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The Effect of Self-Identity on Smart phone Addiction

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Abstract

The purpose of this study was to investigate the relationship between self-identity and smart phone addiction among University students. This study used descriptive cross sectional study to analyze the relationship between self-identity and smart phone addiction. Study participants included 357 University students located in C province who selected through volunteered, but 10 missing data were excluded and finally 347 participants completed the study. The study data were collected using self-identity tool made by Park A chung in 1996 which was composed of Independence, Proprioception, Future conviction, Goal orientation, Initiate, and Intimacy and Smart phone addiction tool made by National information society agency. The self-identity's Cronbach's alpha was .937 and Smart phone was .670. All data analyses were performed using SPSS 18.0. Results showed that most students were not addicted(97.1%) in Smart phone using and middle level(73.2%) of self identity. Also, there was a difference in self − identity level according to gender and grade(the ratio of smart phone general users, not at all addicted, was 90.79% for males and 98.53% for females), and there was difference in Smart phone addiction level according to gender and residence type(the ratio of Smart phone general users, not at all addicted, is 99.32% for commute, 97.04% for dormitory, and 89.66% for self governing). Also there were strongly related with self-identity and Smart phone addiction($p < .001$). This results reveled that self-identity affect to Smart phone addiction, therefore it is important to raise self-identity to prevent Smart phone addiction for University students.

Keywords: *Self-identity, Smart phone addiction, University students.*

1. Introduction

Digital media technology is widespread throughout society[1]. In particular, the spread of Smart phones has led to such changes[2][3]. Beyond of age, Smart phones are deeply embedded in our lives[2][3]. People can use smart phones to search various information, communicate conveniently, and enjoy leisure activities such as games. Smart phones have been around in our lives because they can be used anywhere, regardless of space or distance[4]. In particular, the use of social networking services (SNS) in Smart phones makes efficient information and maintenance of new relationships. With this convenience, the number of Smart phone user is rapidly increasing. However, as the reliance on communication by smart phones has increased, the relationship between existing offline networks including family members has been reduced[5]. Smart phones are becoming a useful tool to express user's own space, own way, and own taste. In other words, a

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Smart phone is a medium in which an individual user does not share with others but is used solely by themselves[6]. How will people change if they fall into Smart phones at an age when self-identity is not established? According to a report released by Korea Information &Culture Promotion Agency, 28.4% of the respondents said that the degree of resting use was pathological, and 43.1% of respondents indicated that they need to pay attention to Smart phone use[8]. As described above, smart phones have many advantages, but if they fall into a smart phone that is their own space while lacking their self-identity, they can result in the same result as a Smart phone addiction. Smart phone addiction refers to the use of Smart phones to abstain from addiction, withdrawal, tolerance, virtual world orientation, and daily life addiction [9]. The Korea Information Promotion Agency mentioned the addiction of smart media addiction on the basis of Brown's six addiction criterion[9]. In other words, smart phone addiction is defined as a phenomenon of resistance and withdrawal due to excessive use of Smart phone and personal and social side effects. The withdrawal symptom of Smart phone addiction is that people become irritated if they are not close to their Smart phone, and feel anxious when they stop. Tolerance means that people are not satisfied with the use of Smart phones and spend more and more time. The daily life disorder caused by virtual world orientation refers to a situation in which students feel comfortable in friendship and communication in the virtual space, and are late to school or are absent from school and have difficulty in studying.

So far, studies on Smart phone research have revealed that the addiction of Smart phone[9-13], the scale of addiction to Smart phone, the variables related to Smart phone, and the causes and results of Smart phone in the Korea. Among these studies, social phobia, school life and interpersonal relationship, ADHD, and school violence were the causes of the addiction of Smart phone. In addition, research on the results of Smart phone addiction resulted in communication interruption and alienation due to overuse of Smart phone. Especially, it has been reported various symptoms such as obsessive use, obsessions, tolerance, withdrawal, and maladjustment of daily life such as inability to control, similar to alcohol or gambling addicts in Smart phone addiction. Smart phone addiction, like other addictions, affects the brain and secretes dopamine, which is what we commonly known as alcoholism and game addiction. However, such a study is merely a discussion of the consequences of Smart phone addiction. In other words, it is difficult to say that it is only the inverse function of Smart phone consume[10-11].

The term identity is derived from the ‘Identitas’ in Latin, meaning that the person is the person who must be, or has identity [14]. Self identity is the most central concept of Erikson 's theory[15]. It can be defined as a conscious sense of individual' s permanence, identity, invariance, identity, and a conscious sense of one 's own self[16]. Park, A chung viewed the concept of self-identity as the subjectivity, future confidence, goal orientation, initiative, and intimacy. Independence refers to ability to actively dominate and influence the environment with a sense of competence and subjective role, self-acceptance means accepting the ability as it is and trusting with oneself, And the goal orientation means the willingness to carry out a given task by trusting the direction in which the future self is directed toward the goal itself[16]. Because Smart phones are media that can be used anytime and anywhere, people who lack self-control easily fall into addiction to Smart phones[17-18].

However, the research so far has focused on the actual condition and result of Smart phone addiction. The convenience and benefits of civilization can not be avoided. If so, looking for a positive way to use a Smart phone can be very meaningful. Therefore, this study examined the relationship between self-identity and Smart phone addiction based on the positive findings of self-identity coping with stress. The specific objectives of this study are as follows.

First, what are the demographic factors that affect Smart phone addiction?

Second, what is the level of self-identity and Smart phone addiction among University students?
Third, what is the relationship between self-identity and Smart phone?

2. Method

2-1. Research tools

2-1-1. Self-identity

The Self-identity scale was developed by Park, A chung[16] and used by Im and Hwang [19]. When Im and Ho [19] used Cronbach alpha was .946 and the entire Cronbach alpha of this study was .937. This scale was 5 point likert and consists of 60 items consisting of 6 sub - factors, Independent, Proprioception, Future conviction, Goal orientation, Initiate and intimacy. 1 point is not at all, 2 point is not so much, Three point is common, 4 point is mostly true, 5 point is very true. The inverse question calculated inversely. Sub-component reliability of self-identity were each Independent(.644), Proprioception(.790), Future conviction(.788), Goal orientation,(.794) Initiate (.841) and Intimacy(.796)(Figure 1).

Table 1. Self identity sub-component realiability

Scale	Sub-component	Cronbach α
Self identity	Independent	.644
	Proprioception	.790
	Future conviction	.788
	Goal orientation	.794
	Initiate	.841
	Intimacy	.796
	Total	.946

2-1-2. Smart phone addiction

The smart phone addiction scale was developed by National information society agency[8]. Smart phone addiction means when people has a feeling of discomfort in everyday life due to excessive use of Smart phone, a greater pleasure in virtual than in the real world, and an irritability and anxiety when not using a Smart phone. The validity of the tool was verified already in 2011 by National information society agency and The reliability of this study' Cronbach alpha was .670. This scale was consisted of 15 questionnaire and 4 point likert, A total score of 45 or higher is a high-risk addict, a score of 42 to 44 is a potential addict, and a score of less than 41 is defined as a general user.

2-2. Data analysis

Statistical program SPSS 18.0 was used to analyze this study. First, the frequency and percentage of general characteristics of participants were analyzed as descriptive statistics. Second, Pearson correlation was performed to analyze the Correlation between self-identity and Smart phone addiction. Third, Cross-sectional analyzes were conducted to examine self-identity according to general characteristics. Fourth, Cross-sectional analyzes were conducted to examine Smart phone addiction according to general characteristics. and Fourth, Multiple regression analysis was performed for the Effect of Self-Identity on Smart phone Addiction.

3. Result

3-1. Information of study participants

The demographic characteristics of the study participants were shown Table 1. A total of 347 students were asked to participate in the study, but 10 were excluded from the analysis by making the responses poor. Among the 347 participants, female students were participated in the study more than boys as Male(21.6%)and Female(78.4%). The age distribution were age under 19(32.0%), 20(25.1%), 21(17.6%), and over 22(25.4%). The Grade distribution were 1st(33.7%), 2nd(25.9%), 3rd(23.3%), and 4th(17.0%). The Residence types distribution were Commute(42.7%), Dormitory(49.0%), self-governing(8.4%). The Part time job distribution were on campus(2.3%), convenience store (2.9%), restaurant(10.4%), and None(84.4%). The Pocket money per month distribution were Less than 100,000 won(17.3%), Less than 200,000 won(28.8), Less than 300,000 won(30.0%), and more than 300,000 won(23.9%)(Table 1).

Table 2. Information of study participants (N=347)

Characteristic		Fre. (N)	Ratio (%)	Characteristic		Fre. (N)	Ratio (%)
Gender	Male	75	21.6	Residence type	Commute	148	42.7
	Female	272	78.4		Dormitory	170	49.0
					self-governing	29	8.4
Age	19↓	111	32.0	Allowance (won)	↓ 100,000	60	17.3
	20	87	25.1		↓ 200,000	100	28.8
	21	61	17.6		↓ 300,000	104	30.0
	↑22	88	25.4		↑ 300,000	83	23.9
Grade	1st	117	33.7	Part time Job	On campus	8	2.3
	2nd	90	25.9		Convenience store	10	2.9
	3rd	81	23.3		restaurant	36	10.4
	4th	59	17.0		None	193	84.4

Missing data were excluded.

3-2. Correlation between self-identity and Smart phone addiction

The Pearson correlation analysis was used to examine the correlation between the sub-components of the self-identity of the participants and the addiction of the Smart phone(Table 2). Self-identity consists of Independent, Proprioception, Future convictions, Goal orientation, Initiate, and Intimacy. According to the result, Participants' 'Independent' and smart phone addiction were correlated ($r = .536$, $p < .005$), Proprioception and smart phone addiction were correlated ($r = .522$, $p < .001$), Future convictions and smart phone addiction were correlated ($r = .571$, $p < .001$), Goal orientation were correlated ($r = .719$, $p < .001$), Initiate were correlated ($r = .709$, $p < .001$), and Intimacy were correlated ($r = -.234$, $p < .001$).

Table 3. Correlation between self-identity and Smart phone addiction

Variables	Mean	SD	Correlation						
			1	2	3	4	5	6	7
1. Independent	3.35	.45	1.00	.536**	.451**	.558**	.405**	.389**	-113*
2. Proprioception	3.93	.56		1.00	.522**	.653**	.583**	.538**	-.243**
3. Future convictions	3.66	.58			1.00	.571**	.453**	.426**	-.234**
4. Goal Orientation	3.29	.57				1.00	.719**	.620**	-.388**
5. Initiate	3.24	.62					1.00	.709**	-.300**
6. Intimacy	3.30	.63						1.00	-.243**
7. Smart phone addiction	2.06	.33							1.00

**. The correlation coefficient is at 0.01 level (both sides).

*. The correlation coefficient is at 0.05 level (both sides).

3-3. Difference of self identity according to general characteristics

The differences in self-identity according to general characteristics are shown in Table 3. A chi-square analysis was conducted to test for differences. The results of the X 2 analysis showed that grade influenced the difference in self identity($p<.005$). The self-identity measurement tool was originally divided into 5 steps, 1 point is not at all, 2 points is not so much, 3 points is common, 4 points is mostly true, and 5 points is very true. There is no one 1point participant in this study. Therefore, for convenience, this study divided into four stages such as Low(2 points), Average(3 points), Higher than average(4 points), and Very high(5 points). As for gender, Male students were very high at 24%, while female students were at 8.46%($p<.001$). Most female students were higher than average(76.11%), but boys were distributed evenly from low(1.39%) to very high(24.0)($p<.005$). Also, it was found that the school year(grade) also affected the self identity($p<.001$). In the first grade, the highest average was 69.23%, the second-year students also had the highest average of 82.22%, the grade was also higher than average at 66.67%, the third grade also had the highest average of 76.27%. However, none of the fourth grade students answered very high, while the first grade was 17.95% and the third grade was 22.22%. And there was no difference in age, pocket money, residence type, and part-time status.

Table 4. Difference of self-identity according to general characteristics

Categories		Self identity(%)				X^2	p
		Low	Average	Higher than average	Very high		
Gender	Male	1(1.39)	9(12.5)	47(9.72)	18(24.0)	17.572	.001*
	Female	0(.0)	42(15.44)	207(76.11)	23(8.46)		
Grade	1st	1(0.85)	14(11.97)	81(69.23)	21(17.95)	33.519	.000**
	2nd	0(0.0)	14(15.56)	74(82.22)	2(2.22)		
	3rd	0(0.0)	9(11.11)	54(66.67)	18(22.22)		
	4th	0(0.0)	14(23.78)	45(76.27)	0(0.0)		
Age	↓ 19	1(0.90)	15(13.51)	77(69.37)	18(16.22)	12.539	.051
	20	0(0.0)	9(10.34)	74(85.06)	4(4.60)		
	21	0(0.0)	27(18.12)	103(29.13)	19(12.75)		

Residence	Commute	0(0.0)	25(17.00)	109(74.15)	14(9.52)	8.699	.191
	Dormitory	1(0.59)	26(15.30)	122(71.76)	21(12.35)		
	Self governing	0(0.0)	0(0.0)	21(77.78)	6(22.22)		
Part time job	On school	0(0.0)	0(0.0)	0(0.0)	1(100.0)	21.613	.118
	Convenience store	0(0.0)	0(0.0)	6(60.00)	4(40.00)		
	Restaurant	0(0.0)	4(1.11)	31(86.11)	1(2.78)		
	None	0(0.0)	30(18.87)	115(72.33)	14(8.81)		
Porket money	↓ 100,000	0(0.0)	11(18.33)	38(63.33)	11(18.33)	9.49	.302
	↓ 200,000	1(1.00)	14(14.00)	74(74.00)	11(11.00)		
	↓ 300,000	0(0.00)	13(12.75)	78(76.47)	13(10.78)		
	↑ 300,000	0(0.0)	13(17.57)	55(74.32)	6(8.11)		

**. p<.001, *. p<.005

3-4. Difference of Smart phone addiction according to general characteristics

Differences in self identity according to general characteristics are shown in Table 4. A chi-square analysis was conducted to test for differences. The results of the X 2 analysis showed that Gender and residence type influenced the difference in self identity. 98.53% of the female students were Smart phone general users, and 90.79% of male students were normal users, which showed meaningful results(p<.005). While 98.53% of the female students were general users of Smart phone, only 90.79% of male students were general users(p<005). The difference of Smart phone addiction according to residence type was significant(p0.01). 99.32% of the students attending school were general users while 97.04% of the students were living in dormitories and 89.66% of the students were general users. There was no difference between the other variables and Smart phone addiction.

Table 5. Difference of Smart phone addiction according to general characteristics

Categories		Smart phone addiction			X^2	p
		General user	Potential addiction	Addiction group		
Gender	Male	69(90.79)	4(5.26)	2(2.63)	9.068	.011*
	Female	268(98.53)	3(1.10)	1(0.37)		
Grade	1st	116(99.15)	0(0.00)	1(0.85)	10.688	.099
	2nd	84(93.33)	4(4.44)	2(2.22)		
	3rd	78(96.30)	33.70)	0(0.00)		
	4th	59(100.0)	0(0.00)	0(0.00)		
Age	↓ 19	11099.09)	0(0.00)	1(0.01)	8.672	.070
	20	81(93.10)	4(4.60)	2(2.30)		
	21	146(97.99)	3(2.01)	0(0.00)		

Residence	Commute	147(99.32)	0(0.0)	1(0.68)	13.801	.008**
	Dormitory	164(97.04)	4(1.15)	2(1.18)		
	Self governing	26(89.66)	3(10.34)	0(0.0)		
Part time job	On school	8(100.0)	0(0.00)	0(0.00)	5.063	.887
	Convenience store	10(100.0)	0(100.0)	0(100.0)		
	Restaurant	35(97.22)	0(0.00)	1(2.78)		
	None	283(96.92)	7(2.40)	2(0.68)		
Porket money	↓ 100,000	56(93.33)	3(5.00)	1(1.67)	9.494	.302
	↓ 200,000	99(99.00)	0(0.00)	1(1.00)		
	↓ 300,000	99(95.19)	4(3.85)	1(0.96)		
	↑ 300,000	74(100.0)	0(0.00)	0(0.00)		

**. p<.001, *. p<.005

3-5. The Effect of Self-Identity on Smart phone Addiction

Multiple regression analysis was conducted to analyze the factors affecting the addiction of Smart phone by sub-factors of self-identity(Table 5). As a result, Self-identity was explained by 16.8% of Smart phone addiction. The Durbin-Watson value is 2.015 as a measure of the independence of residuals. This means that there is no correlation to residuals. Since the significance of the variance analysis is 0.00 and less than 0.05, the regression equation is suitable for analysis. Also the multilinearity did not occur because the tolerance threshold value was less than 0.1 or the VIF value was not more than 10.0. The results showed that Independence factor(Self-identity's sub item) positively affected the addiction of Smart phone(p<.004). But Goal orientation(Self-identity's sub item)has a negative effect on Smart phone addiction(p<.000). In other words, the higher the Independence, the more likely it was to become addicted to Smart phones, but the more the goal-oriented, the less likely it is to become a Smart phone addict.

Table 6. The Effect of Self-Identity on Smart phone Addiction

Dependent Variables	Independent Variables	Non-standardization factor		β	t	p	Tolerance limit
		B	SE				
Smart phone addiction	Constant	41.874	2.336	-	17.923	.000	
	Independence	2.196	.757	.182	2.901	.004*	.623
	Proprioception	-.168	.694	-.017	-.242	.809	.480
	Future conviction	-.625	.591	-.066	-1.056	.292	.621
	Goal orientation	-4.036	.810	-.425	-4.985	.000**	.337
	Initiate	-.269	.714	-.031	-.376	.707	.360
	Intimacy	.189	.628	.022	.301	.764	.460
R^2=.168, Modified R^2=.153, F=1.446, p=.000, Durbin-Watson=2.015							

*. p<0.05, **. p<0.01

4. Conclusion

On the basis of the analysis above, it can come to conclusions. This study was designed to explore the The effect of Self-Identity on Smart phone Addiction. The information of participants were 347. All of them were enrolled in the first, second, third, and fourth grades who agreed to participate in the study.

In this study, The percentage of female students was higher than male students as 272 students (78.4%) were female students and 75 students (21.6%) were male students. There were 117 students (33.7%) in the first year, 90 students (25.9%) in the second grade, 81 students (23.3%) in the third grade and 59 students (17.0%) in the fourth grade. According to the type of residence, 148 students (42.7%) Commute school, 170 (49.0%) dormitories, and 29 (8.4%) self governing around the school. The average monthly allowance was 60 (17.3%), 100 (28.8%) less than 100,000 won, 104 (30.0%) less than 300,000 won, and 83 (23.9%) over 300,000 won appeared. According to the results of the part time job analysis, 8 students (2.3%) were in the school, 10 students (2.9%) were in the convenience store, 36 students (10.4%) were in the restaurant, and 193 students (84.4%) were not working in any place. There was no uniform distribution of grade and gender among the subjects because the study was aimed at students who indicated their intention to participate in the study. Considering this situation and analyzing the results, the dormitory students were the most, the allowance students were less than 300,000 won, and the number of students who did not work part-time was high. Part-time jobs were difficult to achieve due to the nature of the department and there were also difficulties in finding a place in the school. Dormitory life is also the same reason.

When analyzing the correlation between Smart phone addiction and self-identity, there was strongly correlation each other such as Participants' ‘Independent’ and smart phone addiction were correlated ($r = .536$, $p < .005$), Proprioception and smart phone addiction were correlated ($r = .522$, $p < .001$), Future convictions and smart phone addiction were correlated ($r = .571$, $p < .001$), Goal orientation were correlated ($r = .719$, $p < .001$), Initiate were correlated ($r = .709$, $p < .001$), and Intimacy were correlated ($r = -.234$, $p < .001$). These results should be compared with those of Synthetic cannabinoid products' users in the Pinter JN[20] study. In the study of [20], SC users were found to form new identities to bring about changes in their behavior. He emphasized that the focus of therapy should be on self-identity, and this study is in agreement. Especially Internet addiction related to addiction is considered to have a great importance in the adolescent period in which self identity was formed. In the article 'Internet Addiction in Adolescence: Neurobiological, psychosocial and clinical issues’, Because of the social interaction on the Internet, the adolescents often suffer loss of control, symptoms of distress, social withdrawal, or familial conflicts. According to their findings[21], social interaction with the virtual world in the absence of self-identity leads to addiction more easily. The results of this study suggest that the relationship between self-identity and Smart phone addiction is highly correlated with the results.

When analyzing differences in self-identity according to general characteristics, grade ($p<.005$) and gender($p<.001$) influenced the difference in self identity. In the study of Bakula DM[22], gender character was the strongest predictor of gender identity. Compared with the results of this study, it is concluded that gender is the same as the result of affecting self identity in this study. However, there has been no study of differences in self identity according to grade.

When analyzing differences in Smart phone addiction according to general characteristics, Gender and residence type showed significant results. Female students were less likely to be addicted to Smart phones than male students($p<.005$), and students who are commute school and Living in a dormitory were less likely to be addicted to Smart phones($p<.005$). The results of this study need to be compared with those of Kormendi A. According to a study of ’smart phone usage among adolescents’[23], average Smart phone

using time was 4,48 hours per day and male using hour was 3,40 hour for female 5,39 hour. Kormendi A studied 263 youths, and compared to his studies, it appears that young people's Smart phone addiction can occur regardless of time of use. But this needs to be studied again. In other words, the relationship between Smart phone use time and Smart phone addiction needs to be studied again by gender and age.

When analyzing the Effect of Self-Identity on Smart phone Addiction, the results showed that Independence factor(Self-identity's sub item) positively affected the addiction of Smart phone($p<.004$). But Goal orientation(Self-identity's sub item)has a negative effect on Smart phone addiction($p<.000$). This means that if the independence is high, it is likely to be a Smart phone addiction, and if it is goal-oriented, it is less likely to become a Smart phone addiction. The results of this study need to be compared with those of the study of 'Challenging the addiction / health binary and assemblage thinking: An analysis of consumer accounts'[24]. They argue that critical analyzes of drug use and 'addiction' have identified a series of binary oppositions between addiction and free will, independence, self-control, responsibility, productivity and autonomy. In other words, independence is a major influence factor on addiction. It may be necessary to reexamine what factors of independence affect addiction. The results of studies that are likely to become Smart phone addiction as they are not goal oriented need to be compared with 'Mania risk is characterized by an aberrant optimistic update bias for positive life events' study results. This research[25]suggests that due to the crucial role of future-oriented beliefs in guiding decision-making and goal-directed behavior, this make the mania-typical engagement in highly pleasurable activities. This looks like a conflicting study. But on the contrary, we need to think about this. In other words, if participants consider the bright future to be more important than the use of Smart phone, they can focus on different preparations for the future rather than enjoyment of using Smart phone.

Im and Hwang point out that the difference in self identity and the factors affecting self identity in [19]. Their research suggests that there is a difference between self identity in real space and virtual space. This is consistent with the results of this study. In addition, Lee Song-yi argues that 'college students' self-esteem influence on rational career decision making and career maturity suggests that the higher the self-identity of college students, the higher the career maturity[26]. This study also showed that Smart phone addiction was lower in the goal oriented toward participants' future, which is a subordinate component of ego identity.

Based on the above results, the researcher proposes the following suggestions. Self - identity has a strong relationship with Smart phone addiction, especially independence and Goal orientation, which are sub - components of self - identity. Therefore, it is necessary to develop a program to use a smart phone by doing research in depth. When developing the program, it is considered that the gender, the grade, and the residence type should be considered as in this study.

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