Effect of Group Sandplay Therapy to be Addicted Youth's Addiction Levels and Anxiety

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＜Abstract＞

Smartphones addiction Scale of young people is increasing rapidly with the proliferation of smartphones. They have appeared, such as depression and inquietude and etc. In This research I was selected 16 middle school students as control Group and experimental Group and I was selected 16people on same method and I conducted a survey of their addiction levels and depression and inquietude. The results obtained is summarized contents by enforcing Group sandplay therapy while 10 weeks. First. In the statistics showed positively when I compare to before and after afterward I enforced Group sandplay therapy, their addiction levels were decreased. Second In the statistics showed positively when I compare to before and after afterward I enforced Group sandplay therapy, their depressions were decreased Third. In the statistics showed positively when I compare to before and after afterward I enforced Group sandplay therapy, their inquietude's Scales were decreased. Fourth. As time goes by, they objectively think back themselves and they try to conclude a relationship themselves also they Re-defined their emotions as a result, their addiction of smartphones, depressions and inquietudes are Reduced Effectively.

Keywords : group sandplay therapy, adolescents smart phones, anxious, depressed

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I. Introduction

Since the introduction of smartphone devices in full swing in late 2009, the number of smartphone subscribers has surged in South Korea. Easy accessibility, portability and convenience of smartphones quickly attracted many users. Some studies have even suggested that an active use of smartphones positively influences the user's quality of life (Han etc., 2013).

At the beginning of their invention smartphones were used primarily by early adapters and in business circles, but they have now proliferated into our daily lives (Kwon, etc., 2010). Smartphones allow users to do almost everything they wish to, regardless of time and space. And they even go beyond making the users' lives more convenient and effective; smartphones give their users a sense of psychological stability. However, rapid smartphone penetration rate has also engendered many negative changes in our lives, primarily addiction. One of the major differences between smartphones and other electronic devices—like televisions and desktop computers—is that smartphone is portable, which renders the users highly vulnerable to addiction. While all users are exposed to the risk of addiction, it has recently become a serious problem especially among adolescents (Oh, 2015). Whereas there was a separate problem of internet addiction and cellphone addiction in the past, smartphone addiction is a combination of the two. An interesting fact to note is that smartphone users utilize the device not always out of necessity but habitually, almost unconsciously (Koo, 2014).

In 2013 when the number of smartphone subscribers reached 300 million, the Korea Communications Commission and the Korea Internet and Security Agency jointly conducted a research and consequently published "2013 Survey on Internet Addiction." According to the survey, the penetration rate of smart devices—i.e., smartphones and smartpads—is increasing every year: the rate was 31.3% in 2011 but surged to 71.06% in 2013 (Jang and Cho, 2014). The average hours of smartphone use, encompassing calls and texts, per day was 4.1 hours; the figure was 5.4 for those who were at a risk of an addiction. Survey participants responded that they use smartphones primarily to send mobile messages (40.6%), obtain the latest news (17.6%), play online games (8.3%), and conduct searches for study or work purposes.

Another survey on smartphone addiction indicated teenagers spend an average of 5.6

hours per day on smartphone use, much higher than the figure for adults which was 3.8 hours (National Information Society Agency, 2014). Furthermore, 25.5% of adolescent users were found to be addicted. This number is 2.9 times higher than that of adult addicts, which is 8.9%. A notable fact was that adolescents overuse smartphones mostly for communication or stress-relief purposes, rather than searching for information.

Proliferation of smartphones ushered in many positive changes. But at the same time addiction is fast on the rise, especially among adolescents. Smartphone addiction has caused adolescents to suffer from academic, psychological, physical and mental problems as well as to experience conflict with family members and peers.

Developmentally, adolescence is a stage of transitioning from childhood to adulthood. Tensions and conflicts are experienced during adolescence as one experiences a clash between oneself and the environment, social expectations and rules. Adolescents who fail to meet those expectations experience negative emotions and attempt to alleviate these emotions by playing games or listening to music with their smartphones, which make them vulnerable to addiction (Kim, etc., 2012; Shin, 2013).

Existing studies have revealed that there is a negative relationship between addiction and mental health: the higher the addiction score, the lower the mental health (Kwon and Lee, 2002). Adolescents suffering from addiction are known to show symptoms of obsessive-compulsive disorder, somatization, hostility, depression, psychoticism, interpersonal sensitivity, paranoid ideation, fear and anxiety (Yoo, 2009). Similarly, smartphone-addicted adolescents are met with academic, psychological, physical and mental problems as well as conflicts with their family and peers. The progression from casual employment to addiction occurs faster in adolescents than those of other age groups, given the nature of adolescents (Shin, 2013). As negative effects stemming from smartphone addiction can persist for a prolonged period of time, intervention is keenly required. Shin Young-mi (2012) reported that among all smartphone users, teenagers are especially vulnerable to overuse, which results in symptoms such as tolerance, paranoid ideation, obsession, daily inconvenience and maladjustment. In other words, younger users are more susceptible to addiction than older users. Although there exist many studies on adolescents' smartphone addiction, they mainly concentrated on the correlation

between smartphone use and the users' mental health. There is still a dearth of studies that offer feasible solutions to resolve the issue.

A range of researchers have attempted to make diverse approaches on this issue as smartphone addiction has become an ever more serious issue, but there is still an insufficient number of studies dealing exclusively with adolescent addiction. What is more, only 0.2 percent of those addicted actually have received counseling. More work is needed in this area.

Smartphone addiction does not rest solely on an individual's psychological factors; it is influenced largely by social and environmental factors as well. More attention should be paid to this phenomenon, and therapeutic approaches and prevention programs applicable in real life are seriously in need (Park, 2013).

Sandplay therapy empowers smartphone-addicted adolescents to express their inner selves and experience healing. In other words, by expressing their inner conflict through sandplay therapy in a free and natural manner, adolescents are able to gain an insight about themselves and cure, to some extent, their addiction.

Numbers of previous studies have proven that group sandplay therapy is a highly effective treatment means adolescents, especially in treating depression and anxiety. Therefore this study sought to verify the effectiveness of sandplay therapy by giving group sandplay therapy to adolescents experiencing smartphone addiction, depression and anxiety. The result of this study would be conducive to future studies, being utilized in the process of drawing up various intervention and prevention programs beneficial to the mental health of smartphone-addicted adolescents.

Ⅱ. Method

1. Participants

A survey on smartphone addiction, depression and anxiety was conducted among 78 students in grades one, two and three at a middle school in Ansan city, Gyeonggi province. Among them 16 were chosen for the experimental group and another 16 for the control

group. Only those in the experimental group received group sandplay therapy. Therapy was provided over a period of 10 weeks, once a week with 90 minutes per session in a group of four. No interventions were made with regard to the control group. A homogeneity test was done to all 32 students in both groups, the result of which is shown in Table 1:

Table 1. A comparison among the participants

Category		Experimental group (N=16)	Control group (N=16)	
		N(%)	N(%)	
Age	14 - 15	12(75.0)	10(62.5)	.58
	15 - 16	4(25.0)	6(37.5)	
Gender	Male	7(43.8)	10(62.5)	1.12
	Female	9(56.2)	6(37.5)	

According to Table 1, the age category showed no significant difference. Homogeneity test on the gender also yielded no significant difference.

2. Tools

1) Smartphone addiction (S-scale)

The Youth Smartphone Addiction Self-report Scale (S-scale) developed by the Korea Internet Addiction Center of National Information Society Agency in 2011 was utilized to measure the participants' level of smartphone addiction. The S-scale consists of 15 items divided into four subscales: daily-life disturbance (5 items), cyberspace-oriented relationship (2 items), withdrawal (4 items) and tolerance (4 items).

"Daily-life disturbance" refers to the state in which the prolonged usage of smartphone causes disturbances in adolescents' daily lives, at home or in school. "Cyberspace-oriented relationship" includes questions about the feeling that one's relationships with his/her friends obtained through a smartphone are more intimate than the relationships with real-life friends. "Withdrawal" refers to the symptom in which excessive use of smartphones prompts anxiety

and restlessness in adolescents when they are without their smartphones. "Tolerance" indicates adolescents' requiring a greater need to use smartphones (National Information Society Agency, 2012).

The items were scored with a four-point Likert scale (1 = Not at all, 4 = Always). Scoring for questions 8, 10 and 13 is exactly the same except that it is reversed. The reliability test of the scale yielded a Cronbach's alpha of .88. Cronbach's alpha for each subscale is as follows: .79 for daily-life disturbance, .51 for cyberspace-oriented relationship, .82 for withdrawal and .74 for tolerance.

2) Depression

The tool employed in this study to measure the level of depression is the Center for Epidemiological Studies-Depression Scale (CES-D) (Roth & Locke, 1973). CES-D was developed in 1971 by the U.S. National Institute of Mental Health as a screening instrument for depression in U.S. communities. It is a 20-item self-report measure that asks participants to rate how often over the past week they experienced symptoms associated with depression. Response options range from 0 to 3 for each item (0 = Not at all or less than one day, 1 = 1-2 days, 2 = 3-4 days, 3 = 5-7 days). Scores range from 0 to 60, with higher scores indicating greater depressive symptoms. The items are included in the four subscales: depressed affect, positive affect, somatic and interpersonal. Scoring for questions in the positive affect— questions 4, 8, 12 and 16—is exactly the same except that it is reversed.

The firstKorean version of the CES-D was created by Jeon Gyeom-gyu and Lee Min-gyu (1992). The scale's reliability and internal consistency at the time of development were reported to be Cronbach's alpha = .80 and Cronbach's alpha = .91, respectively. As of today, there exist three Korean versions of the scale. Most recently, Choi Sang-jin and Yang Byeong-chang (2001) created the newest Korean version of the CES-D—a combination of the previous three—which was the version selected for this study.

3) Anxiety

Beck Anxiety Inventory (BAI) (Beck, Epstein, Brown & Steer, 1988) was utilized to measure the level of anxiety. To be more precise, the scale implemented in this study was a

BAI variation adapted by Kwon Seok-man in 1992 in Korea. BAI is a self-report inventory that measures the severity of anxiety. Responses are rated on a 4-point Likert scale and range from 0 (Not at all) to 3 (Severely). Scoring is easily accomplished by summing scores for items. The total score ranges from 0 to 63; higher scores indicate greater anxiety. The internal consistency of the BAI is .91 according to Cronbach's alpha.

4) Group sandplay therapy

The objective of this study was to enable smartphone-addicted adolescents recognize positive emotions, allow them to express their emotions openly, help them to regulate themselves not temporarily but permanently, and assist them in forming the right peer relations, thereby reducing their abuse of smartphones as well as their depression and anxiety.

Bearing this goal in mind, the group sandplay therapy design was based on the emotional, behavioral and cognitive traits of smartphone-dependent adolescents. The objective of the group sandplay in this study was to enable the adolescents explore their inner worlds through non-verbal, creative expressions, gain a self-insight, and ultimately help them to go through their individuation process.

3. Analysis Method

Statistical Package for Social Science (SPSS) 20.0 was used to analyze the effectiveness of this research. Cronbach's alpha was calculated for reliability, and the analysis of covariance (ANCOVA) was adopted to see the pretest-posttest differences in smartphone addiction, depression and anxiety.

Ⅲ. Results

1. The Effect of Group Sandplay Therapy on Adolescents' Smartphone Addiction

After dividing the participants into two groups—experimental and control—the level of

smartphone addiction was measured before and after the group sandplay therapy for both groups. The results are shown in Table 2:

Table 2. Smartphone addiction: mean and standard deviation

Group	Pretest M(SD)	Posttest M(SD)
Experimental	45.81 (4.15)	39.25 (9.94)
Control	45.50 (1.79)	45.12 (4.10)

In case of the experimental group, the mean score decreased by 6.56, from a pretest mean of 45.81 to a posttest mean of 39.25. As for the control group, the pretest mean and posttest mean were 45.50 and 45.12, respectively, indicating a decrease in the mean score by 0.38.

Also the study applied ANCOVA, which assesses the differences in the posttest means with the pretest values as the covariate, to see how sandplay therapy would affect the adolescents' smartphone addiction. The results are presented in Table 3:

Table 3. The effect of group sandplay therapy on adolescents' smartphone addiction

Source	Type III Sum of Squares	df	Mean Square	F
Pretest (Addiction)	348.41	1	348.41	7.30[*]
Group	307.55	1	307.55	6.44[*]
Error	1384.34	29	47.74	
Total	2008.88	31		

[*]$p < .05$

As seen in Table 3, statistical significance of the posttest smartphone addiction level was verified by controlling the pretest effect of both the experimental and control groups through ANCOVA. The outcome indicated that a statistically significant difference does exist ($F = 6.44$, $p < .05$).

Group sandplay therapy therefore proved to be effective in lowering the level of smartphone addiction in adolescents. The results confirmed the study question, "Can sandplay therapy reduce smartphone addiction in adolescents?"

2. The Effect of Group Sandplay Therapy on the Depression in Smartphone-Addicted Adolescents

Depression in smartphone-addicted adolescents was measured for both the experimental and control groups before and after group sandplay therapy, the result of which is delineated in Table 4:

Table 4. Depression: mean and standard deviation

Group	Pretest M(SD)	Posttest M(SD)
Experimental	30.00(6.43)	25.44(7.81)
Control	23.18(7.40)	23.88(6.98)

The experimental group experienced a 4.56 decrease in the mean score, with the pretest mean being 30.00 and the posttest mean 25.44. The control group, on the other hand, showed a 0.7 increase in the mean score, with the pretest and posttest means being 23.18 and 23.88, respectively.

To see how sandplay therapy would affect the adolescents' depression, the study used ANCOVA to compare the posttest scores of the two groups. The result is specified in Table 5:

The statistical significance of the posttest smartphone addiction level was verified by controlling the pretest effect of both the experimental and control groups through ANCOVA. The outcome indicated that a statistically significant difference does exist ($F=5.60$, $p<.05$).

Group sandplay therapy therefore proved to be effective in lowering the level of depression in adolescents who are addicted to smartphone. The result confirmed the study question, "Can sandplay therapy reduce depression in smartphone-addicted adolescents?"

Table 5. The effect of group sandplay therapy on the depression in smartphone-addicted adolescents

Source	Type III Sum of Squares	df	Mean Square	F
Pretest (Depression)	1050.95	1	1050.95	51.07***
Group	115.24	1	115.24	5.60*
Error	596.74	29	20.58	
Total	1667.22	31		

*$p<.05$ ***$p<.001$

3. The Effect of Group Sandplay Therapy on the Anxiety in Smartphone-Addicted Adolescents

To verify the hypothesis of the study, the level anxiety was measured for both the experimental and control groups under the pretest-posttest design. The mean and standard deviation for each group is in Table 6:

Table 6. Anxiety: mean and standard deviation

Group	Pretest M(SD)	Posttest M(SD)
Experimental	33.50(9.21)	25.12(9.72)
Control	30.00(7.34)	28.69(8.90)

A slight decline of 9.38 in anxiety was recorded for the experimental group (M pretest = 33.50, M posttest = 25.12). A slight decline was observed for the control group as well (M pretest = 30.00, M posttest = 28.69).

To see how sandplay therapy would affect the adolescents' anxiety, the study used ANCOVA to compare the posttest means of the two groups, controlling the pretest effect of both the experimental and control groups. The result is exhibited in Table 7:

Verifying the statistical significance of the posttest smartphone addiction level through ANCOVA indicated that a statistically significant difference does exist (F=4.82, p<.05).

Table 7. The effect of group sandplay therapy on the anxiety in smartphone-addicted adolescents

Source	Type III Sum of Squares	df	Mean Square	F
Pretest (Anxiety)	973.52	1	973.52	17.30***
Group	271.11	1	271.11	4.82*
Error	1631.66	29	56.26	
Total	2706.72	31		

*$p<.05$ ***$p<.001$

Group sandplay therapy therefore proved to be effective in lowering the level of anxiety in adolescents who are addicted to smartphone. The result confirmed the study question, "Can sandplay therapy reduce anxiety in smartphone-addicted adolescents?"

4. Group Sandplay Therapy

By touching sand and conducting various activities through sandplay therapy, smartphone-addicted adolescents were able to overcome their pessimism, lethargic state and the difficulty of expressing emotions. They eventually learned to accept themselves and others the way they are through positive feedbacks from the therapist and peers in a comfortable and natural setting. They also developed a positive self-image with the support and encouragement from the group. In addition, they showed improvements in their self-regulation capabilities; they were able to regulate their behaviors appropriately under different circumstances. Even at school, the participants bettered their relationships with peers and teachers, began to enthusiastically take part in school activities and behaved according to the rules, leading a healthy school life. Moreover, they reduced their smartphone usage during class. In short, the study revealed that group sandplay therapy is effective in reducing depression and anxiety in adolescents addicted to smartphones.

Ⅳ. Discussion and Conclusion

1. Summary and Discussion

This study aimed to find whether sandplay therapy is effective in inducing changes to the level of smartphone addiction, depression and anxiety by conducing group sandplay therapy with smartphone-addicted adolescents.

Among students in grades from one to three at a middle school in the city of Ansan, 16 were chosen for the experimental group and another 16 for the control group. After measuring the participant's level of smartphone addiction, depression and anxiety, only the experimental group was given group sandplay therapy. Therapy was conducted for 10 weeks, from August to December 2013. The experimental group members were divided into groups of four and received therapy once a week for 90 minutes per session by two therapists who received the same sandplay therapy training. The control group, on the other hand, was not subject to any interventions.

Tools employed in the study are as follows: Youth Smartphone Addiction Self-report Scale (S-scale) for smartphone addiction, Korean version of CES-D for depression, and Korean version of BAI for anxiety.

Same scales were applied before and after the therapy in order to verify the therapy's effectiveness. ANCOVA was also performed in SPSS 20.0.

A discussion based on the results of the study is as follows:

First, the study observed whether group sandplay therapy is effective at helping with smartphone addiction. A comparison of the addiction level before and after group sandplay therapy showed a statistical significance: The pretest score was 45.81 whereas the posttest score was 39.25, indicating a 6.56 decrease. Based on the statistical significance ($F = 6.44$, $p < .05$), the study evinced that group sandplay therapy is effective in reducing adolescents' mobile dependence.

Most of the studies on smartphone-addicted adolescents mainly made a report on the current phenomenon and did not provide feasible suggestions on how to resolve the issue. Previous studies focused primarily on developing a group counseling program or explained the

effects of pastoral counseling. This study found that group sandplay therapy is also effective in reducing smartphone addiction by investing adolescents with time for self-reflection and inner world exploration, through which they were able to learn of the cause of the addiction and experience transformation.

Second, the study examined whether group sandplay therapy is effective in reducing depression in smartphone-addicted adolescents. A comparison of the depression level before and after group sandplay therapy showed a statistical significance (F = 6.44, p < .05): The pretest mean was 30.00 whereas the posttest mean was 25.44; the mean underwent a decrease of 4.56. Thus it was shown through the study that group sandplay therapy is effective in reducing depression in smartphone-addicted adolescents.

Many previous studies have already confirmed that group sandplay therapy is effective in reducing anxiety in not only adolescents but also all age groups (Choo, 2014; Lee, 2013; Kim, 2013; Kim and Lee, 2012).

Smartphone-dependent adolescents spend most their time alone playing with smartphones. They display difficulties in expressing their thoughts as they often do not engage in direct conversations. Moreover, they have a tough time getting along with their peers. They mostly focus on solitary activities and are prone to developing a passive attitude (Kwon, 2013; Jeong, 2014). But sandplay therapy allowed these adolescents an opportunity to easily access means to open up through symbols. They were able to express themselves psychologically and those expressions were fully accepted in a safe environment. In other words, participants were able to open up emotionally and accept one another within a comfortable and natural setting, through which positive changes occurred.

Third, the study sought to confirm whether group sandplay therapy is effective in reducing anxiety in smartphone-addicted adolescents. A comparison of the anxiety level before and after group sandplay therapy indicated a statistical significance (Z = -1.89, p < .05): The mean average score of the experimental group decreased by 8.38 from a pretest mean of 33.50) to a posttest mean of 25.12. Thus the study revealed that group sandplay therapy is effective in reducing anxiety in smartphone-addicted adolescents.

The effectiveness of group sandplay therapy in reducing depression in a range of

groups and people has already been seen in previous studies (Jang, 2014; Seo, 2005). This study confirmed that result especially for adolescents who are addicted to smartphone.

Fourth, at the beginning of group therapy the adolescents found it difficult to communicate and meet eyes with each other, and focused mainly on their own story. They touched sand and created pictures only within their own domain in the sandtray, expressed indirectly their dissatisfaction of or scoff at what others had made, and were loath to share their creations. There were those who would remain silent during the entire session, being afraid of revealing their emotions to the group. Then there were some would tell stories that are unrelated to the theme, or would be lost in their own thoughts. But as therapy progressed, the adolescents began to meet eyes with each other, share their emotions, and adopt a more considerate attitude like waiting for others to finish their activities. They were able to freely express their negative emotions, confront those emotions and even were empathetic towards the emotions of others. As they re-established their emotions, the levels of addiction, depression and anxiety were reduced. The appearance of negative themes decreased whereas that of positive themes increased. Such transformation is in line with the view that a child's chaotic sandpicture eventually finds union and order (Kim, 2004; Kalff, 1980). It also is in agreement with the finding that even in group sandplay therapy, in which participants share a sand tray, clients form a sense of empathy and achieve inner healing (Kim, 2004)

To summarize the study results, adolescents who suffered from smartphone addiction, depression and anxiety experienced a positive self-image, developed an attitude of accepting oneself and others and actively expressed their inner feelings after receiving group sandplay therapy. Their outward behavioral changes as well as scores on the scales revealed that group sandplay therapy is able to reduce addiction, depression and anxiety in smartphone-addicted adolescents.

2. Limitations and Suggestions

Based on the outcomes, the study would like to make the following suggestions for future researches:

First, participants of this study were comprised entirely of students from a single

middle school. This means that the effectiveness of group sandplay therapy cannot be generalized for all adolescents addicted to smartphones. Therefore, future studies would have to be conducted with adolescents of various ages from a host of regions in order for group sandplay therapy's effectiveness to be universalized.

Second, the effectiveness of group sandplay therapy was verified despite that only 10 therapy sessions were provided, as they had to be conducted in tandem with school classes. But not enough observations were made to confirm the duration of the effect. There is thus a need in the future for a long-term study comprised of programs with different numbers of sessions to be able to confirm the sustainability of the therapy's effect.

Third, group therapy has its limitation of exploring the deep unconscious of an individual. So it is necessary for follow-up studies to conduct individual sandplay therapy to explore the participants' deep unconscious and see also the effectiveness of individual therapy in alleviating smartphone addiction.

Fourth, the study was conducted based on the hypothesis that smartphone-addicted adolescents would suffer from depression and anxiety. But it is not certain whether depression and anxiety were really sowed by smartphone addiction, or, in fact, depression and anxiety were what led to smartphone addiction. What is certain is that according to the survey, there exists a positive relationship between smartphone addiction and depression/anxiety. Further studies are needed to identify the exact causal relationship between smartphone addiction and depression/anxiety.

Lastly, a posttest was conducted after the group sandplay therapy but a follow-up test was not done due to limitations in time. Though the therapy's effectiveness was verified immediately after the program, it is possible that some of these effects may be reduced after a certain span of time. It is also possible that additional effects that did not show up in the posttest will appear later. For these reasons, it is necessary to conduct a follow-up test after a certain period in order to verify the long-term effect of group sandplay therapy. Despite these limitations, this study is highly meaningful for the following reasons:

First, group sandplay therapy promoted positive emotions functions, reduced anxiety and depression and improved the ability regulate smartphone use, thereby increasing adolescents'

interest in peer relations, school life as well as family life. After therapy, the adolescents reported positively of their satisfaction in their daily lives.

Second, existing studies on smartphone-addicted adolescents in Korea showed the effects of group counseling and pastoral counseling, but none has been done on the effect of group sandplay therapy. This program is particularly meaningful as adolescents were able to alleviate their negative emotions and achieve healing in a natural setting. Group sandplay therapy naturally sparked the interest of the participants and induced active participation through the use of familiar tools, allowing them to have fun even in a therapy setting.

Third, the effectiveness of the program was clearly verified by adopting a pretest-posttest control-group design and also by controlling the pretest effect through ANCOVA.

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