and demonstrations are not simply a matter between the police and rally and demonstration groups, but also a matter of national or international affairs related to the people. Here, a rally refers to the act of a particular or unspecified majority meeting temporarily at a certain place with a common purpose, and unlike a rally that gathers in one place, it is classified as a demonstration when marching together. And since rallies inevitably have a direct impact on social order as a collective freedom of expression, the need for autonomy inherent in basic rights and the need for batting-proof regulation to maintain social order need to harmonize with each other.

In addition, in order to achieve the purpose of rallies and demonstrations, organizations or individuals may fully convey their opinions through peaceful demonstrations or various media outlets, not violent demonstrations. He is by no means a socially weak man who can only speak out through struggles in the style of past authoritarian regimes, when the basic rights of the people were excessively limited as in the previous era. In some cases, it is the current democratic social pattern in Korea that rally and demonstration groups are exerting great influence to change the government's policies through large-scale rallies and demonstrations. If a rally, demonstration group or individual intentionally staged violent protests to carry out their demands and claims by any means, collide with the police, and as a result, the public fully pays for the social costs of violent protests, it will only undermine the nation's external image with huge economic losses. Therefore, in order for illegal and violent rallies and demonstrations to be eradicated, social consensus among the three main players - assembly and demonstration organizations, police, and the public - should now be formed. In particular, the police, who are in charge of the order of well-being of the nation and the people, are required to take stern legal action and concrete countermeasures against illegal and violent rallies and demonstrations that turn violent beyond their original intentions[3].

2. Concepts and Legal Grounds of Assembly and Demonstration

2.1. Concept of assembly and demonstration

It is common to define freedom of assembly as the same as freedom of association in that freedom of assembly is freedom of collective expression, but in particular, the German Basic Law stipulates freedom of assembly and freedom of association in separate clauses. In Korea, however, the Constitution or the Assembly and Demonstration Act(hereinafter referred to as the Assembly Act) does not have a definition of the concept of assembly. Therefore, it is necessary to confirm the concept of the assembly before considering the freedom of assembly.

On the definition of a rally, Korean scholars say, 'temporary union in which many people meet with common purpose in certain places', 'the act of meeting temporarily in certain places with common purpose'[4], act of voluntary meeting of many people with common purpose'[5], 'the act of two or more people voluntarily expressing their common intentions in certain places'[6], 'the temporary gathering of many people with common purpose', 'the temporary gathering of specific or unspecified persons for the purpose of gathering in public[7]. 'Enemy meetings and 'temporary meetings of the majority to achieve a certain common purpose' are defined, and Constitutional Court precedents define 'any specific or unspecified majority to be temporarily assembled at a certain place for a particular purpose, and there can be no restriction on the number of places or people to be gathered.' In addition, Germany has generally defined 'temporary meetings in certain places of natural people with a common purpose of discussing or expressing their opinions on any matter'.

2.2. Legal basis for assembly and demonstration

Freedom of assembly belongs to the basic right of freedom, among which it is classified as the right of freedom. That's because freedom of assembly, along with freedom of speech, is recognized as a means of free expression by human beings. In that sense, freedom of assembly, like freedom of speech, is closely related to freedom of inner mental activity[8]. When new ideas, new arguments or ideas were introduced through freedom of religion, freedom of conscience, and freedom of thought, they could be spread around through freedom of speech or freedom of assembly. Therefore, freedom of assembly as modern human rights is directly related to popular rallies that were widely used as a means of disseminating democratic ideas along with the development of democratic ideas.

Freedom of assembly is a fundamental right that has been secured in Britain since the late 18th century through the process of political struggle. Freedom of assembly was widely used in Britain, especially with regard to the right to petition, for the purpose of influencing public opinion. The laws enacted in this regard began with the Riot Act of 1714 and developed into the Sedient Meeting Act of 1817, the Public Meeting Act of 1908 and the Public Order Act of 1935.

The first codification of freedom of assembly in succession to British tradition was the United States, where Article 1 of the United States Constitution stipulated, "The United States Congress shall not enact laws that prohibit the creation of religion, the exercise of freedom of religion, restrict freedom of speech or publication, or violate the people's rights to rally peacefully and petition the government for relief of pain," and the freedom of assembly was widely recognized through the interpretation of these regulations.

On the other hand, France's Declaration of Human and Citizens' Rights sets forth a number of important basic rights, but does not have any stipulations on freedom of assembly. Of course, from the time of the Great Revolution, assembly was an important means of civil revolution, and it was not denied that freedom of assembly should be guaranteed. However, it is recognized that it is derived from the "freedom of expression of will" in the absence of a constitutional stipulation.

In Germany, where progress in democratization was slower than in neighboring countries, there was a tendency to ban political rallies under the constitutional national tradition, and in response efforts continued to establish freedom of assembly as a basic right. The Frankfurt Constitution(the draft) of 1849 stipulated freedom of assembly in Article 161, but it was not actually implemented, and Article 123 of the Weimar Constitution of 1919 stipulated freedom of assembly and guaranteed it as a basic right. Under the influence of these countries, the Korean Constitution has continued to recognize freedom of assembly as a basic right since Article 13 of the 1948 Constitution stipulated that "all citizens are not restricted from freedom of speech, publication, assembly, or association without the law."

3. The Concept and Legal Basis of the Police line

As the government came to assume more responsibilities on the citizens the voters, measurement of the performance of police service grew more important. Perhaps the most effective way of evaluating performance is to focus on the degree of citizens' satisfaction[9]. In a modern society where the importance of personal information is widely known and awareness of the people's right to informational self-determination is high, the infringement and restriction of the people's basic rights by state public power requires special attention. In particular, the importance of digitized personal information, including personal video information, is doubled. Therefore, measures such as identification of identity and belongings, filming and transmitting surveillance cameras, and sharing personal information for investigation should be balanced with the freedom of individuals whose legitimacy or constraints are legally guaranteed even if they are terrorist measures[10].

Many nations are experiencing restrictions in budget and manpower for the prevention of crimes, and efforts are continuously being made by the police and academic circles to apply more effective crime prevention techniques[11]. Therefore, when predicting each other between the organization and its members and trying to perceive what is the appropriate row between each other, it is possible to perceive each other through a psychological contract from the perspective of the contractor[12]. Government wide overall measures for safety of elders are required to solve all the problems of worsened health conditions of elders, increase of poverty rate from bi-polarization, generational conflict with the young and mid-aged and loneliness, emotional instability. It's essentially required to establish security strategy aiming at prevention of elder crimes and reducing the victims at the time of introducing local community policing system by area in step with the changing trend of the aged population[13].

The police line is one of the tools of police action. From a formal point of view, the understanding of the concept of the police line can be defined as a control line set up by the police to maintain and protect public well-being and order.

In utilizing the police line, the utilization measures should first be reviewed from the perspective of the police function, but at the same time, they should be discussed in consideration of the changing public's legal sentiment and political consciousness.

Moreover, the police line has a power factor called crowd control, so if it is abused, there is room to tarnish the public's image of the police. Conversely, since the police line is a tool for police action, there is a great deal of room for this to be used, but there is a possibility that if the concept is narrow-minded, the potential utilization may not be fully utilized. Therefore, the precise setting of the concept, name, purpose, etc. of the polyline has a very important significance for the long-term success of the polyline system.

The purpose of the installation of the police line shall be derived from the general purpose of the police. In other words, the police are the police because they are the main focus of maintaining and protecting the public peace and public order. However, it is necessary to stress that the police are not installing the police to control the crowd, but the police are installing it to protect and maintain the public well-being and order, which is the function of the police. In other words, the police aim to protect the people's bodies, lives and property and maintain social order through the establishment of the police line. From this point of view, understanding the polyline as a 'control' concept is not appropriate in this era of democratization. The police line should not be a tool of "control" but a tool of "protection" and a tool for "risk prevention," the purpose of a comprehensive police function.

If you look at the police line as one of the means of police, its use does not necessarily have to be limited to the control of crowds of rallies and demonstrations. Police lines can be used throughout the police administration, including traffic control, factor security, police measures in the event of a disaster, and investigative needs, and the use of police lines may be newly developed unless they are contrary to their nature. On the other hand, as long as this is available for a variety of applications, the installation patterns of the polyline need to be devised in a variety of ways. Sometimes tape can be used for situations and purposes, sometimes barricades, or blockage signs, sometimes vehicles, etc.

The polyline is a restriction of the people's right to general freedom of action, but basically exists for the protection of the people or social order, so it cannot take effect even in areas unrelated to the purpose of protection.

4. National and Internal Judicial Sanctions for Violating the Police Line

4.1. United States of America's police line legal grounds and sanctions in case of violation

The police line is generally used as a useful tool for performing duties by the U.S. police. In the case of administrative capitals and large cities where political rallies and demonstrations are frequent, the police line is used to control crowds and protect public order in rallies and demonstrations. However, in areas where rallies and demonstrations are not frequent, police lines are usually used for ordinary purposes such as crime scene preservation, disaster, civil protection and order maintenance in hazardous areas.

Independent legislation on the legal basis of the installation of the polyline, violations, and sanctions in case of incursions are not found anywhere, such as federal and state legislation or municipal ordinances of local governments.

First of all, in the case of the police line installation, if it is necessary to find the basis for the police line installation, it would be the basis clause for general police activities. However, for the establishment of restricted areas for crowd and traffic control, which is a precursor to the establishment of the police line, it is usually regulated in the Police Regulations, which are close to the nation's legal order. In addition, practical guidelines on the installation and operation of the police line are sometimes provided for in the manual, policy, etc. within the police. However, in the United States, the concept of administrative legislation is not the same as in Korea, so even if it is defined in Manual and Policy, it may have some legal meaning. In general, however, it is not necessarily clear what legal characteristics are of what is provided in the Manual and Policy within the administrative agency.

Under this conceptual definition, the discipline in the internal manual or policy of the U.S. police, which sets the working standards for the police line, is a rule. However, the legal nature of the rules may vary depending on whether the legislation is delegated or what is regulated. Rules, which usually regulate the establishment and operation of the polyline, may be understood as a Professional Rule under U.S. Administrative Laws. Therefore, regulations on these polylines have legal effect to detain courts unless their effect is limited through precedent in the U.S. Therefore, the working-level rules within the U.S. police against the police line are understood in our country. However, it is somewhat questionable whether such a weak sense of binding force constitutes a law as a concept of our style. In short, the working-level rules of the U.S. police, which regulate the police line, are generally understood in a similar legal sense to the administrative rules of Korea, such as directives and established rules.

4.2. South Korea's sanctions on the police line

The police line, or the police line system, was introduced in earnest after the revision of the Assembly Act in 1999, but the effectiveness of the system has been insufficient at the sites of rallies and demonstrations. However, it is necessary to secure the effectiveness of the police line to establish a culture of advanced rallies and demonstrations, and to change it to a police line-based method of responding to the police force.

Violation of the polyline shall be punished by the Gypsies Act. Legitimate procedures must be followed, such as notifying the organizers in advance when installing the police line, and those who violate the police line at the site of rallies and demonstrations can be notified of the Miranda principle and arrested in the act. If on-site detection is not easy, a request for attendance may be issued and a subpoenaed investigation may be conducted by collecting evidence against those who violate the police line.

The nation's police line trespassers face up to six months in prison or a fine of up to 500,000 won for obvious offenses, but have not been properly implemented. Article 12-2 of the Assembly and Demonstration Act stipulates that the chief of the competent police station can set up a police line by setting a minimum scope when deemed necessary for the protection of rallies and demonstrations and the maintenance of public order, but only in October 2004 was the case in which police booked people who crossed the police line after 1989 when the Assembly Law was revised.

5. Outro

That the general function of the police is to maintain public well-being and order and to prevent danger is something that can be recognized from the concept of the police.

Therefore, the goal of installing the polyline also needs to be set from the perspective of this risk prevention and protection by default. As self-evident in the inherent limitations of the police, the police line cannot be used to promote active welfare, but can only be used to maintain passive order and prevent danger.

Furthermore, it needs to be widely recognized that the police line is not used as a means of aggression, but as a defensive and protective means of police enforcement to protect the interests of individuals or society from immediate danger or disruption. Therefore, as already mentioned above, it is not very desirable for the police line to give the image of a 'control line' and as far as possible, efforts should be made to make it widely perceived to the public that it is a means to protect and defend the lives and property of the people and the social and public interests.

The situation requiring the installation of the polyline is difficult to list. In the United States, police lines are used when necessary for crowd control during rallies and demonstrations, preservation of crime scenes and traffic accident sites, protection of tolerance, blocking criminals from fleeing, protecting and maintaining crowd protection and order in disaster areas, bombing buildings, and bomb threat areas, but if not in such cases, police lines can generally be installed if necessary to prevent danger, maintain public well-being, and order.

Meanwhile, in situations requiring the establishment of a police line, the fact that crowd control during rallies and demonstrations is quite different from other situations cannot be overlooked. Therefore, the establishment of a police line in the event of a rally and demonstration requires more careful consideration and situation management skills. When it is necessary to establish internal police regulations on the establishment and operation of police lines, it is also necessary to distinguish between the cases of rallies, demonstrations and other cases in consideration of advantages. If the police line is perceived as a tool for ordinary police officers to perform their duties, the right to install the police line can be any police officer facing the situation. However, it is also worth considering allowing only police officers at the scene to make decisions on the installation of the police line if their nature requires rationality in a broader range of judgments, such as rallies, demonstrations or disasters.

This consideration will also be needed in balance with the fact that the right to set up a controlled area under the Disaster Management Act or the Fire Control Act lies with the mayor, the county governor, the chief of the fire department, the chief of the fire station, and the chief of the fire department.

Various practical factors should be considered in determining the installation of the polyline, but in light of the protective and defensive nature of the polyline, the establishment of a controlled area beyond the required scope will be subject to social criticism and should be restrained. It should be said that the installation decision maker's most basic duty is to establish a control zone within the indispensable range. Therefore, the installation judge shall endeavor to install the police line only if the violation of the police line itself violates or seriously threatens public well-being and order.

Another aspect to consider in determining the installation of the polyline in Korea is that it is necessary to gradually expand the scope of the polyline by installing the polyline from the initial stage when the polyline can be observed if possible to prevent the authority of the polyline from being trampled.

In addition, in the settlement stage of the polyline, severe legal responsibility should be held, especially for encroachment and damage to the polyline. It will not be easy to discuss criminal penalties if they are not intentional intrusions, and in such cases, if the liability for

damages can be imposed, it should be actively considered. And punishment must be made for the intentional violation or damage of the police line.

Demonstrations along the police line can effectively express the political will of the protesters, are safe and not condemned by the general public, but unless they are those who planned illegal or violent protests from the beginning, there is no reason for them to violate the police line. If the practice of compliance with the police line gradually accumulates, it could finally be used as a meaningful control tool even in illegal demonstrations and violent demonstrations.

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7. Authors profile

7.1. Authors contribution

	Initial name	Contribution
Author	GWY	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑ -Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑