**Abstract**

**Purpose:** Crisis negotiation has become one of the most important areas of Korean policing. The increasing number of dangerous situations such as suicide, hostage-taking and others is raising the importance of crisis negotiation. The purpose of this study is to verify the effectiveness of crisis negotiation education program for police officers in charge of crisis negotiation in the Korean police. Before and after taking the education program in Korean Police Investigation Academy, the improvement of police officers’ abilities is identified and verified for the effectiveness of the education program.

**Method:** This study aims to achieve its purpose by analyzing the effectiveness of crisis negotiation specialized education programs designed to improve the ability of police officers in charge of crisis negotiations. For this study, the effectiveness of the crisis negotiation curriculum, which was conducted two waves between February and October 2020, was analyzed with 53 participants’ evaluation data.

**Results:** The effectiveness of the crisis negotiation specialized education program was carried out by assessing the results of the multiple choice test by participants in the curriculum in pre and post-academic performance score. Comparative analysis of the evaluation results showed that the post-academic performance score was significantly improved compared to the pre-evaluation score. In particular, significant changes could be seen in both the pre- and post-academic performance score comparisons of individual courses. In other words, it is the result of supporting the effectiveness of the crisis negotiation specialized education program in Korean Police Investigation Academy.

**Conclusion:** Two-weeks crisis negotiation specialized education program for police officers in charge of crisis negotiations showed significant effectiveness. As a result, it is necessary to increase the opportunities to open the curriculum and expand the number of police officers for education. In addition, it is required to analyze the effectiveness of the crisis negotiation specialized education program in more detail. Specially, it is also necessary to analyze whether the educational effects are actually applicable in practice.

**Keywords** Crisis Management, Crisis Negotiation, Educational Program, Police Training, Policing

**1. Introduction**

Korean police have included handling not only terrorism but also crisis situations in the scope of the anti-terrorism negotiation team’s work in response to rising demand for crisis negotiations in 2009. Since then, the Korean National Police Agency’s investigation bureau and security bureau have formed and operated a crisis negotiation team, respectively. The Korean police’s growing interest in crisis negotiations is attributable to the 2009 demolition of Yong-san redevelopment area in central Seoul, which killed six people and injured 24 others[1]. Demand for suicide attempts, abnormal behavior of mentally ill people, domestic violence, and hostage robbery, which were actually required to be negotiated, increased. In particular,
more and more crisis negotiation teams have been dispatched due to frequent attempts to commit suicide. This seems to be due to Korea’s higher suicide rate. Korea has the highest suicide rate among OECD countries. The number of suicides reached 13,670 in 2018, 26.6 per 100,000 people[2]. Although the number of suicides has declined in part until recently, suicide is the number one cause of death in 10s, 20s, 30s of Korean. In 2018, 33,451 cases were taken to emergency rooms due to suicide attempts[2]. As of 2019, the number of suicide-related reports to the police reached 90,308[3]. Even if at least 1 percent of the suicide-related cases require a crisis negotiation team, more than 9,000 appearances are needed. In addition to suicide, there have been many incidents(domestic violence, hostage robbery, mentally illness) that require the presence of crisis negotiation teams as well.

Although the Korean police do not officially count the number of crisis negotiation cases, it is true that the activities of the crisis negotiation team increase every year. Although the number of cases related to crisis negotiations continues to increase and the importance of crisis negotiations is emphasized in the policing, there are many practical problems. First of all, there is a lack of manpower for crisis negotiations. As of 2018, there are a total of 118,651 police officers in South Korea[4]. However, there are only 800 police officers in charge of crisis negotiations. Since there are 255 police stations nationwide, it is hardly to assign the crisis negotiation officer to all police stations. In addition, there are police officers specializing in crisis negotiations at all police stations, but it is difficult to guarantee their actual expertise. Secondly, there are not many experts in crisis negotiations. Since 2009, the Korean police have set up a crisis negotiation team around all of the police station, but the actual experience of crisis negotiation experts at the police station level was not much and the period was short. Korea’s crisis negotiation team is not a permeant team but a temporary team. Therefore, a crisis negotiation team is operated when a crisis occurs. It is difficult to mean that a police officer belonging to the crisis negotiation team has an ability to negotiate a crisis. The bigger problem is that only 800 police officers on paper belong to the crisis negotiation team. Third, it is the limitation of education and training programs to foster police officers specializing in crisis negotiations. Although the Korean Police Investigation Academy has developed and educated a specialized course for crisis negotiation, the curriculum is only four times a year(two for beginner and two for senior) and lasts for two weeks in the per educational period. There are not many training sessions and the training period is also short for training professionals.

In order to produce more police officers specializing in crisis negotiations, the Korean police needs to increase the number of police officers in crisis negotiations and expand the curriculum for crisis negotiations for police officers. However, the premise here is that it is possible when the crisis negotiation program for police officers is effective. Unfortunately, however, the existing crisis-related studies in Korea had little discussion about the crisis-negotiating curriculum[5]. There is only one research on the effectiveness of the police crisis negotiation education program in 2011[5]. Most of the crisis negotiation-related studies are focused on the theoretical discussion of crisis negotiations and the study of techniques[6][7][8][9][10][11][12][13][14][15][16]. Some studies also have in-depth analyses of actual crisis negotiation cases[17][18]. In addition, several studies have suggested ways for police to develop crisis negotiations[6][10][19][20]. However, a convincing curriculum that can produce many crisis negotiation experts is important for the development of crisis negotiations. Moreover, there has been little evaluation of the education program in previous discussion[5].

Therefore, the purpose of this study is to evaluate the effectiveness of the Korean Police Investigation Academy’s specialized crisis negotiation process. To achieve the purpose of the research, the study aims to analyze the pre and post-test data of 53 participants in the two rounds program of the 2020 crisis negotiation education program at the National Police Investigation Academy. If the crisis negotiation education program was effective, participants in the follow-up survey would have performed better than the prior evaluation. By using SPSS, the
effectiveness of crisis negotiation specialized education program was examined. The findings were discussed. Based on the results of the study, policy implications were also presented.

2. Theoretical Background

2.1. Crisis negotiation in policing

To understand the concept of crisis negotiations in the police, the conceptual definition of crisis in prioritized\cite{14}. Crisis is divided into individual and public dimensions. At a personal level, a crisis means a state in which the resources, capabilities, and agility of an individual make it difficult to solve problems on their own in a crisis situation\cite{21}\cite{22}. Meanwhile, on the public level, a crisis means difficulty in coping with a crisis with public resources. The crisis is for the disabled who have considerable difficulty in drawing up a solution to the problem\cite{22}. A crisis usually goes through the pre-crisis phase, the crisis phase, the coordination and negotiation phase, and the resolution phase\cite{23}. In general, the pre-crisis phase is often when people in a crisis are not aware of their own crises. In times of crisis, people often have conflicts and have emotional responses. The coordination and negotiation phase is a stage where people in crisis try to accept mediation and negotiation. The resolution phase is the stage in which the crisis is accepted and the crisis is terminated. There are many solutions to the crisis. The most common method is to resolve through tactical responses and negotiations\cite{24}. The tactical response is a case in which an armed crackdown is required in an environment where negotiations are difficult to reach. Resolving through negotiation is the most important method of response in crisis negotiations and means communication to solve problems without physical conflict. Negotiate through dialogue between stakeholders in a crisis. And draw up a solution to the problem. Usually, police officers in crisis negotiations participate in the solution through negotiation. Therefore, the ability to communicate is very important\cite{22}\cite{24}.

Crisis negotiations are about gaining the trust of people in crisis situations and bargaining for their safety to contributed to solve the crisis\cite{22}. In crisis negotiations, bargaining and negotiation are seemed to both identical terms\cite{25}. In general, if bargaining is mainly used in relationships between individuals, negotiation is a term used in relations between countries or institutions.

As a result, policing in crisis situation refers to a situation in which police intervention is needed in an urgent situation in which a person’s life is at risk or his or her body or property is being violated\cite{1}. Then, crisis negotiations in the police mean negotiating to resolve a person’s life, body, property are to be violated or clearly expected to be violated\cite{1}. Negotiations often take place between normal people, but police’s crisis negotiations are those taking place in irrational situations with criminals holding hostages, those attempting suicide, and mentally abnormal people\cite{16}.

2.2. Development of crisis negotiation models

Over the past 30 years, many scholars have presented various crisis negotiation models\cite{24}\cite{26}\cite{27}\cite{28}\cite{29}. Fisher and Ury were the earliest scholars presenting the theoretical model of crisis negotiation\cite{26}. Firsher and Ury presented a ‘principled negotiation’ model. They focused crisis negotiations on resolving conflicts through interactions between stakeholders based on the principle of profit\cite{26}. However, the police’s crisis negotiations were difficult to apply because there were many negotiations with people who had difficulty in rational thinking. The following is a ‘crisis bargaining’ model\cite{27}. The crisis bargaining model was presented by Donohue and his colleagues as a useful strategy for hostage negotiations\cite{27}. In hostage negotiations, bargaining is divided into crisis bargaining and normative bargaining. Crisis bargaining is the stage of forming a relationship between the hostage-taker and the po-
lice[27]. On the other hand, normative bargaining is material bargaining[27]. Therefore, the possibility of problem-solving increases only when bargaining strategically is made in the order of crisis bargaining to normative bargaining. In 2002, Taylor presented a ‘cylindrical crisis communication’ model[28]. In this model, Taylor analyzed nine cases of crisis negotiations and showed that the process of communication in crisis negotiations was structured in a cylindrical manner[28].

There is a ‘behavioral influence stairway’ model[24] developed by the FBI’s crisis negotiation unit(CNU). This model focuses on active listening skills, which is the most important in modern crisis negotiations. The model also explains that the relationship between police and hostage-takers is formed through stages of empathy, lipo formation, and behavioral influence[24]. The development of individual stages is in principle predicated on active listening. Successful negotiations can be achieved through the stages of gaining empathy, forming a lipo, and getting the positive behavioral changes[24].

The SAFE model for crisis negotiations is the latest model for negotiations presented by Hammer[29]. Hammer explains that in the SAFE model, the process of crisis negotiation proceeds within the framework of the dominant component[29]. The dominant components are divided into four categories[29]. First, it is a substantial demand. ‘Substantial demands’ mean mechanical needs, interests, and needs expressed by negotiators and negotiators. Second, ‘attention’ means the degree of trust, power, control, and relations that develop between negotiators and subjects. Third, ‘face’ is the ‘self-image’ projected by the negotiating body. The negotiating body is very sensitive to the damage to its prestige or reputation. If one’s prestige is damaged during the negotiation process, (s)he takes a stubborn stance and resists the negotiation. Finally, ‘emotional distress’ refers to negative emotions that degrade the ability to cope with stress arising from a crisis. Crisis negotiators are required to be able to detect such negative feelings during the negotiation process[13]. In the SAFE model, the process of crisis negotiation consists of ‘the identifying phase’, ‘the matching phase’, and ‘the shift phase’ within the four dominant components[29]. The identifying phase refers to the process in which the negotiator identifies the framework of the dominant components that the negotiating body reveals. The negotiating body reveals its desires, demands, and feelings. Negotiators observe the attitude and behavior of the negotiating subjects and explore the four components. The matching phase is when the negotiator determines the level of communication and proceeds with the dialogue in line with the SAFE framework revealed by the negotiating body. Finally, the shift phase refers to the process of switching to the next phase of SAFE if there is some progress after communicating in accordance with the emotions and desires revealed by the negotiating body[13].

2.3. Crisis negotiation education program

2.3.1. Background

The Korean Police Investigation Academy is the only educational institution in Korea that trains crisis negotiators. The crisis negotiation education program was established in 2009 to enhance the expertise of its police officers as the National Police Agency's counterterrorism team expanded to the crisis negotiation team. Prior to 2016, the crisis negotiation team training at the Nation Police University was irregular once or twice a year. It was not until 2016 that two specialized and two advanced courses were offered at the Korean Police Investigation Academy.

The purpose of the crisis negotiation specialized education program focused in this study, crisis negotiation professional program, is to understand the need for crisis negotiation and to acquire negotiation theory and negotiation strategy. Through this, the purpose is to cultivate basic knowledge that effective negotiations can be made even in the actual crisis negotiation situation. In addition, the crisis negotiation specialized education program introduces practical cases and allows them to participate in actual role plays so that they can develop their ability.
to solve problems through negotiation in real situations such as personnel situations and suicide situations. In particular, the purpose of the program is to experience the dynamic emotional changes of the crisis situation directly through participation in role plays and to ensure that negotiations are carried out effectively.

2.3.2. Summary of crisis negotiation education program

Those who are eligible for education in the crisis negotiation specialized education program are police officers with more than a year of investigation experience recommended by the head of the crisis negotiation team at the local police agencies. In fact, there is a limit to the possible existence of differences on the individual abilities of the student because the subject is selected by recommendation. Students are required to attend more than 90 percent of the classes during the two-week training period and earn a minimum of 60 percent (out of 500). In order to be certified as a professional investigator in crisis negotiations, one must earn at least 80 percent of the 350-point learning evaluation performance scores. The evaluation method is to conduct a learning evaluation through written and practical evaluations during the training period. Other evaluations of educational life and seminars are added to the total score.

The contents of the curriculum specializing in crisis negotiations are divided into theoretical and practical education. Theoretical education fosters basic knowledge essential for crisis negotiations, such as crisis negotiation system, abnormal psychology, terrorism theory and status, and tactical dialogue principle. Practical training consists of case analysis, tactical dialogue training, and role-playing training for actual crisis negotiation cases. The crisis negotiation education program focuses on practical classes so that students can experience actual field rather than theory. Among 63 hours of education in two weeks, theory classes are 10 hours, and the rest are all practical classes. Out of the total subjects, it consists of 20 percent negotiation techniques, 16 percent case analysis and 30 percent negotiation practice.

In the crisis negotiation specialized education program, theoretical education consists of crisis negotiating, terrorism, and psychology. The crisis negotiation course focuses on the theory and technique of crisis negotiation. Terrorism provides the lectures about terrorism-related theories, cases, and actual conditions of terrorism. Psychological lectures focus on types and examples of abnormal psychology. The crisis negotiation education program focuses on practical education. The actual training program analyzes and discusses existing crisis negotiation cases. It also trains the tactical communication techniques available during the actual crisis negotiation process. The training courses for tactical communication techniques are offered in stage 1 to stage 2. Finally, the key to practical training is participation in role-playing[30][31]. Real theater actors appear to show the situation of suicide, domestic violence, kidnapping and kidnapping, hostage robbery, and hostage terror, and allow trainees to participate. During the two-week training period, role-playing training is conducted for three days. Trainees get the opportunity to develop their ability to negotiate crises through participation in role-playing education.

3. Research Method

3.1. Analytical model and hypothesis

The purpose of this study is to verify the effectiveness of the crisis negotiation socialized education program. In order to achieve the purpose of this study, the researchers collected data from the staff of the crisis negotiation education program at the Korean Police Investigation Academy. Trainees conduct a learning assessment before they participate in the education program. In addition, a learning evaluation is conducted on the end of the education program. As a result, it becomes a pre-post experiment. Because there is no comparative group, a total of two rounds of data from those who completed the education program(February, May,
2020) should be used to evaluate the validity of the education program to verify the effectiveness of the education program. Validate the effectiveness of the crisis negotiation specialized education program by comparing the results of the learning evaluation before and after attending the crisis negotiation education program. In other words, the research hypothesis is that there are significant changes in students’ learning abilities later than before attending the crisis negotiation education program.

3.2. Data

To analyze the effectiveness of the police crisis negotiation education program, the researchers collected data from the trainees before and after the specialized education program was implemented. The collected data is obtained from a pre-post experimental model without a comparative group. Due to the difficulty of sophisticated experimental design, it is difficult to call complete experimental design and it is pseudo-experimental design without comparison group. To ensure the validity of the experimental data, the effects of the same education program were confirmed by analyzing the data in the 7th and 8th rounds. The data used in the study are the results of the study evaluation before and after students of the Korean Police Investigation Academy’s crisis negotiation program. To be more specific, preliminary and post-evaluation data of participants were used for analysis of seven and eight crisis negotiation courses, which were opened in the first half of 2020. The number of participants in the seven-time curriculum was 29 and the number of participants in the eight-time curriculum was 25. Finally, the data used in the analysis is the result of 53 participants’ responses.

4. Results

4.1. Descriptive statistics

The following are the results of a demographic statistics of participants. The results of the descriptive analysis of 53 trainees are shown in Table 1. First of all, the demographic and sociological characteristics of the seventh round participants were mostly male and the average age was 41.6552. There were many participants in their 30s and 40s. The rank of the trainees was the highest in rank of assistant inspector and inspector. Simply by average comparison, the pre-score was lower than the post-score. A descriptive statistics for the eighth round can also be found. The participants were all male and the average age was 43.6 years, slightly higher than the seventh. The rank of inspector was the highest among the trainees. It can be seen that the post-score is quite high compared to the pre-score.

Table 1. Descriptive statistics of participant.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Round 7</th>
<th></th>
<th>Round 8</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Gender</td>
<td>Frequency</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>Male</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>2</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>20~39</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40~49</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50~60</td>
<td>6</td>
</tr>
<tr>
<td>Rank</td>
<td></td>
<td></td>
<td>Senior policeman</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Assistant inspector</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inspector</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Senior inspector</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20~39</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40~49</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50~60</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Senior policeman</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Assistant inspector</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inspector</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Senior inspector</td>
<td>2</td>
</tr>
</tbody>
</table>
4.2. Differences across demographic characteristics

The study analyzes the effectiveness of crisis negotiation specialized education programs through quasi-experimental design. Although there are limitations in terms of experiment without comparative groups, at least experimental effects can be expected if the academic performance of the students participating in the training is not affected by their demographic characteristics. An ANOVA analysis was conducted to compare the differences in academic performance according to the demographic characteristics of the trainees. Among the demographic characteristics, gender was mostly male, so no difference analysis was conducted.

First of all, differences in academic performance by age were compared. In the seventh-round trainees, there was no difference in their academic performance by age. In the eighth round, there was not much difference in academic performance depending on age. However, students in their 50s had significantly lower grades compared to other ages, and some of the differences in their studies were found. Next, the differences in academic performance by rank were compared. The police rank may also be related to the duration of police life and the ability of police officers, so there may be differences in academic performance. Fortunately, the academic performance of students who participated in the crisis negotiation program was not affected by their rank. The difference between pre- and post-score scores is not affected by the police rank.

Table 2. Differences across age group.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pre-test</td>
<td>104.23</td>
<td>17.42</td>
<td>20~39</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post-test</td>
<td>123.46</td>
<td>14.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pre-test</td>
<td>105.50</td>
<td>13.00</td>
<td>40~49</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post-test</td>
<td>118.00</td>
<td>7.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pre-test</td>
<td>100.00</td>
<td>3.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post-test</td>
<td>115.00</td>
<td>12.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANOVA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Between sum</td>
<td>117.95</td>
<td>6064.80</td>
<td>F</td>
<td></td>
</tr>
</tbody>
</table>

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

Table 3. Differences across rank.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior policeman</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pre-test</td>
<td>106.67</td>
<td>14.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post-test</td>
<td>12583</td>
<td>13.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistant inspector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pre-test</td>
<td>104.00</td>
<td>18.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post-test</td>
<td>120.00</td>
<td>11.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pre-test</td>
<td>102.50</td>
<td>13.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post-test</td>
<td>116.25</td>
<td>12.71</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 4.3. Relationships between age and academic performance

It has been shown that there is little difference between pre- and post-academic performance score depending on demographic characteristics. However, it seems that people in their 50s are slightly different from other groups in their 50s. Thus, the relationship between pre- and post-academic performance score was estimated with age variables as continuous variables. The relationship between pre- and post-academic performance score was also analyzed. Although pre-score and post-score will be affected by the experimental effects, it is likely that there will be a link between pre- and post-academic performance score. As a result of correlation analysis, the difference in academic performance by age was not much. However, the age and post-academic performance score of participants in the round seven showed significant relationship. The higher the age, the lower the academic performance score. Next, it was shown that pre- and post-academic performance score had a fairly strong correlation. In other words, the higher the pre-score, the higher the post-score.

#### Table 4. Relationships between age and academic performance scores.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Age Total</th>
<th>Round 7</th>
<th>Round 8</th>
<th>Pre-test Total</th>
<th>Round 7</th>
<th>Round 8</th>
<th>Post-test Total</th>
<th>Round 7</th>
<th>Round 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td></td>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>-.090</td>
<td></td>
<td></td>
<td>Total</td>
<td>.561***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round 7</td>
<td>-.054</td>
<td></td>
<td></td>
<td>Round 7</td>
<td>.630***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round 8</td>
<td>-.123</td>
<td></td>
<td></td>
<td>Round 8</td>
<td>.513***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>-.262</td>
<td>.561***</td>
<td></td>
<td>Total</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round 7</td>
<td>-.393*</td>
<td>.630***</td>
<td></td>
<td>Round 7</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round 8</td>
<td>-.191</td>
<td>.513***</td>
<td></td>
<td>Round 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

#### 4.4. Experimental effects of crisis negotiation specialized education program

To identify the most important experimental effects in this study, a paired sample T-test was performed. First of all, the results for the entire sample showed very high experimental impacts. The average of all participants’ pre-scores was 103.15, but the post-score was 121.30, indicating a significant improvement in their academic performance. There was also a significant difference between pre-scores and post-scores in the seventh round of crisis negotiation specialized education program. In other words, the experimental effect has been proven. The seventh pre-score was 103.79 but after the completion of the education program, their academic performance improved to 119.83. In the eighth round of tests, participants’ academic performance score rose sharply from 102.40 to 123 points. As a result, the crisis negotiation specialized education program provided by Korea Police Investigation Academy had a very positive effect on the students’ ability to negotiate crisis.
Table 5. Experimental effects of crisis negotiation specialized education program.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total</th>
<th>Round 7</th>
<th>Round 8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>T</td>
</tr>
<tr>
<td>Post-test</td>
<td>121.30</td>
<td>12.559</td>
<td>10.845***</td>
</tr>
<tr>
<td>Pre-test</td>
<td>103.15</td>
<td>13.608</td>
<td></td>
</tr>
</tbody>
</table>

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

5. Conclusion

The role of crisis negotiation police officers has become important in the current demand of policing. Many Korean terrorism and police studies point out that police efforts are needed to respond to social risks [32][33][34][35][36]. In response, the Korean police attempt to expand the manpower in crisis negotiations. However, there is still a lack of specialized police officers in crisis negotiations. Therefore, it is necessary to continue to develop and distribute crisis negotiation education programs. This study attempted to verify the effectiveness of the crisis negotiation education program, which was rarely addressed in previous crisis negotiation studies. In order to achieve the purpose of this study, data from participants in the crisis negotiation education program provided by the Korean Police Investigation Academy were analyzed. A total of 53 participants participated in the first half of 2020. Participants were evaluated for pre- and post-academic performance. If the education program is effective, post-academic performance will be improved compared to prior score. In this study, a quasi-experiment without a comparative group was conducted. Statistical analysis shows that the crisis negotiation specialized education program has a significant effect on improving students' academic performance. The change in academic performance was unaffected by class. Age was partly related to some academic performance. As a result, it is concluded that the police program specializing in crisis negotiation greatly contributes to the improvement of students' ability to negotiate crisis. Therefore, it is necessary to establish an infrastructure that can further spread crisis negotiation education programs. There is a need for a system that can provide more courses that have been established so far. Also required is the expansion of faculty members who can take charge of teaching courses. Finally, since the study analyzed a small number of participants, it is necessary to analyze the experimental effects on more participants in the future.

6. References

6.1. Journal articles


6.2. Books


6.3. Additional references


7. Appendix

7.1. Authors contribution

<table>
<thead>
<tr>
<th>Initial name</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Author</td>
<td>- Set of concepts ✔</td>
</tr>
<tr>
<td></td>
<td>- Design ✔</td>
</tr>
<tr>
<td></td>
<td>- Getting results ✔</td>
</tr>
<tr>
<td></td>
<td>- Analysis ✔</td>
</tr>
<tr>
<td></td>
<td>- Make a significant contribution to collection ✔</td>
</tr>
<tr>
<td></td>
<td>- Final approval of the paper ✔</td>
</tr>
<tr>
<td></td>
<td>- Corresponding ✔</td>
</tr>
<tr>
<td>Corresponding Author</td>
<td>- Play a decisive role in modification ✔</td>
</tr>
<tr>
<td></td>
<td>- Significant contributions to concepts, designs, practices, analysis and interpretation of data ✔</td>
</tr>
<tr>
<td></td>
<td>- Participants in Drafting and Revising Papers ✔</td>
</tr>
<tr>
<td></td>
<td>- Someone who can explain all aspects of the paper ✔</td>
</tr>
</tbody>
</table>