



# The Emotional Factors Influencing Mobile Phone Dependency of College Students and Gender Difference

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## 대학생의 휴대전화의존성에 영향을 미치는 정서요인과 성별의 차이 탐색

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### Abstract

This study aimed to identify emotional factors influencing on the mobile phone dependency of students and its difference by gender. This study analyzed 1220 students out of 2,351 college students in the 7th year of the Korea Child and Youth Panel Survey (KCYPs) conducted by the Korea Youth Policy Institute. SPSS 23 was used for the study analysis, and t-test, ANOVA and multiple regression analysis were performed. Self-identity, depression, and aggression affected the students' mobile phone dependency. The explanatory power was 13.3%. In the case of male students, depression and self-identity were found while self-identity and aggression were found as factors influencing on the mobile phone dependency. The female's mobile phone dependency was higher than male students. In order to weaken the mobile phone dependency of college students, it will be necessary to develop self-identity, and it is needed to have an intervention program that lowers depression, and aggression.

**Key words :** College students, Mobile phone dependency, Self-identity, Depression, Aggression

### I . Introduction

The rapid advancement in technology has made many devices, and a mobile phone is one of them (Nishad and Rana, 2016). Mobile phone is a useful tool to provide a lot of functions and pleasures in everyday life. Almost 95 percent of Americans own cell phones and 77 percent own smartphones(Shoukat, 2019). According to the Gallup Report, the number of smartphone subscribers in Korea was 93 percent out of total

population in the country(GallupReport, 2018). Almost every Korean college student has a mobile phone by 98.8 percent(Ha, 2015).

Mobile phones make out lives easier but on the other hands it binds us. Too much dependency makes us "Mobile addictive"(Shoukat, 2019). Mobile phone dependence means not only obsessing with using mobile phone without a clear purpose, but also giving difficulties in the relationship with people around(Kim, 2013; Kim and Im, 2016). Block (2008) expressed concerns about problematic

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use of mobile phones such as behavioral or technological addiction and the effects on social and personal characteristics. There are indications that younger people have an even higher likelihood of using short message service(SMS) function and other features, resulting in increased exposure to emotional and social problems(Bianchi & Phillips, 2005; Seo et al., 2016). Mobile phone dependency negatively predicted attention and positively predicted depression affected social relationship with friends and both Korean language arts and mathematics achievement(Seo et al., 2016). Mobile phone addiction not only represents physical effects but also psychological and academic effects. Sleep deficit, anxiety, stress and depression are related to mobile phone addiction (Shoukat, 2019). According to Hakoma and Hakoyama(2011), female college students have high level of attachment to mobile phone than male students, indicating that females tend to maintain social relationships through mobile phone usage. On the other hand, there are researches to argue that boys tend to use more mobile phone than girls for playing games, shopping, or watching movies(Bisen and Deshpande, 2016). Jun(2019) found that self-esteem is positively related with mobile phone dependency and peer-alienation is negatively related with it. Woo(2013) found that parenting abuse and neglect affected on children's mobile phone dependency. In the study of Hur et al.(2015), depression aggression, attention, social withdrawal, and self-identity were found as the significant predictors of mobile phone dependency in adolescent. Even though there are studies to find out the gender difference of mobile phone dependency, there is no study about gender difference of emotional factors affecting mobile phone dependency of college students.

In this context, even though mobile phone is used widely in every aspect of life, there is a need to educate students to have strong control in their mind not to be depended psychologically. From the education perspective, there should be intervention programs or strategies to make educational strategies for decreasing mobile phone dependency. There are few researches exploring the relationship between mobile phone dependency and positive emotions for decreasing mobile phone dependency.

The purpose of this study was to investigate the relationship between positive emotions, negative emotions, and mobile phone dependency of college students and to identify the influencing factors on mobile phone dependence and its difference by gender.

## **II . Research Method**

### **1. Subjects**

This study used data from the Korea Children 's Youth Panel Survey(KCYPS) conducted by the Korea Youth Policy Institute. KCYPS was conducted in 2010 to identify the growth and developmental patterns of children and adolescents. 7,071 samples were sampled from 16 provinces including first year students, fourth grade students, and first year students of middle school in multi-level cluster sampling method. In this study, I selected 1st year college students in 2016 who were first year middle school students in 2010. Among the 2,351 samples extracted, the last 1,220 questionnaires were used for the final analysis, except for the missing questionnaires in the questionnaire response related to this study. The subjects were 575 male students(47.1%) and 645 female students(52.9%). 375(30.7%) were 2-year

junior college students and 845 (69.3%) were 4-year college students. 273 (22.4%) students were from the national and public universities, and 947 (77.6%) were from the private universities.

<Table 1> General characteristics of the subjects

Variables		No.	%
Gender	Male	575	47.1
	Female	645	52.9
College type	2-year college	375	30.7
	4-year college	845	69.3
College foundation	National/public	273	22.4
	Private	947	77.6

## 2. Research Instruments

1) Positive emotions: Self-esteem, Ego-resilience, Self-identity, Life satisfaction

As positive emotions in this study, 4 variables were chosen from the section of social-emotional development in KCYPS database. Self-esteem was used by Rogenberg(1965) with 10 items. Ego-resilience is composed of 14 items by Block & Kreman(1996) and revised by Sun-kyung Yoo and Haw-won Shim(2002). Self-identity consists of 8 items. Life satisfaction is 3 items by Shin-young Kim et al.(2006). All four scales consisted of a 4-point Likert scale(not at all=1, no =2, yes=3, and very much=4). The reversed items were reversely coded, so the higher the sum of the items, the higher the variables. Cronbach's alpha for self-esteem, ego-resilience, self-identity, and life satisfaction are .843, .826, .722, and .781, respectively.

2) Negative emotions: Attention deficit, Aggression, Depression, Social Withdrawal

As negative emotions in this study, 4 variables were chosen from the section of social-emotional

development in KCYPS database. Attention deficit and Aggression were extracted from the scale by Bong-whan Jo & Kyung-hee Im(2003) and each variable has 7 and 6 itmes respectively. Depression consists of 9 items from Simple Mental Diagnostic Test by Kwang-il Kim et al.(1984). Social withdrawal is 5 items by Sun-hee Kim and Kyung-yeon Kim(1998). All four scales consisted of a 4-point Likert scale(not at all=1, no =2, yes=3, and very much=4). The reversed items were reversely coded, so the higher the sum of the items, the higher the variables. Cronbach's alpha for attention deficit, aggression, depression and social withdrawal are .797, .807, .829 and .894, respectively.

3) Mobile phone dependency

Mobile phone dependency is a dependent variable of this study, utilized the 7th survey data in 2016. It is composed of 7 items made with 4-point Likert scale (not at all=1, no =2, yes=3, and very much=4) by Siyoung Lee et al.(2002).

<Table 2> Items of mobile phone dependency

No.	Items
1	I spend more and more time using my mobile phone
2	I'm nervous if I do not take my mobile phone.
3	If I do not hear from anyone for a while with my mobile phone, I feel uneasy.
4	I tend to forget how time goes by when I do various things with my mobile phone.
5	I cannot stand bored without a mobile phone when I am alone.
6	Without a mobile phone, it feels isolated.
7	Without a mobile phone, I cannot live because of inconvenience.

Source: Lee et al.(2002)

The larger the sum of the items, the higher the mobile phone dependency. The reliability of the instrument(Cronbach's alpha) was .845. The items in this study were as shown in <Table 2>.

### 3. Data Analysis

The collected data were analyzed using SPSS version 23.0 and verified with .05 two-tail significance level. First, students' personal variables, mobile phone dependency and positive-negative emotion variables were analyzed by descriptive statistics such as frequency, minimum score, maximum score, mean and standard deviation. Second, the differences in mobile phone dependency according to gender and home economic level were verified with t-test and one-way ANOVA. Third, correlation analysis (Pearson's Correlation Coefficient Analysis) was conducted to examine the correlation between

students' emotional variables and mobile phone dependency. Third, stepwise multiple regression analysis was conducted to analyze the effects of positive and negative emotion variables on mobile phone dependency.

## III. Research Results

### 1. Descriptive Statistics of Main Variables

Mobile phone dependency was high as 2.46 out of 4 points. The mean of positive emotion (M=2.83) was higher than that of negative emotion (M=1.96). In positive emotions, self-esteem of 2.95 was highest, followed by life satisfaction of 2.85, ego-resilience of 2.84, and self-identity of 2.67. In negative emotions, social depression of 2.20 was highest, followed by attention deficit of 2.05, depression of 1.81, and aggression of 1.78 (<Table 3>).

<Table 3> Descriptive statistics of variables

Classification	Variables	No.	Minimum score	Maximum score	Mean	SD
Mobile Phone Dependency		1220	1.00	4.00	2.4660	.60482
Positive emotions	Self-esteem	1220	1.40	4.00	2.9593	.43776
	Ego-resilience	1220	1.50	4.00	2.8497	.38028
	Self-identity	1220	1.38	4.00	2.6723	.40719
	Life satisfaction	1220	1.00	4.00	2.8598	.55647
Negative emotions	Attention deficit	1220	1.00	3.71	2.0564	.50005
	Aggression	1220	1.00	3.67	1.7803	.51755
	Depression	1220	1.00	3.70	1.8150	.52918
	Social withdrawal	1220	1.00	4.00	2.2085	.70948

### 2. Difference in Mobile Phone Dependency by Gender

As a result of analyzing the differences of mobile phone dependency according to the students' gender, there was a significant difference in gender (<Table 4>). The dependence of female students (M = 2.60) on mobile phone was higher than male

students (M = 2.31).

<Table 4> Gender difference in mobile phone dependency

	n	Mean	SD	F/t
Male	575	2.31	.56	-8.484***
Female	645	2.60	.60	

\* p<.05 \*\* p<.01 \*\*\* p<.001

### 3. Correlation between Main Variables

Mobile phone dependency showed a significant positive correlation with attention deficit, depression, aggression, and social withdrawal, and negatively correlated with self-esteem, ego-resilience, self-identity, and life satisfaction ( $p < 0.01$ ). Among them, the correlation with self-identity was the highest ( $r = -.31.3$ ), and the correlation with life satisfaction was the lowest ( $r = -.163$ ) (<Table 5>).

### 4. Factors Affecting College Students' Mobile Dependency and Gender Difference

In order to examine the effect of positive emotions (Self-esteem, Ego-resilience, Self-identity, Life satisfaction) and negative emotions (Attention deficit, Aggression, Depression, Social withdrawal) on mobile phone dependency, stepwise multiple regression analysis was performed (<Table 6>). First, the level of explanations of self-identity, aggression and depression was 13.3% ( $r^2 = 0.133$ ), and this regression model was statistically significant ( $F = 132.071$ ,  $p < 0.001$ ). In order to grasp the relative influence, the standardization coefficients were found to be self-identity (-0.231), aggression

(0.135), and depression (0.098). It can be seen that the higher the level of aggression and depression, and the lower the degree of self-identity, the more influence on mobile phone dependency. Tolerance and VIF statistics were checked to identify multicollinearity problems. As a result, the Tolerance value was less than 1.0, the VIF value was less than 10, and the Durbin-Watson value was 1.876, which was close to 2, so that it did not have the problem of multicollinearity.

In the case of male students, the level of explanations of depression and self-identity was 7.93% ( $r^2 = 0.079$ ), and this regression model was statistically significant ( $F = 25.676$ ,  $p < 0.001$ ). The standardization coefficients of depression (.166) and self-identity (-.166) were the same in impacting on the mobile phone dependency and depression was the first factor in the regression model. In the case of female students, the level of explanations of self-identity and aggression was 15.3% ( $r^2 = 0.153$ ), and this regression model was statistically significant ( $F = 93.005$ ,  $p < 0.001$ ). The standardization coefficients of self-identity (-.316) and aggression (.176) were calculated and self-identity was the first factor in the regression model.

<Table 5> Correlation among variables

	①SE	②ER	③SI	④LS	⑤AD	⑥AG	⑦DE	⑧SW	⑨MD
①SE	1								
②ER	.507**	1							
③SI	.548**	.508**	1						
④LS	.605**	.463**	.373**	1					
⑤AD	-.341**	-.249**	-.444**	-.212**	1				
⑥AG	-.395**	-.237**	-.266**	-.308**	.557**	1			
⑦DE	-.635**	-.399**	-.468**	-.599**	.496**	.596**	1		
⑧SW	-.400**	-.385**	-.570**	-.321**	.445**	.369**	.521**	1	
⑨MPD	-.227**	-.225**	-.313**	-.163**	.227**	.255**	.287**	.196**	1

①SE(Self-esteem), ②ER(Ego-resilience), ③SI(Self-identity), ④LS(Life satisfaction), ⑤AD(Attention deficit),

⑥AG(Aggression), ⑦DE(Depression), ⑧SW(Social withdrawal), ⑨MD(Mobile phone dependency)

&lt;Table 6&gt; Factors affecting the increase of mobile phone dependency of college students by multiple regression analysis

		B	SE B	$\beta$	t	p	$\Delta R^2$	R <sup>2</sup>	F	p
All	(Constant)	2.898	.162		17.903	.000	.133	.135	132.071	.000
	Self-identity	-.343	.045	-.231	-7.648	.000				
	Aggression	.157	.039	.135	4.052	.000				
	Depression	.113	.041	.098	2.716	.007				
Male	(Constant)	2.624	.220		11.925	.000	.079	.082	25.676	.000
	Depression	.172	.048	.166	3.607	.000				
	Self-identity	-.223	.062	-.166	-3.605	.000				
Female	(Constant)	3.514	.189		18.611	.000	.153	.156	93.005	.000
	Self-identity	-.489	.058	-.316	-8.474	.000				
	Aggression	.206	.043	.176	4.737	.000				

#### IV. Discussion and Conclusions

The purpose of this study was to investigate the negative or positive emotional factors affecting mobile phone dependency of college students in South Korea based on the data of 1,220 students in the 7th year of KCYPS and its difference by gender. Self-identity, depression, and aggression affected the students' mobile phone dependency. The high level of self-identity and the lower level of depression and aggression showed low level of mobile phone dependency. In the male students, the depression was the first factor impacting on mobile phone dependency while in the female students, self-identity was important and secondly, aggression impacted on the mobile phone dependency.

As expected, mobile phone dependency showed a significant positive correlation with negative emotional factors (attention deficit, depression, aggression, and social withdrawal), and negatively correlated with positive emotional factors (self-esteem, ego-resilience, self-identity, and life satisfaction). This results give a lesson that in order

to decrease mobile phone dependency of college students, positive emotional conditions are supporting their control in using mobile phone and their decision when to use or how to use it.

Out of positive or negative emotional factors, self-identity give highest effect on mobile phone dependency, followed by aggression and depression. The relationship of depression with mobile phone dependency has been studied in many studies (Seo et al., 2016; Kim, 2013; Kim & Im, 2014; Nishad & Rana, 2016; Shoukat, 2019).

In the case of male students, depression was the first factor in the regression model while self-identity was for female students. The self-identity was the common factor both in male and female students. Without self-identity, depression was an important factor in explaining male students' mobile phone dependency but aggression was an important factor in the case of female students. Therefore, it can be explained that in the case of male student, depression and loneliness make them depend on the mobile phone while aggression emotion of female students makes

them depend on the mobile phone. In the case of women, more social media are used to maintain social relations and text messages are used as channels of social relations than men. The first factor was self-identity to female students. So using mobile phone is related to playing the self and making the self through mobile phone to female students while avoiding depression and loneliness is related to using mobile phone to male students. Self-identity is a positive emotion while depression is a negative emotion.

This result is consistent with the result of gender difference of mobile phone dependency by ANOVA as shown in Table 2. The girls' mobile dependency was higher than boys, which is consistent with the results of Hakoma and Hakoyama (2011), which argues that female students tend to maintain social relationship more than male students. Many researches revealed that female students have higher mobile dependency than boys (Kim, 2013; Kim and Im, 2014). In the study of Seo et al. (2016), mobile phone dependency of female students affected social relationship with friends but it was not the case of male students. This means that female students tend to have social relationship through mobile phone and mobile phone has a meaning as a channel to maintain social relationship for female students. As Bianchi and Phillips (2005) point out, younger female students use short message (SEM) service. In Korea, KakaoTalk is a popular SEM application to communicate with people in a easy way.

In this context, there is an implication for educational intervention for college students. Self-identity is considered to be a stable and coherent concept of oneself. According to the Webster dictionary, it is the quality that makes a person different from others

(<http://www.merriam-webster.com>). In other words, students who know who they are, who they should be, and in which they are different from others, could have a power to control when or how to use mobile phones. Therefore, long-term strategy to make our students use mobile phone without depending much on it, should be related to education in their developmental stage of self-identity such as child-bearing of parents. In addition, the short-term intervention program in colleges for students should be provided to explore who they are or how to have strong self-identity. As college students prepare their careers, the educational programs or counseling programs to decrease mobile phone dependency could be related to career guidance programs.

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