

International journal of  
**human & disaster**

**Vol. 6 No. 4**

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Publisher: J-INSTITUTE  
ISSN: 2423-8260

Website: j-institute.org  
Editor: admin@j-institute.org

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DOI Address:  
dx.doi.org/10.22471/disaster.2021.6.4.01

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## Study on the Mediating Effect of Self Focused Attention and Depression in the Relationship of Effect Between the HUMAN's Self Esteem and Inter Personal Problems

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### Abstract

**Purpose:** The purpose of this study is to comprehensively examine an under self esteem and inter personal problems by predicting the mediating effects of self esteem and negative emotions including depression and self focused attention, and consequently, by exploring the effects on the inter personal problems.

**Method:** A questionnaire survey was conducted targeting 127 college students from the departments related to early childhood education located in Gyeongnam. To examine and understand the mediating effects of self focused attention and depression in the relationship of effect between human self esteem and inter personal problems, a hypothetical research model was set, which was sought to be statistically validated. For such research data, the descriptive statistics, Pearson correlation analysis, and the serial multiple mediator model regression analysis were performed by using the statistical programs of SPSS 26.0 and PROCESS v35.

**Results:** First, self esteem demonstrated a significantly positive correlation with general self focused attention and a significantly negative correlation with depression and inter personal problems, and the general self focused attention demonstrated a positive correlation with the immersive self focused attention. Furthermore, the immersive self focused attention demonstrated a positive correlation with depression and inter personal problem, and the depression and inter personal problem demonstrated a significantly positive correlation. Second, in terms of the effect of self esteem on the inter personal problems, depression turned out to have a partially mediating effect. Furthermore, as for the path of the relationship of effect between self esteem and inter personal problems, both the ego focus and immersive ego focus turned out to have an effect on the depression.

**Conclusion:** Self esteem and depression are the psychological characteristic variables which tend to remain constant and stable despite the changes amidst the passage of time, and since the self esteem influences the inter personal relationships based on the self focused attention, it is necessary to develop a program which can help strengthen and enhance the positive aspects of one's inside.

**[Keywords]** Self Focused Attention, Self Esteem, Relationship, Inter Personal Problem, Depression

## 1. Introduction

As social beings, human live on while constantly building their relationships with others from the beginning of their lives. Such relationship building with others is crucial in that it brings satisfaction and stability to the individuals' lives [1]. inter personal relationships are dynamic, continuous and complex interactions made and taking place by and between one's self and

others, and are also an important foundation for the individuals' development and growth [2]. Positive inter personal relationships have a positive effect on the human growth and development, whereas negative inter personal relationships cause emotional difficulties including depression, anxiety, frustration, loneliness, and alienation [3][4][5]. In particular, the social support secured via the mature and healthy inter personal relationships help to alleviate the psychological pains experienced by modern people, and also provides for a resource to endure the psychological pains caused by various stresses [6][7][8].

Inter personal problem means the difficulties as a source of personal experiences or subjective pains related to others, and also means failing to form a relationship which pursues mutual satisfaction based on respect, or the lack, distortion or a defect of the knowledge and skills needed to continuously maintain and develop such a relationship [9]. As for such inter personal problem, one avoids relationships with others or acts inappropriately because of the fear of being rejected in one's relationship with others or experiencing failure as well as experiencing rejection by others [7]. Consequently, in severe cases, it may cause negative consequences including aggression, social isolation, and a sense of depression [10][11]. Furthermore, when one is not satisfied with the formation of inter personal relationship, difficulties in forming social relationships may negatively influence one's growth and development, thereby resulting in dysfunctional phenomena [12]. Such dysfunctional phenomena include various psychological and social maladaptive phenomena [13], emotion of inferiority due to inappropriate peer relationship related experiences [14], and psychological problems including depression or anxiety [15], which may expand to learning disabilities or social problems. In addition, they may be overly dependent on others or demonstrate passive behaviors. It might also lead to inter personal problems including aggressive or defiant inter personal behaviors and inter personal anxiety disorder [3]. As such, unhealthy inter personal relationships have become an important criterion for a painful life for the individuals and healthy inter personal relationships for the individuals to lead a happy life [9][16].

College students entering their adulthood establish their sense of identity, view of life, and values during this period [17], and the act of forming close and effective inter personal relationships is a crucial developmental task for the successful college life and personal development [18]. College students of this period, in particular, future preschool teachers, compared to other majors, begin to establish their teaching and professional views as soon as they enter college. Since it is necessary to form new relationships with people from various positions in the field of childcare through childcare practices and various curricular activities, and in order to efficiently achieve the purpose of this study, college students from the departments related to early childhood education were selected as the subjects. College students of Korea lack inter personal experiences given their entrance examination oriented young adulthood [3], and the expansion of the COVID-19 has restricted making contact with others, thereby increasing the difficulties in forming inter personal relationships [19]. Such difficulties in forming inter personal relationships interfere with self identity and personality development, and may further cause difficulties in adapting to society as independent adults [20].

In particular, the recent growth of the inter personal sensitivity due to the COVID-19 and the increased feeling of discomfort, inadequacy, and inferiority in the course of interaction with others further intensifies the negative self concept [21][22]. Such a negative self concept causes stress and depression, and is also related to the self focused attention, which is a temperamental tendency to focus on one's present and past inner aspects of an internal perceptual form, through which attention is directed towards oneself rather than the external world [21][23][24]. The self focused attention is a concept related to the direction of attention, and also refers to a tendency to pay attention to the internal and concealed aspects of oneself [25], where those of high self focused attention pay excessive attention to themselves inside, thereby further intensifying the anxiety and influencing the inter personal problems [24][26]. Self focused attention takes on dual aspects as the direction of attention is focused on one's thoughts, feelings, actions, and appearance [27]. It is also divided into the adaptive self focused attention, which

enhances self knowledge and contributes to psychological adaptation, and the maladaptive self focused attention, which is related to the psychological distress or maladaptation[25]. The self focused attention of the adaptive side pays much attention to one's self, yet the attention is not occupied only towards a specific aspect and takes on the characteristic that the direction of attention can be flexibly shifted[28], whereas the maladaptive self focused attention is also called self immersion as it is a rigid characteristic which makes it difficult to easily shift attention to other areas by paying too much attention to the inner aspects[29]. In Korea, Lee and Kwon[29] classified the adaptive tendency to pay attention to other aspects or the outside of one's self without being too focused on one's own specific aspects into the "general self focused attention" and the "immersive self focused attention," which is a maladaptive tendency which makes it difficult to turn the attention to other aspects or the outside.

When the tendency of maladaptive (immersive) self focused attention which excessively immerses in one's internal information becomes significant, it becomes impossible to efficiently process the external stimuli[4], and it causes difficulties in controlling emotions[30], thereby leading to a higher possibility of depression[31]. Depression causes various negative symptoms, based on which, it negatively influences the scenes of performance or general everyday life. The reason for causing depression is the fact that the people with depression are biased in how they perceive and interpret reality, and the reason for their biased interpretation is that they process the treatment of attention to themselves dysfunctionally.

Furthermore, it is reported that the excessive attention to one's self activates the negative self schema and also promotes the negative information processing not only regarding one's self but also on the world and the future, thereby causing depression and maintaining such[32]. In particular, the people with depression are sensitive to rejection or criticism from others, are passive and dependent in their inter personal relationships[33], and often exhibit excessively behaviors in trying to please others, and sometimes demonstrate inter personal problems of being aggressive and competitive, and controlling and wary[34].

Based on the previous studies examined thus far, it is apparent that the depressed people generally have a low self esteem, such as by critically looking at themselves, which is related to the self focused attention with which they focus on themselves. It may also be inferred that this might lead to inter personal problems. That is, while the self focused attention and depression are important variables for the self esteem and inter personal problems, the comprehensive studies on such variables seem to be inadequate.

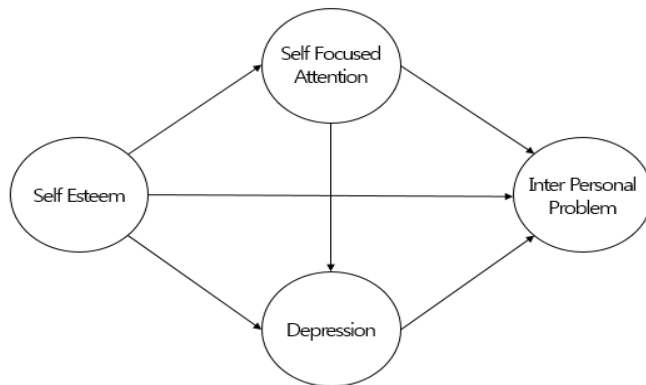
While there are many studies which have individually examined the relationship of variables including depression and inter personal relationship[35][36][37][38], depression and the self focused attention[37][39][40], self esteem and depression[41][42], and the self focused attention and inter personal relationship[37], there are only a few studies which have comprehensively considered their relationship. Furthermore, the studies on the effect of the self focused attention and depression on explaining the relationship of self esteem and inter personal problem are relatively inadequate.

Hence, this study was conducted with a view to comprehensively examine the self esteem and inter personal problems by predicting the mediating effects of self esteem and negative emotions including depression and self focused attention, and by exploring the effects on the inter personal problems. That said, the hypothetical research questions set for this study are as follows. And The continuous multiple regression model is as follows in <Figure 1>.

Research question #1 : What is the direct effect of the college students' self esteem, inter personal problem, self focused attention, and depression?

Research question #2 : What is the indirect effect of the self focused attention and depression mediating on the effect of college students' self esteem on the inter personal problems?

**Figure 1.** Continuous multiple regression model.



## 2. Research Method

### 2.1. Research subject

This study was conducted targeting 127 college students of the departments related to early childhood education located in Gyeongnam. The average age of the subjects was 19.4 years, and the 19 years olds accounted for 66.1% of the total. As for the gender, female students accounted for 98.4% of the total, capturing the majority of the survey subjects, and as for their educational background, 68.5% of students enrolled in 2 to 3 year colleges and universities. As for the subjects, sophomores were the most at 71.7%, and 75.6% of them lacked any practical experiences. The detailed background of the research subjects is presented in <Table 1>.

**Table 1.** General characteristics of the research subjects.

Variable	Classification	N(%)	Variable	Classification	N(%)
Gender	Male	2(1.6)	Practical experiences	Yes	31(24.4)
	Female	125(98.4)		No	96(75.6)
Type of college	2-3 year college	87(68.5)	Age	18 year old	13(10.2)
	4 year college	40(31.5)		19 year old	84(66.1)
Grade year	Freshmen	18(14.2)		20 year old	14(11.0)
	Sophomores	91(71.7)		21 year old	9(7.1)
	Juniors	18(14.2)		22 year old or older	7(5.5)

Note: N=127.

### 2.2. Tools of measurement

#### 2.2.1. Self esteem

The testing tool for measuring the self esteem of the research subjects is the questionnaire produced by Kim[43] and Choi[44], which is an adaptation of the references of Nathaniel Branden's "The Six Pillars of Self Esteem" and "The Power of Self Esteem."

Based on the 2 basic concepts of self esteem(self efficacy and self esteem), the self esteem's measurement tool is consisted of a total of 40 questions including 7 sub factors including self concept, conscious life, self acceptance, self responsibility, self assertion, purposeful life, and diligence, and in this study, the sum of sub factors was used to determine the overall level of



self esteem. Each question is consisted of a 5 point scale of Likert of 'Not at all'(1 point) to 'Absolutely agree'(5 points), and the total score ranges from 40 to 200, meaning that the higher the score, the higher the self esteem. The credibility Cronbach's  $\alpha$  value of the self esteem in this study is .81.

### **2.2.2. Self focused attention's tendency scale(scale for dispositional self focused attention in social situation: SDSAS)**

In order to identify and understand the self focused attention's tendency scale of the research subjects, the self focused attention's tendency scale developed by Lee and Kwon [29] was used based on the concept of private self consciousness of Fenigstein et al [45]. This scale is consisted of a total of 30 questions, including 9 questions for the general self focused attention scale and 21 questions for the immersive self focused attention scale. The general self focused attention tendency is intended to measure the extent to which one pays attention to one's self, and it is also consisted of 9 questions such as 'I try to understand myself' and 'I pay attention to myself.' The immersive self focused attention is a measure of the tendency which focuses excessively and continuously on a particular aspect of one's self and easily shift attention to other aspects or the outside of one's self, and it is also consisted of 21 questions such as 'I often get caught up in certain thoughts, and it is difficult for me to notice my opinion,' and 'I keep paying attention to a certain mood.'

In the form of the questionnaire, the extent to which the content of the question is consistent with the subject's demonstrated tendency is evaluated on a 5-point Likert scale for 'Not at all(1 point)' to 'Absolutely agree(5 points).' The reliability Cronbach's  $\alpha$  value of the general self focused attention scale and the immersive self focused attention scale presented by Lee and Kwon [29], who developed this scale, were .79 and .94 each, and in this study, the general self focused attention was .81, and the immersive self focused attention was .92.

### **2.2.3. Depression**

In order to measure the depression of future teachers, the Korean version of Beck's depression scale [46] was used. The Korean version of Beck's depression scale(Beck Depression Inventory - Korean version: K-BDI) is a self-report questionnaire for evaluating the symptoms of depression, and is consisted of a 4-point scale(0-3 points), with a total of 21 questions. The Cronbach's  $\alpha$  value reported by the tool developer was .93(Beck, 1978), while the Cronbach's  $\alpha$  value of the Korean version of Beck's depression scale(K-BDI) was .80 [46]. The K-BDI score distribution ranges from 0 to 63, and the higher the score, the higher the extent of depression. A total score between 0 and 9 is considered to be normal, a score between 10 and 18 is mild depression, and a score of 19 or higher is concerned to be severe depression [47]. The reliability Cronbach's  $\alpha$  coefficient for the depression scale in this study was .85.

### **2.2.4. Inter personal problem**

In order to measure the future teachers' inter personal problems, the short form of KIIP - Circumplex scales(KIIP-SC) of the Korean version of inter personal problem test(KIIP) standardized by Kim, Jin, Cho, Kwon, Hong, and Park [48], which was restructured by Alden, Wiggins and Pincus [49] for the measure produced by Horowitz, Rosenberg, Baer, Ureno and Villasenor [50] was used.

This scale can measure the extent of difficulty an individual experiences in the inter personal relationship. The sub factors are consisted of 8 categories of control domination, self centeredness, apathy, social inhibition, non-assertiveness, hyperconformity, self sacrifice, and over involvement. Each of the sub factors is consisted of 5 questions for a total of 40 questions, and is also consisted of a Likert-type 5-point scale. The higher the score, the larger the difficulty in terms of the inter personal problems. In this study, the reliability Cronbach's  $\alpha$  coefficient of the inter personal problem scale is .87.

## 2.3. Analytical method

This study set a hypothetical research model to learn about the mediating effect of the self focused attention and depression in terms of the inter personal relationship of effect between the human self esteem and inter personal problems, and also attempted to statistically validate it. As for this study's data, the statistical programs of SPSS 26.0 and PROCESS v35 were used.

First, the mean value, standard deviation, skewness, and kurtosis of the index variables were verified to determine as to whether the index variables satisfy the assumption of normality. Next, the reliability of the sub factor used for the measurement model was examined by calculating the Cronbach's  $\alpha$  coefficient, which is the internal consistency index. Subsequently, the correlation of the measurement variables was examined based on the Pearson's correlation analysis. Finally, a serial multiple mediator model regression analysis was performed to examine the mediating effect of the self focused attention and depression in terms of the relationship of effect where the self esteem has effect on the inter personal relationship.

## 3. Research Results

### 3.1. Correlation and descriptive statistics of the research variables

<Table 2> below illustrates the correlation between the variables used for this study. First, the self esteem has a significantly positive correlation with the general self focused attention( $r=.457, p<.01$ ), whereas the depression( $r=-.474, p<.01$ ) and inter personal problem( $r=-.440, p<.01$ ) demonstrated a significantly negative correlation. The general self focused attention demonstrated a positive correlation with the immersive self focused attention( $r=.412, p<.01$ ). The immersive self focused attention demonstrated a positive correlation with the depression( $r=.486, p<.01$ ) and inter personal problem( $r=.555, p<.01$ ), while the depression and inter personal problem demonstrated a significantly positive correlation( $r=.654, p<.01$ ).

To validate the normality, skewness and kurtosis of the measurement variables were verified. If the absolute values of skewness and kurtosis exceed 3 for skewness and 8 for kurtosis, they are viewed to be problems. However, in this study, skewness turned out to be .044 to 1.017 and kurtosis turned out to be .110 to 2.276, demonstrating that the distribution of each variable was assumed to be normal.

**Table 2.** Correlation and descriptive statistics of the research variables.

Sub variable	Self esteem	General self focused attention	Immersive self focused attention	Depression	Inter personal problem
Self esteem	1				
General self focused attention	.457**	1			
Immersive self focused attention	-.160	.412**	1		
Depression	-.474**	.012	.486**	1	
Inter personal problem	-.440**	-.026	.555**	.654**	1
<i>M</i>	10.91	30.42	50.94	10.39	96.83
<i>SD</i>	1.68	6.31	17.95	8.31	15.73
Skewness	1.78	-.10	.31	.66	1.10
Kurtosis	1.77	.48	-.66	-.38	1.62

Note: N=127, \* $p<.05$ , \*\* $p<.01$ , \*\*\* $p<.001$ .

## 3.2. Results of the continuous multiple mediation regression analysis performed

### 3.2.1. Analysis of the mediating effects of general self focused attention

As with Model 1, in the regression analysis of the independent variable of self esteem on the general self focused attention, it demonstrated 20.9% of explanatory power with a significantly positive(+) effect( $p<.001$ ). In Model 2, as a result of the regression analysis performed on the effect of self esteem and general self focused attention, which is an antecedent parameter, on depression, which is a posterior parameter, as for the self esteem, it has a significantly negative(-) effect and the general self focused attention has a significantly positive(+) effect, while the explanatory power turned out to be 29.1%( $p<.001$ ). Finally, in Model 3, as a result of the regression analysis performed on the effect of the independent variable of self esteem and the general self focused attention and depression, which are parameters, on the inter personal problem, it turned out that the self esteem has a significantly negative(-) effect, and the depression has a positive(+) effect, with the explanatory power being 45.2%( $p<.001$ ) <Table 3>.

**Table 3.** Results of the regression analysis.

Model Summary	Model 1 (Subordinate : general focus)		Model 2 (Subordinate : depression)		Model 3 (Subordinate : inter personal problem)	
	coeff	se	coeff	se	coeff	se
Constant	12..105	3.224	30.804	4.261	101.597	8.487
Self esteem	.120***	.021	-.210***	.029	-.133*	.058
General self focusedness			.382***	.112	.149	.196
Depression					1.055***	.150
R-sq	.209		.291		.452	
F-value	33.063***		25.480***		33.824***	

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

<Table 4> illustrates the results of the indirect effect. Ind1 means the indirect effect on 'self esteem → general self focused attention → inter personal problem,' and it turned out that the scale of the indirect effect was .018, and was insignificant since 0 was included for the confidence interval. Ind2 is an indirect effect of 'self esteem → depression → inter personal problem,' and it turned out that the scale of the effect was -.221, and was significant since the confidence interval did not include 0. Finally, Ind3 is the path of 'self esteem → general self focused attention → depression → inter personal problem,' and it turned out that the scale of the indirect effect was .048, and there was a significant indirect effect since 0 was not included for the confidence interval.

**Table 4.** Results of the indirect effect analysis.

Mediating effect path		Indirect effect	Confidence level	
			LCI	UCI
Ind1	Self esteem→general self focused attention→inter personal problem	.018	-.024	.061
Ind2	Self esteem→depression→inter personal problem	-.221	-.325	-.134
Ind3	Self esteem→general self focused attention→depression→inter personal problem	.048	.017	.092



<Table 5> illustrates the differences in the scale of the indirect effect by the mediating effect path. As a result of validating the differences between the indirect effect of 'self esteem → depression → inter personal problem' and the indirect effect of 'self esteem → general self focused attention → depression → inter personal problem,' it turned out that the difference for the indirect effect was .063, and since the confidence interval did not include 0, it was significant. It also turned out that the indirect effect of 'self esteem → depression → inter personal problem' was larger than the indirect effect of 'self esteem → general self focused attention → depression → inter personal problem.'

**Table 5.** Differences of the indirect effect.

Classification	Difference in indirect effect	SE	Confidence level	
			LCI	UCI
Ind1 minus Ind2	.239	.053	.234	.505
Ind1 minus Ind3	-.030	.053	-.143	.028
Ind2 minus Ind3	-.269	.063	-.579	-.263

### 3.2.2. Analysis of the mediating effects of immersive self focused attention

As with Model 1, it turned out that the independent variable of self esteem was not significant in the regression analysis on the immersive self focused attention. In Model 2, as a result of the regression analysis performed on the effect of self esteem and the immersive self focused attention, which is an antecedent parameter, on depression, which is a posterior parameter, it turned out that the self esteem has a significantly negative(-) effect, while the immersive self focused attention has a significantly positive(+) effect, with the explanatory power being 39.8%( $p < .001$ ). Finally, in Model 3, as a result of the regression analysis performed on the effect of the independent variable of self esteem and the parameters of the immersive self focused attention and depression on the inter personal problem, it turned out that the self esteem has a significantly negative(-) effect and the immersive self focused attention and depression have a significantly positive(+) effect, with the explanatory power being 53.1%( $p < .001$ ) <Table 6>.

**Table 6.** Results of the regression analysis.

Model Summary	Model 1 (Subordinate: immersive focus)		Model 2 (Subordinate: depression)		Model 3 (Subordinate: inter personal problem)	
	coeff	se	coeff	se	coeff	se
Constant	69.117	10.182	21.935	4.355	93.978	8.015
Self esteem	-.119	.066	-.141***	.024	-.129**	.046
Immersive self focusedness			.195***	.033	.288***	.062
Depression					.759***	.151

R-sq	.026	.398	.531
F-value	3.27	40.969***	46.435***

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

<Table 7> illustrates the results of the indirect effect. Ind1 means the indirect effect on 'self esteem → immersive self focused attention → inter personal problem,' and it turned out that the scale of the indirect effect was -.034, and was insignificant since 0 was included for the confidence interval. Ind2 is an indirect effect of 'self esteem → depression → inter personal problem,' and it turned out that the scale of the effect was -.107, and was significant since the confidence interval did not include 0. Finally, Ind3 is the path of 'self esteem → immersive self focused attention → depression → inter personal problem,' and it turned out that the scale of the indirect effect was -.018, and there was a significant indirect effect since 0 was not included for the confidence interval.

**Table 7.** Results of the indirect effect analysis.

Mediating effect path		Indirect effect	Confidence level	
			LCI	UCI
Ind1	Self esteem→immersive self focused attention→inter personal problem	-.034	-.091	.005
Ind2	Self esteem→depression→inter personal problem	-.107	-.175	-.046
Ind3	Self esteem→immersive self focused attention→depression→inter personal problem	-.018	-.048	-.002

<Table 8> illustrates the differences in the scale of the indirect effect by the mediating effect path. As a result of validating the differences between the indirect effect of 'self esteem → depression → inter personal problem' and the indirect effect of 'self esteem → immersive self focused attention → depression → inter personal problem,' it turned out that the difference in the indirect effect was -.0893, and since the confidence interval did not include 0, it was significant. Hence, 'self esteem → immersive self focused attention → depression → inter personal problem' turned out to be larger than the indirect effect of 'self esteem → depression → inter personal problem.'

**Table 8.** Differences in the indirect effect.

Classification	Difference in indirect effect	SE	Confidence level	
			LCI	UCI
Ind1 minus Ind2	.072	.045	-.024	.155
Ind1 minus Ind3	-.0167	.017	-.061	.005
Ind2 minus Ind3	-.089	.034	-.159	-.028

## 4. Discussion and Conclusion

The purpose of this study was to examine and validate the mediating effect of the self focused attention based on the depression and self understanding in the relationship of effect between

the human's self esteem and inter personal relationship targeting college students of the departments related to early childhood education in Gyeongnam. To this end, the levels of self esteem, depression, self focused attention, and inter personal problem were examined, and the correlations between such variables were confirmed. Furthermore, the mediating effects of depression and self focused attention on the self esteem and inter personal problems were examined.

The key results and discussion of this study are as follows.

First, the correlation analysis was performed in order to examine and understand the relationship of effect between the key variables set for this study. First, the self esteem demonstrated a significantly positive correlation with the general self focused attention, and demonstrated a significantly negative correlation with the depression and inter personal problems, while the general self focused attention demonstrated a positive correlation with the immersive self focused attention. Furthermore, the immersive self focused attention demonstrated a positive correlation with the depression and inter personal problem, while the depression and inter personal problem demonstrated a significantly positive correlation.

That is, the self esteem demonstrated a positive correlation with the general self focused attention, yet had no correlation with the immersive self focused attention, while the general self focused attention did not demonstrate a direct correlation with the depression and inter personal problems. It is interpreted that those with a high self esteem have less inter personal problems and a lower sense of depression, and the general self focused attention tendency which pays attention to the other people's positions or the outside more easily is elevated. Furthermore, those with a high general self focused attention have a consistently high self esteem since they pay attention to themselves and the external stimuli in various manners, whereas those with the immersive self focused attention tendency which pays attention continuously towards their inner selves rather than others or the outside imply that the self immersion which pays excessive attention to one's own specific aspects has no significant relevance to the self esteem. Furthermore, the excessive self focused immersion seems to have a negative effect on the depression and inter personal problems.

This is quite similar to the research results of Kim and Lee [51], and Joirman, Parrott and Hammersla [52], whose meaning is also similar as with the study of Woo OS and Lee JY [7] which claimed that there is a significantly positive correlation between the general self focused attention and inter personal competence. Furthermore, the personality traits vulnerable to the depression not only cause various problems in terms of the inter personal relationship, but also are consistent with the research results of Gotlib and Robinson [53] and Park and Chung [54], which claimed that emotions and inter personal relationship are related. Their results are identical to those of a study [55] which claimed that the greater the self esteem, the lower the level of depression, and the lower the self esteem, the greater the level of depression. Examining the results of such studies, and considering the fact that self esteem [56] and depression [57][58] are the psychological variables which are maintained stably despite the changes in the passage of time, and that they are psychological variables which are mutually influential [59], if the self esteem is elevated, depression will decline, and the declined depression would influence the inter personal problem and change the negative effects such as avoidance of inter personal conflict and strengthen the sense of alienation towards positive effect [60][61]. This implies that the development of a program which can help the strengthen and enhance positive aspects and change and reduce the negative aspects is required since even when the self esteem is high and the depression is low, there is a tendency which is continuous and maintained stably. Furthermore, it is necessary to pay attention to the self esteem related promotion programs and manage them continuously.

Second, in terms of the effect of self esteem on the inter personal problem, depression turned out to have a partially mediating effect. Furthermore, in terms of the path of the relationship of effect between self esteem and inter personal problem, both the ego focus and immersive ego focus turned out to have an effect on depression. It turned out that the ego focus and

depression have an indirect effect on the relationship of effect of the self esteem on the inter personal problem, and since self esteem not only directly influences the inter personal problem but also indirectly influences the inter personal problem through depression, it may be considered that there is a partial mediating effect. It may be considered that those with a low self esteem feel more depressed, which further intensifies the inter personal problems. In particular, given the fact that those who tend to use the self focused attention influence the sense of depression, which influences the inter personal problems, self esteem sequentially influences the self focused attention and depression in the relationship of inter personal problems as a matter of double mediating effect.

Such results are quite similar to the previous studies[62][63] which reported that the college students' low self esteem was particularly and highly related to the depression, and a study[64] which reported that the college students of a low self esteem experienced a more severe form of depression than the college students of a high self esteem. and similar results. See also Byeon et al.[63] is in line with the study that reported that college students with low self esteem have higher levels of depression, and that high levels of depression influence inter personal problems. Furthermore, Byeon et al.[62] is consistent with the study which reported that the college students of a low self esteem have a higher level of depression, and that the high levels of depression influence the interpersonal problems. They are quite similar to the previous studies [65][66] which claimed that the self focused attention strengthens violence or social anxiety and maladaptive behaviors, and are also consistent with the study which claimed that those of a high general self-focused attention related score have excellent skills for empathy with others and also have a continuous and positive effect on the inter personal problems as in the study of Kim and Lee[51], Joireman, Parrott, and Hammersla[52].

Gathering which, it may be viewed that the self esteem influences the self focused attention and depression, and that it influences the inter personal problems. Specifically, those of a low self esteem are maladaptive and immersive in themselves, which further intensifies depression. A depressed person with a maladaptive self focused attention causes one to be immersed in one's past and present experiences in conflict situations with others and soon would become overwhelmed by one's own emotions. The emotional empathy related response which emerges at this point in time is not a response of sensitively recognizing and understanding the emotions of others, but rather is a self immersive response in responding to one's own emotions. Batson[67] and Schreiter et al.[68] explain that the depressed people consequently avoid or withdraw from any social situations themselves since, rather than demonstrating warmth and compassion for others by looking at and understanding them from the others' point of view when they see others in trouble, they look towards the others from their own point of view and reflect on painful memories similar to the past or re-experiencing negative emotions, and hence, the moment of facing the others comes primarily as an excessive discomfort.

This demonstrates that the immersive self focused attention tendency does not sensitively understand the positions and emotions of the negative others via depression, thereby causing inter personal problems. That is, the self focused attention tendency and the negative bias are explained as the mechanisms which cause highly emotional responses among the depressed people, which influences the inter personal problems. Schreiter et al. [68] is consistent with the study which claimed that the depressed people respond to others' problems with a high level of empathic pains since the emotional responses are caused by primarily accepting, experiencing, and interpreting the others' problems as if they were their own. Such previous studies are supportive of the results of the study which claimed that the depressed people are influenced by self esteem, which leads to an excessive emotional reactivity as they focus on their negative inner selves. Considering the fact that the self esteem and depression are not significantly influenced by the changes of time, and that the characteristics of the previous points in time are the variables which are continuously and stably maintained even after the points of time, the results of this study which claim that the self focused attention of those of a low self esteem and depression negatively influences the interpersonal relationships implies that the act of

loving and respecting one's self and distancing from the maladaptive self focused attention, that is, the fact that the skills to classify one's self from others by breaking away from the state of being overly immersed in one's self are crucial for maintaining amicable interpersonal relationships.

In particular, the emotional support from peers is very important for the college students who experience various psycho-social environments from the perspective that the inter personal problems experienced by the college students who are the research subjects would have a lasting effect[69] not only on their adaptation to their college life but also on their future social life[70]. The college students of a low self esteem continue to experience the inter personal problems without attracting emotional support from their peers[71]. Based on which, the results of the previous studies and this study imply that it is important to distinguish between the personal psychological responses and the psychological responses from the perspective of others via the insight into one's own experiences. The ability to distinguish one's own psychological experiences from one's psychological experience via others would increase the feeling of closeness and intimacy with other along with the others oriented empathy[72], thereby influencing the inter personal problems. Hence, it may be predicted that if the ability to distinguish one's self from others is grown beyond the self focused attention, it will be connected to the psychological variables such as depression and will also help in pursuing even better inter personal relationships. Towards this end, it is necessary that the tendency of focused attention is not only focused on one's self, but also be dispersed to others, and it may also be expected that it will be helpful for the depressed people for their accurate empathy and improvement of their inter personal relationships.

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	GB	-Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/> -Make a significant contribution to collection <input checked="" type="checkbox"/>
Corresponding Author*	SP	-Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/> -Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
Co-Author	YJ MY	-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

Publisher: J-INSTITUTE  
ISSN: 2423-8260

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
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DOI Address:  
dx.doi.org/10.22471/disaster.2021.6.4.17

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## An Analysis of the Groundwater Flow's Characteristics Following CLIMATE CHANGES

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### Abstract

**Purpose:** The purpose of this study is to estimate the groundwater volume available in the Gyeongju region and predict changes in the groundwater flow's characteristics based on the IPCC RCP climate scenario.

**Method:** As for the method to carry out this study, the results of forecasting the weather conditions in the Gyeongju region based on the IPCC RCP climate change scenario were used. By using the predicted precipitation data, the groundwater volume available was analyzed by using the SWAT MODEL. To analyze the groundwater flow's characteristics, the future groundwater flow's characteristics were analyzed by using MODFLOW by using the observed water level related data.

**Results:** When examining the content by scenario, and across all scenarios, it was analyzed that the M3 basin was the largest, followed by the M2 basin and the M1 basin, respectively. It was also analyzed to be inversely proportional to the size of the outflow hydrologic curve in the case of the M1 basin as the city area was greater than that of the M2 and M3 basins. It was analyzed that the scenario of RCP 2.6 had the lowest variation for the content by basin, and that RCP 4.5 had the largest variation by basin. In terms of the flow direction of the groundwater, the M3 basin flows from the mountainous terrain to the Deokdongcheon Stream along the Deokdong Lake, and the M2 basin flows from the south towards the direction of the Bomun Lake. The M1 basin was analyzed to be the Bukcheon basin and finally flows towards the west side of the Hyeongsan River, and the overall groundwater flow in the target basin was analyzed to flow along the river towards the west side of the Hyeongsan River.

**Conclusion:** As a result of analyzing the groundwater volume available and flow's characteristics in the Gyeongju region according to climate changes in this study, the amount of groundwater volume available in the future RCP scenario both increased in 2100 compared to the current precipitation. Yet, in the case of RCP 4.5, the duration of no precipitation decreased by 57.75% compared to 2020, and RCP 8.5 increased by 56.79%, and hence, it was analyzed that, as for the available volume in 2100, the RCP 4.5 scenario was calculated to be 6.93% higher than the present, and the RCP 8.5 scenario increased by 0.10% compared to the present.

In 2100, when there was no precipitation for 40 or more days, it was analyzed that the groundwater level decreased for RCP 4.5 by 0.7 m on average, and as for RCP 8.5, it was analyzed to decrease by GL by 1.0 m, and hence, the water level's decrease turned out to be very large for the RCP 8.5 scenario.

As a result of the groundwater flow analysis, it was analyzed that it was advantageous for securing the groundwater because of the high groundwater volume available and the groundwater level in the RCP 4.5 scenario where the greenhouse gas reduction policy was significantly realized.

**[Keywords]** Climate Change, Groundwater Flow, Groundwater Recharge, Swat Model, Modflow Model

## 1. Introduction



It is expected that it would become increasingly difficult to secure the water resources by the surface water alone, which accounts for the most of the water supply as for the lack of water caused by the abnormal climate, and to supplement the surface water, a lot of groundwater with a stable supply is undergoing development. While the importance and the utility value of groundwater are continuously rising, the appropriate measures of management are required since it is difficult to restore the groundwater exposed to the decline in the water level and pollutants due to indiscriminate development and use. Furthermore, there is a large spatial and temporal difference in terms of the precipitation pattern caused by the climate changes, thereby resulting in an increase in the disasters and damages following water shortages, and hence, a study on the flow characteristics of groundwater according to climate changes is needed. As for a study on the climate changes, Lee et al.(2020) conducted a study on forest planning in preparations for the climate changes[1], and Kim(2016) compared the need for the climate change policies and the climate change policies of the United States and Korea[2]. Park(2021) claimed that the climate changes can act as a factor for the national disasters[3]. The risk of such climate changes is further growing, and in particular, the risks and uncertainties of the field of water resources are expanding. In this study, the changes in the water resources caused by the climate changes, in particular, the characteristics of changes in the groundwater, were studied. As for the research trend in this connection, Lee and Lee(2011) developed a model for estimating the groundwater volume available linked to the climate changes by using GIS [4], and Jeon(2016) considered the rainfall patterns according to the climate changes, developed a basin model reflective of the RCP climate change scenario, analyzed the impact on the water resource environment, and evaluated the environmental maintenance flow [5].

In regards to the groundwater flow's characteristics, Jeong(2007) conducted a study to calculate the hydraulic constant by determining the content and initial parameters for the flow characteristics of groundwater of Jeju-do by using the MODFLOW model, the amount of water, and analyze the groundwater flow system such as the groundwater distribution map and flow path[6]. Kim et al.(2007) simulated the hydrologic process of the surface water and groundwater by using the SWAT model and the MODFLOW model for the surface water and the groundwater modeling[7].

Park(2010) derived the hydrologic factors for each rainfall year by using the SWAT model and the MODFLOW model to analyze the groundwater flow's characteristics according to the changes in the use of land, and based on which, conducted a study on the effect of changes in the precipitation on groundwater volume available[8].

Kim et al. developed a SWAT-MODFLOW linkage model(2004)[9][10], Chung et al(2011) conducted a study to estimate the amount of groundwater development using the integrated model[11]. Kim et al(2013) used the SWAT-MODFLOW model to examine the effects of groundwater pumping lights and agricultural reservoirs on river flow [12]. Kim et al(2009) conducted a study on the connection between soil water and groundwater[13]. Kim et al(2011) conducted a study on the feasibility of an underground dam using an integrated model[14]. Heo(2003) analyzed the underground water flow in the tunnel[15].

Song et al.(2014) conducted a study on the effect on the groundwater system from the groundwater level fluctuation related characteristics of observation wells which are directly impacted by the precipitation[16], while Ahn et al. conducted a study on the optimal method of applying the permeability coefficient by analyzing the changes in the groundwater flow according to the method of applying the permeability coefficient of the MODFLOW model [17]. Na et al(2007) developed a groundwater flow model by using the Visual MODFLOW based on the results of the sensitivity analysis for the boundary conditions to determine the reliability of the model when developing the groundwater model[18]. Kim et al(2012) have used SWAT-MODFLOW to develop a correlation equation which can predict the amount of the groundwater pumping capacity and the river water reduction[19]. As for the study on the groundwater volume available, Cho and Park(2008) studied the groundwater volume available calculation techniques by using the changes of the groundwater level and the unsaturated zone function

model[20]. Moon et al(2002) studied the relationship between the type of groundwater level and the groundwater volume available based on the analysis of data from the national groundwater observation network[21]. Park(2014) conducted a study on the temperature change and sensitive of aquifers due to artificial replenishment of groundwater[22]. Choi(2021) analyzed the calculation of groundwater volume available and flow characteristics according to the climate changes in the Gyeongju region, and also conducted a study on the future groundwater volume available according to the climate changes[23].

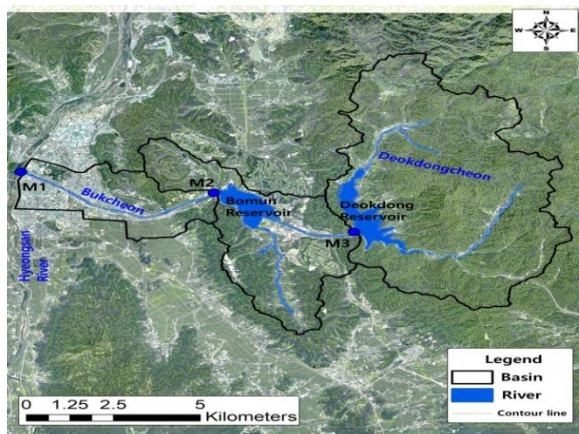
As such, the studies on the hydrological environment in preparations for the climate changes, studies on the abnormal climates, and the studies on the groundwater flow's characteristics are actively conducted, yet there are still many studies are needed on the extreme climate conditions for each unit area in preparations for the future climate change related scenarios with large rainfall deviations. In many previous studies, on the recharge characteristics and flow of groundwater were performed, but studies on the future groundwater recharge and flow characteristics according to climate change were insufficient. Hence, in this study, the groundwater volume available was analyzed according to the reduction of greenhouse gas based on the IPCC RCP scenario, and the changes in the groundwater flow's characteristics were predicted based on them.

## 2. Analysis of the Groundwater Volume Available According to the Climate Changes

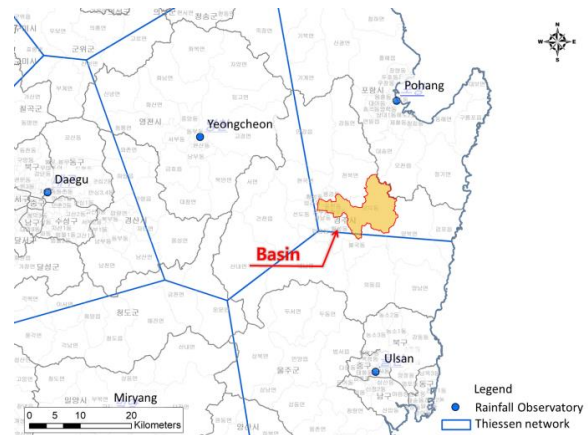
### 2.1. Analytical method

In this study, the climate change prediction data according to the IPCC RCP scenario presented in the “Analytical Report on the Outlook of the Korean Peninsula’s Climate Changes, Korea Meteorological Administration 2018”[24][25] were used for the Gyeongju region, and based on which, the groundwater volume available according to the future climate changes was calculated by using the SWAT model, and the groundwater flow's characteristics was analyzed by using MODFLOW. <Figure 1> is the target basin, and <Figure 2> is the location of the rainfall observatory for the analysis of the target basin.

**Figure 1.** Basin location map.



**Figure 2.** Thiessen network.



Comparing this against the average annual precipitation in the city of Gyeongju of 1,090mm for the past 10 years, it is predicted that under the RCP 8.5 scenario, which emits according to the current trend without reducing the greenhouse gas, the increase will occur by 399 mm in the 2060s, 396 mm in the 2070s, and 553 mm in the 2090s, and 23 mm every 10 years. Furthermore, under the RCP 6.0 scenario where the greenhouse gas reduction policy is realized to some extent, it is predicted to

increase by 431 mm in the 2070s and 404 mm in the 2090s, and it has the tendency to increase by 20 mm every 10 years.

Comparing RCP 4.5, which actively implements the greenhouse gas reduction policies, and RCP 8.5, which maintains the current level of greenhouse gas emissions, it turned out that the precipitation for RCP 4.5 decreased by 1.2% in or after 2070.

**Table 1.** Average precipitation forecast for scenario and deviation from the current climate value.

Year	RCP2.6		RCP4.5		RCP6.0		RCP8.5	
	Pre. (mm)	Deviation	Pre. (mm)	Deviation	Pre. (mm)	Deviation	Pre. (mm)	Deviation
2021~2030	1,381	290	1,485	394	1,338	247	1,429	338
2031~2040	1,438	348	1,329	238	1,396	306	1,421	330
2041~2050	1,332	241	1,403	312	1,255	164	1,371	281
2051~2060	1,378	287	1,450	359	1,358	267	1,443	352
2061~2070	1,444	354	1,478	388	1,199	109	1,489	399
2071~2080	1,405	315	1,567	476	1,522	431	1,487	396
2081~2090	1,303	212	1,522	431	1,482	391	1,465	374
2091~2100	1,371	280	1,339	248	1,494	404	1,643	553

## 2.2. Calculation of groundwater volume available following climate changes

By using the estimated parameters, the climate conditions from 2020 to 2030 were applied for the land cover in 2020 by each climate condition scenario, and the climate conditions from 2030 to 2050 were applied for the land cover in 2030. The virtual land cover map was analyzed by applying the climatic conditions of 2100 from 2050.

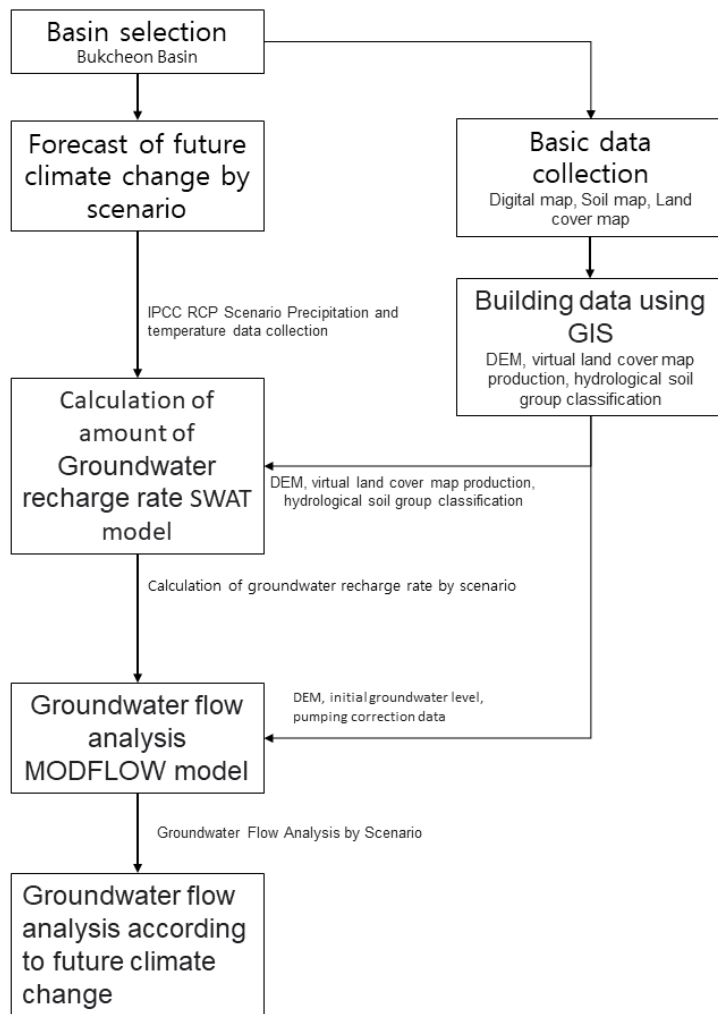
<Figure 3> shows the process of this study. Using the future rainfall according to the climate change scenario, the amount of reclamation was estimated using the SWAT MODEL, and the groundwater flow characteristics were analyzed using the estimated amount of recharge using MODFLOW.

First, in the SWAT model content's estimation results for the target basin, there was no significant change in the runoff hydrologic curve, which is a change in the land cover, and hence, the content was analyzed to be proportional to the amount of precipitation as it sensitively impacts the amount of precipitation due to the climate changes.

The 10 year average content was analyzed by using the SWAT MODEL for the entire target basin, and the average content turned out to be the largest at 22.1% of the precipitation under the RCP 4.5 scenario where the greenhouse gas reduction policy was significantly realized. Second, the content of RCP 2.6, which is the case in which the earth can recover on its own, was analyzed to be 20.9%.

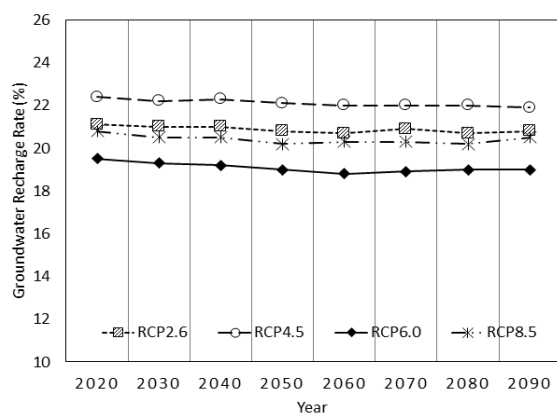
Next, as the current trend, the content of RCP 8.5, a scenario in which the greenhouse gases are emitted without reduction, turned out to be larger than that of RCP 6.0, where the greenhouse gas reduction policy was realized to some extent. It turned out that the scenario was larger for the amount of precipitation by year, which is as illustrated in <Figure 4> through <Figure 7>.

**Figure 3.** Study process.

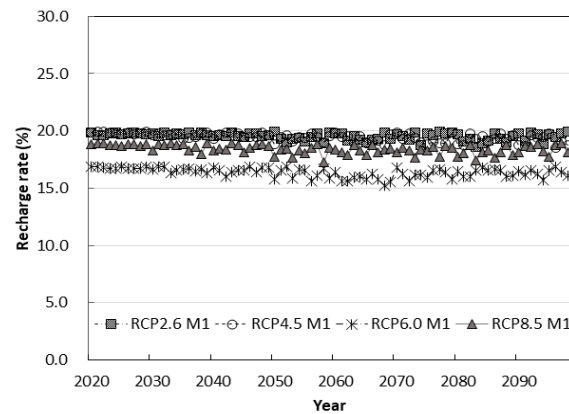


Note: Choi(2021)[23].

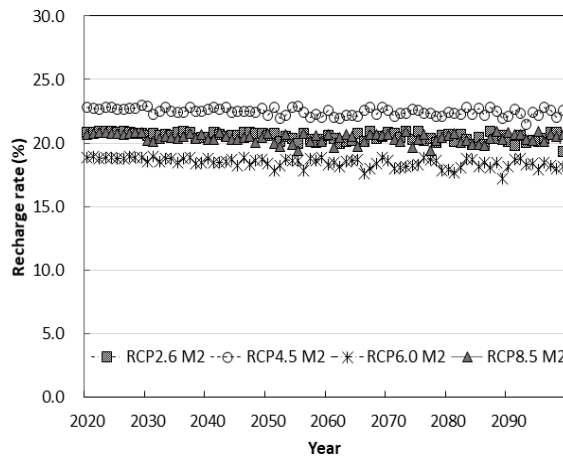
**Figure 4.** Groundwater recharge rate.



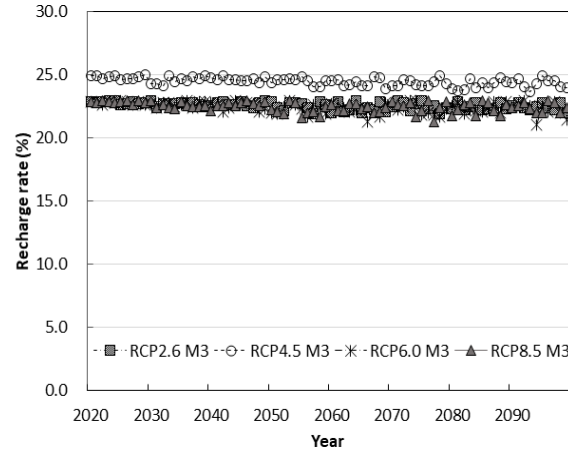
**Figure 5.** Analysis of recharge rate by scenario in M1 basin.



**Figure 6.** Analysis of recharge rate by scenario in M2 basin.



**Figure 7.** Analysis of recharge rate by scenario in M3 basin.

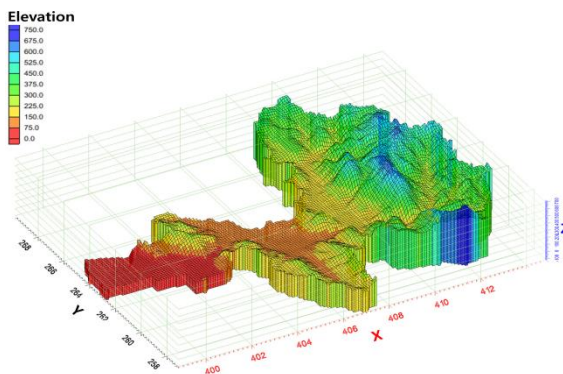


Next, examining the content by scenario, in all scenarios, it was analyzed that the M3 basin has the largest content, followed by the M2 basin and the M1 basin. This was analyzed to be inversely proportional to the size of the outflow hydrologic curve in the case of the M1 basin as the city area was larger than that of the M2 and M3 basins. It was analyzed that the scenario of RCP 2.6 has the lowest variations in terms of content by basin, and that RCP 4.5 has the largest variation by basin.

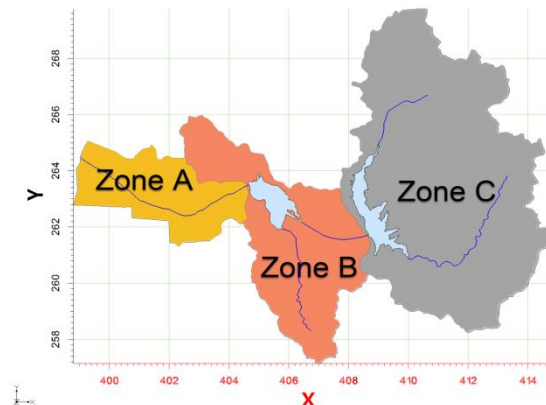
### 3. Groundwater Flow Analysis According to Climate Changes

To apply the MODFLOW model, the basin was constructed identically for the SWAT model by considering the topographical and hydrogeological characteristics up to the surrounding area of the target basin and constructed a simulation area. The simulation grid was set to 100X100m, and the first vertical layer was set as the main aquifer by making reference to the hydrogeological map and cross-sectional view of the city of Gyeongju, and the lower elevation was set to -100m as illustrated in <Figure 8>. Furthermore, the upper elevation of the first layer reproduced the actual ground surface by interpolating the digital elevation data(DEM) generated via the GIS. The areas other than the target basin were set to inactive grids and increased the simulation's efficiency.

**Figure 8.** Basin 3D grid construction.



**Figure 9.** Classification of input zone for recharge rate and hydraulic conductivity.



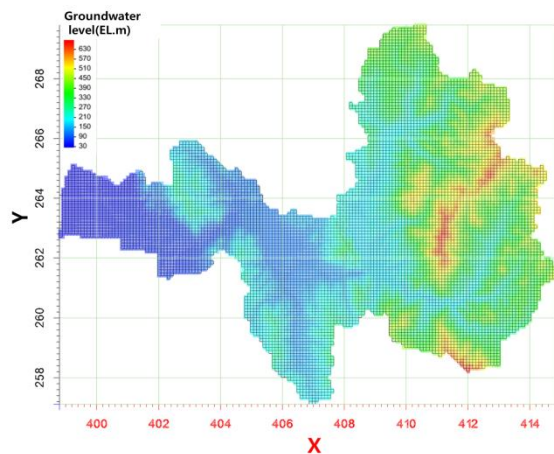


Furthermore, as illustrated in <Figure 9>, the content and hydraulic conductivity were input for each zone by simplifying it into 3 zones such as the basin of the SWAT model. Bukcheon and Deokdongcheon were formed by the rivers and Bomunho and Deokdongho were formed by the lakes, and the initial input data of the MODFLOW model were structured. By using the optimal parameters, the groundwater flow analysis was performed according to RCP 4.5 where the greenhouse gas reduction policies are significantly realized among the climate scenarios and RCP 8.5 where the greenhouse gases are emitted without reduction according to the current trend. In order to examine and understand the flow characteristics of groundwater according to the presence or absence of the greenhouse gas reduction policies, the RCP 4.5 and RCP 8.5 scenarios with large differences in the amount of greenhouse gas reduction were selected.

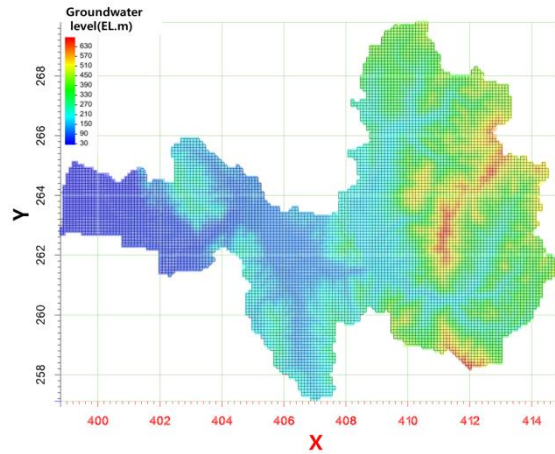
To review the overall groundwater flow for the target basin, 20 random locations of wells were selected, and the groundwater levels according to the RCP 4.5 and RCP 8.5 scenarios for 2020, 2050, and 2100 were compared by considering the climate changes.

As a result, the content of the RCP 4.5 scenario was calculated to be larger than that of the RCP 8.5 scenario, where discharge is made without reduction in the current trend, and the overall groundwater level was analyzed to be high as illustrated in <Figure 10> and <Figure 11>.

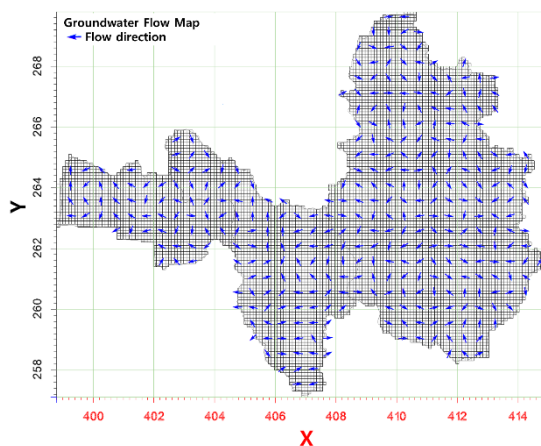
**Figure 10.** RCP 4.5 scenario groundwater flow(year 2100).



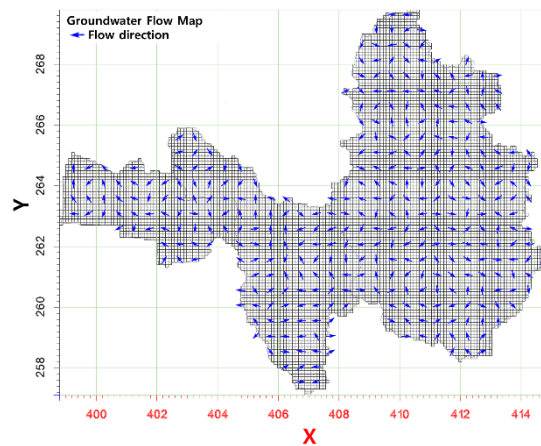
**Figure 11.** RCP 8.5 scenario groundwater flow(year 2100).



**Figure 12.** Groundwater flow map(RCP 4.5, 2100 year).



**Figure 13.** Groundwater flow map(RCP 8.5, 2100 year).



Under both scenarios, the flow direction of the M3 basin runs from the mountainous terrain along the Deokdong Lake to the Deokdongcheon Stream, while the M2 basin flows from the south towards the direction of Bomun Lake. The M1 basin was analyzed to be the Bukcheon basin and finally flowed towards the west of the Hyeongsan River, and the overall groundwater flow of the target basin was analyzed to flow along the river towards the west of the Hyeongsan River.

<Figure 12> and <Figure 13>. Shows ground recharge at 2100 year. In the case of the RCP 4.5 scenario in 2100, the groundwater reserve is 29.224,000m<sup>3</sup>, which is 6.93% higher than the current 2020. was analyzed as This is because the precipitation in 2100 in both future RCP scenarios is increasing compared to the current precipitation, but in the case of RCP 4.5, the 57.75% decrease compared to 2020, and the RCP 8.5 increases by 56.8%. As a result, the groundwater reserves greatly increase, and the RCP 8.5 scenario was analyzed to be similar to the present.

## 4. Conclusion

As a result of the analysis of the groundwater flow for the climate change scenarios of RCP 4.5 and RCP 8.5, the flow direction of groundwater for both scenarios identically begins from the upstream of the basin, flows towards the Deokdong Lake, and flows in the direction of the Bomun Lake. Finally, it was analyzed that it flows towards the west of the Hyeongsan River along the Bukcheon.

The groundwater level of RCP 4.5 and RCP 8.5 varied depending on the changes in the future precipitation, and it was analyzed that in 2020, the groundwater level of RCP 4.5 was 0.52m higher on average than that of RCP 8.5 across all wells. Furthermore, in 2050, the groundwater level's difference turned out to be 1.41m, and in 2100, the groundwater level's difference turned out to be 1.31m, which was analyzed to be high under the RCP 4.5 scenario.

The amount of precipitation in 2100 in both future RCP scenarios is increasing compared to the current amount of precipitation. However, in the case of RCP 4.5, the duration of no precipitation decreased by 57.75% compared to 2020, and as for RCP 8.5, it increased by 56.79%, and as for the content of 2100, the 4.5 scenario was calculated to be 6.93% higher than the present, while the RCP 8.5 scenario was analyzed to increase by 0.10% compared to the present.

When there was no precipitation for 40 or more days in 2100, it was analyzed that the groundwater level decreased for RCP 4.5 by GL 0.7m on average, and as for RCP 8.5, it decreased by GL 1.0 m, whereby under the RCP 8.5 scenario, the reduction of water level turned out to be the largest.

As a result of the groundwater flow analysis performed, it was analyzed that it was advantageous for securing the groundwater given the large groundwater volume available and the groundwater level under the RCP 4.5 scenario where the greenhouse gas reduction policies are significantly realized.

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	GC	<ul style="list-style-type: none"> <li>-Set of concepts <input checked="" type="checkbox"/></li> <li>-Design <input checked="" type="checkbox"/></li> <li>-Getting results <input checked="" type="checkbox"/></li> <li>-Analysis <input checked="" type="checkbox"/></li> </ul>
Corresponding Author*	SA	<ul style="list-style-type: none"> <li>-Make a significant contribution to collection <input checked="" type="checkbox"/></li> <li>-Final approval of the paper <input checked="" type="checkbox"/></li> <li>-Corresponding <input checked="" type="checkbox"/></li> <li>-Play a decisive role in modification <input checked="" type="checkbox"/></li> </ul>
Co-Author	KP	<ul style="list-style-type: none"> <li>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/></li> <li>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/></li> <li>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/></li> </ul>

Publisher: J-INSTITUTE  
ISSN: 2423-8260

Website: j-institute.org  
Editor: admin@j-institute.org

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DOI Address:  
dx.doi.org/10.22471/disaster.2021.6.4.27

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## A Study on Coaching Program for Leadership Development of University Students in the DISASTER Era

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### Abstract

**Purpose:** The purpose of this study is to suggest the direction of university coaching education for the development and operation of coaching education for university students. In particular, this study aims to focus on coaching education of Howon University students who aim to cultivate global leaders and also lead the world by producing professional manpower to lead the era of the fourth revolution and disaster. To this end, it aims to analyze the core competencies of ICF coaching and coaching education competencies for Howon University students.

**Method:** This study conducted in-depth consultations with coaching experts, and the aspects of the talent education prizes that Howon University aims for and the core coaching competencies presented by ICF and KCA were analyzed. And then this research proposes coaching education program for Howon University students.

**Results:** According to previous studies on the operation of university coaching programs from 2010 to the present, coaching programs have improved students' practical ability to search for career or prepare for employment. In addition, the coaching leadership program for ICF core competencies and Howon University students was designed considering the psychological tranquility such as self-understanding, possibility discovery, confidence recovery, and other factors that show higher recognition of interpersonal relations.

**Conclusion:** This study designed coaching education program for leadership development based on data on in-depth interview such as consultations and coaching core competencies and Howon University educational philosophy. As a result of analyzing the contents of the consultation of five professional coaches of the Korea Coach Association and the International Coaching Federation, the core competencies of coaching and the educational ideology of Howon University, so the contents of the coaching leadership education program were composed of one semester(32hours) in total with 3 parts. First, coaching ethics and coaching mindset are three for coaching mindset, and second, coaching skill practice is to communicate effectively as a global leader. Third, the program could be organized by becoming a coach-type leader for learning and growth.

**[Keywords]** Coaching, Coaching Program, Leadership Development, University Students, Core Competency

## 1. Introduction

With the entry of the fourth industrial revolution era, the growth engine that can cope with these changes is required more than ever before, as it is experiencing a corona pandemic phenomenon. As an alternative, there is a growing interest in coaching with the direction keys that can grow together with the coach and the coaching customer. In fact, Eric Emerson Schmidt, former CEO of Google he said, "If a company wants to grow, hire a coach! ".

The etymology of coaching has its origins in the wagons of Hungary's Kocs region in the 1500s, and it began later in the 1880s when people who coached the rowing of university students in the Cambridge River called coaches. Coaches can be compared with trains, which are the origin



of training. Coaching is a more personalized service that allows you to move freely from where you are and where you want, that is, to arrive at the target state, compared to train that can move along a fixed track(Korea Coach Association, 2021)[1][2][3][4][5].

The approach of modern coaching can be seen as beginning with Thomas J. Leonard, a financial consultant in the United States in the early 1980s. He founded a company called Coach University, and later his colleague Laura Whitworth established a coaching training center, which led to a full-scale coaching industry. Based on the establishment of the International Coaching Federation(ICF) in 1995 and the establishment of the International Association of Coaching(IAC) in 2003, it has established specialization and systematization of coaching. As a result, academic approach to coaching has been activated and it has been growing from more than 100 countries to professional coaches(Korea Coach Association)[3][4][5][6].

The speed of the spread of coaching in society as a whole is changing very rapidly, and the spread of coaching is being made in universities as well as in response to the situation of this era. Coaching is selected as a department in the undergraduate course of the university, training coaches, coaching lectures are being conducted through lifelong education, and coaching majors are increasing in graduate schools[4][5][6][7]. This study was started to design and provide coaching leadership program for students of Howon University who have a vision of fostering global talent in line with this trend.

So the purpose of this study is to explore the direction for the development and elaboration of coaching subjects as a method for university personality education. In particular, Howon University operates personality, self-development, leadership and teamwork as liberal arts subjects based on the ideology of cultivating global leaders. Nevertheless, in the rapidly changing future society, it is necessary to establish self-identity and to find ways to construct and operate various coaching-based competency development for students to develop the potential of individuals and organizations.

## **2. Theoretical Background**

### **2.1. Understanding of coaching**

As the importance of coaching is emphasized, various definitions are being made according to the viewpoint. First, in 2002 the International Coaching Federation defined as a strong and cooperative relationship that enables individuals with a willingness to develop with coaches to develop their potential to the fullest and achieve goals, degraded behaviors and very good results through discovery processes, and a constant partnership that helps coaches improve professional or personal performance and improve quality of life for those who are coaching. Meanwhile, the Korean Coach Association is a horizontal partnership that helps to maximize the potential of individuals and organizations to realize the best value. The Corporate Coach University(CCU) is a powerful and cooperative partnership that enables individuals who are willing to develop with coaches to develop their potential as much as possible, to set goals, strategic actions, and to achieve very excellent results through discovery processes. It is defined as a relationship. In addition, in the research papers on coaching, coaching is considered by dividing into various factors[8][9].

First, coaching can be regarded as a process of establishing a relationship with customers, along with direction, development support, performance evaluation, and feedback, in order to improve performance, and the specific functions or behaviors that the boss intervenes or mediates through dialogue. In terms of defining coaching from the perspective of the main activity of coaching, the perspective of the organization scene is analyzed and summarized from the perspective of the main activity of coaching[9]. In addition, the coach has been interested in the change and growth of the coach, and the present is shown as performance-oriented, partnership through cooperative relationship, individual learning and growth, and the process of contributing to the growth and performance of the organization leader. The definition of

coaching can be defined as 'the process and mutual trust relationship that develops the ability of the members so that the customer can develop their potential and solve their own role[10][11][12].

The common part of the definition of various coaching mentioned above is that coaching means a fundamental change in the way of looking at humans. This can be seen as the philosophy of coaching. In other words, it is the basis of coaching philosophy that human beings are constantly developing and have possibilities, and are active in pursuing change. Hidetake Enomoto, one of the most important masters of coaching, also outlines the principles of coaching in his *Magical Coaching*: "First, there is an infinite possibility for everyone. Second, all the answers that he needs are inside him. Third, we need a partner to find the answers. John Whitmore emphasized coaching in leadership, saying, "Leaders in the 21st century are not commanders who are in charge and responsible, should be coaches who grow members and be the conductors of orchestras that make members exert their potential"[12][13][14].

For this reason, the International Coach Federation(ICF) explains that coaching philosophy is viewed as 'everyone is whole, has answers inside, and is creative' according to positive and active human view[1][6][12][13]. The Korean Coach Association defines coaching as a horizontal partnership that helps people and organizations maximize their potential and realize their best values view[1]. In summary, coaching is to help people go from their current point to where they want to go, and the coaching subjects are not passive beings who are taught by someone, but people who think for themselves, set solutions, and have the potential to take responsibility for their execution. It is also called "coach" a partner who believes in the potential ability of the coaching subject, guides in the right direction, and helps them achieve their goals. As we have seen above, the common part of coaching is that it means a fundamental change in the way we look at humans. In other words, it is the basis of coaching philosophy that human beings are constantly developing and have possibilities, and are active in pursuing change. As a result of the continuous expansion of the concept of coaching, it is now an important method in the field of human resource development. Therefore, this study aims to define coaching as a series of integrated partnership processes that help people to lead their lives by self-responsibility by self-awareness so that they can explore the present, prepare for the future, and maximize their potential in order to support the change and growth of individuals and organizations[6][13][14][15].

Coaching is to help you go from where you are at to where you want to go. Coaching is not a passive being taught by someone, but a person who has the potential to think for himself, to solve the problem, and to take responsibility for the execution. It is also called "coach" a partner who believes in the potential ability of the coaching subject, guides in the right direction, and helps them achieve their goals. As we have seen above, the common part of coaching is that it means a fundamental change in the way we look at humans. In other words, it is the basis of coaching philosophy that human beings are constantly developing and have possibilities, and are active in pursuing change. As a result of the continuous expansion of the concept of coaching, it is now an important method in the field of human resource development. Therefore, this study aims to define coaching as a series of integrated partnership processes that help people to lead their lives by self-responsibility by self-awareness so that they can explore the present, prepare for the future, and maximize their potential in order to support the change and growth of individuals and organizations[6][15][16][17].

## 2.2. Preceding studies

The speed of the spread of coaching in society as a whole is changing very rapidly, and the spread of coaching is being made in universities as well as in response to the situation of this era. Coaching is selected as a department in the undergraduate course of the university, training coaches, coaching lectures are being conducted through lifelong education, and coaching majors are increasing in graduate schools[9].

First, it is like to examine the process of opening coaching courses at universities. There are a total of 10 universities in coaching courses, of which 7 schools run coaching courses in connection with the university verification program at the Korea Coach Association[1]. The University of South Seoul has a personality psychological coaching course as a liberal arts course, and more than 180 students take classes each semester. The major courses teach personality, coaching and leadership coaching in the Department of Child Welfare. There is also a career coaching specialist course at the Korea Broadcasting and Communications university. This course runs career coaching and career and coaching theories and practice such as career and coaching process, coaching skill and case study using STRONG test(career development test, career exploration test, and job interest test)[17][18][19][20][21].

The training schedule is STRONGTM beginner and career coaching course, and it is operated for 8 hours in total for 4 days. After the training, STRONG beginner education certificate, Asesta career coaching basic course and certificate and certificate of completion of the head of the Gyeonggi Regional Industry-Academy Cooperation Division of Korea Broadcasting and Communications University are also issued, Sookmyung Women's University has liberal arts courses in the undergraduate department, enneagram leadership, personality coaching and happy coaching conversation in the Department of Child Welfare, and coaching theory is established in the Department of Physical Education as a major choice[20][21][22][23][24][25].

The following is a survey of coaching programs operated by the Korea Coach Association as a university verification program. There are seven university that run coaching programs registered with the Korea Coach Association. The program-certified university program conducted by the Korea Coach Association is a program that aims to help college students(excluding graduate students) introduce coaching education at universities so that they can become key talents in individual growth and organization. It is run by a credit program with at least two credits or special education for more than 20 hours, and coaching practice time is more than 30% of total training time[1][8][9][10].

And coaching practice is necessarily face-to-face. The subjects of the verification program were university students including two-year or more university students. And it was a subject that runs in college for regular semester or seasonal semester. This course covers all subjects in liberal arts and majors, which included coaching definition, coaching philosophy, coaching ability, and coaching practice presented by the Korea Coach Association. Coaching practice is being conducted at the university in accordance with the rule that it should be more than 30% of the entire course and that pure coaching theory and practice should meet up to 70% or more[1][2][3][9][10][26].

### 3. Research Method

#### 3.1. Research model

The research model of this study proposes coaching education program for Howon University students by analyzing in-depth consultation of coaching experts, core coaching competency presented by ICF and KCA, and human resource education that Howon University <Table 1>.

**Table 1.** Research model.

Step 1		Step 2		Step 3		Proposal of
Experts consultations	⇒	Coaching core competency (KCA / ICF)	⇒	Howon university founding ideology and vision	⇒	Howon university coaching program model

#### 3.2. Experts consultations

This study was conducted by five experts consultations in depth to develop coaching education

programs for students at Howon University. In addition, the main contents of the coaching program were derived by considering the core competencies of coaching and the ideology of the team that are commonly directed by the Korea Coach Association and the International Coaching Federation.

For 5 experts consultations in-depth, which are qualitative research methods, the form of questions was developed based on the previous studies[8][9][10]. The specific questions are 'What do you think the purpose and direction of university coaching education?', and also 'What do you think is the contents of coaching that should be dealt with intensively? What is the part that should be emphasized in the university coaching program in the disaster and pandemic era where university competitiveness is important? <Table 2>.

**Table 2.** Coaching experts data.

Coaching experts	Education	Specialized field	Coaching career	License
1	Doctor	Business coaching	10 years	Ksc
2	Doctor	Life coaching	8 years	Kpc / pcc
3	master	Business coaching	12 years	Ksc / pcc
4	master	Life coaching	7 years	Kpc / pcc
5	Doctor	Education coaching	11 years	Kpc

### 3.3. Coaching core competency

The keywords of coaching concepts presented by experts in coaching and coaching education were defined as 'change and growth'. It is a process that helps customers find their own value and direction of life, and emphasizes that coaches are not providing information.

The International Coaching Federation(ICF) analyzed coaching trends and field practice to announce the updated ICF coaching core competency model. The competency model is based on data collected from more than 1,300 coaches worldwide with a variety of coaching training courses and coaching styles and experiences, including ICF members and non-members. Through this extensive study, we confirmed that the existing ICF coaching core competency model developed 25 years ago is very important for today's coaching practice. Therefore, the updated core competency model adds and integrates some new elements into existing coaching competency[6].

The new competency and guidelines emphasized ethical behavior and confidentiality first. It also included coaching mindsets, the importance of continuous reflection, significant differences between various levels of coaching agreements, the importance of partnerships between coaches and customers, and the importance of cultural, systematic and contextual consciousness. The newly included capabilities reflect the core elements of coaching practice today and will be used as a more powerful and comprehensive coaching standard for the future First core competency is foundation like demonstrates ethical practice. It means understands and consistently applies coaching ethics and standards of coaching. Second is embodies a coaching mindset that means develops and maintains a mindset that is open, curious, flexible and client centered.

Third, it establishes and maintains agreements. Definition as is partners with the client and relevant stakeholders to create clear agreements about the coaching relationship, process, plans and goals. And establishes agreements for the overall coaching engagement as well as those for each coaching session. Fourth, cultivates trust and safety. Definition is partners with the client to create a safe, supportive environment that allows the client to share freely. Maintains a relationship of mutual respect and trust.

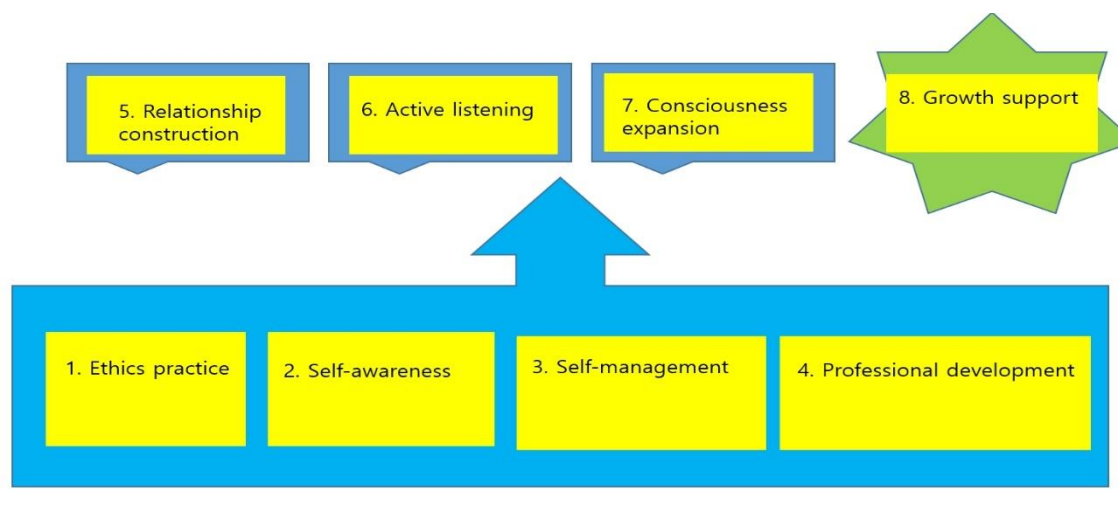
Fifth, it maintains presence .Definition Is fully conscious and present with the client, employing a style that is open, flexible, grounded and confident definition: open, flexible and centered, fully awake

and with customers. Sixth, listens actively. Definition is focused on what the client is and not saying to fully understand what is being communicated in the context of the client systems and to support client self-expression definition is fully understand what is delivered in the context of the customer's system, and self-expression of the customer(self-expression) Focus on what the customer said and did not say to help express.

Considers the client's context, identity, environment, experience, values and beliefs to enhance understand. Seventh is evokes awareness. Definition is facilitates client insight and learning by using tools and techniques such as powerful questioning, silence, metaphor or analogy definition: powerful questions, silence, metaphor or analogy It promotes insight and learning of client by using tools and techniques. Eighth is facilitates client growth. The growth of client is promoted. Definition is partners with the client to transform learning and insight into action. Promotes client autonomy in the coaching process. Definition is also customers will turn learning and insight into action.

And the KCA(Korean Coach Association) presents eight coaching competency systems as shown in <Figure 1> which is based on ICF core competencies[1][6].

**Figure 1.** KCA coaching core competency system.



Note: [http://kcoach.or.kr/\(2021\)](http://kcoach.or.kr/(2021)) re-reviewing the contents presented by the coach association.

### 3.4. Coaching competency foster vision and talent award pursued by Howon university

In 1977, Howon University was established by the founder of the late Indang Kang Jung-joon as a founding spirit of "a rewarding life, a true human image, and a self-reliant person" and developed into a well-known employment-oriented university that fosters professional technical personnel.

Howon University has a vision to cultivate global leaders who will lead the world by producing professional manpower to lead the era of the fourth industrial revolution. In addition, it aims to strengthen personality education and foster field-based talents that are essential for companies and society in order to become "a university that provides hope and help to neighbors and society" through community service[24][25][26][27][28].

The lessons of Howon University are sincerity, creation, and service The purpose of education is to cultivate next-generation industrial manpower that combines creativity and innovation ability. The educational goal is to foster people who are rewarding life and true human image and self-reliance by strengthening creativity capacity, harmony of practical personality and open education. This can be connected to the joint construction of relationships based on the ethical practice and trust of coaching, and to effectively communicate, encourage learning and growth, and grow together[27][28][29][30][31].

### 3.5. Comprehensive analysis

Interviews with coaching experts and analysis of the core competencies of ICF and KCA coaching and the connection between Howon University vision and human resource development can present the following results. Since Howon University is training next-generation industrial manpower that combines creativity and innovation capabilities, coaching education programs should not be 'teaching' but 'experienced' coaching so that they can practice as industrial manpower in the actual field.

The author of this study also worked as an advisor to student counseling departments and employment support departments other than the advisors of the major department, and performed mentor coaching, happy coordinator emotional coaching, mind prevention coaching, and career coaching[27][29][30].

It is necessary to emphasize the importance of self-awareness in the contents of education, to construct contents so that this can be recognized as a leader, and to acquire coaching skills based on coaching philosophy linked to it. In addition, in order to cultivate human resources to practice in terms of education method, it should be centered on team or activity-oriented activities as participatory education method. In the previous studies, coaching programs for college students had positive effects on both psychological and behavioral aspects of college students. In other words, coaching can improve self-efficacy, self-understanding, and psychological peace in psychological aspects, and improve life satisfaction due to stress reduction.

In addition, in the behavioral aspect, it was possible to improve the behavioral aspects such as career exploration execution ability, career preparation ability, and career preparation behavior, which are especially important for college students. In addition, coaching had a positive effect on university students in terms of communication ability and leadership improvement among social competencies. Therefore, in the current situation that various coaching programs(academic coaching program, career guidance program, college life adaptation program, etc.) for college students are introduced or developed directly to prove their effectiveness, this study emphasizes the need for coach-type leader education that can be practiced reflecting these times in Howon University and proposes the contents of coaching leadership program development.

## 4. Results and Conclusion

### 4.1. Results

As the importance of human resource development that can achieve outstanding achievement for the continuous growth of companies in a rapidly changing environment increases, the need for coaching is emerging for the middle managers of the organization as leadership to effectively support the growth and development of members. It is very important to receive education to develop and nurture coaching skills from universities in the situation that many organizations need talented coach-type leaders. The Considering the ideology of coaching, the core competencies of coaching, the educational ideology of Howon University and the vision of human resource development, I would like to present the Howon University coaching program as shown in <Figure 2>.



**Figure2.** Howon coaching program.



## 4.2. Conclusion

This study designed coaching education program for leadership development based on data on in-depth interview and coaching core competencies and Howon University educational philosophy. As a result of analyzing data on the core competencies of professional in-depth interviews and coaching and the educational ideology of Howon University, the contents of the coaching leadership education program were composed of 32 hours in total with 3 parts. first, coaching ethics and coaching mindset are three for coaching mindset, and second, coaching skill practice is to communicate effectively as a global leader. Third, the program could be organized by becoming a coach-type leader for learning and growth.

The coaching program is to become a necessary talent in the field as a global leader through understanding self-understanding and understanding of other people's understanding.

In these days many educations experts believe that the crisis in the provincial universities will accelerate, as the power to increase university competitiveness is also falling day by day amid the structural limitations of the decline in the school-age population. There are also evaluations of various policy prescriptions by the education authorities as "basic measures are insufficient". In the local university, it is said that only competent universities survive, and one of the things that can make a brand for Howon University students is the coaching program.

That is why this study emphasizes that the coaching education program for establishing Howon University as a university that fosters global leaders is an essential part. Finally, in the future, it is necessary to apply coaching education program to students for one semester and conduct a pre-post analysis to verify the effectiveness of coaching education program.

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	JK	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
Corresponding Author*	YL	-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

### 6.2. Funding agency

This work was supported by Howon University Research Grant in 2021.

Publisher: J-INSTITUTE  
ISSN: 2423-8260

Website: j-institute.org  
Editor: admin@j-institute.org

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E-mail: pds500@naver.com

DOI Address:  
dx.doi.org/10.22471/disaster.2021.6.4.37

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## A Study on the Factors that Decrease the Reliability of the Korean Police in HUMAN Society

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### Abstract

**Purpose:** Due to the nature of police work, most of the work regulates or restricts the activities of the people, so it is not easy to seek cooperation from the people, and it is not easy to increase the reliability of the police despite the legitimate law enforcement activities.

Despite this environment of police work, efforts to improve police reliability are needed.

**Method:** 'It is necessary to seriously consider the "people variables, political variables, and legal variables" that make the police's just activities impossible. We would like to find problems in the three variables and find ways to improve the reliability of the police in the legitimacy of police capacity building, police bureaucracy, and police activities.

**Results:** We analyzed the factors that deteriorated the reliability of the Korean police and looked at ways to improve the reliability of police work. There are many difficult conditions to enhance public trust due to people variables, political variables, and legal variables in police affairs. Despite this environment of police work, efforts to improve police reliability are needed.

**Conclusion:** The ways to restore public confidence in police work are as follows. In the process of police affairs, it shall be strictly followed by principles, and in the process, it is necessary to comply with the prescribed legal procedures. In addition, the top priority is not to lose trust in the people through fair handling of work and a friendly attitude.

**[Keywords]** Trust in the Police, Fairness of the Police, Police Activities, Police Duties, Protection of Crime Victims

## 1. Introduction

Most of the police activities correspond to law enforcement activities and often involve coercion, so even legitimate law enforcement activities often lead to resistance or opposition from the people[1][2].

Due to the nature of police work, most of the work regulates or restricts the activities of the people, so it is not easy to seek cooperation from the people, and it is not easy to increase the reliability of the police despite the legitimate law enforcement activities[3].

The people's expectations and demands for the police are diverse and broad depending on the society, times, situations, and problems. Moreover, the public's demands on the police are close to life and feel directly with their skin, so if they go wrong, they will cause complaints and conflicts with citizens. Therefore, attention should be paid to how to harmonize the expectations and needs of the people[4].

Due to the nature of police work, it further implies the possibility that the performance of police work may lead to a decrease in police trust depending on the police officer's attitude to execute it rather than enhancing police trust[5].

Talking about trust in the police is the same as talking about police reform and innovation. But trust, reform, and innovation are not the same thing. Trust is abstract and has infinite value. The components are also abstract and infinite.

Even if abstraction and infinity are divided, they become abstraction and infinity, but not sphere and finite. However, the tasks of reform and innovation to enhance trust are specific and finite. Sphere and finite cannot fill abstraction and infinity. Therefore, there is no way to perfectly create the abstract value of trust.

Nevertheless, the factors determining trust must be reviewed. This is because human beings are specific and finite. Humans are beings that try to achieve abstraction and infinity with spheres and finiteness.

In order to achieve trust, it is necessary to reform, innovate and change the specific trust factor. In this respect, it is important to analyze the elements that make up trust. In the end, trust can only be achieved through specific and finite tasks of reform and innovation.

The factor determining trust, which is the concept of abstraction and infinity, must reflect the characteristics of trust. Trust is created as a result of a comprehensive evaluation of the state, society, institutions, institutions, and individuals.

Since trust is a holistic perception of the state, society, institutions, institutions, and individuals, the components of trust must encompass almost all of the objects of trust analysis. And trust is not built in a short time. formed over a long period of time.

Also, trust in a country, society, institution, institution, and individual comes from comparison with other countries, societies, institutions, institutions, and individuals.

The determinant of trust in the police should be able to explain almost everything about the police. The variables can be divided into distrust of the criminal and judicial institutions that the police themselves have created and are making, people variables, political variables, and legal variables.

Trust cannot be restored simply by working hard at a given task. It is not wrong to say that we should work hard on our assigned tasks. But it doesn't do anything to build trust.

Despite this environment of police work, efforts to improve police reliability are needed.

## 2. Theoretical Background

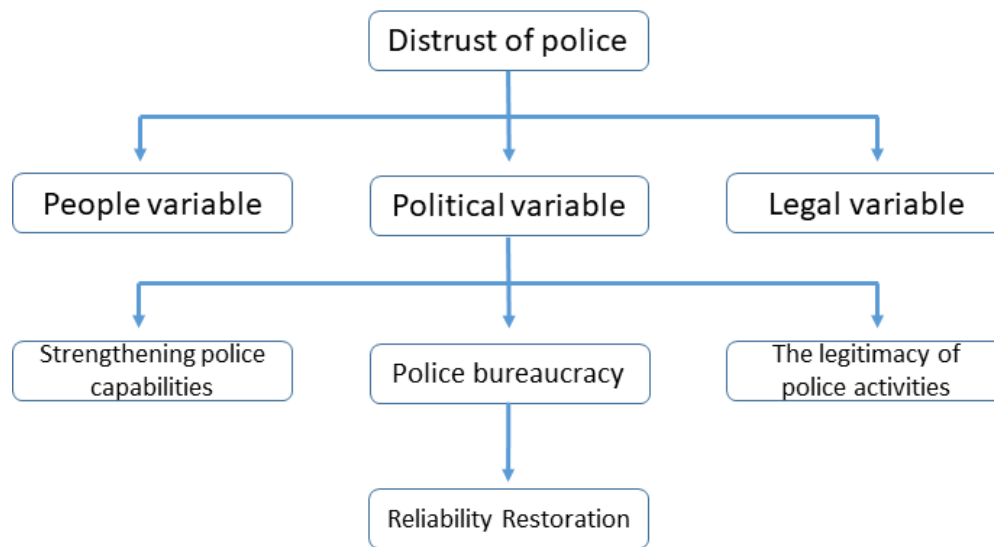
Trust in the police has attracted attention by many studies as a driving force for police activities and as an evaluation metrics for police activities. Many studies measure reliability in various ways, such as police-related attitudes, evaluations, satisfaction, reliability, efficiency, and fairness, but their interpretation has been rather inconsistent[6].

The concept of police reliability was divided into three stages. The first is a neutral concept in a broad sense that reflects the general attitudes and feelings of citizens toward the police. This includes citizens' public opinion, perspectives, perceptions, attitudes, and evaluations as its concept. The second is related to perception and attitude. This is the most widely used concept in existing studies such as reliability, confidence, and satisfaction, and is a concept that reflects a positive evaluation of the police. The third is the concept of the narrowest sense. This reflects specific perceptions of police performance or activities such as efficiency, respect, fairness, priority, and integrity. Among these three concepts of police reliability, the reliability of the police included in the second concept classification is an indicator of police legitimacy. Since this was reasonably measured and verified by previous studies, this report explains it as a central concept for studying citizens' perceptions of the police[7].

Trust in the police is one of the main indicators that enable us to know the legality of state management. When citizens perceive the police as legitimate social institutions, they will act

more law-abiding[8]. Trust in the police acts as the basis for citizens' willingness to comply with the law as well as sponsorship and voluntary crime prevention activities. This is a key element required in the era of community police activities[9][10]. As such, police activities based on citizens' trust will be more effective. If respected by citizens, police officers' job satisfaction and self-esteem will increase. It also reduces job-related stress in the police. In addition, there will be more tangible and intangible support from the local community[11][12]. There are various reasons why the police should strive to gain citizens' trust, and it can be said that it is that important[13][14].

**Figure 1.** Research model.



### 3. Factors that Reduce the Reliability of the Korean Police

#### 3.1. Distrust in criminal justice agencies

The low trustworthiness of the police is itself manifested as a need to reform and innovate the police. According to the principle of popular sovereignty, the ultimate basis for the existence of the police is the trust of the people.

And low trust in the police translates into high costs of police administration. The cost here includes not only a simple amount, but also the budget, time, and pain of the administrative execution process. Trust is a social common capital.

If it is not enough, it must be filled with something else. That's what shows up in budget, time, and pain. In order to avoid the suffering of the people, including the police, we need to talk about the trust of the police.

According to an analysis of the degree of trust and fairness in criminal justice agencies in the 2020 Social Integration Survey by the Korea Institute of Public Administration, the public confidence in criminal justice agencies such as courts, prosecutors, and police is low at less than 50%.

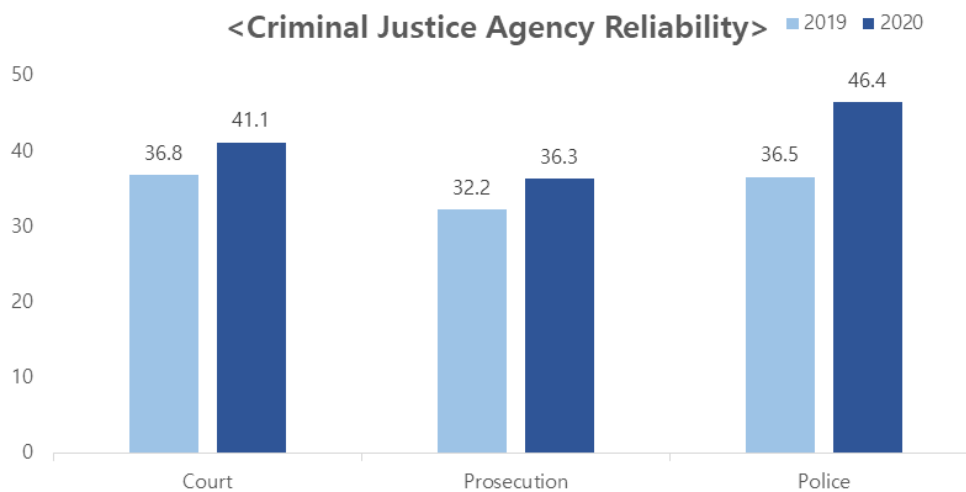
The credibility of the police among the criminal justice agencies is high. The reason is that the recent corruption in the courts and prosecutors was more serious than the corruption in the police. For the police, this might be considered a fortunate outcome.

However, there is only one criminal and judicial system in the country, and the trust that the people feel has also one root. The trust of the courts, the prosecution and the police is inter-locked, not separate. Even looking at the public perception that the cause of distrust in the criminal justice system is the unfair enforcement of the law, it can be seen that the credibility of the criminal justice system is one.



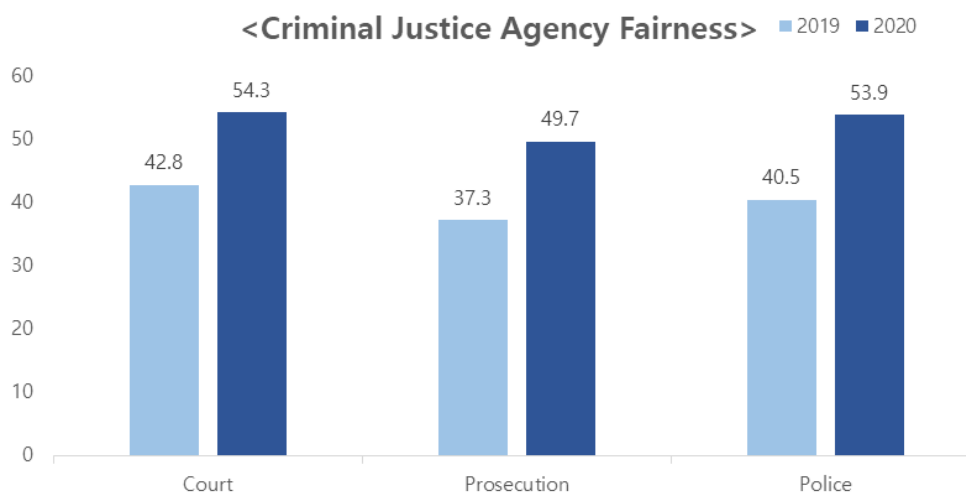
Trust in the criminal justice system is low, but trust in the police alone cannot be high. This statistic shows that reform and innovation of the entire criminal and judicial system, not just the police, is necessary to increase trust in the police.

**Table 1.** Criminal justice agency reliability[15].



In 2020, the reliability of Korean criminal justice agencies was 46.4% for police, 41.1% for courts, and 36.3% for prosecutors. The reliability of the police rose 9.9 percentage points from 2019, ahead of that of the court, but all three institutions still showed low reliability, with less than 50%.

**Table 2.** Criminal justice agency fairness[15].



In 2020, the public's perception of fairness was 54.3% in court, 53.9% in police, and 49.7% in prosecution. Compared to reliability, courts, prosecutors, and police are all more than 7% higher. However, unlike courts and police, the prosecution showed that there is still a great "public distrust" with less than 50% of fairness awareness.

Although there are differences in perception about the purpose and level of disclosure of this information, the disclosure of information by criminal justice agencies will be part of a policy to gain trust from the public.

### **3.2. Factors that reduce the reliability of Korean police and variable factors**

In a free and democratized Korean society, police frequently collide with the public and are criticized by the public. In accordance with laws and rules, it is not easy to escape from the "criticized police" despite hard work for the safety of the people[16][17]. Corruption police officers exist everywhere, and unjust police often appear in the media. Of the 115,000 police officers, only a small number of police or police organizations have problems, but criticism is directed at the entire police officers and police organization[18].

It is natural to criticize police officers who did something wrong, and there is no excuse for that. However, it is necessary to seriously consider the "people variables", "political variables", and "legal variables" that make just activities of the police impossible.

#### **3.2.1. People variable**

The people should trust the police. The police are on the side of law-abiding citizens and relatively weak people among the people. Those who hate the police are criminals and offenders. Those who commit crimes frequently criticize and condemn the police, making it difficult for the police to engage in just activities. The absolute majority of ordinary people and relatively weak people must clearly be on the side of the police. You should not disparage and criticize the police recklessly.

Only when public trust in the police is premised can the police work in a free and just way.

As a front-line public administrative agency, the police directly deal with and contact citizens. These are routine investigations and crime prevention missions. In this process, a certain relationship is formed between the police and citizens, and this relationship determines the trust of the police.

It is not until the moment when people encounter murder cases and are subjected to violence to seek the help of the police. When people are struggling and in trouble, they look for the police. However, even if only a small police corruption is found, they criticize and accuse the entire police.

#### **3.2.2. Political variable**

The police who practice justice must remain politically neutral. However, at the request of politicians, or voluntarily, more and more police officers are expressing their political tendencies.

For the police to be politically neutral, first, it is necessary to prepare an institutional foundation that guarantees political neutrality. Second, we need a democratic government that guarantees the political neutrality of the police. Third, it is necessary to make efforts by the police themselves to make the political neutrality of the police a tradition and establish it as a culture.

A citizen-friendly, human rights-friendly democratic government directly On the other hand, non-democratic governments are not friendly to police reform and police reform. promotes police reform and creates a favorable environment for police innovation. It ignores the main task of police reform and is lukewarm about innovation[19].

This is because they are trying to maintain the government by controlling and using the police. It is the productivity of politics that has a greater impact on the trustworthiness of the police than the character of the government.

If politics has high productivity and efficiency, then most social problems can be solved with politics. Many conflicts can be resolved with political leadership. But Korean politics is not like

that. The incompetence of Korean politics affects society and the police to a greater extent than the character of the government.

Political incompetence leads to distrust of the police. The incompetence of politics makes politics distanced and politics becomes individual law. People are coming out on the streets, and there are complaints and accusations. If this happens, the police will take over the politics, and distrust of politics will be transferred to the police.

At this time, if the police move along with the political power, distrust in the police will expand. If the police have autonomy and conduct independent administration, the distrust of the police is separate from the distrust of politics. It is a time when we need an autonomous police award in a democratic society.

Some politicians show a desire to make the police work for the state and the people faithful to their own political factions or to mobilize them to pursue ideologies in their favor. They recklessly enact and revise police-related laws and try to interfere excessively with police activities. They are distrustful of the police's autonomous and just activities and try to impose sanctions from time to time[20].

Political problems in Korea are often mistaken for police problems and affect the distrust of the police. As long as there is a close relationship between politics and society and the Korean police, you need to properly analyze politics and society to determine the exact status of the police. Through this, it is possible to identify elements of distrust that the police do not need to receive.

The extreme division of politics also afflicts the police. Political rallies and demonstrations at the National Assembly, political parties, and Gwanghwamun always make the police nervous. Political variables in the gaps between left and right, conservative and progressive, pro-Japanese and anti-Japanese, pro-American, and anti-American are affecting the reliability of the police[20].

### **3.2.3. Legal variable**

The police need to prevent crimes and suppress criminal acts in advance. However, laws and regulations based on human rights in the democratic era make it difficult for the police to respond in advance and take autonomous safety measures.

Many activities necessary for public safety, crime suppression, and security must be based on the autonomous judgment of the police[21].

However, the police cannot play a proper role in a situation where the justice and the legitimacy of the police have not been guaranteed in advance.

Adjustment of investigative power is also possible on the premise of trust in the police. However, it will be difficult to adjust the investigative power in a situation where the police trust is disparaged by expanding and interpreting the misconduct of very few police officers.

## **4. How to Improve the Reliability of the Korean Police**

The police act for the purpose of maintaining the safety, order, and property protection of the people. To this end, prevention, investigation, and suppression of criminal activities are prioritized. Article 3 of the Police Act presents the duties of the national police as follows.

- Protection of people's lives, bodies, and property
- Prevention, suppression, and investigation of crime
- Protection of crime victims
- Security guards, major personnel guards, and counter-terrorism operations
- Collection, preparation, and distribution of information to prevent and respond to risks to public well-being
- Traffic control and prevention of traffic hazards

- International cooperation with foreign government agencies and international organizations
- Maintaining the public well-being and order

All of this is inevitably related to the human desire for survival. All the people lead their lives, believing in the police. Police should be reliable to all citizens.

The police should be reliable and trustworthy.

#### **4.1. Strengthening police capabilities**

A professional police officer is also a police award that the people demand. When the police are competent and faithful to their mission, they can earn the trust of the people. Competent professional police officers are especially needed in today's society.

Modern society is a risk society. Urbanization, globalization, organization, informatization, centralization, diversification, and increased interdependence and mobility have made society an extremely dangerous society [22].

A tiny computer program malfunction can cause a plane to crash, and a tiny virus can become a national catastrophe. There is a need for competent professional police officers who can respond quickly and accurately to large-scale disasters while responding appropriately to the diversifying demands for security.

To this end, scientific policing is required to enhance information judgment and analysis capabilities.

The police must have the power and capabilities necessary for protecting the lives of the people, maintaining order, and preventing crime.

Police capabilities include coercion against violators of laws; physical power to overpower criminals; the ability to use guns, knives, or tools for arresting criminals; cool-headed rationality, reasoning, and extensive wisdom necessary for crime prevention and investigation. These competencies are required by the overall police organization rather than by all police officers at the individual level. When these capabilities are considered sufficient, the people trust the police [23].

#### **4.2. Police bureaucracy**

The police must be strict enough to be responsible for the enforcement of laws and regulations, hierarchical order, and the spirit of following orders. The illegal crime groups are organized like gangsters, have a strict hierarchical order, and possess tremendous destructive power. Therefore, the police responding to this must also be an organization with a strict hierarchy [24].

The police are a rank-oriented organization. The police bureaucracy, a rank-oriented one, must have a strict system of command and following orders.

The police exist for the "people and state." Since all efforts must be made to maintain public safety and national order, the police must always think from the perspective of the people and devote themselves to the people.

Article 4 of the Police Act stipulates, "When performing its duties, the national police respect the freedom and rights of the people in accordance with the Constitution and laws, must protect fairness and neutrality as service providers to the entire people, and shall not abuse the granted authority."

If the police stick to these conditions, the people will trust and support them.

#### **4.3. The legitimacy of police activities**

Police activities must be justified against the people and the state.

Justification means acting in accordance with laws or organizational rules but always maintaining correct and straight demeanor.

In a situation where all possible cases of cases that may occur in the process of performing police work cannot be set by law, justice can be a standard of police behavior. This process must be fair and not narrow, and careful in determining what is just and right[25].

It seeks to find the possibility of restoring trust in the police in the "protection of crime victims" stipulated in Article 3 of the Police Act and Article 2 of the Police Officer's Job Execution Act.

Until now, the police have put all the efforts to arrest criminals and secure evidence. However, from now on, police capabilities against crime victims can be exercised.

Looking at the Criminal Procedure Act, it is easy to find various devices to protect criminals in the entire process, including the police stage, the prosecution stage, the court stage, and the correction stage[26].

The police have only been interested in arresting criminals and sending them to the prosecution during the investigation. As a result, it was not easy to show a positive image to the people. The police will be able to restore trust to the people when it becomes a reality with an interest in protecting crime victims.

## 5. Conclusion

The starting point for trust in the police is consolidated into one. They are gathered as autonomous police officers in a democratic society. Only the autonomous police in a democratic society can build trust in the police[27].

The autonomous police in a democratic society are first members of a democratic society. The Korean society the police are in, and the Korean society the police are supposed to belong to is a democratic society. In a non-democratic society, the police do not exist for citizens. Only in a democratic society can the police work with citizens and residents and gain their trust. The police should be reformed according to the changes in society and become a human rights police officer.

The police need to change and reform in line with the already developed and developing democratic and human rights society. It must also respond to new security demands to control and prevent risks. However, it should not be misunderstood as an obligation to unconditionally comply with the demands of citizens or residents. However, we must not forget that the fundamental power of the police comes from the citizens.

Building trust in the police is fundamentally up to the police. And the starting point is a change in the perception of the police itself. The trust in the police will only begin when policies are established and implemented to enter the citizenry by establishing an autonomous police image in a democratic society, and when high-ranking police officers are competent and successful in doing this[28].

So far, the factors that deteriorate the reliability of the Korean police were analyzed and measures to improve the reliability of police work were examined.

Due to people variables, political variables, and legal variables in police affairs, it is difficult to increase public trust in many ways. In particular, unlike other administrative agencies, due to the nature of police work, it is difficult to get close to the people due to the nature of tasks with strong regulations such as control and crackdown on the people rather than public benefit work.

However, if such police work is regulated from the perspective of individual citizens, there may be complaints or grievances, but in general, the inevitability is recognized from the perspective of the entire people. Therefore, there is a need to harmonize with the question of the necessity and inevitability of police regulation and how to minimize public complaints and grievances.

In other words, it is necessary to strictly follow the principles in handling police affairs and comply with the prescribed legal procedures in the process. In addition, it is considered that the

most priority is not to lose trust in the people through a fair and kind attitude when handling police affairs.

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# 7. Appendix

## 7.1. Authors contribution

Initial name		Contribution
Author	DP	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

Publisher: J-INSTITUTE  
ISSN: 2423-8260

Website: j-institute.org  
Editor: admin@j-institute.org

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DOI Address:  
dx.doi.org/10.22471/disaster.2021.6.4.47

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## A Study on Antecedent Variables Affecting University Students' Job Preparation Behavior Under the COVID-19 Situation

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### Abstract

**Purpose:** Even before COVID-19, students majoring in airline services had to face high competition every time to get a job as an airline cabin attendant. However, students are having more difficulty preparing for employment due to the external situation of COVID-19. Therefore, when university students strive to achieve long-term goals, it is important to study the preceding factors that can overcome these crises and achieve significant results in job preparation behavior despite the influence of external environments such as COVID-19.

**Method:** The grit measurement tool used eight simple scale questions consisting of four passionate questions and four perseverance questions. Resilience is defined as positivity, sociability and control. The 15 questions from RQT(Resilience Quotient Test) measurement tool were applied. Job preparation behavior consists of preliminary job preparation behavior(6 questions) and full-fledged job preparation behavior(5 questions). Multiple regression analysis was conducted to verify the hypothesis.

**Results:** The grit(passion) of university students majoring in airline service had a significant effect on all job preparation behaviors(preliminary job preparation behavior, full-fledge job preparation behavior). Grit(perseverance) had no significant effect on all job preparation behaviors. Students' resilience(positivity) had a significant effect on both job preparation behaviors. However, resilience(control) had a significant effect only on full-scale job preparation behavior and resilience(sociability) had no significant effect on job preparation behavior. Student's grit(passion) had a significant effect on resilience (positivity, sociability, control). Students' grit(perseverance) only had a significant effect on resilience(control). Students' resilience(positivity) only had a significant effect on grit(passion). Student's resilience(control) had a significant effect on grit(passion, perseverance).

**Conclusion:** The prolonged COVID-19 has hit the aviation industry at almost a disaster level. Therefore, more efforts from departments and university are required for students preparing for cabin crew employment in the long term. This study confirmed that the grit of students is a variable that precedes resilience and job preparation behavior. Therefore, in order for students to prepare well for employment, departments need emotional support in the educational environment and develop programs that can increase their grit while attending school. First of all, it is important for the department to allow students to participate in various major-related programs and maintain their passion, and to experience a sense of accomplishment through the process. This successful experience will be a driving force for students to keep their steady efforts. In this study, grit(perseverance) did not affect job preparation behavior but perseverance affect resilience(control) and control affect full-fledged job preparation behavior. Therefore, universities and departments should strive to develop curriculum and non-curricular programs that can increase student control. Also emotional support in the educational environment is important in order for students to develop the ability to work independently and have the belief that they can do well on their own. When these successful experiences are accumulated, students will have the strength to overcome difficulties by activating their positive psychological resources even when difficulties arise. As a result, these efforts of departments and schools have a positive effect on job preparation behavior.

**[Keywords]** Job Preparation Behavior, Grit, Resilience, Student Majoring Airline Service, Covid-19

## 1. Introductions

Before COVID-19, new airlines continued to be launched in the Korean aviation industry. These new airlines and existing large airlines hired a large number of cabin crew due to the expansion of new routes and increased number of flights, which increased by about 82% from 8,246 in 2003 to 14,178 in 2019[1]. Since 1998, UAE Airlines in the Middle East began hiring Korean cabin crew, and six Middle Eastern airlines hired Korean cabin crew in large numbers[2]. 6 airlines in Europe and the Americas, 8 airlines in Northeast Asia, and 8 airlines in Southeast Asia also hired Korean cabin crew consistently[2].

This led to an increase in demand for professional personnel such as cabin crew, and the Department of Airline Service was newly established at four-year universities and colleges nationwide. As of 2021, there are 43 departments in four-year universities and 54 departments in colleges. However, there are no major restrictions on the qualifications for the airline cabin crew recruitment test, so non-major students from 339 universities across the country can also apply. This is also the reason why the competition rate for cabin crew employment is high. In fact, the recruitment of cabin crew was not an easy process even before COVID-19. This is because when airlines hire flight attendants, they look at the various competencies required to perform their duties. This competency is slightly different when hiring cabin crew members for domestic and foreign airlines. In a previous study examining the recruitment criteria for cabin crew in domestic airlines, [1]divided four tiers: job competency, service competency, self-development, and applicant characteristics, and composed a total of 12 sub-factors with three sub-variables in each tier. [3]studied external evaluation items such as sophisticated image, bright smile, honorifics, Situational language proficiency, voice, and facial expressions. In addition, the study on the recruitment criteria for cabin crew of foreign airlines is as follows. [2]drew priorities by applying expert interview techniques for external factors(9 sub-items), personality qualities and attitudes(9 sub-items), mother tongue and second language skills(4 sub-items), and experience and qualification conditions(6 sub-items).

However, To make matters worse, university students majoring in airline services are having difficulties in preparing for employment due to external variables such as COVID-19. Therefore, it is important for departments with the goal of nurturing service professionals to find preceding factors that can affect students' job preparation behavior. However, it is not easy to acquire the competencies revealed in the research required for cabin crew of domestic and foreign airlines in a short period of time. This is because the above competency is not the result obtained by taking the written test after memorization, but the result obtained in the process of self-reflection and learning through various experiences, mistakes, and failures. In addition, the necessary competencies for cabin crew can be experienced and learned only when they belong to relationships or organizations with others. Therefore, students majoring in airline service need to make steady efforts to become cabin crew. That is why grit, which is explained by passion and perseverance, is important for students to achieve long-term goals[4][5][6]. In particular, when an external variable situation such as COVID-19 occurs, students need the strength to respond flexibly to negative environmental factors and adapt well to internal and external stress[7]. Among these strength, the variable that recent research[6][7] is paying attention to is resilience. However, studies on grit and resilience variables have not been actively conducted in studies targeting university students majoring in airline services. As society becomes more complex, technology advances, and life expectancy increases, resilience becomes an important variable to pay attention to[8].

Therefore, the purpose of this study is to investigate the effect of grit and resilience, which have not yet been actively dealt with, on job preparation behavior for university students majoring in airline service. It also aims to investigate the relationship between grit and resilience. Therefore, this study is to identify the preceding factors that can have a good effect on job preparation behavior even if university students majoring in airline service strive to achieve long-term goals and face a crisis such as COVID-19.

## 2. Theoretical Background

### 2.1. Grit affects job preparation behavior

Grit consists of two factors: passion, which is continuous interest, and steady effort. Passion, which is a continuous interest, means maintaining interest in a specific goal, and steady effort refers to the degree to which one perseveres and strives to achieve the goal[4].

Grit refers to maintaining a long-term passion and continual interest toward a higher and more challenging goal that one has set, in the sense of overcoming failure or adversity and succeeding. Job preparation behavior is the process and action to set goals to achieve the desired job and to prepare for improving the competency required by the job to achieve the goal[9][10].

The concept of job preparation behavior was specifically established by[9][11] and divided into 2 sub-variables. Preliminary job preparation behaviors include credit management, official English proficiency and certification acquisition, vocational education and training, and internship experience in the field of interest. Full-fledged job preparation actions are divided into submission of resume to the desired company, taking an exam, and taking an interview. People who find clear goals and meaning are more likely to be more flexible and proactive in their career-related work. Therefore, if university students who are preparing for a job have the grit to work steadily toward their goal, they can better prepare for the job[12]. Accordingly, the following hypotheses were derived based on various previous studies [12][13] that grit affects job preparation behavior.

H1. Grit of university students majoring in airline service will have a significantly positive(+) effect on job preparation behavior.

### 2.2. Resilience affects job preparation behavior

Resilience refers to the ability to recover from stress, the ability to adapt to a stressful situation, and the ability to perform above-average functions despite severe adversity[14]. Resilience is not an innate ability that only special people have, but it can be acquired during development[15].

Resilience is explained by the concepts of positive emotional temperament[16][17], sociability and internal control[16][18][19]. Students with high positivity and sociability, one of the sub-concepts of resilience, have a high ability to adapt to employment-related variables[17]. Internal control, one of the sub-concepts of resilience, is an important construct in understanding human behavior. For example, some people succumb to negative emotions when faced with uncertain situations or difficulties, while others choose challenges to actively deal with them. As evidenced by this, the internal sense of control in university students showed a significant effect on the work environment[18], career involvement behavior, and career adaptability[19].

H2. Resilience of university students majoring in airline service will have a significantly positive(+) effect on job preparation behavior.

### 2.3. Grit affects resilience

Job preparation behavior is the process and action of setting goals to achieve desired job and preparing to improve the competencies required by the job to achieve the goal[9]. However, the prolonged COVID-19 disaster froze the job market in the aviation industry. Many countries are on the verge of a transition to "with COVID-19" thanks to vaccination and treatment development. However, the slump in the long-term job market is having a serious negative impact on the job preparation behavior of aviation service majors. Therefore, the importance of grit and resilience is emerging as antecedent variables that can have a positive effect on the employment preparation behavior of aviation service majors. In particular, these two variables are a very important individual's internal competency among the core competencies required for talents in the 21st century[12].

Duckworth says Grit is similar to resilience in that it overcomes failure or adversity, but resilience is

the ability to restore it to its original state, while grit maintains long-term passion and continues to pay attention to higher challenging goals. Accordingly, the following hypothesis was derived based on previous studies[12][20][21] that the higher the grit, the higher the resilience.

H3. Grit of university students majoring in airline service will have a significantly positive(+) effect on Resilience.

## 2.4. Resilience affects grit

Students face a variety of challenges as they pursue long-term goals to achieve their career goals. At this time, resilience is the power to flexibly cope with various situations and grow by itself by showing the ability to lead the environment in a favorable direction, and there are many studies proving that this resilience directly affects grit[6][22].

Therefore, resilience can be assumed to be a leading factor influencing the achievement of long-term goals by developing this ability through continuous learning when students achieve long-term goals. Accordingly, the following hypothesis was derived.

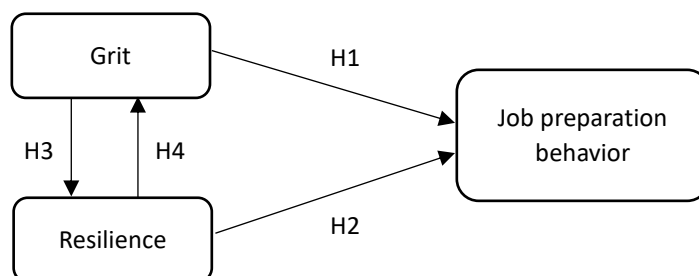
H4. Resilience of university students majoring in airline service will have a significantly positive(+) effect on Grit

## 3. Research Design

### 3.1. Research model

This study designed the research model as follows to empirically analyze the relationship between grit, resilience, and job preparation behavior.

**Figure 1.** Research model.



### 3.2. Manipulative definition of variables and questionnaire composition

Grit is divided into passion and perseverance. Passion is a state of interest and maintenance, and perseverance is a state of continuous effort. The grit measurement tool used eight simple scale questions consisting of four passionate questions and four perseverance questions constructed by[23].

Resilience is defined as positivity, sociability and control. Positivity means recognizing and empathizing with positive expectations, beliefs that they can be resolved, and other people's feeling Sociability is the ability to establish and maintain smooth interpersonal relationships by understanding and empathizing with other people's minds and emotions. Control is recognizing and controlling one's emotions. The RQT(Resilience Quotient Test) measurement tool developed by [24] was supplemented by[19] to suit the Korean situation, and [25] used a 15-item scale among them. In this study, 15 questions of [25] were applied.

Job preparation behavior is the process and behavior of preparing the necessary competencies for employment in order to increase the possibility of the desired employment[26].

Revised and supplemented the scale used by [9] and applied it to university students majoring in airline service. It was measured on a Likert 5-point scale using the measurement items of preliminary job preparation behavior(6 questions) and full-fledged job preparation behavior(5 questions).

### **3.3. Data collection and analysis methods**

This study was conducted as an online survey targeting university students majoring in airline service. 212 questionnaires out of 230 were used for the final analysis except for 16 questionnaires whose answers were insincere. The collected data were analyzed with SPSS 21.0 Statistics Program. First, Demographic characteristics were confirmed by frequency analysis. Second, an exploratory factor analysis was conducted to validate the validity of the measurement tool, and the cronbach's  $\alpha$  coefficient was calculated for reliability verification. Third, the mean and standard deviation of major variables were confirmed by descriptive statistical analysis, and the correlation between each variable was confirmed by correlation analysis. Fourth, hypothesis verification was conducted with multiple regression analysis.

## **4. Empirical Analysis Result**

### **4.1. General characteristics of respondents**

As a demographic feature of the sample, the gender was 41 males(19%) and 171 females(79%). The number of people by grade is as follows. 95 students(44%) in the first grade, 63 students(29.2%) in the second grade, 39 students(18.1%) in the third grade, and 15 students(6.9%) in the fourth grade. The school type is distributed to 36 students(16.7%) from colleges and 176 students(81.5%) from four-year colleges, followed by 75 students(34.7%) in North Choongcheong Province, 66 students(30.6%) in Gangwon Province, 48 students(22.3%) in South Choogcheong Province, and 23 students(10.6%) in Seoul.

### **4.2. Validation and reliability of measurement tools**

The feasibility and reliability verification results for the grit are as follows. First, the KMO value was 0.81 and the result of the Bartlett sphericity test was  $\chi^2=503.765(df=28, p=.000)$ , indicating that the selection of variables for factor analysis was good. A total of two factors were extracted, and the cumulative distributed explanatory power was 61.1%, with 31.3% of passion and 29.8% of perseverance for each sub factor. The factor loading of the two factors was 0.70 or higher, indicating that the validity of the construct was verified, and the reliability was also higher than 0.75, indicating no problem. The resilience are as follows. First, the KMO value was 0.916 and the result of the Bartlett sphericity test was  $\chi^2=1395.598(df=91, p=.000)$ , indicating that the selection of variables for factor analysis was good. A total of two factors were extracted, and the cumulative distributed explanatory power was 56.3%, with 45.881% of positivity and 10.4% of control for each sub factor. The factor loading of the two factors was 0.60 or higher, indicating that the validity of the construct was verified, and the reliability was also higher than 0.65, indicating no problem.

The job preparation behavior are as follows. First, the KMO value was 0.859 and the result of the Bartlett sphericity test was  $\chi^2=882.521(df=55, p=.000)$ , indicating that the selection of variables for factor analysis was good. A total of two factors were extracted, and the cumulative distributed explanatory power was 55%, with 27.892% of preliminary job preparation behavior and 27.693% of full-fledged job preparation behavior for each sub factor. The factor loading of preliminary job preparation behavior is 0.60 or higher, and full-fledged job preparation behavior is 0.54 or higher, indicating that



the validity of the construct was verified, and the reliability was also higher than 0.60, indicating no problem.

### 4.3. Hypothesis validation

Prior to hypothesis testing, correlation analysis between each variable was performed. All variables showed positive correlations.

**Table 1.** Correlation matrix.

	1	2	3	4	5	6	7
1. Passion	1						
2. Perseverance	.359**	1					
3. Control	.498**	.306**	1				
4. Sociability	.359**	.186**	.520**	1			
5. Positivity	.443**	.173*	.539**	.643**	1		
6. Preliminary job preparation behavior	.540**	.185**	.353**	.378**	.486**	1	
7. Full-fledged job preparation behavior	.263**	.014	.329**	.271**	.325**	.446**	1
Average	3.9505	2.9469	3.6792	4.1783	4.1774	4.1085	3.2698
Standard deviation	.69265	.85630	.79001	.64441	.68308	.74586	.92385

Note: \*\*p<.001.

#### 1) The effect of grit on job preparation behavior

Multiple regression analyses were conducted to verify the effect of a student's grit on preliminary job preparation behavior, and the regression model was described as 28.5% and the regression equation was statistically significant ( $F=42.958$ ,  $p<.001$ ). Passion among independent variables ( $\beta=.585$ ,  $p<.001$ ) has a statistically significant positive effect on preliminary job preparation behavior of students, so a higher passion among the grit also increases the student's preliminary job preparation behavior.

The effect of grit on full-fledged job preparation behavior, and the regression model was described as 6.8% and the regression equation was statistically significant ( $F=8.671$ ,  $p<.001$ ). Passion among independent variables ( $\beta=.395$ ,  $p<.001$ ) has a statistically significant positive effect on full-fledged job preparation behavior of students, so a higher passion among the grit also increases the student's full-fledged job preparation behavior.

**Table 2.** Hypothesis 1 verification.

Dependents variable	Independents variable	Unst. coefficients		St. coefficients	t	p	Multicollinearity	
		B	SE.	$\beta$			Tolerance	VIF
Preliminary job preparation behavior	(Constant)	1.823	.260		7.020	.000		
	Passion	.585	.067	.543	8.709***	.000	.871	1.148
	Perseverance	-.009	.054	-.010	-.160	.873	.871	1.148
	R=.540, R <sup>2</sup> =.291, Adj R <sup>2</sup> =.285 F=42.958, p=.000, Durbin-Watson=2.024							
Full-fledged job preparation behavior	(Constant)	2.002	.367		5.451	.000		
	Passion	.395	.095	.296	4.159***	.000	.871	1.148
	Perseverance	-.099	.077	-.092	-1.291	.198	.871	1.148
	R=.277, R <sup>2</sup> =.077, Adj R <sup>2</sup> =.068 F=8.671, p=.000, Durbin-Watson=1.660							

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

## 2) The effect of resilience on job preparation behavior

Multiple regression analyses were conducted to verify the effect of a student's resilience on preliminary job preparation behavior, and the regression model was described as 24.1% and the regression equation was statistically significant ( $F=23.310$ ,  $p<.001$ ). Positivity among independent variables ( $\beta=.411$ ,  $p<.001$ ) has a statistically significant positive effect on preliminary job preparation behavior of students, so a higher positivity among the resilience also increases the student's preliminary job preparation behavior.

The effect of resilience on full-fledged job preparation behavior, and the regression model was described as 12.8% and the regression equation was statistically significant ( $F=11.290$ ,  $p<.001$ ). Positivity ( $\beta=.252$ ,  $p<.01$ ), Control ( $\beta=.240$ ,  $p<.01$ ) have a statistically significant positive effect on full-fledged job preparation behavior of students, so a higher resilience increases the student's full-fledged job preparation behavior.

**Table 3.** Hypothesis 2 verification.

Dependents variable	Independents variable	Unst. coefficients		St. coefficients	t	p	Multicollinearity	
		B	SE.	$\beta$			Tolerance	VIF
Preliminary job preparation behavior	(Constant)	1.629	.317		5.146	.000		
	Control	.103	.070	.109	1.480	.140	.658	1.519
	Sociability	.092	.094	.079	.973	.332	.544	1.839
	Positivity	.411	.090	.376	4.564***	.000	.529	1.890
	R=.502, R <sup>2</sup> =.252, Adj R <sup>2</sup> =.241 F=23.310, p=.000, Durbin-Watson=2.098							
Full-fledged job preparation behavior	(Constant)	1.070	.420		2.545	.012		
	Control	.240	.093	.205	2.588**	.010	.658	1.519
	Sociability	.063	.125	.044	.504	.615	.544	1.839
	Positivity	.252	.120	.187	2.112*	.036	.529	1.890
	R=.374, R <sup>2</sup> =.140, Adj R <sup>2</sup> =.128 F=11,290, p=.000, Durbin-Watson=1.557							

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

## 3) The effect of grit on the resilience

Multiple regression analysis was performed to investigate the effect of student's grit on positivity. Regression model was described as 26.0% and the regression equation was statistically significant ( $F=37.991$ ,  $p<.001$ ). Passion among independent variables ( $\beta=.508$ ,  $p<.001$ ) has a statistically significant positive effect on positivity of students, Perseverance ( $\beta=.135$ ,  $p<.01$ ) has a statistically significant positive effect on positivity of students, so a higher grit increases the student's control. The effect of grit on sociability, Regression model was described as 12.4% and the regression equation was statistically significant ( $F=15.951$ ,  $p<.001$ ). Passion ( $\beta=.311$ ,  $p<.001$ ) has a statistically significant positive effect on sociability of students, so a higher passion increases the student's sociability. Grit on sociability, Regression model was described as 12.4% and the regression equation was statistically significant ( $F=15.951$ ,  $p<.001$ ). Passion ( $\beta=.311$ ,  $p<.001$ ) has a statistically significant positive effect on sociability of students, so a higher passion increases the student's sociability.

The effect of grit on positivity, regression model was described as 18.9% and the regression equation was statistically significant ( $F=25.605$ ,  $p<.001$ ). Passion ( $\beta=.432$ ,  $p<.001$ ) has a statistically significant positive effect on positivity of students, so a higher passion increases the student's positivity.

**Table 4.** Hypothesis 3 verification.

Dependents variable	Independents variable	Unst. coefficients		St. coefficients	t	p	Multicollinearity	
		B	SE.	$\beta$			Tolerance	VIF
Control	(Constant)	1.274	.280		4.553	.000		
	Passion	.508	.072	.446	7.024***	.000	.871	1.148
	Perseverance	.135	.059	.146	2.299*	.022	.871	1.148
	R=.516, R <sup>2</sup> =.267, Adj R <sup>2</sup> =.260 F=37.991, p=.000. Durbin-Watson=2.002							
Sociability	(Constant)	2.801	.248		11.280	.000		
	Passion	.311	.064	.335	4.851***	.000	.871	1.148
	Perseverance	.050	.052	.066	.962	.337	.871	1.148
	R=.364, R <sup>2</sup> =.132, Adj R <sup>2</sup> =.124 F=15.951, p=.000. Durbin-Watson=1.850							
Positivity	(Constant)	2.435	.253		9.615	.000		
	Passion	.432	.065	.438	6.590***	.000	.871	1.148
	Perseverance	.013	.053	.016	.241	.810	.871	1.148
	R=.444, R <sup>2</sup> =.197, Adj R <sup>2</sup> =.189 F=25.605, p=.000, Durbin-Watson=1.869							

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

#### 4) The effect of resilience on the grit

Multiple regression analysis was performed to investigate the effect of student's resilience on passion. Regression model was described as 28.1% and the regression equation was statistically significant ( $F=28.513$ ,  $p<.001$ ). Control ( $\beta=.316$ ,  $p<.001$ ), Positivity ( $\beta=.240$ ,  $p<.001$ ) have a statistically significant positive effect on passion of students, so a higher resilience of student increases the student's passion.

The effect of student's resilience on perseverance, Regression model was described as 0.8 28% and the regression equation was statistically significant ( $F=7.241$ ,  $p<.001$ ). Control ( $\beta=.313$ ,  $p<.001$ ) among resilience has a statistically significant positive effect on perseverance of students, so a higher control of student's resilience increases the student's perseverance.

**Table 5.** Hypothesis 4 verification.

Dependents variable	Independents variable	Unst. coefficients		St. coefficients	t	p	Multicollinearity	
		B	SE.	$\beta$			Tolerance	VIF
Passion	(Constant)	1.700	.286		5.942	.000		
	Control	.316	.063	.361	5.013***	.000	.658	1.519
	Sociability	.020	.085	.018	.233	.816	.544	1.839
	Positivity	.240	.081	.237	2.955**	.003	.529	1.890
	R=.540, R <sup>2</sup> =.291, Adj R <sup>2</sup> =.281 F=28.513, p=.000, Durbin-Watson=2.205							
Perseverance	(Constant)	1.611	.400		4.031	.000		
	Control	.313	.088	.289	3.555***	.000	.658	1.519
	Sociability	.057	.119	.043	.477	.634	.544	1.839
	Positivity	-.013	.114	-.010	-.113	.910	.529	1.890

## 5. Conclusion

This study examined the effects of grit and resilience, which are the antecedent variables that affect job preparation behavior, targeting university students majoring in airline services under the COVID-19. Also, the influence of grit and resilience on each other was investigated.

First, it was found that the grit(passion) of university students majoring in airline service had a significant effect on both sub-variables of job preparation behavior(preliminary job preparation behavior, full-fledged job preparation behavior). Although there is no recruitment due to the COVID-19 disaster, it is necessary to continuously provide a variety of major-related programs so that students can maintain their passion for achieving long-term goals. Grit(perseverance) did not have a significant effect on all job preparation behaviors. It can be inferred that there is a mediating variable between grit(Perseverance) and job preparation behavior. Previous research on grit and self-efficacy[6], and results of previous studies on self-efficacy and job preparation behavior[10] support this. It is necessary for the professor to continuously provide encouragement and positive feedback during career guidance so that students can have the belief that they can do well on their own. In addition, it is necessary to provide students with continuous successful experiences through the operation of educational programs to achieve long-term and short-term goals.

Second, Resilience(positivity) of university students was found to have a significant effect on both sub-variables of job preparation. However, resilience(control) affect only on the full fledged job preparation behaviors and resilience(sociability) had no effect on job preparation. [27]states that both factors of positivity and emotional control are important to increase students' resilience. Positivity in other words means being grateful for everything. This study revealed that gratitude is the ability to change lives, and because it comes from a perspective rather than conditions and circumstances, students can look back on what they have been given with a grateful heart, and cultivate gratitude through training just as they build muscles through exercise. Furthermore Preliminary job preparation actions is not something that can be achieved in a short period of time, but it is a goal that must be achieved one by one sequentially during the four years of the major curriculum.

Therefore, resilience(control, sociability) will not be solved by students trying to control themselves, but by preceding "self-efficacy, believing that they can do well on their own," and "self-leadership, the ability to solve things on their own." Thus the department needs to develop positive mind training[28] to relieve and cope with negative emotions such as anxiety and worry in order to cultivate emotional control ability[29], which is a powerful weapon of resilience, and an emotional coaching program to improve emotional control ability[30]. And it is necessary to make time for self-development activities or professional counseling[31]. In addition, in the field of university education, it is suggested that each student is recognized and self-expression is created freely[10], and self-esteem is raised by systematically forming a social support system[29].

Third, in the grit and resilience test, grit(passion) had a significant effect on all resilience sub-variables. Grit(perseverance) only had a significant effect on resilience(control). Resilience(control) had a significant effect on all sub-variables of grit, resilience(positivity) had a significant effect only on the passion of grit.

Summarizing the study results, it can be seen that grit(passion) is a variable that has a significant effect on all variables. Therefore, it is important for universities and departments to make a multi-faceted effort to help students achieve their dreams while maintaining their passion. On the other hand, grit(persistence) did not directly affect job preparation behavior. However, perseverance has a significant effect on resilience(control), and resilience(control) has a significant effect on full-fledged employment behavior. Therefore, it can be seen that self-control is an important variable in the

employment preparation behavior of airline service majors. Because current airline service students must make long-term efforts in the face of external threats such as Covid-19 to achieve their goals. Accordingly, the academic significance of this study is that the importance of control, which has not been interested in previous studies, has been derived. Therefore, universities and departments should strive to develop curriculum and non-curricular programs that can increase student control. Also it suggests that the development of various programs that can enhance the passion and perseverance factors of grit, and the proper implementation of the social environment in the classroom[5] such as school and department level support, can increase the resilience of students. Professors should instill confidence that students can achieve their long term goal even under difficult conditions, encourage them to recognize their self-efficacy and provide positive feedback that they are currently making valuable efforts for their dreams[6]. Furthermore, even when disasters such as COVID-19 occur and online distance education is conducted, two-way communication[32] must be maintained between student-professor, student-department, and student-university. That way, students' grit increases, and resilience increases. This is a way to enable students to prepare well for employment in a crisis situation.

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## 7. Appendix

### 7.1. Authors contribution

	Initial name	Contribution
Lead Author	SL	<ul style="list-style-type: none"><li>-Set of concepts <input checked="" type="checkbox"/></li><li>-Design <input checked="" type="checkbox"/></li><li>-Getting results <input checked="" type="checkbox"/></li><li>-Analysis <input checked="" type="checkbox"/></li><li>-Make a significant contribution to collection <input checked="" type="checkbox"/></li><li>-Final approval of the paper <input checked="" type="checkbox"/></li><li>-Corresponding <input checked="" type="checkbox"/></li><li>-Play a decisive role in modification <input checked="" type="checkbox"/></li></ul>
Corresponding Author*	SA	<ul style="list-style-type: none"><li>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/></li><li>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/></li><li>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/></li></ul>

### 7.2. Funding agency

This research was supported by a Research Grant of Chungwoon University in 2019.

Publisher: J-INSTITUTE  
ISSN: 2423-8260

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: isobcm@gmail.com

DOI Address:  
dx.doi.org/10.22471/disaster.2021.6.4.59

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## Improvement Plan of Framework Act on the Management of DISASTERS and Safety for Effective Evacuation Strategies in South Korea

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### Abstract

**Purpose:** Framework act on the management of disasters and safety is the highest law covering disasters and safety in South Korea. Disaster management infrastructure has been expanded through the enactment and revision of the Framework act on the management of disasters and safety. However, there is still a high awareness that disaster management should be led by the administration. In the modern society, where self-help is emphasized above all else in the event of a disaster, it is difficult to expect effective disaster response through administrative initiative alone. This study intends to review measures to improve Framework act on the management of disasters and safety through evacuation that enables the primary victims, the residents, to respond to disasters most effectively.

**Method:** The items such as 'enhancement of disaster site response capacity' and 'emphasis on the role of local governments in disaster and safety management', which were newly revised in 2015, were reviewed. The problems of the current Disaster Safety Act were reviewed from three perspectives: 'Incomplete disaster prevention administration in case of a disaster', 'Various aspects of local residents for evacuation', and 'Insufficient structure of public-private cooperative system for evacuation'.

**Results:** First, it is necessary to recognize the incompleteness of disaster prevention administration during a disaster. Rather than increasing dependence on the administration, improvement should be made with the direction of how the residents can increase their independence and self-reliance. Second, the evacuation order should be improved to be 'situational information' that informs residents that they are in a situation that makes them think of evacuation, rather than 'action directive type'. Third, the Framework act on the management of disasters and safety should stipulate in detail the establishment and reinforcement of public-private cooperation networks that utilize the capabilities of residents.

**Conclusion:** For effective evacuation in the event of a large-scale disaster, the response capacity between various actors in the local community must be quickly aggregated. In addition, through improvement of the Disaster Safety Act in the future, the evacuation plan should start with reestablishing the relationship between the administration and residents. Residents should be aware of their own role for evacuation, and the administration should have a system that can support it as much as possible.

**[Keywords]** Disaster Response, Correspondence of Administrations, Dependent on Government Response, Correspondence of Inhabitants, Evacuation Plan

## 1. Introduction

Framework act on the management of disasters and safety is the highest law covering disasters and safety in South Korea. Framework act on the management of disasters and safety was created to preserve the land from various disasters and to protect people's lives, bodies, and property. It establishes the disaster and safety management system of the national and local governments, and stipulates disaster prevention, preparedness, response, and recovery, activi-

ties for safety culture, and other matters necessary for disaster and safety management. This Act confirms that it is the basic duty of the state and local governments to prevent various disasters and to minimize damage in case of disasters. According to this Act, when all citizens and the State and local governments engage in acts related to the safety of people's lives and bodies and property protection, they give priority to safety so that the people can live in a society that is safe from disasters..

The Framework act on the management of disasters and safety was to unify the diversified disaster-related laws and to reinforce the functions of generalizing and coordinating the disaster management tasks that were dispersed in each ministry. The Framework act on the management of disasters and safety was amended on December 30, 2014 and partly revised on July 14, 2015 due to problems that appeared in the process of resolving the Sewol ferry disaster in April 2014. Although South Korea's disaster management infrastructure has been expanded through enactment and revision, there is still a strong perception that disaster management should be led by the administration. In particular, in modern society, where self-help is emphasized above all else, it is difficult to expect effective disaster response through administration alone[1][2][3][4][5][6].

In South Korea, guidelines on national behavior by type of disaster are prepared and disseminated at the governmental level for prompt response in the event of a disaster. Natural disasters are classified into 18 categories, such as typhoons, heavy rains, and heavy snowfalls, and the items that people should do in case of disasters are summarized. The main content of the guidelines on national behavior by type of disaster is to explain evacuation tips according to the situation. Although it corresponds to a general rule according to a disaster situation, it is unreasonable to regard it as a universal solution for disaster evacuation that can be applied to all regions of South Korea. Disaster safety conditions and demand differ from region to region. Even if people live in the same area, evacuation methods(evacuation shelters, routes, etc.) may vary depending on the population and characteristics of residence. In the case of local governments in South Korea, evacuation plans for residents(areas of concern for casualties, etc.) are being prepared according to the guidelines of the Ministry of Public Administration and Security. However, as a uniform preparation plan, regional characteristics are not taken into account, and there are problems such as lack of localization. In this regard, the evacuation plan for residents in South Korea is still in its infancy. While reviewing the Framework act on the management of disasters and safety, this study provides directions for evacuation, one of the non-structural measures that can protect lives from disasters.

In summary, with the enactment of the Framework act on the management of disasters and safety in Korea, disaster management tasks were collectively adjusted and related infrastructure was gradually expanded, contributing to the development of national disaster management. However, administration alone cannot solve disaster management in modern society. The reason is that disasters have become more complex and diversified. In disaster management in modern society, not only the role of the administration but also the role of the residents, who are the primary victims of disasters, is important. Disaster management cannot be effective simply through administrative initiatives. Residents, including administrative and non-governmental organizations or organizations that will be useful for disaster response, should cooperate.

This study examines the role of residents regarding evacuation, which can be the primary action for disaster response among disaster management strategies. Evacuation, which is one of the most reliable non-structural measures that can protect human life from disasters, may not be enough to simply follow the evacuation order of the administration. This is not to encourage individual actions that do not have on-the-ground information. Control according to the administrative disaster order must be maintained. In other words, it is undesirable to excessively depend on the administration in performing the role of residents as important as the role of administration in a disaster situation. It is necessary to develop a self-reliant awareness of local residents to take an interest in identifying local risks and to respond to disasters.

## 2. Framework Act on the Management of Disasters and Safety and Evacuation

### 2.1. Composition and major revisions of framework act on the management of disasters and safety

Framework act on the management of disasters and safety was enacted in South Korea after Typhoon Rusa in 2002 and the Daegu subway arson accident in 2003. It is a positive law enacted to realize the spirit of the Constitution. It has a status as a basic law over other related laws by stipulating essential and common matters for disaster and safety management.

Framework act on the management of disasters and safety consists of a total of 10 chapters. Chapters 2 and 3 define administrative functions and plans for disaster management, and Chapters 4 to 7 deal with disaster prevention, preparedness, response, and recovery, which are the 4 stages of disaster management. Chapter 8 focuses on Policies for Promotion of Safety Culture in South Korea.

**Table 1.** Composition of framework act on the management of disasters and safety.

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CHAPTER 1. GENERAL PROVISIONS
CHAPTER 2. SAFETY MANAGEMENT ORGANIZATIONS AND FUNCTIONS
CHAPTER 3. SAFETY MANAGEMENT PLANS
CHAPTER 4. PREVENTION OF DISASTERS
CHAPTER 5. PREPARATION FOR DISASTERS
CHAPTER 6. DISASTER RESPONSE
CHAPTER 7. RESTORATION OF DISASTERS
CHAPTER 8. PROMOTION OF SAFETY CULTURE
CHAPTER 9. SUPPLEMENTARY PROVISIONS
CHAPTER 10. PENALTY PROVISIONS
ADDENDA

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Among the newly revised items from 2014, the main issues related to disaster sites and local governments are as follows.

First, it is the enhancement of disaster site response capabilities.

In Framework act on the management of disasters and safety Article 52, It was stipulated that the head of a emergency rescue control group (fire chief, land disaster) and the chief of a regional rescue center (the head of Coast Guard, maritime disaster) should exercise on-the-spot command for emergency rescue.

Specifically, 1. Directing and controlling the operation of personnel, materials, and equipment of the emergency rescue staff and emergency rescue agencies, 2. "head of a local countermeasure headquarters, head of consolidated support headquarters cooperates with fire chiefs in emergency rescue activities." 3. Designation of a dedicated public office for media briefing at the disaster site 4. Consultation with the head of consolidated support headquarters when emergency rescue activities are completed, and notification to the head of a local countermeasure headquarters 5. In the early stage of a disaster, prevention of confusion and Reinforcement of expertise in rescue operations.

Second, the role of local governments in disaster and safety management was emphasized. Local governments were allowed to supervise the safety inspections. According to Article 27, the owner of the building notifies the result of the safety inspection to the head of the local government, and the head of the local government is responsible for monitoring and managing the implementation status and appropriateness. According to Article 32-2, public officials performing safety inspections of local governments are allowed to exercise Judicial Police Power. In the event of non-compliance with the duties of the local government head, the Prime Minister or the Minister of Public Administration and Security stipulates that necessary measures, such as an agency warning, be taken (Article 77). In other words, under the principle of local

responsibility, local governments are primarily responsible for disaster and safety management and have overall coordination of disaster management within their jurisdiction.

## **2.2. Key points to evacuation in the framework act on the management of disasters and safety**

The main purpose of the Framework act on the management of disasters and safety is to unify the diversified disaster-related laws and to reinforce the functions of generalizing and coordinating disaster management tasks that have been dispersed in each ministry. Evacuation plans for local governments in South Korea are prepared according to the guidelines of the Ministry of Public Administration and Security.

Since evacuation plans tend to be uniform throughout the country, the reasons for the lack of localization can be said to be various. However, it is worth noting that disaster response is considered to be administrative-led from a macro perspective. The responsibilities of the state expressed in the Framework act on the management of disasters and safety in South Korea are as follows.

*“Article 4(Responsibilities of State, etc.) (1)The State and local governments shall be responsible for protecting lives, bodies, and property of people from disasters or various other accidents, shall endeavor to prevent disasters or various other accidents and to mitigate damage therefrom, and shall formulate and implement plans to promptly deal with and recover from the damage.”*

The responsibilities of citizens under the Act are as follows:

*“Article 5(Obligations of People) People shall fully cooperate with the State and local governments in performing disaster and safety management affairs, and endeavor to protect buildings and facilities they own or use from any disaster or various other accidents.”*

In the Framework act on the management of disasters and safety, disaster response activities are the responsibility of the state, and the people are required to cooperate. This appears to have formed a structure in which the people directly or indirectly depend on the administration for disaster response in a broad framework.

Evacuation is one of the most effective ways to protect lives during disaster response. It can be effectively implemented only when the administration and the local community, the basis of life of the people, cooperate with each other[7][8][9][10]. In the case of evacuation in a large city, it is effective only when the actors of various local communities quickly aggregate their response capabilities after a disaster occurs. If the evacuation plan is applied to a community that has an administrative-dependent disaster response structure, local residents will recognize that evacuation is carried out after receiving disaster information from the administration. In other words, evacuation can be recognized as a passive concept based on administrative recommendations and orders[11][12][13].

Framework act on the management of disasters and safety should be improved from the following three perspectives, away from the concept of administrative dependence.

First, it is necessary to recognize the incompleteness of the administration for disaster response. Currently, most evacuation plans in South Korea deal with administrative-led measures. If an evacuation plan is established in the framework act on the management of disasters and safety as stipulated in the national responsibility and public responsibility structure, it is impossible to escape from the passive aspect of evacuation of residents after the disaster information is transmitted by the administration. Such an evacuation scheme cannot sufficiently respond to local disasters or disasters according to local circumstances. Therefore, in addition to emphasizing the national responsibility for disaster response, an evacuation plan should be prepared that recognizes the incompleteness of disaster administration[14][15].

Second, when evacuating, the diversity of the residents' situation should be considered. The evacuation orders stipulated in the Framework act on the management of disasters and safety are as follows.

*“Article 40(Evacuation Orders) (1)Where it is necessary to prevent any harm to people's lives or physical safety when a disaster occurs or is likely to occur, the head of a Si/Gun/Gu and the*

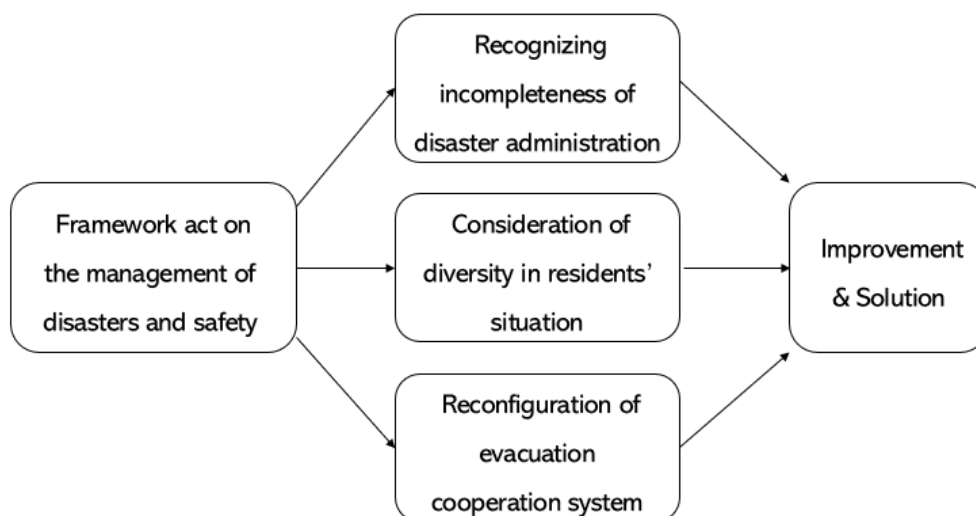
*head of a local control group(limited to cases where the authority prescribed by Presidential Decree is exercised; hereafter the same shall apply in this Article) may order residents or persons within the relevant areas to evacuate or to evacuate vessels, automobiles, etc. In such cases, evacuation shelters may be designated beforehand.”*

According to the Framework act on the management of disasters and safety, the head of the local municipality may order an evacuation and designate an evacuation site. However, issuing uniform disaster information to a specific area cannot guarantee the safety of local residents in the event of a disaster. For example, where localized torrential rains cause rapid flooding, it may be safer for residents to evacuate to the roof of their own building or to a nearby tall building rather than follow Evacuation Orders. This is because the evacuation action that an individual should take may differ depending on the geographical characteristics of the living space, the situation and conditions, etc.[16][17].

Third, a cooperative system for evacuation should be established in advance. In South Korea, the concept of wide-area evacuation has not been actively introduced yet, and the agreement system for cooperation between local governments is insufficient. In addition, it is necessary to construct an evacuation cooperation system by spatially dividing not only within the region but also between regions. In inter-regional cooperation, when large-scale disasters are expected to cause damage across multiple local governments, wide-area evacuation is required. If the operation of evacuation is not prepared in advance through agreements between local governments, etc., a disaster may cause secondary damage[18][19].

The research model for this study is as follows.

**Figure 1.** Research model.



### 3. Legal Policy Improvement Plan

#### 3.1. Awareness of the incompleteness of the administration for disaster response

There may be limitations in the subject of the evacuation order being the head of a Si/Gun/Gu or the head of a local control group. In particular, evacuation of a wide area, which is unfamiliar in South Korea, cannot be responded to with such an evacuation instruction by the head unit. The flow of decentralization in Korean governments gives the head of a Si/Gun/Gu or the head of a local control group the responsibility to protect the lives of local residents, but evacuation is not something to be discussed only from the perspective of decentralization.



Prior to the enactment of the Framework act on the management of disasters and safety, disaster management in South Korea was diversified and disaster management tasks were distributed among ministries. In order to improve this issue, many parts have been defined as administrative initiatives. Conversely, within the framework of the Framework act on the management of disasters and safety, it creates a state of over-administrative dependence. Until now, the idea that disaster prevention is the responsibility of the administration is widespread among residents.

Residents tend to think that they run away after an evacuation order is issued, and that the timing should be informed. In the future, it is necessary to improve the direction of how residents increase their independence and independence, rather than increasing their dependence on the administration. In addition, the more precisely the administrative evacuation order is provided, the stronger the relationship between residents' administrative dependence so far[20][21].

Self-help is divided into subjective self-help and passive self-help, and passive self-help has dependence on receiving information and evacuation. On the other hand, independent self-help is centered on the subjectivity of wanting to protect one's own life or the life of one's family, and based on this, information from the administration can be used well.

### **3.2. Consideration of diversity of residents' situation following evacuation**

Evacuation Orders of Framework act on the management of disasters and safety are issued on a regional basis. Residents in the region have various types of residence, such as single-family houses, high-rise apartments, and country houses. Therefore, the legal structure that guarantees safety through uniform Evacuation Orders should be improved.

Similar to the Framework act on the management of disasters and safety in South Korea, Japan also stipulates the Basic Act on Disaster Control Measures with the term 'evacuation'. There are active studies in which these terms can limit the perception of residents in Japan,. Specifically, both Japan and South Korea call evacuation, but English evacuation is divided into three categories. First, evacuation to protect life in a hurry is evacuation, second, gathering to shelter is sheltering, and third, continuing evacuation in temporary housing is refuse. In other words, evacuation in Evacuation Orders means Sheltering[22][23].

Evacuation is completely different depending on the conditions of each resident, such as location, house structure, and family conditions. Evacuation Orders must be converted into "situational information" that conveys that the residents themselves are in a situation where they can consider evacuation, not the current "action order type". However, in the case of a large-scale disaster, it is also necessary to exert force such as setting a boundary zone in a situation where it is difficult to leave it to the voluntary evacuation of residents[24][25].

### **3.3. Construction of a public-private cooperative system for evacuation**

Through the Framework act on the management of disasters and safety, the 'Central Private-Public Cooperative Safety Management Committee' and 'local private-public cooperative Safety Management committee' is organized and operated, but it is insufficient.

In Article 12-2 of the same law, only the basis for the establishment of the committee was specified, and the regulations on cooperation with the private sector and companies with expertise in disaster prevention in disaster management are insufficient. This may lead to poor participation of local residents. Disasters cannot be dealt with by the administrative capacity, and non-governmental organizations, including residents, or organizations that can respond to disasters other than national organizations often have more local risks that impede evacuation. Therefore, public-private cooperation is essential[26][27][28].

In a large-scale disaster situation that surpasses the administrative capacity, it should be stipulated in more detail on the establishment and reinforcement of a public-private cooperation network that utilizes the capacity of the residents to break away from the administrative-led way of thinking[29][30][31].

**Table 2.** Framework act on the management of disasters and safety improvement measures.

Item	Measures to improve the legal system
Recognition of the incompleteness of the administration for disaster response	<ul style="list-style-type: none"><li>• According to decentralization, the mayor/gun/gu heads are given the responsibility to protect the lives of local residents, but evacuation is not something to be discussed only from the perspective of decentralization.</li><li>• Currently, residents think that they should evacuate after the evacuation order is issued, so they think that the timing should be informed.</li><li>• In the future, rather than increasing the dependence on the administration, it is necessary to improve how residents can increase their independence and self-reliance.</li></ul>
Consideration of the diversity of residents' situations when evacuating	<ul style="list-style-type: none"><li>• Because local residents have various residence types, the legal structure of a uniform evacuation order should be improved.</li><li>• Since evacuation is affected by the conditions of each resident, such as location, house structure, and family conditions, the evacuation order should be improved as 'situational information' rather than 'action directive'.</li></ul>
Formation of a precooperative system for evacuation	<ul style="list-style-type: none"><li>• Currently, the composition of the 'private-public cooperative safety management committee' has only specified the basis for its establishment, and the regulations on cooperation with the private sector and companies specialized in disaster prevention in disaster management are insufficient.</li><li>• The details of strengthening the public-private cooperation network using the capacity of residents should be stipulated in detail.</li></ul>

## 4. Conclusion

Disasters in modern society are becoming increasingly complex, diversified, and large-scale. This study explored ways to improve the Framework act on the management of disasters and safety so that residents can respond independently, away from the administrative-centered evacuation order structure.

Disasters are often difficult to respond to with normal rules. This is because laws such as the Framework act on the management of disasters and safety arise from past experience, but disasters occur beyond experience.

The basic policies for evacuation are stipulated in Article 40(Evacuation Orders) and Article 42(Compulsory Evacuation Measures) of Framework act on the management of disasters and safety. Although the Ministry of Public Administration and Security is preparing an evacuation plan for residents, this is only a description of the universal solution of evacuation and does not deal with the characteristics of each region. An evacuation strategy for disaster response should be a socially viable solution, not a general solution. Disaster conditions and available resources differ from region to region, and even in the same region, differences in evacuation methods must be considered according to the topography and residential characteristics. Evacuation is an important countermeasure to protect human life in the event of a disaster. It can be effective only when various community actors gather their ability to respond quickly and systematically. For this, the following factors should be considered.

First, it is necessary to consider the incompleteness of disaster prevention administration in the event of a disaster. Article 40(Evacuation Orders) of Framework act on the management of disasters and safety stipulates that 'The head of a Si/Gun/Gu and the head of a local control group may order the evacuation of local residents, etc.' However, the situation in which the

evacuation order is not clearly communicated to the residents must also be considered. If an evacuation plan is established with the structure of “evacuation of residents after an administrative order,” there is a risk of being biased toward a passive plan of waiting for an administrative order even in a disaster situation in which residents must evacuate independently.

Second, various aspects of local residents regarding evacuation should be considered. In the event of a disaster, the head of the local government orders evacuation according to the law, but local residents are inevitably in various situations. A uniform evacuation order cannot guarantee the safety of local residents. For example, if flooding is expected due to localized heavy rain, it may be safer for residents to evacuate to the roof of the building where they are located than to evacuate to a designated shelter through an evacuation route.

Third, cooperation and participation of local residents should be considered. Although Article 12-2 of the Framework act on the management of disasters and safety stipulates the 'local public-private cooperation committee', only the basis for the establishment of the committee is specified. The lack of local residents' participation and lack of professionalism are pointed out as problems.

In summary, Framework act on the management of disasters and safety has been enacted and revised through disasters such as Seongsu Bridge Collapse in 1994, Sampoong Department Store Collapse in 1995, and Sewol Ferry Disaster in 2014 and an institutional mechanism to control disasters was also prepared. However, disasters in modern society are becoming more complex, diversified, and large. Administrative-led disaster management has limitations in efficiently responding to disasters in modern society. The future evacuation plan requires reestablishing the relationship between the administration and the residents, and the residents should be aware of their own role for evacuation, and the administration should have a system that can support it as much as possible.

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	JC	-Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/> -Make a significant contribution to collection <input checked="" type="checkbox"/>
Corresponding Author*	CC	-Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	DL	-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/> -Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

### 6.2. Funding agency

This Work is Financially Supported by Ministry of the Interior and Safety as 「Business Continuity Management(BCM) Human Resource Development Project」.

Publisher: J-INSTITUTE  
ISSN: 2423-8260

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: hjt6302@naver.com

DOI Address:  
dx.doi.org/10.22471/disaster.2021.6.4.69

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## The Current Situation and Countermeasures of Cyber Crime Under the Korean PENDEMIC: Focused on the Northern Gyeonggi Province Investigation

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### Abstract

**Purpose:** In this study, the actual situation of cyber crimes under the pandemic situation of 12 police stations under the Gyeonggi Northern Police Agency, which occurred mainly in the northern Gyeonggi province, was investigated, and the countermeasures were studied by identifying how users' motivations for using them affect their perception of criminal behavior.

**Method:** Based on this, the study is meaningful in that it provides basic data for preventing future cyber crimes and responding to cyber crimes. Although the Korean police only exposed the actual situation of cyber direct transaction fraud, game fraud, shopping mall fraud, and other crimes using messengers under the pandemic state, we will also shed light on cyber crimes such as Facebook, Twitter, YouTube, Toc, and Telegram, which are metaverses. There is a need.

**Results:** As for the monthly occurrence of cyber crimes of the Northern Provincial Police Agency, there were 642 cases of direct transaction fraud in November 2019, during the early phase of the pandemic due to Corona 19, 2 cases of shopping mall scams, 78 cases of game scams, and 34 cases of other messenger scams. In December 2019, 336 cases of direct transaction fraud occurred, 3 cases of shopping mall scams, 29 cases of game scams, and 28 cases of other messenger scams.

**Conclusion:** When the police who leave brilliant cultural achievements think about the status of police officers leading the advanced social and national security administration in the era of national income of 30,000 dollars, they dream of cyber culture safety. The police, dreaming of the advent of the peaceful era of cyber culture, stand for the benefit of the people you'll have to do it

**[Keywords]** Pandemic, Cyber Crime, Corona 19, Gyeonggi Northern Police Agency, Direct Transaction Fraud

## 1. Introduction

Corona 19<sup>1</sup> is named Wuhan pneumonia<sup>2</sup> or COVID19, and a worldwide pandemic is an RNA virus belonging to SARS-CoV-2(Coronavirida), a legal infectious disease that first occurred in Wuhan, Hubei Province, China in December 2019. So far, the transmission route is known to be spread through droplets and contact, and it is known that it spreads through respiratory droplets through coughing or sneezing, and by touching a contaminated object and then

<sup>1</sup> It is a respiratory infectious disease that first appeared in Wuhan, China in December 2019 and has spread throughout China and the world. It was initially known only as a respiratory infectious disease of unknown cause, but on January 9, 2020, the World Health Organization(WHO) announced that the cause of the pneumonia was a new type of coronavirus.

<sup>2</sup> China in December 2019 and has spread throughout China and the world. Coronavirus Infectious Disease-19 is transmitted when droplets(saliva) of an infected person penetrate the respiratory tract or the mucous membranes of the eyes, nose, and mouth.



touching your nose, nose, or mouth. Symptoms include fever, malaise, cough, shortness of breath, and pneumonia in various forms, ranging from mild to moderate respiratory infections, as well as sputum, sore throat, headache, hemoptysis, nausea, and diarrhea.

Here, we need to understand the current status of COVID-19, which is causing a global pandemic. As of 00:00 on November 20, 2021, a total of 256 million confirmed cases worldwide, 5.13 million deaths, 5.18% fatality rate, spread across 214 countries including Italy, USA, UK, France, Germany, Japan, China and Korea is occurring. On the other hand, in the Republic of Korea, as of 00:00 on November 20, 2021, if you look at the status of infection in Korea, you can see the current status of infection: 409,99 confirmed cases, 3,215 deaths, 82,644,996 total number of vaccinations, and 40,374,444 people who have completed vaccination. Under this global chaotic pandemic state, the lack of a response manual to deal with public security issues and the fear of police transmission of COVID-19 are reluctant to approach the crime scene, and the surrounding area is also overlapping with the lack of security. Meanwhile, as the general public has more opportunities to contact the metaverse due to self-quarantine and telecommuting, cyber crime is on the rise.

Therefore, this paper needed to understand the current state of cybercrime in Korea due to the COVID-19 pandemic and discuss countermeasures in a situation where the government announces the behavioral immunity system in real time. In addition, I would like to address the different status of the police in response to the helplessness of the role of the police in the exercise of police powers under Article 3 of the Police Act under the pandemic situation of the Korean police. It was necessary to deal with the issues of cybercrime epidemic by stage in the public's anxiety and fear of cybercrime.

This study set the northern Gyeonggi residents under the pandemic condition as the research subject and sampled the crime arrest samples from 12 police stations under the Gyeonggi Northern Provincial Police Agency. We want to know the current situation and discuss how to deal with it. Prevention measures to overcome this in the future knowledge and information society, a global cooperative system plan for an effective monitoring system for global cyber fraud, and the police for legal enforcement in society due to Corona 19 in a society that has been stagnant after the pandemic I would like to mention the role of what is being prepared.

## 2. Theoretical Background of the Study

### 2.1. Definition of cyber

In our everyday sense, cyber means virtual space or cyberspace or cyberspace, which means a virtual space made of computers, the Internet, etc. Also, the term 'saberspace' first appeared in William Gibson's 1984 science novel 'New Romance', which is a compound word of Cyber, meaning cybernetics, and Space, meaning space. Rather, it can be seen to mean another cosmic world that extends infinitely in the brains of humans. The first person to use the term cyberspace was John Perry Barlow, who used the term for the concept of communication space, and over time it has become a common term and we use it every day [1]. Therefore, in this study, the term cybercrime is often referred to as a crime of social network service. In the broad sense of academic and dictionaries such as dictionaries, they are unified under the title of cyber crime.

**Table 1.** Definition of cyber crime by scholars.

Scholars	Cyber crime concept definition
lumler & Gurevitch(1974)	Satisfaction of needs resulting from exposure of media users to mass media and other sources of access to use and gratification.
Palmgreen & Rayburn(1982)	The essence of the theory of using and satisfying cyber crimes that occur on the internet.

Lee Min-sik(2000)	Cyber crimes include high-tech crimes, internet crimes, and computer crimes, which are designated and academically established crimes.
Kim Jeong-hyun(2018)	A comprehensive concept that encompasses all illegal activities conducted using electronic networks and computers worldwide.

## 2.2. Types of cybercrime

The types of cybercrime can be divided into cyber sex crimes, Internet fraud, cyberspace hacking and virus penetration, and Internet methods such as obscene sites and suicide sites. Cyber fraud is a type of crime that induces Internet auctions and sales. In addition, there are various fraud methods such as general product service, temptation for money, telecommuting, pyramid scheme, multi-level, intellectual property rights. Cyber sexual exploitation After inducing members to sign up using a recently popular telegram room, providing sexual exploitation and demanding large sums of money. Sex crimes are taking place.

Hacking generally refers to the act of hackers illegally accessing computer systems to extract or destroy data[2]. As computers become popular and Internet technology develops rapidly, it is a new type of crime that is taking place in the cyber world, and it is a cyber crime that causes a lot of scandal in society. E-commerce is a transaction between B2P or P2B that is made through fixed information, and broadly refers to a transaction that includes all commerce activities ranging from contract ordering and payment performed using business and networks on the Internet. It is a new commerce that has occurred based on the Internet and other networks and digitalization. It is a business that is performed between publicity of products and services, provision and viewing of catalogs, preparation of quotations, confirmation of order and contract establishment, and payment, order reception processing within the company, and P2B method. It is considered that the entire transaction is made through an electronic method[2][3]. Other accounts used for cybercrime include twitter, facebook, cyworld, me2day, tossi, and YouTube, but the characteristics are as follows.

**Table 2.** Cyber account crime types[4][5].

Cyber system type		Crime form
Cyber fraud	Online auction sales	When the auction/sale bid price is paid, but the item is not delivered
	Telecommuting	If you see a telecommuting ad and apply and finish your job, but are not paid
	Intellectual property right	Distribution of pirated software in cyberspace
	Pornography	Obscene video that distributes and distributes adult mall advertisements posted on cyber
Hacking	User hijacking	A method of illegally stealing and leaking user accounts and passwords given to others without consent.
	Denial of service	Send massive amounts of data to overload the system
	Trojan horse	Hiding in normal programs, disabling code of the system or network
	E-mail bomb	System paralyzed by sending large and small size e-mail
E-commerce fraud	Confidentiality	Consists of making sensitive information on the network known to third parties
	Authenticity	Transmitting/receiving information under the guise of an unknown network
	Non repudiation	Receiving e-cash and denying that you did not receive it

Twitter was displayed as the SNS with the strongest presence, but it was not possible to confirm the characteristics of sharing, group, or reputation. didn't If you look at the core of their research

results, you can see that SNS is basically based on forming relationships centered on people, and for these relationships, it is basically necessary to confirm identity. For example, , In the case of the existing iloveschool, Facebook in the US, and xiaonei in China, based on school information, actual information of individuals is verified and relationships are formed. In addition, SNS has a characteristic that enables communication through interaction between users. This means that it is not just a one-time thing, but that the relationship is maintained continuously through communication through interaction[6].

Facebook is one of the US social network service(Social Network Service, SNS; service that allows users to form networks on the web) websites and provides services similar to Cyworld in Korea. It is headquartered in Palo Alto, western California, USA in May 2012. Since the end of 2008, Facebook has overtaken MySpace, the world's largest social media site, to become a leader in the social media field. it became Controversy over privacy has arisen in Europe, and in January 2016, a German federal court ruled that Facebook's 'Find Friends' function, which accesses users' email address books and sends invitations, should be stopped[7]. Cyworld is a representative SNS account in Korea. Cyworld, which opened as a club-oriented relational community service in 1999, started a personal media service called 'Minihompy' in September 2001. Since SK Communications took over Cyworld in 2003, it has recorded an explosive increase in subscribers and a large number of visitors. It has grown into a representative SNS in Korea by adding various functions. It is characterized by a powerful 'network search engine'. Me2DAY can be seen as a representative example of mobile SNS targeting the niche market of blogs and SNS.

Since the service started in 2007, it was acquired by NHN in December 2008 and currently has about 50,000 members. You can share your daily life in a short text of 150 characters or less, and each post is uploaded once and then 1 After a minute, it cannot be deleted. You can upload photos or videos using your mobile phone, and comments left by people are also sent as text messages on your mobile phone, so you can share your situation with friends who have access to me2day across time and space. Tossi is a wired/wireless linked SNS operated by SK Telecom. Tossi introduced a location-based service(LBS:LocationBaseService) using a mobile phone, It provides a service that automatically transmits messages(eg, serving go-dong, Yongsan-gu). You can conveniently record your daily feelings and thoughts at every moment, and you can post text messages, MMS, messengers, etc. There is this.

YouTube is a video sharing service operated by Google that allows users to upload, watch and share videos. It is a compound word of the words You and the CRT(Tube, television). In February 2005, Chad Hurley, Steve Chen, and Jawed Karim, former PayPal employees, said, "Everyone has started to make it easy to share video footage. Since January 2015, HTML5 has been used as the default playback method. YouTube allows you to upload most video container types including avi, mkv, mov, mp4, flv and ogg, and video files with encoding methods such as MPEG-4, MPEG, VOB, and WMV. In 2018, YouTube Red was abolished and YouTube Premium to replace this service was announced[7][8].

### 2.3. Characteristics of cyberspace

Cyberspace is a concept that symbolizes the information world, that is, the information society that spreads within computers due to the network of computers. In other words, cyberspace is a virtual space made up of digital signals, and although it is not an actual space, it is a concept formed based on the fact that certain areas exist. Groups are a type of community formed based on sharing, interest, or other purposes, such as videos, where content is shared among users within the system, or a relationship network is formed through recommendation and distribution. Not all SNSs have these characteristics. Most of the services popular with users tended to focus on one or two characteristics, and the rest of the characteristics, although present, were found to be insignificant in terms of their effectiveness.

The biggest characteristic of cyberspace is **first**, ease of access. Cyberspace can be freely accessed anytime, anywhere by anyone as long as there is a computer connected to the Internet. **Second**, there is interactivity. In the existing media, the distinction between the information provider and the receiver is clear, but in cyberspace, that part is blurred. **Third**, it has the characteristics of a community-oriented medium. In terms of information format, cyberspace exploits the characteristics of

anonymity, non-face-to-face, and less restrictions on time and space, so conventional crimes such as defamation, intimidation, and orthodox laws are being used as evidence. In terms of criminal policy, a new 'cyber crime' is being established. In this study, the need for common law precedents to deal with these traditional crimes is increasing.

## 2.4. Review of previous research

This study is based on a Pandemic state in which COVID-19[9][10][11][12][13] covers the entire world[14][15][16][17][18] in Korea[4][6][15][19][20][21][22][23][24] discuss and do Therefore, based on previous research, we look forward to the future countermeasures of the application of advanced public security that will determine the ability of Korea to cope with crime under the Pandemic condition. [9][25], one of the hundred-year pandemic events caused by the novel coronavirus COVID-19. Across the globe, the workplace and society as a whole are trying to make adjustments. Different regions of the ever-changing situation are on different trajectories of the COVID-19 shock, but even in the competitive environment of developing a radiation vaccine, the domestic security order Externally, several aspects suggested that a crime prevention system was still needed.

Park So-yeon(2020) pointed out various legal issues leading to workers taking unpaid leave and recommended resignation in an article titled "Take a break from work, how to deal with COVID-19 workers"(2020). Accordingly, countermeasures are classified by situation, and legal countermeasures are presented, including the Labor Standards Act and the Infectious Disease Prevention Act.

Analyzed the trend of infectious disease thesis trends in major countries from 1996 to 2018 in "Statistics in the study of infectious diseases". As a female author, she analyzed the trend of over 600 infectious disease papers and published a paper that blamed herself for being ranked 16th in the world, inferior to China and South Africa[14][26]. Park Han-sun(2020) in his thesis, Corona 19 is driving the world into a pandemic state. Recognizing the fact that MERS, SARS, and the new flu epidemic experienced only a few years ago, he emphasized the importance of global resource allocation to overcome COVID-19.

## 3. Cybercrime in Northern Gyeonggi Province Pandemic State

### 3.1. Pre-occurrence and arrest rate of cyber criminal pandemic in northern gyeonggi-do

<Table 3> shows the occurrence and arrest of a pandemic war among cyber crimes occurring at 14 police stations under the Gyeonggi Northern Provincial Police Agency, and the arrest rates according to the occurrence. In case of direct transaction fraud, 2,463 cases were arrested out of a total of 2,854 cases, representing an arrest rate of 86.3%. The arrest rate is low at 77.5%. Phishing scams can confirm 1 occurrence and 0 arrests, so the arrest rate is also 0%. The reason for the high arrest rate of 87.2% by arresting 27 cases of 32 cases of shopping mall fraud is interpreted because it is relatively easy to verify the identity between the buyer and the seller.

**Table 3.** Gyeonggi northern police agency cyber crime detection and arrest rate.

Types of cybercrime	Direct purchase		Arrest rate (%)	Game scam		Arrest rate (%)	Phishing scam		Arrest rate (%)	Shopping mole		Arrest rate (%)
	Occurrence	arrest		Occurrence	Arrest		Occurrence	Arrest		Occurrence	Arrest	
Total occurrence	2,854	2,463	86.3	271	231	77.5	1	0	0	32	27	87.2
'19.01	496	465	94	28	24	86	0	0	0	7	7	100

'19.02	480	404	84	33	18	55	0	0	0	7	7	100
'19.03	329	277	84	17	9	53	0	0	0	1	1	100
'19.04	379	333	88	71	64	90	0	0	0	3	2	90
'19.05	412	367	87	39	37	95	0	0	0	4	3	95
'19.06	263	240	91	37	39	105	0	0	0	6	6	100
'19.07	495	377	76	46	40	56	1	0	0	4	1	25

Note: Refer to internal documents(period: 19.01.01.~19.7.31.).

Also in most cases, when a dispute arises with an overseas or domestic business operator while purchasing direct from overseas or domestic, or if the dispute is not resolved amicably with the business operator, it is most often reported to the police to resolve the damage. In some cases, it is reported to the police and transferred, and detailed damage cases are received and blocked. This is because there is a way to easily solve the customer service center using 1,372 without an area code and relief from fraudulent losses related to purchase or delivery.

The administrative districts of the northern Gyeonggi region to be sampled to determine the current state of cybercrime in Korea are 12 police stations(Uijeongbu Police Station, Goyang Police Station, Ilsan Eastern Police Station, Ilsan Western Police Station, Namyangju Police Station, Paju Police Station, Yangju Police Station, Dongducheon Police Station, Guri Police Station, Pocheon Police Station, Gapyeong Police Station, Yeoncheon Police Station(in order of population under jurisdiction), 8 cities(Uijeongbu, Goyang, Namyangju, Paju, Yangju, Dongducheon, Guri, Pocheon) Gapyeong-gun, Yeoncheon-gun and 142 eup/myeon/dong) are designated as jurisdictions. Compared to Gyeonggi Province's 28 cities and 3 counties(20 cities and 1 county of Gyeonggi Nambu Provincial Police Agency), the jurisdiction is on the small side. As a regional feature, it is a border area adjacent to Seoul and North Korea, and has three military cultural streets, three unification prospects, and a military hospital(Goyang, Yeoncheon). The area is 4,266 km<sup>2</sup>, which accounts for 41.9% of the total area of Gyeonggi-do, which is seven times the area of Seoul(605 km<sup>2</sup>). The population of the Northern Gyeonggi Provincial Police Agency, which is the northern region of Gyeonggi-do, is 3,397,278, accounting for 26.0% of Gyeonggi-do. This is converted to Gyeonggi Province's total population of 13,061,074, which is three times smaller than the Gyeonggi Nambu Provincial Police Agency(9,663,796).

**Table 4.** 19/november cybercrime occurrence by police station(occurrence: cases).

Police office cyber criminal	Ui Jeong bu	Go yang	E. Ilsan	W .Ilsan	Namyang ju	Paj u	Yang ju	Dongdu cheon	Gu li	Po cheon	Ga pyeong	Yeon cheon
Direct purchase	99	38	24	61	195	75	33	36	28	44	-	9
Howping mole	1	-	-	-	-	-	1	-	-	-	-	-
Game scam	5	4	4	1	46	4	1	1	8	1	-	3

Messenger scam	8	6	16	-	-	-	-	-	1	3	-	-
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Note: Refer to internal documents(period: 2019.11.1 ~ 2019.11.30).

As a result, the number of people in charge per police officer is 563(excluding 116 general workers), and the total number of police officers is 5,934, which is 127 more than the national population in charge of 436 per police officer. <Table 4> shows the status of cyber crimes by 12 police stations under the Gyeonggi Northern Provincial Police Agency in November 2019. At this time, the media reported that about 2-30 corona 19 patients in Wuhan were reported to be incurable respiratory syndrome. Therefore, the direct transaction rate during this period was similar to that of the previous year. Uijeongbu Police Station 99 cases, Goyang Police Station 38 cases, Ilsan Eastern Police Station 24 cases, Ilsan Western Police Station 61 cases, Namyangju Police Station 195 cases, Paju Police Station 75 cases, Yangju Police Station 33 cases, Dongducheon Police Station 36 cases, Guri Police Station 28 cases, Pocheon Police Station 44 cases. The number of cases was 0 at Gapyeong Police Station and 9 cases at Yeoncheon Police Station. Shopping mall scams, game scams, and other messenger scams were similar to previous years, but there were 46 cases of game mall scams at Namyangju Police Station, which were found to occur frequently along with direct transaction fraud. shown as a result.

**Table 5.** Cybercrime occurrence by police station in may(5) 2020(occurrence: cases).

Police office Cyber criminal	Ui Jeong bu	Go yang	E. Ilsan	W .Ilsan	Namyang ju	Paj u	Yang ju	Dongdu cheon	Gu li	Po cheon	Ga pyeong	Yeon cheon
Direct purchase	77	90	80	74	87	81	53	8	6	5	5	23
Howping mole	1	—	2	—	—	—	—	—	—	—	—	—
Game scam	6	6	34	3	1	7	—	4	1	1	-	-
Messenger scam	3	6	11	—	1	—	—	1	—	—	—	3

Note: Refer to internal documents(period: 2020.05.1 ~ 2019.05.31).

<Table 5> It shows the current status of cybercrime by 12 police stations under the Gyeonggi Northern Provincial Police Agency in the month of May 2020. At this time, tens of thousands of COVID-19 patients in each country are reported in the media worldwide, and it is an incurable respiratory syndrome. At the peak of this, all companies close their doors, all companies recommend working from home, hospitals are overflowing with patients, and only the press of news of vaccine development in Europe, such as the United Kingdom and Pfizer, was announced. Therefore, the ratio of direct transactions during this period fluctuated significantly from the previous year. Uijeongbu Police Station 77 cases, Goyang Police Station 90 cases, Ilsan Eastern Police Station 80 cases, Ilsan West Police Station 74 cases, Namyangju Police Station 87 cases, Paju Police Station 81 cases, Yangju Police Station 53 cases, Dongducheon Police Station 8 cases, Guri Police Station 6 cases, Pocheon Police Station 5 cases. There were 5 cases at the Gapyeong Police Station and 23 cases at the Yeoncheon Police Station. In the case of shopping mall scams and game scams, other messenger scams were similar to previous years, but there were 46 cases of game mall scams at Namyangju Police Station, which were found to occur frequently along with direct transaction fraud. It seems that the number of cyber crimes has increased due



to adaptation to the environment. During this period, the proportion of direct purchases over the internet or direct overseas purchases increases, and in the case of overseas direct purchases, if it is thought that the police have been scammed, the victims are reported directly indoors, and in the case of domestic businesses such as purchasing agents or delivery agents, the report is also made to the police station. It can be seen that this is a time when the number of cases is very high, and inquiries about damage relief are also on the rise.

### 3.2. Cybercrime arrest rate and analysis under the G.N. police agency pandemic

#### 3.2.1. Cybercrime occurrence analysis

This study reveals the current status of cybercrime in Korea under the pandemic. The Gyeonggi Northern Provincial Police Agency, which was the sample target of the Korean police, has a hearing audit officer and a public relations officer on the left and right, with the Northern Police Agency as its peak. The Division 1 of the Northern Office was assigned to the Police Department, the Information Technology Department, the Information Department, and the Security Department. There is a situation room. <Table 6> compiled by the Cyber Safety Division of the Northern Office, shows the monthly(2019.11.01. ~ 2020.05.31.) of the Pandemic status of 12 police stations including Dongducheon Police Station under the Northern Regional Police Agency under the global pandemic Corona 19 Pandemic. The cybercrime that appeared is organized by type. If you look at the recent cases of overseas direct purchase reported by the police department, it is a good way to prevent damage from direct purchase by searching for the type of consumer damage, information on suspected fraud sites, and consumer precautions.

**Table 6.** Monthly occurrence Gyeonggi northern police agency's under pandemic.

Division	2019/11	2019/12	2020/01	2020/02	2020/03	2020/04	2020/05
Direct purchase	642	336	328	447	514	449	589
Shopping mole	2	3	2	1	4	—	3
Game scam	78	29	42	24	27	26	63
Messenger scam	34	28	54	39	31	25	29

Note: Refer to internal documents(period: 19.11.1. ~20.5.30.).

<Table 6> Looking at the monthly occurrence status, in November 2019, when Corona 19 entered the pandemic(the first occurrence in December in Wuhan, China), there were 642 direct transaction scams, 2 shopping mall scams, 78 game scams, and other messengers. There were 34 cases of fraud. In December 2019, there were 336 direct transaction scams, 3 shopping mall scams, 29 game scams, and 28 other messenger scams. In the month of January 2020, 328 cases of direct transaction fraud occurred, 2 cases of shopping mall scams, 42 cases of game scams, and 54 cases of other messenger scams. In February 2020, 447 cases of direct transaction fraud occurred, 1 case of shopping mall scam, 24 cases of game scam, and 39 cases of other messenger scams. In March 2020, there were 514 direct transaction scams, 4 shopping mall scams, 27 game scams, and 31 other messenger scams. In the month of April 2020, there were 449 direct transaction scams, 0 shopping mall scams, 26 game scams, and 25 other messenger scams. In the month of May 2020, there were 589 direct transaction scams, 3 shopping mall scams, 63 game scams, and 29 other messenger scams.

As part of social distancing to prevent COVID-19, many salaried workers lose their jobs or choose to work from home. Overseas direct purchases are being refunded through the self-governing bag service(overseas objection), but this is not the case and the trend is to report it to the police station. In addition, the Korea Consumer Agency has opened an “international transaction consumer portal(Crossborder.kca.go.kr)” to help resolve the increasing number of overseas direct purchase consumers.

### 3.2.2. Counter arrest rate and countermeasures after the cyber criminal pandemic in northern gyeonggi province

#### 3.2.2.1. Gyeonggi buk provincial police agency cyber crime arrest rate

<Table 7> show the number of occurrences and arrests for the four major cyber crimes since the outbreak of the pandemic in the northern Gyeonggi region. This period(2019.11.1~2020.05.31) is the period when countries took measures such as border closures, travel restrictions, and entry restrictions to protect their own citizens and to develop vaccines after the outbreak of COVID-19, while at the same time providing guidance to avoid mutual contact, wearing a mask, and generating a mutant virus that originated in South Africa. . In relation to this situation, vaccine development news in Europe, such as the United States and the United Kingdom, mutant virus has occurred as the vigilance between people has loosened. Due to the outbreak of the Corona 19 mutant virus, working from home or social distancing campaigns and steps 3 or 4 of the state control room are taking place in a frozen social atmosphere again. It is a time when the South African mutant virus has driven even more fear into a state of not being able to communicate with neighbors and residents. Therefore, the total number of direct purchases(including overseas direct purchases) by the Gyeonggi Northern Provincial Police Agency during this period was 3,405, and the number of arrests was 2,624, which is a low rate of 81.8%. At this time, the low arrest rate indicates that even police officers are having difficulties in resolving direct purchase cyber crimes that occurred under the condition that they let go of their hands.

**Table 7.** G.N.police agency: incidence and arrest rate of criminal offenders after the outbreak of the pandemic.

Types of cyber-crime	Direct purchase		Arrest rate (%)	Game scam		Arrest rate (%)	Phishing scam		Arrest rate (%)	Shopping mole		Arrest rate (%)
Division	Occurrence	Arrest		Occurrence	Arrest		Occurrence	Arrest		Occurrence	Arrest	
Total occurrence	3,405	2,624	81.6	289	219	72.5	277	65	32.5	15	11	65.6
'19.11	642	525	82	78	63	81	34	11	32	2	1	50
'19.12	336	258	77	29	25	86	28	5	18	3	1	33
'20.01	328	230	70	42	33	79	64	14	26	2	2	100
'20.02	447	288	86	24	16	63	39	9	23	1	1	100
'20.03	614	436	85	27	18	67	31	11	36	4	3	76
'20.04	449	371	83	26	13	50	26	11	44	0	0	0
'20.05	589	516	88	63	51	81	29	13	46	3	3	100

Note: Refer to internal documents <period: 2019.11.1.~2020.5.31.(monthly)>.

Next, game fraud is on the rise, with 289 cases and 219 arrests, indicating a 72.5% arrest rate. Of the 277 cases of phishing scams, 65 cases were arrested, and the arrest rate was very low at 32.5%. This shows the polarity of phishing scams during the COVID-19 period, despite the fact that many arrests have been made in the banking sector, politicians, and police and prosecutors regarding voice phishing scams. A total of 15 cases of shofil fraud occurred, 11 cases were arrested, and the arrest rate was 65.6%. A vigilant housewife, student, housewife, and office worker who work from home are mainly targeted by shopping mall scams. The function is lost and the arrest rate is low.

### **3.2.2.2. Cybercrime prevention measures under the pandemic**

This study is a study on preventive measures against cyber fraud crimes under the pandemic. As a preventive measure, first, direct purchase, so-called direct purchase, is to prevent fraud damage. Under the pandemic situation, many cases occur at work and at home, so arrests can be made easily. to be. It is advantageous to report direct purchase scams or family damage cases overseas or domestic directly to 112 or the nearest police station, as we are well aware of the cases experienced. In addition, if a dispute arises with a foreign or domestic business operator or is not resolved amicably with the business operator, most cases are reported to the police to resolve the damage. In some cases, it is reported to the police and transferred, and detailed damage cases are received and blocked. This is because there is a way to easily solve the customer service center using 1372 without an area code and relief from fraudulent losses related to purchase or delivery. This is the second game scam. This is showing signs of slowing down under the pandemic of Corona 19, but in most cases of game money transaction fraud, which is used a lot by teenagers, there is a way to report it through the Cyber Security Bureau of the National Police Agency. This is a system that receives a report from the Cyber Security Bureau of the Cyber Police Agency through a portal site and disperses it to the Cyber Investigation Division of the local police station for processing by securing evidence using a copy of a bankbook for transaction details, call transcripts, and Kakao Talk text messages using game devices. The system is running. As a preventive measure, when teenagers purchase game equipment using game money while using game money, the more information they know about the other person, the faster the investigation will proceed. It helps. When the first report is received, a detective in charge will be designated and wait about two weeks to find a way to respond to complaints on the integrated portal of the Cyber Police Agency. Reporting on game money fraud requires special attention for most of the youth. Third, voice phishing is largely dealt with by the police in a separate unit. In the meantime, I did a lot of publicity for voice phishing. In the case of phishing scams, because they are treated as important cases and not treated as cyber crimes by police stations, in general, when they are treated as international or domestic thieves or fraudsters, it is often cracked down with cyber phishing, so caution is required. For this reason, it is a topic that requires more attention and awareness of foreign phishing rather than domestic phishing. Fourth, most shopping mall scams are from women or housewives. Online shopping mall fraud may be interpreted differently depending on the viewing angle. In the case of using a consumer complaint center, most cases are reported because they are inexperienced in handling civil complaints and report it as an Internet shopping mall scam. However, if an online shopping mall is not connected to the customer center, it is confirmed as a scam and a report is filed with the police. In the case of shopping mall fraud, the Cyber Security Bureau of the National Police Agency recommends that most of the cases of shopping mall scams be resolved through the Consumer Complaint Center rather than being sued as fraud cases at the police station. Because of this, the phenomenon that the number of occurrences is not captured before and after the pandemic is due to this phenomenon.

## **4. Conclusion**

It is true that there are convenient positive aspects of using cyber around us, but there are also many adverse functions derived from it. In particular, cyber crimes are occurring as another social problem, and various crimes in cyberspace such as cyber hacking, virus distribution, cyber terrorism, and cyber fraud threaten the modern information age.

Therefore, in this study, the current situation of cyber fraud crimes in 12 police stations affiliated with the Northern Police Agency in the northern Gyeonggi region under the pandemic situation, and how users' motivations for using them affect the perception of cybercriminal behavior, and study countermeasures. Based on this, the study is meaningful in that it provides basic data to prevent future cybercrime and respond to cybercrime. Although the Korean police only exposed the actual situation of cyber direct transaction fraud, game fraud, shopping mall fraud, and other crimes using messengers under the pandemic state, the Korean police used cyber threats such as Facebook, Twitter, Saiwond YouTube, Tocci, and the recently emerged Telegram. It was also necessary to shed light on the top crime. If you look at the monthly occurrence of cyber crimes of the Northern Provincial Police Agency, there were 642 direct transaction fraud cases in the month of November 2019, when the COVID-19 pandemic began (the first occurred in December in Wuhan, China), 2 cases of shopping mall scams, and 2 cases of game scams. There were 78 cases and 34 cases of other messenger scams. However, after the news of vaccine development in Europe, such as the United States and the United Kingdom, the vigilance between people loosened, and a mutated virus from South Africa occurred. This is even more so, and in each country, especially in Europe, the UK and the US, millions of people are closing their borders again with the mutant virus.. In a social atmosphere frozen again due to the outbreak of the Corona 19 mutant virus, telecommuting or social distancing campaigns and state control Level 3 or 4 action in the Situation Room is taking place. It is a time when the South African mutant virus has driven even more fear into a state of not being able to communicate with neighbors and residents. Therefore, the total number of direct purchases by the Gyeonggi Northern Provincial Police Agency during this period was 3,405, and the number of arrests was 2,624, which is a low rate of 81.8%. At this time, the low arrest rate indicates that police officers are also having a hard time resolving the direct purchase cyber crimes that have occurred under the pandemic. Next, game fraud is on the rise, with 289 cases and 219 arrests, indicating a 72.5% arrest rate. Of the 277 cases of phishing scams, 65 cases were arrested, and the arrest rate was very low at 32.5%. This shows the polarity of phishing scams during the COVID-19 period, despite the fact that many arrests have been made in the banking sector, politicians, and police and prosecutors regarding voice phishing scams. A total of 15 cases of shofil fraud occurred, 11 cases were arrested, and the arrest rate was 65.6%. Looking at the countermeasures that occur frequently under the pandemic

First, direct purchase, so-called direct purchase, is easy to arrest because a large number of cases occur at work and at home under the pandemic situation to prevent fraud. It is advantageous to report direct purchase scams or family damage cases overseas or domestic directly to 112 or the nearest police station, as we are well aware of the cases experienced.

This is the second game scam. This is showing signs of slowing down under the pandemic of Corona 19, but in most cases of game money transaction fraud, which is used a lot by teenagers, there is a way to report it through the Cyber Security Bureau of the National Police Agency.

Third, voice phishing is largely dealt with by the police in a separate unit. In the meantime, I did a lot of publicity for voice phishing. In the case of phishing scams, because they are treated as important cases and not treated as cyber crimes by police stations, in general, when they are treated as international or domestic thieves or fraudsters, it is often cracked down with cyber phishing, so caution is required.

Fourth, most shopping mall scams occur in women or housewives. Online shopping mall fraud may be interpreted differently depending on the viewing angle. In the case of using a consumer complaint center, most cases are reported because they are inexperienced in handling civil complaints and report it as an Internet shopping mall scam. However, if an online shopping mall is not connected to the customer center, it is confirmed as a scam and a report is filed with the

police. In the case of shopping mall fraud, the Cyber Security Bureau of the National Police Agency recommends that most of the cases of shopping mall scams be resolved through the Consumer Complaint Center rather than being sued as fraud cases at the police station.

As a part of social distancing to prevent COVID-19, many salaried workers lose their jobs or choose to work from home. Overseas direct purchases are being refunded through the self-governing bag service(overseas objection), but this is not the case and the trend is to report it to the police station.

When the police who leave brilliant cultural achievements think about the status of police officers leading the advanced social and national security administration in the era of national income of 30,000 dollars, they dream of cyber culture safety. The police, dreaming of the advent of the peaceful era of cyber culture, stand for the benefit of the people you'll have to do it

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Author	JH	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>