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Quality Characteristics of Chia Seed Porridge SAFETY from Adult Disease in Republic of KOREA

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Abstract

Purpose; The purpose of this study is to develop healthy porridge for the contemporary people by adding chia seed in the Korean traditional rice porridge to facilitate rice consumption which has been reduced these days. The study made 6.5 times porridge samples by adding omega 3 fatty acid abundant chia seed in proportions of 5%, 10%, 15% and 20% respectively. The result of measuring viscosity showed that when the added proportion of chia seed increased. The result of measuring spreadability showed that when the added proportion of chia seed increased. The result of measuring lightness of the porridge decreased significantly. The result of sensory evaluation showed that savory taste and flavor increased significantly when the added proportion of chia seed increased. The greasy taste and consistency also increased significantly when the added proportion increased. Besides, the feeling in the mouth and overall preference showed that Sample CS20 with 20% chia seed was most significantly preferred. This indicates that the optimum proportion of adding chia seed in the porridge is 20%. Therefore, it is also considered a good idea to add chia seeds to the axis to make up for the lack of omega 3 fatty acid of modern people. Also it is thought that later research on the general and nutritional content of chia seed should be carried out to derive the results that omega 3 fatty acids rich in chia seed are beneficial to adult diseases.

[Keywords] Safety, Chia Seed, Porridge, Adult Diseases, Omega 3 Fatty Acid

1. Introduction

Chia seed (*Salvia hispanica* L.) is rich in omega-3 fatty acids and has a higher protein content than other grains[1]. Chia seed is used to be eaten as a staple by the ancient Aztecs, which ideally contains the ratio of omega-3 fatty acids and omega 6 fatty acids at 3:1. It is also rich in minerals such as calcium and phosphorus and high in vitamins A, B, E and D. Chia seed has a jelly-like texture when wet and is used in a variety of foods such as oatmeal porridge, pudding, bread, cakes, biscuits, salads and sandwiches. It has 20.4 g protein content per 100 g of chia seed, 4 g of saturated fat, 0 g of trans fat, 26.2 g of unsaturated fat, 19.3 g of omega 3 fatty acid and 7.1 g of omega 6 fatty acid[2].

Therefore, it is an important food for modern people with low levels of omega 3 fatty acids.

Chia seeds are tasteless and can be cooked in a variety of foods, and a study of chia seeds is done on Hershey DR(1995), cooking(Berdan and Anawalt 1996). Art(Coe Sophie D1994), etc. has not yet been studied much, and it is almost unheard of in our country.

The diet of modern people has become a social problem as it increases the incidence of various adult diseases. Proteins in rice reduce the concentration of cholesterol and neutral fat in the blood, and rice provides a lot of nutrients compared to flour and has a low content of cholesterol or fat. Therefore, products made from rice have better prevention of adult diseases than products made from flour.

This is a grain dish made from the oldest dead stock to be boiled with plenty of water to drink.

The Korean people, who started farming about 5,000 years ago, have been making and eating various kinds of porridge, and have been described in great variety and detail, depending on how to boil porridge, the type of rice, the type of rice and the absence fee, by the Joseon Dynasty, the completion period of Hansik[3]. Juk is a food that is easily digested because it is rich in water and boiled for a long time and is easily digested. Many people can eat it with a small amount of ingredients by adding a lot of dead water. It has the advantage of adding a grain as well as a component[4]. Research has been carried out on the past to add functional or medicinal food to porridge that has been eaten on behalf of rice[5], and Sea weed fusiforme[6], Green Tea[7], ginkgo nut[8] and others.

Therefore, in this study, to prevent adult diseases, we intend to evaluate the quality of the omega 3 fatty acids by manufacturing porridge with added *Chia* seed.

2. Experimental Methods

2.1. Manufacture of porridge

Based on Lee HJ et al(2005), 300g of rice was washed and drained three times, then soaked for two hours in 1950 ml of water(6.5 times porridge) and ground for three minutes with a blender(FM-909T, Hanil Electric, Korea). By adding the crushed *chia* seed by ratio, the stove (Magic chef, Oriental Magic, Korea) was used to heat it for 3 minutes with high heat and 17 minutes with medium heat in a stainless steel pot(diameter 22 cm in diameter and 11 cm in height) <Table 1>. Immediately before the experiment, the porridge was prepared and cooled to a high degree and used as a specimen. The experiment on the storage period of the porridge with the addition of *chia* seed was kept at room temperature(24±1°C).

Table 1. Recipe for making porridge added with rice and chia seed powder(g).

Samples	Control	CS5	CS10	CS15	CS20
Rice	300	295	290	285	280
Chia seed	0	5	10	15	20
Water	1950	1950	1950	1950	1950

Note: Control: Porridge made of rice powder 300g, *Chia* seed 0g
 CH5: Porridge made of rice powder 295g, *Chia* seed 5g
 CH10: Porridge made of rice powder 290g, *Chia* seed 10g
 CH15: Porridge made of rice powder 285g, *Chia* seed 15g
 CH20: Porridge made of rice powder 280g, *Chia* seed 20g

2.2. Viscosity measurement

Store it in 60°C water bath with added *chia* seed of Porridge in 500 ml beaker and store it with three 500 ml sample. 5 repeated measurements were made using spindle(No. 3, pm 30 using Brookfield. USA).

2.3. Spreadability measurement

To measure the spread of porridge, line spread chart was used. After taking 50 ml of porridge 60°C, the line spread chart was measured in six areas spread 2 minutes later by lifting and spreading the cylinder. The bottom of the line spread chart was easily measured by drawing a line at 5 mm intervals, and all samples were measured 5 times to obtain the average value.

2.4. Lightness measurements

Lightness were used(Color meter, JC-801, Color Techno Co., Japan) and the conditions of measurement were measured in a cylindrical container(35×10mm) with a sample band of 25mm and a standard white panel(L=94.23) for 5 or more measurements per specimen.

2.5. Sensory evaluation

A sample of 100 ml of porridge for sensory evaluation with the addition of *chia* seed was provided in a clear polyethylene disposable cup, and the sample number was used with a five-

digit random number. Twenty university students in the hotel cooking department who were interested in the study of porridge and could identify the difference in quality of porridge were trained once a week for four weeks to develop the overall characteristics of porridge, and sensory evaluation was conducted, and the mouth was rinsed with water in the middle of the specimen.

2.6. Statistical methods

The viscosity, spreadability, Lightness and sensory evaluation results of porridge were analyzed by ANOVA, and significance test was performed with Duncan's multiple test at $P < 0.05$ level, and the analysis was performed using SPS WIN Program 20.0.

3. Results and Discussion

3.1. Viscosity of porridge

The results of measuring viscosity after adding 5%, 10%, 15% and 20% of the *Chia* seed rich in omega 3 fatty acids to make 6.5times porridge were the same as <Table 2>.

The viscosity of the control group without *chia* seed was 97.79 cP, the viscosity of CS5 with 5% added *chia* seed was 117.78 cP, the viscosity of CS10 with 10% added *chia* seed was 135.90 cP, the viscosity of CS15 with 15% added *chia* seed was 165.86 cP, and the viscosity of CS20 with 20% added *chia* seed was increased significantly to 186.32 cP. This is thought to be due to the fact that *chia* seed is thickened to death by holding the added moisture to the porridge, and that the moisture content of the additions to the porridge decreases significantly as the *chia* seed's addition increases. These results are thought to have increased viscosity because *chia* seed have low starch content but are rich in fiber and have a large water containing capacity. Therefore, the higher the added amount of *chia* seed, the higher the viscosity of the porridge. Therefore, further research on the water retention of *chia* seed should also be conducted.

Table 2. Viscosity of porridge made with rice and different amounts of chia seed powder.

Samples	Viscosity (cP)
Control ¹⁾	²⁾ 97.78±2.24 ^{f4)}
CS5	117.33±1.52 ^e
CS10	135.90±3.33 ^d
CS15	165.86±2.53 ^c
CS20	186.32±1.09 ^b
F-value	1407.40 ^{***3)}

Note: ¹⁾Control, CS5, CS10, CS15, CS20

Rice powder: Chia seed powder; 100:0, 295:5, 290:10, 285:15, 280:20

²⁾Mean±S.D. ³⁾*** $p < 0.001$

^{4a)}Means in a row by different superscripts are significantly different at the $p < 0.05$ by Duncan's multiple range test.

3.2. Spreadability of porridge

Measurements of the spreadability of porridge are shown in <Table 3>.

The spreadability of the control group without *chia* seed was 11.20 cm, the spreadability of CS10 with 10% added *chia* was 9.30 cm, the spreadability of CS15 with 15% added *Chia* was 8.27 cm, and the spreadability of CS20 with 20% added *chia* seed was significantly reduced as the spreadability of *chia* was 7.47 cm. Lee DH(2004) reports that the spreadability of black sesame decreases as the addition of black sesame increases, It is thought to be the result of the similar composition of the *chia* and black sesame, and this study also shows the same tendency as the spreadability of porridge decreases as the addition of *chia* seed increases[9]. This is thought to have significantly reduced the spread of the brine by increasing its moisture content and increasing its viscosity as the addition of the *chia* seed has increased. The gel is formed when water is added, which is why it is believed that the spread of the porridge has decreased as the amount of *chia* seed added increases.

Table 3. Spreadability of porridge made with rice and different amounts of chia seed powder.

Samples	Spreadability
Control ¹⁾	²⁾ 11.20±0.10 ^{a4)}
CS5	10.47±0.06 ^b
CS10	9.30±0.10 ^c
CS15	8.27±0.06 ^d
CS20	7.47±0.06 ^e
F-value	1610.32 ^{***3)}

Note: ¹⁾Control, CS5, CS10, CS15, CS20

Rice powder: Chia seed powder; 100:0, 295:5, 290:10, 285:15, 280:20

²⁾Mean±S.D. ³⁾***p<0.001

^{4a-e)}Means in a row by different superscripts are significantly different at the p<0.05 by Duncan's multiple range test.

3.3. Lightness of porridge

The results of the lightness are shown in <Table 4>.

The lightness of the seeded porridge was 73.39 for the control group that did not add *chia* seed, the lightness of CS5 with 5% added *chia* seeds was 63.21, the lightness of CS10 with 10% added *chia* seed 59.18 and the lightness of CS15 with 15% added *chia* seed was 57.11, and the lightness of CS20 with 20% added *chia* seed was significantly lower. Originally, the color of the *chia* seed was dark brown, and as the added amount increased, the color of the porridge was brown, which is thought to have lowered the price of the porridge's. Park JL et al(2007) showed a different trend from this study, as the addition of black sesame decreases with the lightness of porridge[10].The result is that the *chia* seed are brown in the skin and white in the inside. Black sesame is thought to be the result of its appearance because both the inside and outside are black.

Table 4. Lightness of porridge made with rice and different amounts of chia seed powder.

Samples	L
Control ¹⁾	²⁾ 73.39±0.02 ^{a4)}
CS5	63.21±0.01 ^b
CS10	59.18±0.00 ^c
CS15	57.11±0.02 ^d
CS20	55.53±0.03 ^e
F-value	639773.33 ^{***3)}

Note: ¹⁾Control, CS5, CS10, CS15, CS20

Rice powder: Chia seed powder; 100:0, 295:5, 290:10, 285:15, 280:20

²⁾Mean±S.D. ³⁾***p<0.001

^{4a-e)}Means in a row by different superscripts are significantly different at the p<0.05 by Duncan's multiple range test.

3.4. Sensory evaluation of porridge

The results of the sensory evaluation of the porridge with the addition of *chia* seed are shown in <Figure 1>.

Sensory evaluation of the color of porridge with the addition of *chia* seed showed that the control group was not relatively preferred over the samples with the addition of *chia*, and among the samples with the addition of *chia*, the preference increased significantly to 20%. Among the samples with added *chia* seed, CS15 with 15% added *chia* seed and CS20 with 20% added *chia* seed had higher color preference over significantly different samples, and the preference for the color of porridge was found to have been most preferred with 20% added *chia* seed.

Sensory evaluation of the aromatic scent of porridge showed that the preference of the comparator was significantly lower than that of other specimens, and that the scent obtained was significantly higher as the rate of addition of the *chia* seed increased. In Ji JL & Jeong HC (2013), a study on *perilla* added bread found that the flavour of the bread was strong as the additions of the *perilla* powder increased, but the symbol level decreased, and the addition of

the right amount was stronger, and the present study showed a similar tendency[11].

Tests on the taste of porridge show that the contrast group has less significant taste among specimens. As the taste of the porridge increased, the taste of the porridge was significantly higher as the addition of the *chia* seed increased.

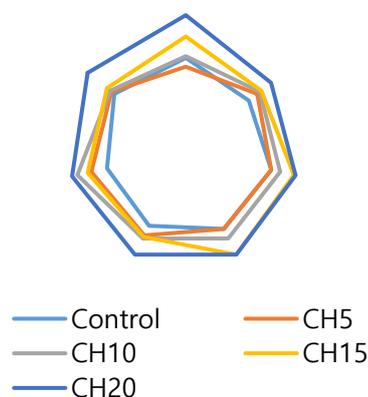
The mild taste of porridge showed that CS5 with 5% *chia* less control and 5% *chia* seed were not significantly greasy compared to other samples, and that the increased amount of *chia* application made it feel as if it were dead.

Sensory evaluation of the texture in the mouth feel of porridge indicates that the texture is significantly assessed as the amount of added *chia* increases. This is thought to be because the fat content of the *chia* increases.

The overall preference of porridge showed that the control group without the addition of *chia* seed was not significantly preferred, and there was a significant difference between samples. As the amount of addition of *chia* seed increased, the overall symbol became significantly higher, and CS20, a specimen with 20% of the *chia* added, was found to be significantly preferable to other samples. A study by Yoon GS(2001) showed a similar tendency to this study, as the addition of black sesame increases the overall symbolism[12]. Park JL et al(2007) also showed the same trend in the study, in which the overall symbolism was evaluated favorably as the addition of black men increases[13]. In the study of noodles with *perilla* seeds added by Ha KH& Shin DH(1999), the addition of *perilla* powder to flour showed a similar tendency as this study suggested that the addition of *perilla* powder to flour had a lower preference than 100% flour noodles, but the addition of an appropriate amount would have a better preference[14].

The results of sensory testing showed that the scent and taste obtained increased significantly as the addition of the *chia* seed increased, and that the greasy taste increased significantly. In addition, tactile and comprehensive symbols in the *chia* indicated that CS20, a specimen with 20% added *chia* seed, was significantly preferred, indicating that the appropriate amount of addition of the *chia* to the porridge was 20%.

Figure 1. The sensory evaluation of porridge made with rice and different amounts of chia seed powder.



4. Summary and Conclusion

This study tries to the quality characteristics of *chia* seed porridge, which is safe from adult diseases.

After adding 5%, 10%, 15%, and 20% of *chia* seed to make 6.5porridge, the viscosity of the porridge was measured, and the spreadability of the porridge was significantly reduced as the addition of the *chia* seed increased. Color measurements showed that the lightness of porridge was significantly lower as the addition of the *chia* seed increased, and sensory evaluation showed that the scent and taste obtained increased significantly as the addition of the *chia* seed increased, and that the texture and overall preference in the *chia* showed that CS20, a specimen with 20% *chia* seed, was significantly preferred, with an appropriate addition of 20% of the *chia* seed added to the porridge. Therefore, it is also considered a good idea to added *chia* seed to the porridge to make up for the lack of omega3 fatty acid of modern people. As *chia* seed are colorless, tasteless and odorless, they are thought to be applicable to a variety of foods and can be developed. It is thought that studies should be conducted on the abundance of omega3fatty acid in *chia* seed. Also it is thought that later research on the general and nutritional content of *chia* seed should be carried out to derive the results that omega 3 fatty acids rich in *chia* seed are beneficial to adult diseases.

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Children SAFETY Education in KOREA: Pre-Service Early Childhood Teachers' Changes after Flipped Learning on Child Safety Course

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Abstract

Most people rarely think about the possibilities or risks of accidents that can happen in everyday life, think that accident is caused by unforeseen coincidence. However, if people are aware of the potential for accidents that may occur in their surroundings and form behaviors and attitudes that protect them, these everyday accidents will not only be fully prevented, but they will be able to prevent them even when an accident occurs, the damage can be minimized.

Children are particularly curious, lacking self-regulation, awareness of the situation, and coping with safety, it is more prone to safety accidents than anyone else. As a result, the duty of early childhood teachers to educate children to develop the right knowledge of safety and the attitude and ability to cope with dangers is increasing and the knowledge and ability of early childhood teachers who can implement safety education appropriate for the developmental characteristics of children should be essential.

According to the various previous studies, the higher the safety knowledge of early childhood teachers, the higher the ability to practice for the safety of children, and teacher's safety-related expertise is closely related to safety education and accident prevention of children. Therefore, it is very important to find out how the application of the flipped learning method to the child safety curriculum has an effect on the safety expertise, knowledge, attitude, and practice of pre-service early childhood teachers.

The subjects of this study were 23 pre-service early childhood teachers, 3rd grade in the department of Infant & Child Care, University A in Gangwon-do using learning achievement test tool is divided into knowledge, skill, and attitude.

Applying the flipped learning method to the child safety curriculum showed significant results in the safety knowledge, skills and attitudes of the pre-service early childhood teachers. So it can be said that the instructor can 'teach well' according to the level of the learner, and the learner becomes aware of his weaknesses, and 'learn well' is possible. Also the results of this study show that the application of the flipped learning method to child safety education is a very positive and necessary method of safety course in the previous education.

[Keywords] Children Safety, Flipped Learning, Safety Knowledge, Safety Skills, Safety Attitudes

1. Introduction

No one is safe from the dangers of accidental economic and physical loss or loss of life. Nevertheless, most people rarely think about the possibilities or risks of accidents that can happen in everyday life[1], think that accident is caused by unforeseen coincidence[2].

However, if people are aware of the potential for accidents that may occur in their surroundings and form behaviors and attitudes

that protect them, these everyday accidents will not only be fully prevented, but they will be able to prevent them even when an accident occurs, the damage can be minimized.

In this situation, children are particularly curious, lacking self-regulation, awareness of the situation, and coping with safety, it is more prone to safety accidents than anyone else. As a result, the safety of children has emerged as the most important issue to be addressed in early childhood education institutions, the duty of

early childhood teachers to educate children to develop the right knowledge of safety and the attitude and ability to cope with dangers is increasing.

However, most of the safety course for pre-service early childhood teachers was conducted by large group lectures, so there is a lack of practical education on various safety accidents occurring in early childhood. It is a situation that recognizes low effectiveness. In addition, the pre-service early childhood teachers responded that the main reason for the safety accident of children is lack of experience and education of teachers[3], it can be seen that the safety accidents of children and the poor education of teachers are deeply related. Therefore, in order to ensure effective safety education for children, and to prevent the safety accidents of children, the knowledge and ability of early childhood teachers who can implement safety course appropriate for the developmental characteristics of children should be essential.

In order to meet these demands, we can consider the method of flipped-learning in safety course for the pre-service early childhood teachers, the reason is that the safety education can be planned and carried out with appropriate contents and methods in consideration of the age-specific developmental differences of children with the instructor in class. In other words, flipped learning is a teaching method that can make the best use of off-line lecture time based on students' understanding and needs[4][5], in-depth teaching can be effectively carried out with the performance of students under the instructor's guidance, while minimizing the explanatory lectures. Sung[6] designed and operated safety education in a flipped learning class, in the off-line lectures, students were taught to recognize the necessity and the main contents of safety education for children through debates, thereby improving the degree of achieving the learning goals, problem solving, and communication skills of safety subjects[7].

In addition, various previous studies[8][9] emphasize the relationship between teacher knowledge and safety accidents by explaining that safety practices for children occur when teachers have safety knowledge. In particular, Um[8] reported a high positive correlation

between the early childhood teacher's safety knowledge, attitude, and practice. In addition, the more experienced teachers who received safety education, the higher the safety knowledge and safety concern[10] and the higher the teacher's knowledge of safety education, the higher the degree of practice of safety education[11].

According to these previous studies, the higher the safety knowledge of early childhood teachers, the higher the ability to practice for the safety of children, as a result, teacher's safety-related expertise is closely related to safety education and accident prevention of children. Therefore, It will provide some implications on how to implement safety education for the pre-service early childhood teachers in previous training how the application of the flipped learning teaching method to the child safety curriculum has an effect on the safety-related expertise, knowledge, attitude, and practice of the pre-school teachers.

Accordingly, this study aims to apply the flipped learning method to the child safety course and to find out the changes in the pre-service early childhood teachers, the research questions set up for this are as follows.

Research Problem 1. What is the effect of the application of the flipped learning method on the child safety course on the knowledge of pre-service early childhood teachers regarding safety?

Research Problem 2. What is the effect of the application of the flipped learning method on the child safety course on the skills of pre-service early childhood teachers regarding safety?

Research Problem 3. What is the effect of the application of the flipped learning method on the child safety course on the attitudes of pre-service early childhood teachers regarding safety?

2. Research Method

2.1. Research subjects

The subjects of this study were 23 pre-service early childhood teachers, 3rd grade in the department of Infant & Child Care, University A

in Gangwon-do. Currently, they were acquiring basic theories related to child care by completing more than 60 credits related to child care. But the students are expected to develop their ability to plan and implement practical safety education plans based on the concepts and basic theories of early childhood safety as children are practicing child-care in the summer.

2.2. Research tools

2.2.1. Flipped learning course

The lectures on applying the flipped learning of the child safety course consisted of five sessions, and each session was conducted in accordance with the pre-class, in-class, and post-class flipped learning operation stages. In the case of the lecture topic by session of the five-time flipped learning class, one session was 'traffic safety', two sessions was 'fire safety', three session was 'child abuse, lost children and kidnapping', four session was 'media safety', and five session was 'drug abuse'.

Commissioned teaching method experts in this child safety course applied to flipped learning, special lectures on how to operate flipped learning, feedback on the preparation and revision of a lesson plan applicable to the subject of the course, and consulting on the five sessions of lecture management, evaluation plan and application were conducted. The application of flipped learning could be planned and applied more appropriately to the child safety course.

2.2.2. Learning achievement test

The Learning Achievement Test Tool was used to modify the performance standards of competency in national competency standards and was divided into knowledge, skills and attitudes. It consists of 9 items, each with 4, 3, 2 items and was rated on a 5-point scale. In detail this is as follows.

Table 1. Learning achievement test.

Division	Number	Contents
Knowledge	1	I know the characteristics of safety accidents related to age-specific developmental characteristics of children
	2	I know the contents of safety accidents related to age-specific developmental characteristics of children
	3	I know daycare centers indoor facility and facilities safety standard
	4	I know safety facility outdoor facilities and facilities standard
Skill	1	I can use appropriate teaching methods suitable for children's developmental characteristics and safety education
	2	I can manage indoor facilities and facilities of daycare centers safely
	3	I can manage outdoor facilities and facilities of daycare centers safely
Attitude	1	I can take precautionary measures with regard to children safety accidents
	2	I can work on countermeasures to children safety accidents

2.3. Research procedures

2.3.1. Learning achievement pre-test

The pre-test of this study was conducted on the lecture students in the 5th week before the start of the application of flipped learning which is applied for 5 sessions.

2.3.2. Applying flipped learning

The child safety course subject to flipped learning consists of 15 weeks of lectures, five sessions of flipped learning were applied. The first session was applied at week 6 of the 15-week lecture schedule, the second session was at 8 weeks, the third session was at 9 weeks, the fourth session was at 10 weeks, and the fifth session was at 12 weeks.

2.3.3. Learning achievement post-test

The post test of this study was conducted at week 13 after the application of 5 sessions, the same test tools as the pretest were conducted for 23 pre-service early childhood teachers.

2.3.4. Data processing and analysis

In this study, a paired t-test was performed to examine the effect of the flipped learning application of child safety management subjects on the knowledge, skills, and attitudes of pre-service early childhood teachers. T-test was analyzed using the SPSS 18.0 program.

3. Results

3.1. The effect of flipped learning teaching method on child safety course on pre-service teachers' knowledge

Table 2. Changes in safety knowledge.

(N=23)				
Division	M	SD	t	p
Knowledge 1(pre)	3.04	.767	5.850***	.000
Knowledge 1(post)	4.26	.619		
Knowledge 2(pre)	2.87	.815	6.423***	.000
Knowledge 2(post)	4.17	.650		
Knowledge 3(pre)	2.87	.919	5.260***	.000
Knowledge 3(post)	4.22	.736		

Knowledge 4(pre)	2.78	.850	5.927***	.000
Knowledge 4(post)	4.22	.671		
Knowledge (pre, total)	11.57	2.841	6.520***	.000
Knowledge (post, total)	16.87	2.361		

Note: ***p<.001

As a results of performing t-test to examine the effect on safety knowledge of pre-service teachers as shown in <Table 2>, the average safety knowledge score was 11.57(SD = 2.841) and 16.87(SD = 2.361) respectively. There was a significant difference between pre and post test (t = 6.520, p <.001). In addition, the difference between knowledge 4(1.435) and 3(1.349) was higher than that between 1(1.217) and 2(1.304).

3.2. The effect of flipped learning teaching method on child safety course on pre-service teachers' skills

Table 3. Changes in safety skills.

(N=23)				
Division	M	SD	t	p
Skill 1(pre)	2.65	.647	8.735***	.000
Skill 1(post)	4.09	.668		
Skill 2(pre)	2.74	.752	7.808***	.000
Skill 2(post)	4.35	.714		
Skill 3(pre)	2.78	.795	7.240***	.000
Skill 3(post)	4.35	.714		
Skill (pre, total)	8.17	1.899	8.655***	.000
Skill (post, total)	12.78	1.882		

Note: ***p<.001

As a results of performing t-test to examine the effect on safety skills of pre-service teachers as shown in <Table 3>, the average safety skills'

score was 8.17(SD = 1.899) and 12.78(SD = 1.882) respectively. There was a significant difference between pre and post test($t = 8.655, p < .001$). In addition, the difference skill 2(1.609) and 3(1.565) was higher than that of 1(1.435).

3.3. The effect of flipped learning teaching method on child safety course on pre-service teachers' attitudes

Table 4. Changes in safety attitudes.

	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Attitude 1(pre)	3.000	.739	7.609***	.000
Attitude 1(post)	4.304	.703		
Attitude 2(pre)	3.174	.834	4.811***	.000
Attitude 2(post)	4.261	.752		
Attitude (pre, total)	6.174	1.472	6.453***	.000
Attitude (post, total)	8.565	1.007		

Note: *** $p < .001$

As a results of performing t-test to examine the effect on safety attitudes of pre-service teachers as shown in <Table 4>, the average safety attitudes' score was 6.174(SD = 1.472) and 8.565(SD = 1.007) respectively. There was a significant difference between pre and post test ($t = 6.543, p < .001$). In addition, the difference between the before and after of attitude 1 (1.304) was higher than that of 2(1.087).

4. Discussion and Conclusion

Applying the flipped learning method to the child safety course showed significant results in the safety knowledge, skills and attitudes of the pre-service early childhood teachers. This is unlike the previous large-group lectures, where students were not able to learn in detail how to acquire knowledge and how to use it, each student's knowledge acquisition and utilization variability is clearly visible in flipped learning. So it can be said that the instructor can 'teach well'

according to the level of the learner, and the learner becomes aware of his weaknesses, and 'learn well' is possible.

The results of this study are described in more detail as follows. First, among the safety knowledge and skills, the average difference of the indoor and outdoor facilities and facilities items was relatively high. This is because the teaching method that allows pre-service early childhood teachers to directly visit the daycare center in the off-line lecture on the topic of 'fire safety' and observe the facility standards and the actual facilities and check the necessity and effects of them in the field on the basis of students' knowledge of safety and skills. It can be judged that the result was effective. However, the result of relatively low response items for children accidents among the safety attitudes is the result of the lack of education related to various accidents because education is focused only on CPR in off-line education.

However, the results of this study show that the application of the flipped learning method to child safety course is a very positive and necessary method in the previous education. It is also a result of confirming that it is a teaching method that solves and complements the problem that most of the safety of children rely on lecture-based education, and there is a lack of practical education on various safety accidents[3] and the safety education for children in the field is extremely limited[12].

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Effective Countermeasures in Overcoming the CRISIS in Korean Society Due to Illegal Online Gambling

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Abstract

This study is to suggest effective countermeasures in overcoming social crisis due to illegal online gambling which is rapidly increasing in our society today.

First, installing an overall coordination mechanism of the illegal gambling industry eradication policy. There are different organizations that carry out their roles related to the illegal gambling industry and are maintaining the coordinated business systems but because there are no organizations that carry out the overall mediation functions, the effectiveness of job performance deteriorates, and although there are aspects where active action is established when problems occur, it is restricted to only being temporary. In this sense, an overall coordination mechanism of the illegal gambling industry eradication policy is needed, and as The National Gambling Control Commission is an organization of the permanent consultative body, it is considered suitable to perform this role.

Second, to make active blockage of illegal online gambling user demands. In the case of illegal gambling, disciplinary measures must be arranged on deposits and withdrawal actions through accounts. On this, investigation agencies or The National Gambling Control Commission ought to facilitate a financial transaction account stop request on illegal accounts and arrange a restriction device to block the reversion of criminal proceeds.

Third, to arrange a payment suspension in using accounts on illegal online gambling. It is necessary to arrange the investigation functions on financial transactions dealing with the illegal gambling industry through related law revision, the right to suspend payments, and the right to request data about the head of agency.

Fourth, to grant rights of the special judicial police. According to the current law, The National Gambling Control Commission has a regulation on the illegal gambling industry but does not have any regulations on investigation rights. Under current circumstances where the online illegal gambling industry is rapidly increasing, simple cyber surveillance and information gathering is considerably limited, thus makes it also limited when it comes to the investigation process afterwards. In that sense bringing in the Special Judicial Police who have the authority to investigate must be taken into consideration.

Fifth, in order to reduce users of the illegal gambling industry, not only should posters, videos, and sound productions about harmful effects and penalties of the illegal gambling industry on teenagers be publicized, but prevention education should be made mandatory, and delivering the seriousness of harmful effects in person through visiting the schools should be actively expanded.

[Keywords] *Social Crisis, Illegal Gambling, Illegal Online Gambling, Special Judicial Police, The National Gambling Control Commission*

1. Introduction

Since the mid-1990s, when the internet started to come into wide use, online games became prevalent and encouraged the users'

speculative spirits into starting up gambling games.

It was about 1995 when internet sites regarding online gambling was first presented. Gambling acts that betted money directly in person shifted into cyber space after betting

was enabled through exchanging cash into electronic money or using virtual money. Since the year 2000, over 1800 online gambling sites were run by approximately 300 companies that received official permission to run them legally. Online gambling, in which the action is considered as gambling in reality, is taken place in cyberspace, or internet, by using electronic money or electronic financial transaction. In other words, it can be known to bet property and decide on profits by coincidence and can gain or lose profit through a connection network online[1].

Since the “Sea Story” incident in this country in July 2006, it is found that the intensive crackdown and the follow-up measures caused offline casinos to rapidly decrease and made online gambling even more prevalent[2].

The scale of the illegal gambling market was 53.7 trillion won in 2005, 75.1 trillion won in 2011, and reached 83.8 trillion won in 2015 and among them, illegal online gambling took a share of about 56% which is about 47 trillion won. The problems that illegal online gambling has in the expansion of the illegal gambling market is first, the users of the illegal gambling industry showing high addiction which causes a loss of money on an individual scale, health issues, occurrence of family trouble, second, the point that they might commit second crimes such as theft, fraud, and violence, third, causes problems in occurrence of invading capital safety and soundness through illegal underground economy vitalization. Especially in the recent past, along with the expansion of the illegal online gambling industry, the access of teenage illegal gambling industry through the internet or smart phones is rising, and the problem in teenagers becoming addicted to using the illegal gambling industry is rising up to a very critical level in society.

When this point is taken into consideration, our society must be concerned and focus on the capabilities about the effective prevention policies and countermeasures for illegal online gambling eradication that the author is trying to discuss.

2. The Present Situation of Online Gambling and Social Crisis with Examinations of Laws Regarding Regulation

2.1. The present situation of online gambling

According to the third illegal gambling research data in 2016, the sales scale of illegal gambling that was 75 trillion 1,474 billion won in 2011 increased to 83 trillion 7,822 billion won by 2015, which shows an increase rate of 11.5%.

Compared with the net sales of the legitimate gambling industry in 2012 that showed an increase rate of 12.4% by 2014, it seems to show a similar trend. Among the whole illegal gambling scale, illegal online gambling takes up about 47 trillion won, which is about 56%. Given the present situation of the crackdown cases in the illegal gambling industry, it decreased 1/7, with 55,788 cases in 2007 to 7,839 cases by 2015. Also, looking at the current state of arrests in cyber gambling crimes of the jurisdiction of the Cyber Bureau, the arrest cases that reached up to 5,847 in 2010 decreased by 2012 and 2013. A tendency shows increasing again and in October 2015, through a 100-day intensive crackdown for cyber gambling eradication of the National Police Agency, the number of cyber gambling crime arrest cases for 2016 was 9,394 which was an increase of 2.8 times the year before which was 3,365[3].

2.2. The examination of regulation related laws on online gambling

There are punishment regulations on gambling acts in Article 246 of the Criminal Code, and on establishing gambling places in Article 247, and the illegal gambling industry can also be applied in the crime of establishing gambling places.

In Article 248, there is a punishment regulation to the one who sells lottery tickets without accordance to the law, and this is also applied to the illegal gambling industry concerning the lottery business which is categorized in the gambling industry.

Article 1 in the Act on Special Cases Concerning Regulation and Punishment of Speculative Acts regulates ‘The purpose of this Act is to prescribe the matters concerning the instruction on and regulation of speculation-related businesses, and the special punishment of persons, etc., who perform speculative acts by using slot machines or speculative gaming machines, besides speculation-related businesses’ which clearly states this is a regulation about illegal gambling acts and the industry.

In Article 44-7, Section 1 in the Act on Promotion of Information and Communications Network Utilization and Information Protection, ten types of information that prohibit circulation using an information and communications network are regulated, and the ones related to online gambling regulations are Act. 6, ‘Information with a content that falls within speculative activities prohibited by statutes,’ and Act. 9, ‘Other information with a content that attempts, aids, or abets to commit a crime.’ If the crime of gambling or the crime of establishing a gambling place fall under this category according to the criminal law or an act of speculation, the regulation can be applied, along with aiding and abetting the crime of the establishment of gambling places.

Other individual acts that are regulated in relation to the illegal gambling industry are the Game Industry Promotion Act, Tourism Promotion Act, Korean Racing Association Act, Bicycle and Motorboat Racing Act, Lottery Tickets and Lottery Fund Act, and Traditional Bullfighting Match Act.

3. National Policy Issues Regarding Illegal Online Gambling

3.1. Dispersed regulations on the illegal gambling industry

The illegal gambling crackdown system of the government is in dualistic structure. The monitoring function of the illegal gambling industry is conducted by The National Gambling Control Commission, and the prosecution and

the police agency are in charge of the crackdown. In other words, through the 「National Gaming Control Commission Act」, the matters concerning inspecting actual conditions of places of business of gaming business entities and guiding and supervising them are regulated, but only formal monitoring is in regulation concerning the crackdown of the illegal gambling industry.

The Public Order Division in the National Police Agency Public Safety Bureau is in charge of the permission of the gamble business according to the 「Act on Special Cases Concerning Regulation and Punishment of Speculative Acts」, the Police Administration Public Safety Bureau or the Public Order Division in the Local Police Agency is in charge of the illegal gambling industry that uses illegal games considering that this is also a business conduct in speculative game rooms according to Article 2, Section 3, Item ‘b’ of 「The National Gambling Control Commission」, the Korean National Police Agency Cyber Bureau and the Department of Cyber Safety in the Local Police Agency is in charge of the crackdown of online gambling sites that is regulated in Article 2, Section 3, Item ‘c’ of 「The National Gambling Control Commission」. The Intellectual Crime Investigation Team is in charge of the crackdown of private establishments such as the Casino Business, Horse Racing, Bicycle and Motorboat Racing that are regulated in Article 2, Section 3, Item ‘a’ of 「The National Gambling Control Commission」.

3.2. Willingness to crackdown and criminal responsibility concerning gambling crime

Concerning the crime of gambling, according to the criminal law, any person who gambles shall be punished by a fine not exceeding ten million won. Any person who regularly gambles shall be punished by imprisonment for not more than three years or by a fine not exceeding twenty million won. Any person who establishes a gambling place with the purpose of profit making shall be punished by

imprisonment for not more than five years or by a fine not exceeding thirty million won.

The Sentencing Committee regulates the sentencing guidelines by distinguishing the establishment of gambling places, illegal sports gambling, providing usage of illegal games, and distribution of illegal games.

According to the current laws and sentencing guidelines the strongest penalty is four years of imprisonment and in other cases, the bounds are of no more than three years of imprisonment with the possibility of probation. For these reasons, there is a tendency to not deal with this matter as a priority because in the case of the police, it is not a violent crime related to a direct invasion of a civilian's life and body, and is focused when the case is very serious of unlawfulness and a social awareness is occurred. Moreover, taking a look at the present condition of the judicial action of gambling crimes, in 2015, the cyber gambling special crackdown promotion outcomes show that they have arrested 2,873 people in 1,246 cases, and 2,610 of these people were charged without physical custody, 99 were not indicted, and according to the statistics of The Public Prosecutors' Office, criminals that were arrested in relation to gambling and lottery tickets that fall into folk crime, as for the penal code offenses, 44.3%, which is 11,840 out of 26,724 criminals were prosecuted, and as for the Special Criminal Acts, the 79.0%, which is 1,222 of the 1,547 criminals arrested were charged with prosecution by the 「Act on Special Cases Concerning Regulation and Punishment of Speculative Acts」 and leads to a problem where the criminal himself cannot be aware of the seriousness of the crime[4].

3.3. Manned enforcement of crackdown and organization of the national gambling control commission

The National Gambling Control Commission ought to establish a comprehensive plan for an integrated crackdown and supervision of the gambling industry, and must implement an education in prevention of gambling addiction to teenagers. Also, in spite of the

fact that the Surveillance and Report Center of Illegal Gambling Industry has to deal with the illegal gambling industry and matters of the illegal gambling industry accusations or requests for investigation, and matters regarding monitoring illegal gambling sites, but the monitoring staff is very limited. There are currently only nine monitoring personnel (contract employees) for the illegal gambling industry in The National Gambling Control Commission, and with this number it seems that it will be inadequate to find illegal gambling sites, analyze scientifically and systematically with effect. Not only so, but The National Gambling Control Commission is consisted of twenty-three dispatched public officials and twenty-six contract employees which is a problem regarding safety and professionalism in the organization.

3.4. The crackdown and punishment of business operators in internationalization and specialization of illegal online gambling

In the case of the illegal gambling industry through internet gambling sites, there clearly exists a limitation of crackdown and punishment on business operators that operate through the illegal gaming industry on an international level such as operating the servers abroad by dispersing them in order to avoid local police crackdown or going abroad and operating an illegal gaming industry by establishing a local corporation.

According to the investigation cases a business operator was arrested by Gyeongbuk Provincial Police Agency Cyber Investigation Team for operating a gambling site worth a total of 500 billion won by opening an internet casino gambling site 'Woori Casino (www.pdr070.com)' in the Philippines from January 2012 to July 2014, and with the reinforcement of the crackdown of gambling sites from the police, it was revealed that the casino games were operated live on the internet in Manila, Philippines(Jaehyun Seung, Restriction and Problems of the Crackdown of the Illegal Gaming Industry and Legal Countermeasures, 2019.5.24.).

Also, in the case of an illegal sports toto gambling site 'Tiara(md-3232.com)' they used a Chinese site called 'BETSAFE' to prevent information leakage and by using these overseas sites, there is a case in which they tried to secure the safety and reliability of illegal gambling operation, and in 2007 to 2012 in Cambodia, established a local corporation and installed the internet gambling site server from each country with eighty members, and got an unfair profit of 470 billion won through stakes of about 3 trillion 700 billion won for five years[4].

The internationalism of illegal online gambling industries is intensifying and in a situation where most illegal sites are being constructed at illegal web sites abroad which makes it difficult for the investigative agency to trace gambling sites, therefore, a cooperation investigation is urgently needed[5].

4. Conclusion-Examining Effective Countermeasures for Illegal Online Gambling Eradication

4.1. Establishing an overall coordination mechanism on the illegal gaming industry eradication policy

Many organizations concerning the illegal gambling industry are performing their roles in preserving the coordination of business system but there are no organizations performing overall coordination functions therefore the work performance efficiency declines, and although there is an aspect where there are active measures in the case of problem occurrence but it has the limit of being only temporary. In this respect, an overall coordination mechanism on the illegal gaming industry eradication policy is needed[1], and The National Gambling Control Commission, which is part of a permanent consultative body, it is considered suitable to perform this role.

4.2. Arranging active blockage of illegal online gambling user demands

In telecommunications-based financial fraud crimes such as Mortgage fraud and voice phishing, the measure of the suspension of payment of the account is possible based on the Special Act on the Prevention of Loss Caused by Telecommunications-based Financial Fraud and Refund for Loss, but illegal gambling has no related basis. Measure of restriction ought to be arranged on the deposits and withdrawals of accounts due to the characteristics of illegal gambling. There is a need for the investigation agency or The National Gambling Control Commission to arrange restriction devices that can block the attribution of criminal proceeds by making possible the demand of suspension of electronic financial transactions of illegal accounts.

4.3. Arranging a payment suspension in using accounts on illegal online gambling

In order to prevent expansion and additional damage of illegal online gambling, restricting user access through quick site blocking is essential. Currently, only through investigation process from Korea Communications Standards Commission the blocking is possible and even if the information on the online illegal gambling site is identified, it normally takes two weeks. During this time, there are many cases in which the online gambling site operator safely makes a profit and then closes the site, then opens again a new one. Therefore, in order to block illegal gambling sites, it is necessary to arrange a basis in which The National Gambling Control Commission can make orders to block illegal gambling sites directly without deliberation from Korea Communications Standards Commission.

It is necessary to arrange the investigation functions on financial transactions dealing with the illegal gambling industry through related law revision, the right to suspend payments, and the right to request data about the head of agency.

4.4. Granting rights of the special judicial police

According to the current law, The National Gambling Control Commission has a regulation on the illegal gambling industry but does not have any regulations on investigation rights. Under current circumstances where the online illegal gambling industry is rapidly increasing, simple cyber surveillance and information gathering is considerably limited, thus makes it also limited when it comes to the investigation process afterwards. In that sense bringing in the Special Judicial Police who have the authority to investigate must be taken into consideration. In late 2017, 15 of the 17 central departments operate the special judicial police, and the local governments also operate the special judicial police for the crime crackdown concerning public welfare. However at the current moment, with the organizations and personnel in The National Gambling Control Commission, it is difficult to deal with the roles caused by these grants of the special judicial police, so first, a significant increase of the organizations and personnel is needed. And the fact that the grant of the investigation rights having a heavy responsibility should be kept in mind. This might restrict the freedom of the people, therefore, institutional complements that can cultivate professional knowledge should be arranged.

4.5. Expanding report rewards and introducing the informant punishment reduction system

The illegal gambling investigation mostly begins with an inside informant therefore there is a need to increase the payment standards of report rewards and also expand the range to motivate the informant.

The evidence provider of the illegal profits and operators that the writer is suggesting, should be considered the most advantageous sentencing factor in the sentencing guidelines and at the same time the introduction to legal plea-bargaining is necessary.

4.6. Expanding teenage education on harmful effects and punishments regarding the illegal gambling industry

to reduce users of the illegal gambling industry

Not only should posters, videos, and sound productions, but prevention education should be made mandatory, and delivering the seriousness of harmful effects in person through visiting the schools should be actively expanded.

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Mediating Effects of Children's Time of Electronic Media Use on Relationships between the CRISIS of Marital Conflict and the Problem Behavior of Those Children in Their Early Stage of School Age

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Abstract

The purpose of this study was to examine how the crisis of marital conflict between parents influences children's problem behaviors through mediation by time that those children spend in the use of electronic media. For this purpose, the study investigated data about 1,354 participants of the 8th-Year Panel Study of Korean Children(2015). The findings of this study can be summarized as follows. First, mother's recognition of marital conflict directly affects children's time of electronic media use and their problem behavior. In other words, the higher mother is in such recognition, the higher or more children are in the time of electronic media Second, mother's recognition of marital conflict has a direct influence on children's problem behavior via their time of electronic media use. In contrast, however, father's recognition of marital conflict has no effect on children's time of electronic media use and problem behavior. This study is so meaningful in that it provided some empirical information useful for parent education, parent counseling or child-parenting environment by determining direct or indirect relationships between mother's psychological negativity, especially in regard to marital conflict, and early school-age children's problem behavior and their time of electronic media use or, in other words, effects of that negativity on such behavioral problem and time spent in the use of electronic media. The authors of this study hope that its findings could be used as basic data for parent education or child counseling, consequently contributing to parents' more psychological soundness and better domestic environment.

[Keywords] Crisis, Marital Conflict, Time of Electronic Media Use, Problem Behavior, Mediating Effects

1. Introduction

Recently, there's a gradually increasing number of children who show problem behaviors as they suffer social maladjustment and psychological trouble than before. This may be attributed to increase in the instabilities of parenting environment, which include marital conflict, that are brought by higher burdens of parenting, more complicated or diversified domestic environment, to which more women's advancement to society and more families in which both mother and father earn money by working may contribute, and so on. Such instability, especially in relation to the contexts of environment surround-

ing children may cause children's increased behavioral problems. This is why a better understanding of those contexts is needed[1]. As far as parenting environment is concerned, parents are the most important factor of child growth and development. In association, the quality of parent-child relationship at home is a decisive factor of children's psychological development[2], For the whole growth or development of children, thus, it is so important to examine how the psychological instability of parents, parenting environment at home and children's problem behavior are related between them.

Problem behaviors indicate ones that are distracted from normal standards, relations with

others or social norms, which include aggressive, maladjustive and abnormal behaviors[3]. Such behavioral problem is not just restricted to childhood, but keeps on influencing on development since then. This suggest that it's so important to identify and prevent that problem. More notably, problem behavior in childhood is often less radical in symptom or expression than early childhood or adolescence, rather possibly more and more deepened or accumulated[4]. Without adequate intervention from outside, thus, children's problem behavior may have negative effects on their period of youth and adulthood[5]. In this respect, problem behavior in childhood deserves to be more noticed than any other developmental stages. For the whole development of children, thus, it is required to seriously consider and understand interactions between children's problem behavior and environmental contexts surrounding them such as parent-related factors and parenting conditions.

It had been known that there are many different causes of children's problem behavior that include the traits of children themselves, parents' negative parenting behaviors or psychological state, negative parenting environment given to children and children's exposure to electronic media[1][3][6][7][8][9][10][11]. Especially, it is generally recognized that parents' psychological state and parenting style mainly contribute to children's behavioral problems[6][12][13]. In fact, underlying children's problem behavior is parent-child relationship. In a similar vein, parents' negative parenting style for children brought by their psychological anxiety due to factors like marital conflict is thought to be a main cause of increase in children's problem behaviors[7].

It is unusual that marital conflict between parents occurs at home. By the way, such conflict does not just influence parents' psychological health or adjustment, but forms a negative domestic environment that in turn affects the entire family. Especially, children is reportedly vulnerable to marital conflict between parents[14][15]. More specifically, children who are frequently exposed to such conflict are reported to be seriously difficult in adjustment[8], vulnerable to stress and maladjustive to environment

around them as they are much influenced by domestic environment that is negative[16], It is also reported that they probably make emotional or behavioral problems 2~5 times more than other children whose domestic environment is agreeable[17]. In a similar vein, a lot of prior research demonstrate that marital status between parents affect children's problem behaviors[6][8][15][18][19][20][21][22]. Lately, by the way, there are more and more emergence of claims that one of the main reasons of marital conflict is an increased use of electronic media such as smart phones[23]. According to the claims, an increased time spent in the use of electronic media makes family members focus on communication with others rather than conversation or interactions between those members, resultantly forming negative domestic conditions that including the disconnection of family communication[24]. Especially, the investment of more time in the domestic use of electronic media is less likely to provide fundamentals for child development, for instance, opportunity of one-on-one interaction between children and adults. Also, it causes children's failure to make relations with others or develop enough social skills such as those of empathy. Influentially, as a consequence, that failure may lead children to do many different problem behaviors that are characterized as aggressiveness, resistance, depression, regression or anxiety[25][26][27][28][29]. Furthermore, the advancement and prevalence of electronic media brings physical changes in domestic parenting environment, in which children's interactions with adults, that is, parents give way to their interactions with electronic media. Such dramatic change in parenting environment at home is expected to bring a sustained increase of electronic media use by children. It is even more often that children are exposed by parents to electronic media rather than choosing the media by themselves. Anyway, such negative domestic parent environment as marital conflict may be considered as a critical predictor of children's problem behavior.

In particular, the quality of parent-child relationship at home is decisive factor of children's psychological development which in turn has a diversity of influences on children's maladjust-

ment and problem behavior. Additionally, domestic environment that provides exposure to electronic media, for example, TVs, Internet and smart phones affect the quality of mother-father relationship, especially in relation to marital conflict between them and the couple's psychological characteristics, which in turn may influence children's growth and development. Both parents' psychological characteristics and parenting environment that they provide may be quite important factors affecting people in their childhood whose development into social beings are believed to heavily dependent on how they are environmentally influenced[30]. Meanwhile, the early stage of school age is a period when children need to adjust themselves to a new environment amid dramatic physical or psychological changes from the level of early childhood education to that of elementary school education. If children are successful in adjustment to the new environment and performance there during that period, it can have positive effects on their behavioral development, social development, academic achievement and so on[31][32]. The problem is, by the way, the same period might be when children's behavioral problems are transferred or extended from home to elementary school. In this respect, it is needed to examine and appreciate how children adjust themselves to a new environment under such physical or psychological changes with relationships between their domestic environment and problem behavior taken into serious consideration. Thus, the purpose of this study was to examine effects that children's time of electronic media use and marital conflict between parents have on the problem behavior of those children in their early school age with reference to data from the 8th-Year Panel Study of Korean Children(PSKC)(2015) by the Korea Institute of Child Care and Education. It is hoped that the study provides basic information for more effective parent education and child counseling both of which can help parents properly perceive the problem behaviors

and electronic media use of children, reduce marital conflict between them at home, improve psychological health of their own and form a better domestic environment. For its purpose, this study set up a research question, which is 'what are the effects of marital conflict between parents and children's time of electronic media use on those children's problem behavior?'

2. Methods

2.1. Subjects

For this study, the authors reviewed data from the 8th-Year Panel Study of Korean Children(2015) by the Korea Institute of Child Care and Education. The PSKC built up its total sampling of 2,150 families each of which had a newborn baby in 2008. Since then, the agency has been publishing data about those samples in terms of child development, family environment, community environment and so on. Of 2,150 children who participated in the above mentioned panel study, this research excluded those who the method of listwise deletion found as belonging to the cases of missing value or outlier. Accordingly, this study selected 1,354 children as its participants who were currently elementary school students at the age of 7. Of those participants, 687(50.7%) were male and 667(49.3%), female, showing similarity in distribution by gender. Regarding age by months of the participants, it was found 84 to 92 months or, more specifically, 87.9 months(SD=1.56) for boys and 87.86 for girls(SD=1.51) in average, which were almost same irrespective of gender. Of the participants' parents, 926 mothers(68.4%) were in their 30s and 731(54.0%) fathers in their 40s. In terms of education, most of the parents were college graduates <Table 1>.

Table 1. General characteristics of the participants(n=1,354).

Characteristics	Categories	n	%	Characteristics	Categories	n	%		
Gender	Male	687	50.7	Age by months	84~86	282	20.8		
	Female	667	49.3		87~89	854	63.1		
					90~92	218	16.1		
Mother	Age	20s	15	1.1	Father	Age	20s	3	.2
		30s	926	68.4			30s	587	43.4
		40s	540	39.9			40s	731	54.0
		50s or over	5	.4			50s or over	27	2.0
		Missing value of the system	2	.1			Missing value of the system	6	.4
		Education	High school graduates or below	392		28.9		High school graduate or below	363
		Junior college graduate	388	28.7		Junior college graduate	279	20.6	
		College graduate	499	36.9		College graduate	568	41.9	
		Graduate school or over	73	5.4		Graduate school or over	137	10.1	
		Missing value of the system	2	.1		Missing value of the system	7	.5	

2.2. Instrumentation

For this study, 3 different types of scales were used.

2.2.1. Marital conflict

The scale that this study used to measure marital conflict between parents is the PSKC's modified and supplemented version[33] of a marital conflict inventory(Fighting for Your Marriage)

developed by Markman, Stanley and Blumberg. As a self-reported measurement device, that version consists of total 8 items asking about the distress of patients and the possible risks of divorce etc. Speaking in more detail, those items include sentences to obtain responses regarding ways of marital conflict, one parent's criticism of the other parent's own thought or mood, degree of negativity, tendency of ignorance, regret about marital life, loneliness in marital life and tendency of evasiveness following marital conflict. Response for each item was scored based on a 5-point Likert scale ranging from 0 point for "Not agree at all" to 5 points for "Strongly agree". Here, the higher score is, the higher the level of marital conflict is. Examples of the items in form of sentence include 'Our quarrels over the small stuff are often expanded, when we verbally abuse or criticize each other and then fight as we remind each other of his or her past faults' and 'When our fighting begins, we just find ourselves evading the uncomfortable situation because we don't want to talk to each other any more'. By the way, all of the items used here were found high in Cronbach's α , for instance, .92 for mother's recognized marital conflict and .92 for father's.

2.2.2. Time of electronic media use

In this study, the time of electronic media use indicates the total sum of children's spent time in watching TVs and in the use of electronic media(ex. the Internet, game machines, mobile phones and tablet PCs) at weekdays or the weekend. Data about the total sum were collected through interviews with the main providers of parenting those children. In the interviews, those main providers were asked to answer a question item which says 'how much time did oo spend in TV watching and in using electronic media(ex. the Internet, game machines, mobile phones and tablet PCs) in the most usual days during the last school term or, more specifically, at weekdays or the weekend during the same term ? Responses to the question was supposed to be scored as 0 point for no time spent in watching TVs or in the use of electronic media under the condition that score is added by 0.5 points every increase by 30 minutes in the spent time provided the maximum of that time that

the respondents can state is 11 hours and 30 minutes. Meanwhile, higher score for the question item means more time that children spend in TV watching or electronic media use.

2.2.3. Problem behavior

In order to measure problem behaviors by children in their early stage of school age(1st-grade elementary school students(aged 7)), this study used CBCL 6-18(Child Behavior Checklist for ages 6-18) as its scale. CBCL 6-18 is Oh and Kim's standardized version[35] of an inventory[34] developed by Achenbach and Rescola. That scale contains total 120 items with which parents assess the behavioral problems of children or adolescents aged 6 to 18. The scale is also largely categorized into 3 sub-scales for externalizing problem behavior, internalized problem behavior and total problem behavior, respectively or, more specifically, for anxiety/depression, withdrawal/depression, physical symptoms, violation of rules, social immaturity, way of thinking, inattentiveness and behavioral aggressiveness. Data that this study collected using CBCL 6-18 were analyzed, especially focusing on correlations between the sub-scales and total scores. Examples of the items of the sub-scales include "The child cries often", "There are very few things that the child enjoys" and "The child feels too much tired without any particular reason". Meanwhile, responses to the items are scored based on a 3-point Likert scale, for example, 0 point for "Never behave in that way" and 2 points for "Behave frequently or often in that way". Data that this study collected using CBCL 6-18 and then analyzed were all raw scores. In the study, higher score for the item means the higher degree of problem behavior. By the way, the items in total were found high in Cronbach's α which was .90.

2.3. Analysis methods

This study identified the general characteristics of participants and then processed them in terms of frequency and percentage in accordance with the SPSS/WIN 23.0 Program. And then, the study investigated the level or degree of marital conflict between parents, children's time of electronic media use and children's problem

behavior and then determined relationships between the three variables in terms of mean value, standard deviation value and Pearson's product-moment correlation coefficient. Furthermore, this research carried out Baron and Kenny's the three-step mediated regression analysis and the Sobel test to examine and clarify effects that marital conflict between parents has on children's problem behavior via their time of electronic media use[36].

3. Results

3.1. Descriptive statistics of marital conflict between parents, children's time of electronic media use and children's problem behavior

The following shows the descriptive statistics of marital conflict between parents, children's time of electronic media use and children's problem behavior <Table 2>.

Table 2. Descriptive statistics of the main variables.

Variable	Range	M	SD
Mother's recognized marital conflict	2.00	16.40	6.42
Father's recognized marital conflict	2.00	16.29	5.80
Children's time of electronic media use	.00	3.98	1.80
Anxiety/Depression	14	1.89	1.99
Withdrawal/Depression	9	.73	1.09
Physical symptoms	8	.71	.19
Social immaturity	11	1.70	.64
Children's problem behavior			
Accident-proneness	8	.94	.19
Inattentiveness	13	1.97	.11
Violation of rules	7	.98	.15
Aggressiveness	17	2.82	.87
Total	50	13.47	10.56

3.2. Correlations between parent's marital conflict, children's time of electronic media use and children's problem behavior

The following shows correlations between parents' marital conflict, children's time of electronic media use and children's problem behavior <Table 3>.

Table 3. Correlations between parents' marital conflict, children's time of electronic media use and children's problem behavior.

Variable	Mother's recognized marital conflict	Father's recognized marital conflict	Children's time of electronic media use	Problem behavior									
				1	2	3	4	5	6	7	8	Total	
Mother's recognized marital conflict	1												
Father's recognized marital conflict	.63**	1											
Children's time of electronic media use	.28**	.22**	1										
Children's problem behavior	1	.17**	.11**	.09**	1								
	2	.15**	.10**	.13**	.52**	1							
	3	.11**	.11**	.03	.31**	.22**	1						
	4	.18**	.11**	.18**	.57**	.45**	.26**	1					
	5	.20**	.13**	.07*	.47**	.32**	.34**	.42**	1				
	6	.23**	.16**	.23**	.35**	.35**	.17**	.55**	.40**	1			
	7	.22**	.14**	.15**	.31**	.26**	.17**	.47**	.36**	.47**	1		
	8	.26**	.15**	.18**	.52**	.36**	.27**	.57**	.43**	.52**	.60**	1	
Total	.28**	.18**	.20**	.73**	.58**	.44**	.78**	.65**	.72**	.66**	.83**	1	

Note: 1: anxiety/depression, 2: withdrawal/depression, 3: physical symptoms, 4: social immaturity, 5: accident-proneness, 6: inattentiveness, 7: violation of rules, 8: aggressiveness

As shown in <Table 3>, the problem behavior of children in their early stage of school age, which is the dependent variable, has positive correlations with mother's recognized marital conflict ($r=.28, p<.01$) and father's ($r=.18, p<.01$). Also, that dependent variable has positive correlations with children's time of electronic media use ($r=.28, p<.01$). More specifically, correlations between factors of children's problem behavior and mother's recognized marital conflict exist with the range of $r=.11 \sim .26 (p<.01)$. And, correlations between those factors and father's recognized marital conflict exist with the range of $r=.10 \sim .16 (p<.01)$. Nearly all of the factors have correlations with children's time spent in the use of electronic media with the range of $r=.09 \sim .23 (p<.01)$. However, no correlation is shown between children's physical symptoms invested in the use and their time of electronic media use. Children's time of electronic media

has positive correlations with mother's recognized marital conflict ($r=.28, p<.01$) and father's ($r=.22, p<.01$).

3.3. Mediated regression analysis of multiple independent variables affecting the problem behavior of children

In order to determine the relative power of influence that each independent variable has on the problem behavior of children in their early stage of school age, this study conducted the multiple regression analysis, where marital conflict between parents and children's time of electronic media use were both designated as independent variables and children's role practice, that is, their problem behavior as the dependent variable. Prior to that analysis, the study carried out the Durbin-Watson test, which confirmed the independence of residuals. It also calculated VIF values, which confirmed that there's no abnormality in multicollinearity. <Table 4> shows

the relative power of explanation that variables affecting children’s problem behavior and the influence of each variable on the problem behavior via children’s time of electronic media use.

Table 4. Mediated regression analysis of marital conflict between parents, children’ time of electronic media use and the problem behavior of children(N=1,354).

	Model 1 (Independent variable: Time of electronic media use)		Model 2 (Dependent variable: problem behavior)		Model 3 (Dependent variable: problem behavior)	
	B	SE	B	SE	B	SE
(constant)	5.979	.868	3.116	.152	3.143	.982
Mother’s recognized marital conflict	.458***	.056	.049***	.010	.413***	.055
Father’s recognized marital conflict	.001	.062	.004	.011	.005	.061
Children’s time of electronic media use					.910***	.154
<i>R</i> ²	.278		.183		.317	
F	56.539***		23.331***		50.333***	

Note: ***p<.001

This study conducted the multiple regression analysis, that is, Baron and Kenny’s the 3-step mediated regression analysis in order to determine where children’s time of electronic media use effectively mediate the influence of marital conflict between parents on the problem behavior of children in their early stage of school age. At the 1st step of that analysis where Model 1 was employed to clarify the influence of mother’s recognized marital conflict and father’s as independent variables on children’s time of electronic media use as the mediating variable, resultantly, it was found that the former two variables totally account for 27.8% of the latter and that among the two independent variables, mother’s recognized marital conflict has positive, significant effects on the mediating variable(p<.001)and father’s does not(p>.05).

At the 2nd step where Model 2 was used to determine how much marital conflict between parents are much influential to the dependent variable or the problem behavior of children in their early stage of school age, it was discovered

that mother’s recognized marital conflict only has a positive, significant effect on that behavior(p<.001). At the 3rd step where Model 3 was applied to examine the influences of marital conflict between parents as an independent variable and children’s time of electronic media use as the mediating variable on children’s problem behavior, finally, it was proved that mother’s recognized marital conflict only has positive, significant effects(p<.001). In more detail, mother’s recognized marital conflict is significantly influential to children’s time of electronic media use that in turn affects children’s problem behavior more strongly than the marital conflict. Thus, it is evident that time which children spend in the use of electronic media is truly the mediating variable.

It was found that mother’s recognized marital conflict significantly affect children’s time of electronic media use as the mediating variable and their problem behavior. Especially, that time of electronic media use was found making a partial mediation between that marital conflict and

that problem behavior. In contrast, it was discovered that children's time spent in the use of electronic media has no mediating effect on the influence of father's recognized marital conflict on children's problem behavior.

As shown in <Table 5>, the Sobel test confirmed a path on which children's time of electronic media use the mediating variable become

effective. The path flows from mother's recognized marital conflict to children's time of electronic media use and to children's problem behavior. The indirect effect size of the mediating effect was found .417 that is statistically significant ($p < .001$).

Table 5. Path for the mediating effect of children's time of electronic media use on relationships between parents' marital conflict and the problem behavior of children (N=1,354).

Path for mediating effect	Indirect effect	t
Mother's recognized marital conflict → time of electronic media use → problem behavior	.417	4.789***
Father's recognized marital conflict → time of electronic media use → problem behavior	.001	.018

Note: *** $p < .001$

Overall, how much marital conflict between parents is influential to children's problem behavior was investigated to discover that mother's recognized marital conflict affects the problem behavior through mediation by children's time spent in the use of electronic media. This indicates that if mother is higher in the recognition of marital conflict, children spend behavioral problems.

4. Discussion

This study attempted to determine the mediating effects of children's time of electronic media use on the influence that marital conflict between parents has on the problem behavior of those children who are in their early stage of school age. The ultimate goal of the attempt was to provide basic information useful to the development of parent education or child counseling programs that can help parents properly recognize children's behavioral problems and use of electronic media, reduce marital conflict between them at home, become more psychologically healthy and, further, create a better do-

mestic environment. The findings of the research can be briefly described as follows. First, mother's recognized marital conflict has direct effects on children's time spent in the use of electronic media and their problem behavior. More specifically, it was found that the higher mother is in the recognition of marital conflict, the more children are in that time and that behavior. Second, mother's recognized marital conflict also indirectly influences children's problem behavior through mediation by the above mentioned time of electronic media use. In contrast, however, father's recognized marital conflict has no effect on children's time of electronic media use or their problem behavior. Consequently, therefore, children, especially in their early stage of school age, are even more influenced by mother as the main provider of parenting at home than by father. And, mother's recognized marital conflict has effects on time that children invest in the use of electronic media, which in turn contributes to the behavioral problems of children.

Discussions based on the findings of this study are in the following

First, mother' higher recognition of marital

conflict between contributes to children's longer time of electronic media use and more problem behaviors. In addition, higher psychological instability that mother has as the main provider of parenting at home leads children, especially in their early stage of school age, to use electronic media like TVs and smart phones for a longer time and make more problem behaviors that are characterized as inattentiveness, aggressiveness, depression or anxiety. These findings comply with prior research[37][38] that more frequent use of smart phones or other electronic media at home leads family members to be more individualized without communications between them and that the domestic experience of psychological pressure or instability due to marital conflict brings children's higher propensity to commit themselves to the use of smart phones, and Bae's study[3] that children's problem behavior is directly affected by electronic media like smart phones. The findings are also similar to Seol, Kim, Lee, & Lee's survey[25] that more exposure to images from electronic media reduces sociality and heightens aggressiveness, resistance or impulsiveness and another survey[39][40] that excessive use of electronic media such as smart devices, TVs and the Internet contributes to increased behavioral problems regardless of contents that the media provide. Anyway, all of the prior research and surveys suggest that parents who are depressive or more emotionally negative are likely to more frequently express negative emotions such as powerlessness, anger and annoyance and show less responsiveness or inconsistency in parenting[6]. Furthermore, the negative emotional expression or negative psychology that mother expresses or has as the main provider of parenting may result in more negative interactions with children or more exposure by children to electronic media, directly affecting the problem behavior of children. This suggests better relationships that children with mother bring their less frequency of electronic media like smart phones while, poor communications that children make with mother lead to children's investment of more time in the use of such media[41]. In other words, the degree in which mother, who is the main provider of parenting, recognizes marital conflict has a direct effect on children's time of electronic media use or their problem behavior. Thus, mother's state

of mental health is quite an important factor of parenting children, ultimately implicating that more effective strategies of intervention for mothers need to be created and that mothers need to be given more opportunities of counseling program or parent education through which those women can achieve reduction in negative emotions or marital conflict.

Second, the effects of marital conflict between parents on children's problem behavior were investigated here to discover that those effects are partially mediated by children's time spent in the use of electronic media. Clearly speaking, the higher mother is in the recognition of marital conflict, the more children in their early stage of school age in the time of electronic media use and the higher they are in the frequency of problem behaviors. In contrast, it was turned out that father's recognition of marital conflict has no influence on children's problem behavior or their time of electronic media use. These are also especially supported by this study that mother's higher recognition of marital conflict leads to children's more time invested in the use of electronic media that in turn raise the extent to which children behavior problematically, but father's recognition of marital conflict has no influence on children's time of electronic media use or their problem behavior. The finding like this suggests the need to consider the fact that in Eastern culture, usually, women are socialized based on relation-centered propensities of their own and men, based on work-centered ones of their own[42]. This may give an interpretation that in Eastern culture, if psychological instability exists due to marital conflict at home, mother tends to feel the sense of belonging through more commitment to relationships with children while, father tends to build up the same sense by concentrating himself more on work rather than on family. Additionally, men in the same culture has a strong propensity to evade negative situations given to them as they often think it's better to suppress or control the expression of their own emotions[43]. In the East, therefore, father may be less likely to not only actively express his emotional instability due to marital conflict to children, but also positively take part in parenting children[6]. In contrast, however, mother of the East may be more likely to actively

care children in spite of marital conflict or its consequence like emotional instability. With this taken into consideration, in the East, mother appears to have more influence on children's problem behavior as they don't hesitate to not only express her own negative emotion to children in negative manners, but also actively expose children to electronic media like TVs and smart phones. If she fail to resolve psychological trouble of her own, mother would show coercive or instructive parenting behaviors when they interact with children, consequently giving children a lot of stress and provoking their problem behavior[44]. Electronic media like smart phones that children in their early period of school age use are in most cases not those of their own, but of adults' own. The right to use electronic media is up to parents, especially mother. And, mother's psychological stability is quite an important factor of parenting environment or children's behavioral problems. Thus, it is needed to develop a variety of parent education programs that allow mothers to have easy access, help them express their own emotion related to marital conflict and assist those women in interacting the other family members in sound manners.

Considering its significance and limitations, finally, this study made the following suggestions for subsequent studies. Since the research measured marital conflict between parents, children' time of electronic media use and children's problem behavior in a way of parents' self-reporting, some of its findings may be not objective, but subjective due to influence from the time point of data collection or a particular situation under which the collection was made. This suggests that subsequent studies need to secure the objectivity of data collection and the data themselves by using more various ways of assessment including profound interviews and observation methods. Next, this research had lack in considering more different types of domestic environment such as single-mother family, single-father family, broken family and so on. This suggests that such different types of domestic environment should be taken into serious consideration in subsequent studies. In spite of limitations as mentioned above, anyway, this study is significant in that it provided some empirical information for better parenting education or

child counseling or for children's more efficient use of electronic media by investigating and identifying correlations and interactions between parents' marital conflict, which leads them to become psychologically negative, and the problem behavior of children in their early stage of school age or their time of electronic media use. So, these authors hope that this research is applicable as basic information that can assist a better understanding of parenting environment and child education at home, improvement in the psychological health of parents and the formation of a better family environment.

5. References

5.1. Journal articles

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Effects of the Acceptance-Commitment Therapy based Anger CRISIS Management Program on Patients with Schizophrenia: Focusing on Psychological Flexibility and Anger Expression Style

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Abstract

Purpose; The purpose of this study was to set up the acceptance-commitment therapy(ACT)-based anger crisis management program for patients with schizophrenia and then examine and determine the effects of that program on the psychological flexibility and anger expression style(i.e., anger control, anger in and anger out) of those patients. Methods: A non-equivalent control group pretest-posttest design was employed. Participants of the study were 45 inpatients who were diagnosed with schizophrenia. For this study, the ACT-based anger crisis management program was applied to the experimental group(n=23) over 4 weeks with 2 sessions per week based. Meanwhile, the control group(n=22) received usual care services from their primary health care providers without any experiment with the ACT-based program. The study was carried out from May to July, 2019. Data were statistically processed and analyzed using the Chi-square test, Fisher's exact test, and the independent t-test in accordance with the IBM SPSS/WIN 22.0. Findings: The experimental group showed a significant improvement in psychological flexibility($t=5.09$, $p<.001$) and anger control($t=5.09$, $p<.001$) and a significant reduction in anger-in($t=2.44$, $p=.019$) and anger-out($t=2.44$, $p=.019$). Conclusion: The findings of this study suggest that the ACT-based anger crisis management program could be useful as a mental health nursing intervention that realizes the improved psychological flexibility and more effective anger expression style of patients with schizophrenia.

[Keywords] *Crisis, Schizophrenia, Acceptance and Commitment Therapy, Anger Management Therapy, Psychological Flexibility*

1. Introduction

1.1. Necessity of the research

According to a local epidemiologic survey of mental illness status, 1 in four Korean adults has ever experienced at least one among 17 types of mental illnesses that include anxiety disorder, depression disorder and substance use disorder. Of the survey participants, more notably, about 710,000 people have reportedly experienced any of the primary symptoms of schizophrenia such as hallucination, delusion and lowered reality-testing ability[1].

Schizophrenia is one of major mental illnesses. It is estimated that approximately 2 million cases of schizophrenia newly take place each year. Characteristically, the illness aggravates over time and often becomes a chronic mental problem[2]. For instance, schizophrenia is in most cases developed in the early period of adulthood, when it brings disorders in many different areas including recognition, cognition, emotion, behavior and social activity. At some point, then, such disorders lead to thoughts or behaviors that are so bizarre and destructive. Resultantly, thus, patients with schizophrenia may likely express anger towards themselves or others and

even attempt to commit suicide[2][3]. If it becomes chronic, schizophrenia is often involved with negative symptoms such as evasion, that is, schizophrenic patients' failure of emotional recognition or expression in a proper way[3]. Among impairments of emotional control, as far as patients with schizophrenia, anger is a predictor of behavioral aggressiveness or suicide. This clearly suggests why it is inevitable management in the field of mental nursing practice to perform anger crisis[4].

As one of the most basic human emotions, anger is an emotional state that range from annoying to fury and to rage. Also, anger varies in duration and strength depending on situation. By the way, anger expression has two different conceptual styles. One that is positive is anger control and the negative other is anger-in and anger-out[5][6]. Prior research[7] found that patients with schizophrenia is lower in anger control and higher in anger-in and anger-out than normal people without the same illness. Another prior study[8] that compared how to cope with anger between patients with bipolar disorder and with schizophrenia discovered that in anger-provoking situations, the former patients take more problem-solving actions than the latter ones. These prior findings, anyway, suggest that it is urgently needed for patients with schizophrenia to get the skills or capability of coping well with stressful or anger-provoking situations that they may face.

Treatment of patients with schizophrenia is largely made in two ways. One way is treatment with medication and the other is psycho-social rehabilitation. It is generally known that a combined practice of medication and psycho-social rehabilitation is effective in alleviating the symptoms of schizophrenia and reducing the reoccurrence of the mental illness[3]. As a part of the combination, especially, Cognitive Behavior Therapy(CBT) has been actively used to treat people with mental health problems. But, a recent well-organized review of literature that concerns CBT for patients with schizophrenia reached a conclusion that CBT has little effect on those patients in the long-term[9]. In other words, CBT may be temporally effective in treat-

ing schizophrenic patients who receive the therapy without understanding or accepting their illness, but eventually, CBT has just limited long-term effects[10].

In contrast, the Acceptance and Commitment Therapy(ACT) is a new intervention that is based on the concepts of acceptance and awareness, instead of approaches taken by CBT. The new conceptual intervention leads patients with schizophrenia to accept their own thought or emotion as it is[11]. How many ACT has positive effects have already been supported by literature review[12] and meta-analysis research[13]. ACT has the ultimate goal of improving the psychological flexibility of patients with schizophrenia under its assumption that evasive reaction brought by limited attributes of language and negative recognition leads to those patients' psychological inflexibility that in turn causes their mental illness[14]. From the perspective of ACT, patients with improved psychological flexibility are likely to experience in person a negative thought or emotion of their own as it is rather than to evade or suppress it. This means that they accept realities given to them, which contributes to their behavioral changes with the pursuit of valuable objectives[14]. Thus, it is hoped that an anger crisis management program based on ACT would lead its participants or patients with schizophrenia to be more psychologically flexible and that the improved flexibility would allow them to experience without self-defense and cope better with situations given to them, consequently changing their behaviors, especially anger expression, in a positive way.

Hence, this study was designed in order to set up the ACT-based anger crisis management program for patients with schizophrenia and then determine the effects of that program on those patients' psychological flexibility, anger control, anger-in and anger-out, ultimately clarifying the possibility of applying the same program as a new mental-nursing intervention.

1.2. The purpose and hypotheses

Hypothesis 1. The experimental group that participate in the ACT-based anger crisis management program would show a significant dif-

ference in psychological flexibility, in comparison to the control group that don't participate in that program.

Hypothesis 2. The experimental group that participates in the ACT-based anger crisis management program would show a significant difference in anger control, in comparison to the control group that don't participate in that program.

Hypothesis 3. The experimental group that participates in the ACT-based anger crisis management program would show a significant difference in anger-in, in comparison to the control group that don't participate in that program.

Hypothesis 4. The experimental group that participates in the ACT-based anger crisis management program would show a significant difference in anger-out, in comparison to the control group that don't participate in that program.

2. Experimental Methods

2.1. Research design

This study is a quasi-experimental research of nonequivalent control group pretest and post-test design. Specifically, the research is an attempt to set up a cognitive behavior program based on ACT for the anger crisis management of patients with schizophrenia and then determine the effects of that program on the psychological flexibility, anger control, anger-in and anger-out of those patients.

2.2. Subjects

Participants of this study were inpatients of a mental hospital located in K Province. Korea who were diagnosed with schizophrenia by a specialist of mental health medicine at that hospital in accordance with the Diagnostic and Statistical Manual of Mental Disorders, DSM-5. Another qualifications for the subjects were 1)being aged 19 or over, 2)having no history of drug addiction, alcohol addiction or organic mental disorder other than schizophrenia, 3)being able to communicate with the authors of this study during participation in the ACT-based anger crisis management program and understand the contents

of the questionnaire given to them and 4)having no experience of participation in any other cognitive behavior program within 3 months before the beginning of this study. Regarding the number of the subjects, the study initially allocated 21 for each group by using the G*Power 3.1.9 Program in which literature[12] and meta-analysis research[13] on the effects of ACT were reviewed in an organized way or referred and by designating effect size=.80, significance level=.05 and the power of test=.80 through the two-sample independent t-test. However, later, this study modified the number of the participants by taking into consideration the rate of dropout, that is, about 20% due to the possibilities of discharge from hospital, sleep-over, aggravation of symptoms or abandonment for a personal reason during the application of the ACT-based anger crisis management program. Accordingly, by convenience sampling, the study finally selected 26 patients for the experimental group from a ward of the above mentioned mental hospital and 26 for the control group from another ward whose environment for treatment was similar to the former ward. And then, the experimental group was divided into two sub-groups(13 for sub-group A, 13 for sub-group B). Meanwhile, a preliminary survey was made prior to the first session of the ACT-based anger crisis management program. This study applied total 8 sessions of that program to the experimental group over 4 weeks on the basis of 2 sessions per week. After that, the post-test was conducted. While, the control group were just asked to receive the pre- and post-tests in a same way as the experimental group, without being experimented with the ACT-based program. Data collection was made from May to July, 2019. Data that were finally analyzed here were responses from 23 of the experimental group, except 1 who gave up participation in the program half-way and 2 who were discharged and responses from 22 of the control group, except 1 who was discharged and 3 whose answers to items of the questionnaire were deemed insincere.

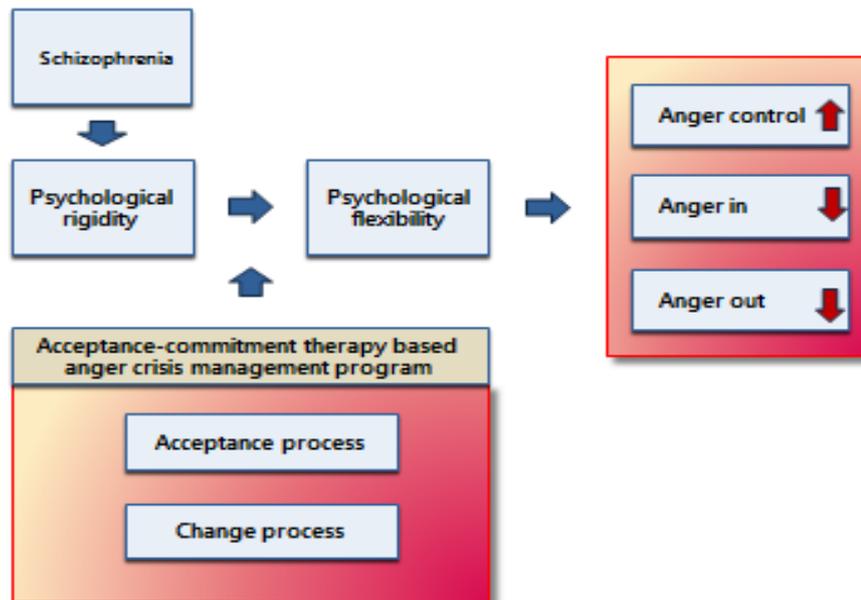
2.3. ACT-based anger crisis management program

ACT originally seeks to make patients experience realities given to them and accept them as

they are rather than alleviating or eliminating problems that the patients have. Similarly, the ACT-based anger crisis management program set up in this study has the ultimate purpose of leading patients with schizophrenia to raise their

own adaptive way of anger expression by helping them become more psychologically flexible. Theoretical frameworks of that program are shown below <Figure 1>.

Figure 1. Conceptual framework of this study.



The ACT-based anger crisis management program used in this study is a restructured version of the guidelines for acceptance and commitment therapy in order to be more applicable to patients with schizophrenia. Before finally completed, that program was examined and verified to have content validity by 1 specialist of mental health medicine and 2 nurses of mental care. That program is structured to provide 8 sessions in total. Each session consists of 3 stages whose total spent time is 50 minutes or, more specifically, 10 minutes for introduction, 30 for development and 10 for breathing meditation. In this study, the introductory part of the program had the goal of inducing so-called the creative despair of participants, leading them to accept the thought or emotion of their own. In more detail, the introductory part sought inducing participants not to avoid their own negative thought or

emotion, especially anger, but to accept them as it helped the respondents appreciate that suppressing or restricting such negative thought or emotion would be ineffective and even cause more problems. The main part of the program aimed to lead participants to accept realities given to them by means of group experience activities, many different metaphors or breathing mediation and then objectively observe and flexibly respond to things around them going beyond stereotypes related to language or objects. Finally, the last part of the program aimed to make participants effectively practice substantial actions in order to achieve meaningful goals or values that they set up in the realities that they face. The composition of the program is shown as below <Table 1>.

Table 1. The anger crisis management program based on ACT.

Themes	Purpose	Contents of program
Orientation of the anger crisis management program (session 1)	Understand the purpose and necessity of the program	<ul style="list-style-type: none"> • ACT program introduction • Do not think about chicken <ul style="list-style-type: none"> • Conducting a pre-test • Breathing meditation
Acceptance (session 2)	Accept thoughts, feelings, and experiences in and of itself	<ul style="list-style-type: none"> • Activities using metaphor • Remembering the moment I'm angry and not reminding me <ul style="list-style-type: none"> • Breathing meditation
Defusion of thought and language (session 3)	Separate thoughts from the actual and understand Hidden language properties know	<ul style="list-style-type: none"> • Button activity of thought and mind • Watermelon words follow game <ul style="list-style-type: none"> • Brain bingo game • Breathing meditation
Stay in the present (session 4)	Focus on the thoughts and emotions of this moment	<ul style="list-style-type: none"> • Experience card matching activity • Emotion is a moment and it passes. <ul style="list-style-type: none"> • Eating meditation
Self as context (session 5)	Be able to understand oneself as an observer's point of view	<ul style="list-style-type: none"> • Activities using metaphor <ul style="list-style-type: none"> • I am peaceful/angry • Beathing meditation
Finding and clarifying values (session 6)	Identify the importance of meaningful value in life	<ul style="list-style-type: none"> • Activities using metaphor <ul style="list-style-type: none"> • Finding my life value • Beathing meditation
Commitment to value (session 7)	For the chosen value committed to devotion	<ul style="list-style-type: none"> • Activities using metaphor • Watch videos about life's worth <ul style="list-style-type: none"> • Beathing meditation
Finish the program (session 8)	Adapted to real life and dedicated to selected values	<ul style="list-style-type: none"> • Participation in the program <ul style="list-style-type: none"> • Program evaluation • Conducting a post-test

2.4. Instrumentation

1. Psychological flexibility

The scale used here to measure the psychological flexibility of participants is the 2nd edition of the Questionnaire for Acceptance and Behavior of Korean version. That edition is Heo et al.'s[17] adapted version of the Acceptance and Action Questionnaire- II (AAQ- II) which was developed by Bond et al.[16]. This scale is a 7-point Likert scale that uses total 10 items to measure the psychological flexibility of respondents in a self-reported way. Among those items, those in form of negative sentence are supposed to be reversely interpreted in terms of scores for them. In other words, higher scores mean higher psychological flexibility. According to research by

Heo et al.[17], the inter-item consistency of this scale is Cronbach's $\alpha=.85$. The reliability in this study is Cronbach's $\alpha =.73$.

2. Anger expression style

Having the goal of measuring the anger expression style of participants, the scale used here is the inventory for anger expression that belongs to Chon, Hahn, Lee and Spielberger's[6] STAXI-K, State-Trait Anger Expression Inventory-Korean version that is the outcome of the modification and supplementation of STAXI, State-Trait Anger Expression Inventory that was developed Spielberger, Krasner and Solomon[18]. The inventory contains of total 24 items or, more specifically, 8 items for anger control, 8 for an-

ger-in and 8 for anger-out. The higher respondents are score for each item, the higher they are in the level of anger control, anger-in or anger-out. According to research by Chon et al.[6], anger control, anger-in or anger-out are respectively Cronbach's $\alpha=.73$, $.74$ and $.81$ in terms of reliability. For this study, however, the reliabilities of anger control, anger-in and anger-out are respectively Cronbach's $\alpha=.80$, $.76$ and $.78$.

2.5. Data analysis

The collected data were processed using the SPSS/WIN 25.0 Program.

1. The general characteristics of participants were identified and determined in terms of frequency, percentage point, mean value and standard deviation value. Homogeneity between the experimental and the control groups in relation to those dependent variables was examined and analyzed using the Chi-square test and the Fisher's exact test.

2. As part of the preliminary survey, the Shapiro-Wilk test was made to verify the normality of dependent variables. This move found that those variables are all normal in distribution($W=.917\sim.985$, $p=.067\sim.971$), which in turn were analyzed using the independent t-test. Homogeneity between the experimental and the control groups in relation to those dependent variables was analyzed using the independent t-test. And then, homogeneity between the experimental and the control groups in relation to those dependent variables was examined and analyzed using the independent t-test.

3. The effects of experimental treatment with the ACT-based anger crisis management program were determined and analyzed using the independent t-test.

3. Results

3.1. General characteristics and homogeneity test

As far as the general characteristics of participants are concerned, 56.5% of the experimental group and 50.0% of the control group were all male. And 73.9% of the experimental group and 81.8% of the control group were all aged 40 or over. In terms of marital status, 91.3% of the experimental group and 81.8% of the control group were all unmarried. Of the experimental group, additionally, 78.3% were high school graduates or lower and 21.7%, junior college graduates or higher. While, 81.8% of the control group were high school graduates or lower and 18.2% of the same group were junior college graduates or higher. 60.9% of the experimental group and 72.7% of the control group were all religious believers. Furthermore, 73.9% of the experimental group and 68.2% of the control group were all at least 5 times in the frequency of hospitalization. Based on all of these characteristics, this study made the homogeneity test to find that the experimental and the control groups were homogeneous with no significant difference <Table 2>.

Table 2. The general characteristics and homogeneity of the two groups.

Characteristics	Categories	Exp. n(%)	Cont. n(%)	χ^2	p
Gender	Men	13(56.5)	11(50.0)	.192	.768
	Women	10(43.5)	11(50.0)		
Age(year)	<40	6(26.1)	4(18.2)	.407	.722 [†]
	≥40	17(73.9)	18(81.8)		

Marital status	Married	2(8.7)	4(18.2)	.876	.414 [†]
	Single	21(91.3)	18(81.8)		
Education level	≤High school	18(78.3)	18(81.8)	.089	1.00 [†]
	≥College	5(21.7)	4(18.2)		
Religion	Have	14(60.9)	16(72.7)	.711	.530 [†]
	Have not	9(39.1)	6(27.3)		
Frequency of hospitalizations	<5	6(26.1)	7(31.8)	.180	.749
	≥5	17(73.9)	15(68.2)		

Note: Exp.=Experimental group; Cont.=Control group.

3.2. Homogeneity test on psychological flexibility, anger control, anger-in and anger-out

As part of the pre-test, this study tested homogeneity between the experimental and the control groups. As a result, it was found that the

two groups were similar to each other with no significant difference between them in psychological flexibility($t=.695$, $p=.491$), anger control($t=.417$, $p=.679$), anger-in($t=.916$, $p=.365$) or anger-out($t=.467$, $p=.643$) <Table 3>.

Table 3. Homogeneity of dependent variables in pretest.

Variables	Exp.(N=23) M±SD	Cont.(N=22) M±SD	t	p
Psychological flexibility	47.13±9.73	45.14±9.51	.695	.491
Anger control	21.35±5.30	20.73±4.64	.417	.679
Anger in	18.65±5.06	17.32±4.69	.916	.365
Anger out	16.13±5.53	15.45±4.02	.467	.643

Note: Exp.=Experimental group; Cont.=Control group.

3.3. The effects of the anger crisis management program based on ACT

This study applied the ACT-based anger crisis management program to its participants. As a result, the research found that the same program brought significant differences between

the experimental and the control groups in terms of psychological flexibility($t=7.29$, $p<.001$), anger control($t=4.67$, $p<.001$), anger-in($t=-2.51$, $p=.016$) and anger-out($t=-2.34$, $p=.024$) <Table 4>.

Table 4. The comparison of psychological flexibility, anger control, anger in and anger out between the pretest and posttest.

Variables	Group	N	Pre test	Post test	t	p
			M±SD	M±SD		
Psychological flexibility	Exp.	23	47.13±9.73	54.22±6.10	7.29	<.001
	Cont.	22	45.14±9.51	40.36±6.65		
Anger control	Exp.	23	21.35±5.30	24.65±3.31	4.67	<.001
	Cont.	22	20.73±4.64	20.14±3.17		
Anger in	Exp.	23	18.65±5.06	15.70±3.14	-2.51	.016
	Cont.	22	17.32±4.69	18.36±3.97		
Anger out	Exp.	23	16.13±5.53	13.52±2.37	-2.34	.024
	Cont.	22	15.45±4.02	15.05±1.96		

Note: Exp.=Experimental group; Cont.=Control group.

4. Discussion

It was turned out in this study that the ACT-based anger crisis management program is effective in improving the psychological flexibility of mentally problematic people. This fact supportively complies with not only an integrated review and research of literature[10] concerning ACT's influence on persons with mental health problems, but also an organized review of literature[12] that suggest that ACT helps improve the psychological flexibility of persons with mental illness. Thus, theoretically, ACT brings behavioral changes as well as improved psychological flexibility that allows its patients to accept their own thought or emotion as it is and get an objective insight to the reality given to them, in comparison to CBT as a conventional intervention that intends to strengthen its patients' coping skills by means of cognitive restructuring[14]. Keeping in mind this theory, the authors of this study set up a particular ACT-based program that includes the utilization of many different metaphors, provision of opportunities, which allow experiencing activities whose goal is to escape from language-related stereotypes, and the process of breathing meditation, all of which the study considered are more appropriate for participants of that program who are under specially situational contexts, especially in relation to schizophrenia, resultantly finding that the program contributed

to making those participants become more psychologically flexible. Indeed, afterwards, the participants recognized that the ACT-based anger crisis management program helped a lot them live a daily life in a socially acceptable way as that program led them to view and accept their own thought or emotion as it is in non-violent way, while acknowledging that until participation in that program, they were likely to be verbally abusive, behaviorally aggressive or just evasive when they faced anger-provoking situations.

This research discovered that the ACT-based anger crisis management program has a positive effect on how patients with schizophrenia express anger. In other words, the study showed that the program significantly enhanced anger control as a positive style of anger expression and, in contrast, significantly reduced anger-in or anger-out as a negative style of anger expression. By the way, prior research suggest that patients with schizophrenia are lower in the level of anger control and higher in the level of anger-in or anger-out than people who are mentally normal[7] and that those patients are less likely to cope with an anger-provoking situation in a problem-solving way that patients with bipolar disorder[8]. By the way, anger expression in such inappropriate way might lead to behavioral ag-

gressiveness towards the self or others and, further, even suicide or violence. In this sense, it may be regarded that the biggest outcome of this study was verifying the fact that the ACT-based anger crisis management program effectively help patients with schizophrenia respond to anger in more adaptive way. When sharing their experience of that program, participant of this study said that after the program participation, they came to understand the fact that any thought or emotion of their own does not always stay in their mind, but changes over time. Also, they added that as a part of the program, meditation while eating nut products or breathing meditation was much helpful to making themselves keep or restore presence in situations that were anger-provoking in daily life.

In fact, it has been already determined that ACT intervention has positive effects on people who suffer physical diseases such as chronic pain, diabetes and tinnitus as well as mental health problems such as eating disorder, anxiety, depression and psychosis[10][11][12][14]. But in Korea, research on ACT intervention is still in its early stage and, if any, their main focus is in most cases put on some adolescents or collage students who have been officially confirmed as those who are highly risky with mental health problems[10]. This suggests that in the near future, this country should develop its own effective methods of ACT intervention provided taking into full consideration characteristics or situational contexts of people who have many different types of mental illness including schizophrenia and then that those interventional methods should be researched in a continuous, empirical way in the field of clinical practice.

5. Summary and Conclusion

This study was attempted to set up the ACT-based anger crisis management program for patients with schizophrenia and then clarify the effects of that program on the psychological flexibility, anger control, anger-in and anger-out of those patients. The study found that the ACT-based anger crisis management program is positively effective in improving the psychological

flexibility or anger control of patients with schizophrenia and reducing those patients' anger-in or anger-out. This apparently suggests that the above mentioned program could be a useful intervention that helps patients with schizophrenia become more psychologically flexible and, further, find a more effective anger expression style of their own. Thus, this study is so meaningful in that it set fundamentals for the creation of effective interventional methods that are effectively applicable to help patients with the same mental illness in the field of clinical practice.

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Examining the Relationship among Acquisition of Sport Rule Knowledge, Enjoyment, and Future Consumption for Preventing CRISIS from Challenges in Sport Industry

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Abstract

The primary purpose of this study was to explore the importance of types of learning sport rules which could influence sport enjoyment and future consumption. This study aimed to find strategies which could prevent crisis from challenges in sports industry with saturated market and declining attendance. Secondly, the researcher could seek to examine the influence of learning sport rules on sport fan behavior. Among many factors, knowledge was considered as a significant element during the initial stage of becoming a sport fan. People that 'know' or 'recognize' a sport, team, and players by being exposed and learning the rules of play increase awareness, which was a fundamental and basic step for becoming a sport fan for enjoyment. However, learning sport rules was considered a minor aspect of knowledge and little attention has been paid to it as a factor of fan development. Based on 260 respondents, the present study explored the relationship among learning sport rules, enjoyment, and future consumption behavior of sport fans. Structural Equational Modeling(SEM) was used to test the model and examine the more meaningful relationships among learning sport rules, enjoyment, and future consumption behavior.

The results showed that the proposed structural model has shown a good fit based on the result of Confirmatory Factor Analysis(CFA) and SEM which indicated that learning types of sport rules influence enjoyment of sport and enjoyment has a significant influence on future intention of sport-related consumption. This finding would aid practitioners in sport-related fields by making it possible to build efficient marketing strategies which could prevent several challenges and crisis of sports industry. Also, the findings of the current study would offer implications for academic and practical personnel by providing specific evidence of how knowledge of sport rules and learning paths impact the understanding of sport fan behavior.

[Keywords] Sports Industry Crisis, Sport Rules Learning, Sport Rules Acquisition, Sport Enjoyment, Sport Consumption

1. Introduction

How did you become a fan of your favorite sport? To answer the above questions, people would consider their past experiences. Many researchers and previous studies have tried to find significant factors that explain how people become a sport fan for enjoyment. Various factors(i.e., motivation, loyalty, commitment, socialization, knowledge, etc.) have been found and considered as critical factors that explain

how people become a sport fan for enjoyment. Among those important factors, knowledge is considered during the initial stage to explain how people become a sport fan for enjoyment [1]. By being exposed to a sport, team, league, and players, people are able to 'know' and 'recognize' these factors such as sport, team, league, and players[1]. Funk and James(2001) argued that learning rules of play increases awareness which is an initial process to become a fan of and enjoy a sport[1]. Also, Zhang et al.(1996) claimed

that educating people about sport itself, which included rules of play might be one of key elements in game promotion of teams and confirmed that knowledge of sport rules critically influences attendance and ticket consumption[2]. That is, rule knowledge positively affects leisure behaviors and participation[3]. Despite the importance of learning rules of play, it is merely considered as one of the knowledge factors of sport(i.e., existence of sports and teams, different levels of play, distinguishing sport and teams) and little attention has been given to it as a factor for explaining the process of fan development[1]. Further, no research has examined the relationship between specific path of learning types of sport rules and its influence enjoyment and future behavior of sport fans.

1.1. Features of sport fan behaviors

There has been a myriad of research done on various sport fan behaviors[1][4][5][6], and most of the research focuses on the loyal or highly identified fan[7]. Also, previous research has paid attention to factors related to the individual's psychological state[8][9][10]. In other words, numerous sport fan studies have focused on unique features of sport fan behavior which is explained by various motivating factors, including entertainment[11][12][13], eustress[14][15], self-esteem[16][17], escape[11][13], learning[12][15], aesthetic[18][19], release[11], companionship[20][21], group affiliation[16][18], family[20][22], and economics[23]. Among those factors, knowledge has been considered significant with regard to its ability to influence consumption behaviors. Previous literatures regarding knowledge has indicated that knowledge, in this context, has to do primarily with information pertinent to sport teams, coaches, players, team history, etc. However, the importance of sport rules as a core factor of knowledge motivation has largely been ignored even though knowledge itself is a key motivating factor for sport fans[2][24]. Previous studies have suggested that knowledge is measured in terms of a fan's knowledge of team history, player/coach information, team records(e.g., statistics), game strategy, skillset pertinent to sport, and general information about the game and related personalities[6][25]. Most know-

ledge factors that have been measured were external factors of sport and sport events. Although the rules of sport are an internal factor of enjoying sport, the approach to understand the importance of rules was not sufficient.

Therefore, the first goal of the current study was to conceptualize and test the relationship and determine influence between learning sport rules on behavioral factors. Specifically, the researcher explored the influence of individual differences on subjects' emotional responses and purchase intentions by learning types of sport rules to provide more practical evidence regarding the relationship between the process associated with learning types of sport rules, enjoyment, and intentions regarding future consumption. Consequently, by examining sport rules as they relate to sport fans' behaviors, scholars will come to recognize the significance of sport rules and the value they have with regard to marketing practitioners who will be in the position to design more effective marketing strategies to prevent reality and crisis of sports industry.

2. Literature Review

2.1. Conceptual framework and hypotheses

Among various literatures, the current study employed the Stimulus-Organism-Response(S-O-R) Model because it confirmed that influence of personal predispositions on the relationship between environmental influence, emotional responses, and behavioral reactions[26].

First, the proposed conceptual framework was utilized to test the relationship between specific types of learning or understanding of sport rules, enjoyment, and intention of sport consumption. Environmental stimuli are related to the level of pleasure(enjoyment) and this leads positive consumption behavior[27]. A research support this relationship that "information or salient beliefs affect intentions and subsequent behavior(p.3)[28]. Furthermore, in related to theory of planned behavior, confidence people have in their ability to perform the behavior critically influences behavior of peo-

ple[29]. Also, sport enjoyment has a positive influence on sport commitment [30]. Furthermore, individual's knowledge level influences behavior[31][32]. Based on S-O-R model, it was necessary to modify the proposed model in order to apply the concept to the current study. Accordingly, the present study examined the influence of four different types of learning sport rules(i.e., by playing, by watching/listening, by attending, and by playing sport video game) on enjoyment. Then, enjoyment and future intention of consumption of sport paths were measured. Therefore, this led to the following research hypotheses.

H1a: Individuals who learn sport rules by playing sports will have a positive influence on enjoyment of sport.

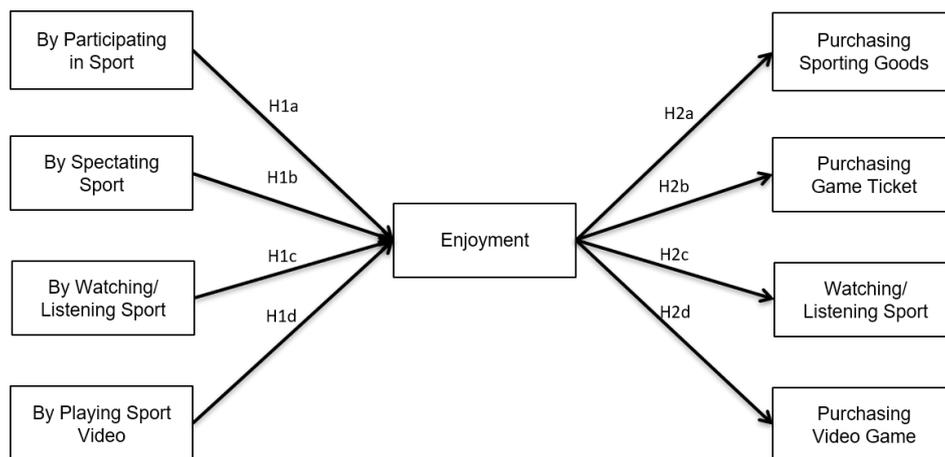
H1b: Individuals who learn sport rules by spectating at a stadium and/or arena will have a positive influence on enjoyment of sport.

H1c: Individuals who learn sport rules by watching television will have a positive influence on enjoyment of sport.

H1d: Individuals who learn sport rules by playing sports video game will have a positive influence on enjoyment of sport.

H2: The enjoyment of sport will have a positive influence on sport related consumptions(i.e., purchasing sporting equipment/tickets and attending sporting events/watching television/purchasing sport-related video games).

Figure 1. Proposed conceptual framework for the relationship between learning types, enjoyment, and intention of consumption behaviors.



2.2. Knowledge and sport

In general, knowledge is defined as “the information stored within memory”(p.281)[33]. Knowledge can be considered one way to determine expertise over experience level[31], and the level of knowledge may influence the information evaluation process. Knowledge influences perception toward initiation of behaviors[2]. Also, prior studies have focused on the relationship between product involvement and knowledge[34][35], between spectator knowledge as a significant predictor and game attendance[2], and between product knowledge and

the amount of information used in decision making[36]. Perhaps most notably, the relationship between consumers' decision-making processes and product familiarity, which is based on past experiences with a certain product[37]. That is, the future consumption and behavioral intentions of a sport consumer are influenced by the consumer's knowledge and information, both of which have been acquired and stored by way of personal experience. Kwak(2009) asserted that sport knowledge predicts attitudes and behavioral intentions toward sport. His findings indicated that when people perceive they are more knowledgeable about a sport, they have more

favorable attitudes towards related sport consumption, and feel more comfortable[38]. Also, past experience makes it possible to predict the behavioral intention of enjoyment. Additionally, his finding shows that positive experience and attitude about sport are significantly associated with their future behavioral intentions.

Based on the definition of a general rule, sport rules indicate what people who are related to sport contests can do and cannot do in the sport game environment. A sport is a kind of play organized by rules, which makes the game fair and exciting, and without rules, it is not a sport game[39]. As previously mentioned, the understanding of sport rules is a significant step to becoming involved, enjoying, and consuming sport. However, even though there are various paths or routes to learn and understand sport rules, no research exists to find those specific types of learning and understanding. That is, there has been no effort to examine how and which path sport fans utilize to learn and understand sport rules.

2.3. Sport consumption

In the sport management field, various consumption behaviors(i.e., purchasing sporting goods, attending and watching sport games at stadiums or arenas; media consumption via television, radio, and internet; video game or movie consumption, and participating in sport via fitness clubs and the like) exist.

Among them, sporting goods and the consumption of sporting goods are significant within the sport industry. One unique feature of sporting goods consumption is that it influences other sport consumption behaviors. For example, purchasing sport apparel means the consumer is participating in active sport[40]. That is, purchasing sporting equipment means that the consumer is simultaneously participating in sport. However, to better explain and predict sporting goods consumption behaviors, a new approach is necessary.

Also, regarding media consumption, there are numerous ways to consume sport media. However, although there has been rapid change and development of the media environment, media

consumption behaviors are explained by general motivation factors such as emotional, cognitive, and behavioral factors[41].

Attending sporting events in person at stadiums or arenas is an activity representative of sport consumption, and researchers have studied it extensively. According to the previous studies, various variables that influence sporting event attendance were examined via previous studies[42][43], and the examined variables were game attractiveness(e.g., individual skills, team records, standing, entertainment), economic factors(e.g., ticket price, income, promotions, substitute activity of entertainment), socio-demographics(e.g., age, gender, education, occupation), and audience preference(e.g., schedule, convenience, weather, quality of stadium)[44]. Regarding sporting event attendance, quality, satisfaction, and loyalty are considered important factors[45]. However, there is no established approach to finding a core factor that encourages consumers to attend sporting events.

The playing of sport video games, as a form of sport fan consumption, is rapidly growing in the United States[46][47][48]. By participating in sport video games, people can enjoy well-organized tournaments with other users from all over the world who also enjoy games. It is considered a new form of participatory experience in the sport field because of the unique feature of video game attractiveness, which is a bit different from enjoyment of traditional sport media[49]. A study considered sport knowledge a factor in their study, but they still did not consider a very fundamental factor(e.g., rules) with regard to sport knowledge. Generally, most researchers studying sport consumption have focused on overall motivation of sport fans and consumers. Those efforts have failed to consider core factors of sport management, sport itself. Therefore, more in-depth efforts to find a core factor which influences sport consumption behaviors are necessary[49].

2.4. Enjoyment

Enjoyment in relation to sport is defined as “a positive affective response to the sport experience that reflects generalized feelings such as

pleasure, liking, and fun”(p.6)[30]. Previous literatures found that enjoyment is an important motivation for participation of sport[50][51]. Also, enjoyment is a key motivational variable to participate in sport programs for fun or drop out sport programs[52][53][54]. Further, enjoyment is emotional responses and it is associated with factors such as how enjoyable, exciting, involving, and interesting the sport[55].

To clarify the various dimensions of sport enjoyment, it is very helpful to review various literatures which are related motivation. There are several motivations to enjoy sport: emotional, cognitive, behavioral and social motivation. Among above motivations, cognitive motivation means people enjoy sport to learn about sport, league, teams, player, and even strategies[41]. That is, individuals tune in for cognitive stimuli. The Learning motivation and Aesthetic Motivation are the examples of cognitive motivation. Further, a central component of enjoyment concept is the experience of and need for hedonic satisfaction[56]. Therefore, the level of enjoyment is totally different and depends on the environment(e.g., the level of fanship, gender, social norms, personality, etc.) that individuals are exposed[57][58], and enjoyment is a significant key and central reason for people to enjoy sport[59].

3. Methodology

3.1. Sample

The target population of the current study was people 18 years of age or older who are interested in sport-related consumption activities in the United States. A total of 260 usable responses were collected via QUALTRICS which is one of external online survey providers.

3.2. Measures

Rule recognition process types.

The rule recognition process was comprised of four subscales with twelve items. The items were developed and revised from previous studies[60][61]. Respondents rated how much each

type of rule recognition influenced their understanding of the rules of their favorite sport using a five-point Likert scale. The four types of recognition types are ‘by playing their favorite sports’, ‘by attending their favorite sporting event’, ‘by watching/listening their favorite sport through TV/radio, and ‘by enjoying their favorite sport through video game play’.

Sport consumption behavior.

Sport consumption behaviors were measured with four subscales(i.e., purchasing sporting goods, purchasing/attending sporting event, media consumption, purchasing sports video game) with twelve items[62].

Attitude toward the sport enjoyment.

Attitude toward sport enjoyment was measured via the questions to rate participants’ general affective enjoyment toward sport using a five-point Likert scale. A total of five-items on the attitude scale(i.e., fun, exciting, delightful, thrilling, and enjoyable) were employed[62].

Demographic information

General demographic information was investigated after modification based on the items of a previous study[63]. Participants were asked to answer their age, gender, ethnicity, household incomes, education levels, and marital status.

3.3. Data analysis

To test the hypotheses, a confirmatory factor analysis(CFA) was conducted[64][65]. The χ^2 and df, the comparative fit index(CFI), the root-mean-square error of approximation(RMSEA), and standard root-mean-squared residual (SRMR) were checked to assess the overall model fit. Second, structural equation modeling was used to examine the structural relationship among variables. The reliability(Cronbach’s alpha) of each subscale was checked. Further, based on the correlation result, the validity of each construct was determined. Additionally, the average variance extracted(AVE) values were checked, as they indicate whether each item contributes to the basic construct of the scales. Based on the result of above analysis, the final items and factors were decided.

4. Results

4.1. Sample

Among the 260 respondents, males were 155 (59.6%) and females were 105(40.4%). Regarding favorite sports, 82.7% of samples chose football, basketball, ice hockey, and baseball; football(n=117, 45%), basketball(n=43, 16.5%), baseball(n=41, 15.8%), and ice hockey(n=14, 5.4%). The average age of the participants was 49 years old(M=48.84, SD= 12.50) and the distribution of the age groups were as follows: 18-25(n=16, 6.2%), 26-35(n=53, 20.4%), 36-45(n=44, 16.9%), 46-55(n=47, 18.1%), 56-65(n=50, 19.2%), and over 65(n=50, 19.2%). With regard to education level, 67.6% of participants had college level or higher degree. In terms of income, 47.2% of respondents had over \$50,000. Regarding the marital status of respondents, the majority of respondents were married(n=127, 48.8%) and 29.6% were single. Also, a majority of the respondents in the current study were Caucasian (n=196, 75.4%), followed by African American (n= 29, 11.2%).

4.2. Variables

Table 1. Descriptive statistics and correlations among variables of main study.

Variable	1	2	3	4	5	6	7	8	9
1. Playing	1								
2. Attending	.371**	1							
3. Watching	.209**	.306**	1						
4. Videogame playing	.349**	.443**	.161**	1					
5. Sporting goods	.355**	.346**	.193**	.465**	1				
6. Spectating	.307**	.381**	.221**	.264**	.523**	1			
7. Media consumption	.255**	.257**	.313**	.218**	.228**	.261**	1		
8. Video game	.204**	.305**	.157**	.664**	.575**	.368**	.177**	1	
9. Enjoyment	.334**	.339**	.341*	.286**	.438**	.432**	.539**	.271**	1
M	3.74	3.85	3.77	3.34	3.43	3.75	4.21	2.89	4.28
SD	0.85	0.88	0.82	0.99	0.99	1.00	0.66	1.17	0.63

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

4.3. Data analysis

Confirmatory factor analysis(CFA).

The measurement model indicated reasonable fit($\chi^2/df = 845.850/341 = 2.48$, CFI = .91, RMSEA = .07, SRMR = .05). Each factor loading

Sport rules learning process.

The means of the sport rule learning process items ranged from 3.32 to 4.02 and the standard deviations ranged from 0.77 to 1.07. Also, the item 'attending at a stadium or arena' had the highest mean and the item 'playing video game' had the lowest mean among sport rules learning process types.

Intention of sport consumption.

The means of the intention of sport consumption items ranged from 2.84 to 4.25 and the standard deviations ranged from 0.71 to 1.35. A 'media consumption' type had the highest mean and a type of 'purchasing video game' had the lowest mean among intention of sport consumptions.

Enjoyment

The means of enjoyment items ranged from 4.18 to 4.37 and the standard deviations ranged from 0.67 to 0.79. The item 'To enjoy sports is enjoyable' had the highest mean(M=4.37, SD=0.67).

value of latent variables is greater than .50. Also, the reliability values showed adequate levels from .79 to .93, which is greater than .70 which is acceptable level of Cronbach's alpha[66]. In terms of AVE, all constructs exceeded the mini-

mum criterion of .50(ranged from .57 to .83) indicating that a large portion of the variance was explained by the constructs[67][68]. Regarding a

validity issue, the values of correlation are less than .85 which is considered acceptable to secure the validity of constructs[69].

Table 2. Summary results for measurement model.

Factors and items	λ	α	AVE
Playing sports		.791	.573
- Playing my favorite sport helps me to understand the rules of my favorite sport game.	.838		
- It is hard to say that one way that I could learn the rules of my favorite sport is by playing the sport.	.571		
- I feel that playing my favorite sport adds to my understanding of the sport rules.	.860		
Attending		.928	.831
- Attending my favorite sport at an arena or stadium helps me to understand the rules of my favorite sports game.	.896		
- One way that I could learn the rules of my favorite sport is by attending games at an arena or stadium associated with my favorite sport.	.916		
- I feel that attending my favorite sports at an arena or stadium adds to my understanding of the rules of my favorite sport.	.893		
Watching		.825	.651
- It is hard to say that watching my favorite sport helps me to understand the rules of my favorite sport game.	.782		
- One way that I could learn the rules of my favorite sports is by watching my favorite sport.	.695		
- I can't feel that watching my favorite sport adds to my understanding of the rules of my favorite sport.	.873		
Video game		.936	.819
- Playing a video game related to my favorite sport helps me to understand the rules of my favorite sport.	.861		
- One way that I could learn the rules of my favorite sport is by enjoying and playing video games related to my favorite sport.	.954		
- I feel that playing video games related to my favorite sport adds to my understanding of the rules of my favorite sport.	.922		
Sporting good consumption		.835	.588
- I am likely to purchase my favorite sport's sporting goods to enjoy in the future.	.873		
- In the future, purchasing my favorite sport's sporting goods is something I plan to do.	.932		
- In the future, I don't intend to purchase my favorite sport's sporting goods.	.603		
Spectating		.870	.664
- I intend to attend my favorite sport's game(s).	.853		
- The likelihood that I attend my favorite sport's game(s) in the future is high.	.984		
- I won't attend my favorite sport's game(s) in the future.	.683		
Media consumption		.800	.695
- I will track news regarding my favorite sports game through the media(e.g., TV, Internet, Radio, etc.).	.695		
- I will watch or listen to my favorite sports game through the media(e.g., TV, Internet, Radio, etc.).	.866		
- I will support my favorite sport by watching or listening to game(s) through the media(e.g., TV, Internet, Radio, etc.).	.738		

Playing video game		.856	.576
- I am likely to purchase video games related to my favorite sport in the future.	.956		
- In the future, purchasing video games related to my favorite sport is something I plan to do.	.930		
- In the future, I intend to purchase video games related to my favorite sport.	.594		
Enjoyment		.920	.822
- To enjoy sports is fun.	.792		
- To enjoy sports is exciting.	.899		
- To enjoy sports is delightful.	.816		
- To enjoy sports is thrilling.	.847		
- To enjoy sports is enjoyable.	.836		

Structural Equation Modeling.

Once it was confirmed that the measurement model had a reasonable fit, SEM was conducted to examine the structural relationship between constructs. The model indicated reasonable fit ($\chi^2/df = 686.869/340 = 2.02$, RMSEA = .06, CFI = .94, SRMR = .09). Also, the structural model provides a good basis for testing the hypothesized paths based on the regression weights, standard error, and critical ratio(t-value). The hypotheses 1a, which hypothesized a positive relationship between the learning sport rules by playing and enjoyment, was supported($\gamma=.139$, S.E=.051, C.R(t-value)=2.757, $p=.006$). Hypothesis 1b, for predicting a positive relationship between the learning sport rules by attending at a stadium or arena and enjoyment, was not supported($\gamma=.094$, S.E=.050, C.R(t-value)=1.871, $p=.061$). As predicted hypothesis 1c, learning sport rules by watching television, significantly influenced enjoyment positively($\gamma=.171$, S.E=.043, C.R(t-value)=3.963, $p<.001$) and it was

supported. As expected in hypothesis 1d, learning sport rules by playing video game had a significant impact on enjoyment($\gamma=.081$, S.E=.040, C.R(t-value)=2.022, $p=.043$). The results of the first four different hypotheses showed that learning sport rules by playing sports, watching, and playing video game had positive influences on enjoyment. While, learning sport rules by attending at a stadium or arena didn't have a positive influence on enjoyment.

For predicting a positive relationship between enjoyment and purchase intention of sporting goods(H2a) was supported($\gamma=.695$, S.E=.102, C.R(t-value)=6.810, $p<.001$), for linking positive enjoyment and intention of spectating at a stadium or arena(H2b) was supported($\gamma=.723$, S.E=.105, C.R(t-value)=6.872, $p<.001$), the relationship between enjoyment and intention of media consumption(H2c) had a positive impact ($\gamma=.637$, S.E=.080, C.R(t-value)=8.018, $p<.001$), and enjoyment had a positive impact on purchasing intention of sport-related video game (H2d)($\gamma=.472$, S.E=.108, C.R(t-value)=4.365, $p<.001$).

Table 3. Regression weights, standard errors, critical ratio(t-value), and p-value for the relationship between sport rules learning types and enjoyment of proposed model.

	Standardized regression weight	Unstandardized regression weight	S.E.	C.R.	P	Results
Enjoyment ← Playing	.200	.139	.051	2.757	.006	Supported
Enjoyment ← Attending	.142	.094	.050	1.871	.061	Not supported
Enjoyment ← Watching	.272	.171	.043	3.963	.001	Supported
Enjoyment ← Video game	.142	.081	.040	2.022	.043	Supported
Sporting goods ← Enjoyment	.495	.695	.102	6.810	.001	Supported
Spectating ← Enjoyment	.468	.723	.105	6.872	.001	Supported
Media consumption ← Enjoyment	.616	.637	.080	8.018	.001	Supported
Video game ← Enjoyment	.299	.472	.108	4.365	.001	Supported

5. Discussion

5.1. Overview of the study findings

Overall, the result of Confirmatory Factor Analysis(CFA) indicated that the measurement model had a reasonable fit. Also, the proposed structural model has shown a good fit based on the result of Structural Equation Modeling(SEM). These findings indicate that learning types of sport rules influence enjoyment of sport and enjoyment has a significant influence on future intention of sport-related consumption.

Types of learning rules and enjoyment.

The SEM results found that three types of sport rules learning(i.e., by playing, by watching, and by playing video game) had statistically significant relationships with the enjoyment. However, learning sport rules by spectating at a stadium or arenas showed an insignificant relationship with enjoyment. These findings were consistent with previous literatures, supporting learning rules of sport as knowledge is associated with enjoyment[38][58][70]. Regarding H1b, learning rules by spectating at a stadium and/or arena was different compared to other learning types. This is a completely contrary result to the other learning types based on the previous literature. As a matter of fact, previous studies have indicated that the enjoyment is greatly influenced by rule knowledge[2][8][38]. One possible explanation for this result can be attributed to the differences in commitment level. Generally, spectating at a stadium and/or arena requires more economical and physical efforts when compared to other types of sport consumption(i.e., watching television, playing video game). In other words, spectating requires considerable effort such as time, money, and physical demands. Also, in regards to playing video games, people enjoy playing video games for the purpose of experience, which elicits fun and enjoyment[71]. When it comes to hedonic framework, the relationship between the product and consumer requires dynamic interaction[72], and as an example, video game players have complex reciprocal effects on both performance and the level of enjoyment[73]. That is, enjoyment of sport which is related to spectating is not only to be influenced by various factors

such as satisfaction of service quality, product, etc., but also measured and interpreted by individual background, direct and indirect experiences[57][58]. Therefore, this finding suggests that generally learning the rules of a sport has a significant effect on enjoyment.

Enjoyment and future consumption.

The results of SEM showed that the relationship between enjoyment and four different types of sport-related consumption had a statistically meaningful relationship. These results are consistent with previous studies that enjoyment plays an important role to predict and explain the behaviors of fans[50][51][52][53][54][59]. One explanation for these results might be due to the accessibility and economic factors. Depending on the economic and accessibility, media consumption is the easiest and most convenient or common consumption behavior compare to other sport-related consumption behaviors(i.e., purchasing sporting goods or merchandizing products, spectating at a stadium and/or arena and etc.)[74]. There are four perspectives to understand enjoyment and media use; hedonic perspective, tripartite perspective, functional perspective, and appraisal perspective[59]. To be specific, with the hedonic perspective, enjoying media is hedonistically oriented and seeks fun in their media usage[75]. In other words, hedonic perspective plays a central role of the enjoyment aspect[76]. The experiences of pleasure in media consumption are important factors in enjoyment and watching mediated sports[41]. Regarding the tripartite perspective, it is necessary to understand the concept of affective and cognitive responses in order to better understand the relationship between enjoyment and media consumption[77]. That is, media enjoyment should be considered as one of the satisfaction types of intrinsic human needs[59]. Finally, enjoying media is a very significant sport-related consumption and meaningful behavior of a human being who seeks enjoyment. The result indicated that media consumption is more importantly considered than other types of sport-related consumption behavior and it was determined that the findings with regard to enjoyment provided important meaning for sport-related consumption behavior of sport fans.

5.2. Implications

Based on the findings of the present study, an important theoretical and practical implications could be considered. Even though many studies have investigated the sports knowledge to find an influence on future consumer behaviors such as game attendance, process becoming a loyal fan, commitment, and enjoyment of sport [2][30][38][41][70], the importance of sport rules, its importance, and specific process of learning rules of sport has been overlooked. As aforementioned, a core product of sport management is the game itself and understanding sport rules is a prerequisite to enjoy the core product. Therefore, it is suggested that the role of understanding sport rules should be considered an important factor for understanding and predicting the sport fan's development process and future behaviors.

5.3. Limitations and recommendations for future research

Even though the present study contributes to academic and practical fields, it has several limitations which should be considered with regard to future research.

First of all, this study didn't consider the demographic characteristics (i.e., gender, income, education, etc.). Previous studies indicated that there are huge gaps between males and females regarding their efforts to have more sport-related knowledge [12][78]. Therefore, it would be more meaningful if future studies considered demographic characteristics in order to have better understandings and generalizations of the results of the study.

Second, the current study employed general sport fans. However, depending on the fans' preference such as sports (i.e., football, baseball, basketball), type of sports (i.e., team sports, individual sports, ball games, combat sports), and preferable league levels (i.e., collegiate level, professional level), the results might be totally different. Therefore, it is necessary to consider more variables that could have influenced the result.

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