

## The Effect of Parental Attachment of Teenagers on Cell-Phone Dependence: Focusing on Mediator Effect of Self-Esteem

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**Abstract:** The purpose of this study is to discover the relation among teenager's parental attachment, cell phone dependence and self-esteem and verify the mediator effect of self-esteem during this process in order to suggest theoretical and practical alternatives. The research questions to identify this purpose are as follows. First, what effects do parental attachment and self-esteem have on teenager's cell phone dependence? Second, does self-esteem mediate the effect that parental attachment has on teenager's cell phone dependence? For this, data were collected from 246 middle school students residing in Korea and they were analyzed through structural equation. The result of analysis showed that first, both parental attachment and self-esteem had a negative (-) effect on teenager's cell phone dependence. Second, self-esteem fully mediated parental attachment and cell phone dependence. This means parental attachment functions as a protection factor that can reduce teenager's cell phone dependence via self-esteem. Based on this result, convergence intervention and practical strategy are suggested to prevent teenager's cell phone dependence.

**Keywords:** Teenagers, cell phone dependence, parental attachment, self-esteem, parental, intervention

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### INTRODUCTION

As media have become developed these days, cell phones are considered as media that are closely involved with teenager's lives and culture (Sook, 2006). Cell phones are used as an essential tool in human relationships including messengers as well as their function as collection of information. However, this cell phone culture can easily cause the problem of dependence on cell phones during adolescent period when teenagers are forming self-control power. Especially, as the age of those who are dependent on cell phones is getting lower, the cell phone dependence leads to such problems as game dependence and loss of control power. It also leads to side effects that cause psychosocial problems including lack of interpersonal skill, anger and depression. Considering these phenomena, cell phone dependence of teenagers is not the problem that can be overlooked any more (Cho, 2013). The cell phone dependence in this context means that due to loss of control power by their will power, compulsive adherence-dependence appears and anxiety and nervousness like withdrawal are caused, so it is expressed as the forms of negligence of peer relationship and decline of learning power. Therefore, multilateral research of protection factors to reduce cell phone dependence of teenagers is being discussed. As a part of the research, the importance of parental attachment of teenagers is discussed (Gyun, 2015). It is reported that

teenagers who form stable attachment to their parents have high self-control power, so, they use internet and other media while controlling the use (Woo, 2013). This implies that parental attachment is an important protection factor for cell phone dependence of teenagers along with the necessity of empirical research to confirm this fact.

Meanwhile, many researchers pay attention to self-esteem which is a protection factor that has a positive effect on accomplishment of developmental tasks during childhood and adolescent period (Kim, 2012). Self-esteem is a factor that plays a role in buffering teenager's psychosocial development and negative problematic behavior and it is considered important in studies related to addiction of teenagers. However, there are few precedent studies that verified or confirmed the effect of self-esteem on cell phone dependence (Kyung, 2013). In addition there is not enough multilateral consideration of protection factors to prevent cell phone dependence of teenagers. Thus, this study intends to confirm the influence of parental attachment and self-esteem as protection factors to prevent teenager's cell phone dependence. Especially, by verifying the mediator effect which is a buffer of self-esteem in the causal relationship of parental attachment and cell phone dependence, the study intends to provide basic resources for information accumulation and program development of protection factors to form healthy cell phone culture of teenagers. In regards to this, the research problems that this study suggests are as follows.

**Research problem 1:** What effects do parental attachment and self-esteem have on teenager’s cell phone dependence?

**Research problem 2:** Does self-esteem mediate the effects that parental attachment has on teenager’s cell phone dependence?

**MATERIALS AND METHODS**

**Research target and collecting survey:** For this study, 300 copies of questionnaires were distributed to second and third graders of 4 middle schools located in Jeollabuk-do. The reason that the targets were limited within 2nd and 3rd grades was this period is when cell phone culture is formed according to the research by Ho (2016). Among the distributed questionnaires, 246 teenagers, who owned cell phones were selected for analysis. This survey was performed by being divided into preliminary survey and main survey. Regarding the process of survey, the purpose of the study was informed through teachers and data were collected from students who agreed to the study.

**Research methods:** The dependent variable of this study is cell phone dependence and to verify it the survey was composed of 30 questions with the standard developed by Ko (2012) Compulsive obsession was 10 questions withdrawal was 7 questions and barrier of living was 13 questions. These were 5 point scale. It is interpreted that the higher the score is, the more serious the degree of dependence is. The reliability of this study was  $\alpha = 0.90$ . The independent variables was used by parental attachment that was made by Park (2005). This was subordinate scope of communication and trust, consisted of 4 point scale and was total 24 questions. It is interpreted that the higher the score was, the more stable attachment was formed. The reliability of this study was  $\alpha = 0.95$ . The mediator variable was self-esteem and the standard by Rosenberg (1979) which is composed of positive questions and negative questions about one self was used. The positive questions were 6 and the negative questions were 4. They were 4 point scale. The higher the score was the higher self-esteem was. The reliability of this study was  $\alpha = 0.83$ . In this study, sociodemographic characteristics including gender, grade, student performance and economic level were used as control variable. In this study, sociodemographic characteristics including gender, grade, student performance and economic level were used as control variable.

**Date analysis:** Regarding the analysis method, SPSS 21.0 and AMOS 18.0 were used. To identify suitability of

model, goodness of fit index including CFI (Comparative Fit Index), TLI (Turker-Lewis Index) and RMSEA (Root Mean Square Error of Approximation) was used. Meanwhile, before structure equation modeling was used, normality and multicollinearity for measuring variables were checked. The normality was checked through Skewness and Kurtosis and the multicollinearity was understood through Variance Inflation Factor (VIF).

**RESULTS AND DISCUSSION**

**Characteristics of the subjects:** Regarding gender, male students were 125(50.8%) and female students were 121(49.2%). The number of male students was rather higher. Regarding grade, 2nd graders were 113(45.9%) and 3rd graders were 133(54.1%). There were more 3rd >2nd graders. Regarding economic level, high level was 76(30.9%), middle level was 141(57.3%) and low level was 29(11.8%). The number of students with middle level was the highest followed by high and low level. Regarding student performance, 88(33.7%) students earned high grades, 79(32.6%) were middle grades and 85(34.1%) earned low grades. Students who earned high grades were the most followed by low and middle grades (Table 1).

Next, technology statistics of variables used in this study is as follows (Table 2). The parental attachment which is independent variable is divided into trust and communication with 13 questions of trust and 11 communication questions. They were measured with 4 point Likert-type scale. The score scope of communication was 13~52 and that of trust was 11~44. The average of communication was 33.34 (SD = 6.80) and that of trust was 38.02 (SD = 7.90). The self-esteem which is mediator variable was composed of 6 questions of positive self-esteem and 4 questions of negative self-esteem, so total 10 questions. They were measured with 4 point Likert-type scale. Regarding the score range, positive self-esteem was 6~24 and negative self-esteem was 4~16. The average of each was 17.69 (SD = 4.06)

Table 1: Characteristics of the subjects

Variables/Category	Number	Percentage
<b>Gender</b>		
Male	125	50.8
Female	121	49.2
<b>Grade</b>		
2nd grader	113	45.9
3rd grader	133	54.1
<b>Economic level</b>		
High	76	30.9
Middle	141	57.3
Low	29	11.8
<b>Student performance</b>		
High	88	33.7
Middle	79	32.6
Low	84	34.1

Table 2: Technology statistics of major variables

Variables	Number	Min.	Max.	Mean	SD	SK	KU
<b>Parental attachment</b>							
Trust	13	13.0	52.00	38.02	7.90	-0.117	-0.568
Communication	11	11.0	44.00	33.34	6.80	-0.286	-0.235
<b>Self-esteem</b>							
Positive self-esteem	6	6.0	24.00	17.69	4.06	-0.594	0.356
Negative self-esteem	4	4.0	16.00	10.23	3.42	0.015	-0.746
<b>Cell phone dependence</b>							
Compulsive adherence-dependence	10	10.0	50.00	27.04	7.10	0.132	0.144
Withdrawal	7	7.0	35.00	16.23	5.74	0.636	0.401
Barrier of living	13	13.0	65.00	27.52	8.72	0.461	0.581

Table 3: Result of measurement model analysis

Variables	Estimate	SE	CR
<b>Parental attachment</b>			
Trust	1.000(0.924)		
Communication	0.829(0.890)	0.042	19.570**
<b>Self-esteem</b>			
Positive self-esteem	1.000(0.772)		
Negative self-esteem	0.571 (.522)	0.071	8.020***
<b>Cell phone dependence</b>			
Compulsive adherence-dependence	1.000(0.789)		
Withdrawal	0.779 (0.760)	0.062	12.557***
Barrier of living	1.390 (0.894)	0.092	15.032***

\*\*p<0.01; \*\*\*p<0.001

and 10.23 (SD = 3.42), respectively. Cell phone dependence which is dependent variable had total 30 questions and they were measured with 5 point Likert-type scale. It was measured with 10 questions of compulsive adherence-dependence, 7 questions of withdrawal and 13 questions of barrier of living. The score range of compulsive adherence dependence was 10~50, that of withdrawal was 7~35 and that of barrier of living was 13~65. The average of compulsive adherence-dependence was 27.04 (SD = 7.10), that of withdrawal was 16.23 (SD = 5.74) and that of barrier of living was 27.52 (SD = 8.72).

**Analysis of measurement model:** To review whether measured variables reflect latent variables properly, the study performed analysis of measurement model (Table 3). Confirmatory factor analysis was performed with all measured variables related to parental attachment, self-esteem and cell phone dependence included. The result of analysis showed the goodness of model fit with CFI = 0.978, TLI = 0.958 and RMSEA = 0.094. In addition, factor discretion of all the variables was significant at over p<0.01 which indicated the measured variables properly reflected the latent variables.

**Analysis of structure model:** Through analysis of measurement model, it could be understood that the relation between latent variables and measured variables was proper, so the direct influence of parental attachment and self-esteem on teenager's cell phone dependence was confirmed (research question 1) in

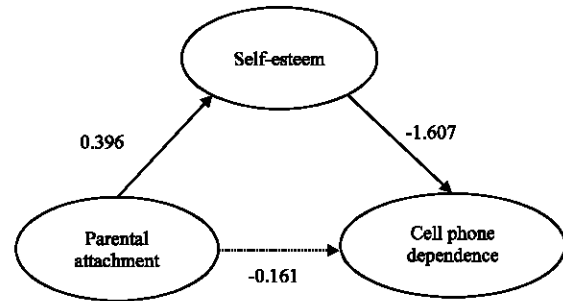


Fig. 1: Model of mediating effect

addition to whether self-esteem mediates the effect of parental attachment on teenager's cell phone dependence (research question 2) through analysis of structure model. First, regarding research question 1, the direct effects of parental attachment and self-esteem on teenagers cell phone dependence were researched. The model fits were CFI = 0.853, TLI = 0.659 and RMSEA = 0.089. Parental attachment had a negative effect (0.423) on cell phone dependence (p<0.001) and self-esteem had a negative effect (1.072) on cell phone dependence (p<0.001). This result indicated that stable parental attachment and positive self-esteem were protection factors that reduce cell phone dependence. Next, regarding research question 2, the mediator effect of self-esteem was studied as shown on Fig. 1. The mediator model fits were CFI = 0.978, TLI = 0.958 and RMSEA = 0.093 which indicated proper goodness of model fit (Table 4).

The channels among all the latent variables through Table 5 and Fig. 1 showed significance. Specifically, parental attachment had a positive effect (0.396) on self-esteem and self-esteem had a negative effect (1.607) on teenager's cell phone dependence. In addition, parental attachment had a negative effect (0.161) on teenager's cell phone dependence but it wasn't significant, so self-esteem was a complete mediator in the relationship between parental attachment and teenager's cell phone dependence.

Table 4: Goodness of fit index

Model	$\chi^2$ (df)	p-value	CFI	TLI	RMSEA
Measured model	34.529(11)	0.000	0.978	0.958	0.093

Table 5: Result of structure model analysis

Variables	Non-standard coefficient	Standard coefficient	CR
<b>Cell phone dependence</b>			
Parental attachment	-0.161	0.528	0.528
Self-esteem	-1.607	0.110*	4.418
<b>Self-esteem</b>			
Parental attachment	0.396	0.060***	12.786

\*p<0.05, \*\*\*p<0.001

Table 6: Mediator effect verification

Channel	Z-value	t-value
Parental attachment->self-esteem->cell phone dependence	8.694***	0.000

\*\*\*p<0.001

Meanwhile, through mediator effect verification formula, the significance of the indirect effect with self-esteem mediated was reviewed. The result showed that the mediator effect of self-esteem was statistically significant (Table 6).

The major results and suggestions are as follows. First, 1 every 5 teenagers use cell phones which are important culture and tools for communication in their life. Nevertheless, precedent studies focus on side effects regarding teenager's cell phones staying in report of states. However, this study is meaningful in that it contributes to expanding discussions regarding various protection factors to establish healthy cell phone culture of teenagers and has a basis of developing various programs.

Second, parental attachment was confirmed to be a protection factor that can prevent teenager's cell phone dependence empirically. This is the same result as many other studies that support the fact that parent's stable attachment is a preventive factor of cell phone dependence. Considering this, parent's concerns and instruction for their kid's healthy cell phone use are necessary. For this, it is required to establish such programs as information about parent education and communication skills. In the situation where cell phones are considered as important culture among teenagers, rather than restricting and controlling the use cell phones, we should establish culture that teenagers can control by themselves based on smooth communication and trust of parents. The role of parents is important but furthermore, parental educations and programs by many institutions involved in youth and family are expected to prevent teenager's cell phone dependence.

Third, in this study, self-esteem was confirmed to be a variable of a complete mediator in the relationship

between parental attachment and cell phone dependence. In other words, healthy cell phone use habits can be formed by parental attachment via self-esteem.

## CONCLUSION

This is the result that re-confirms self-esteem as the most important variable in prevention of mass media addiction. Especially, self-esteem which is an important developmental task and protection factor that should be done during an adolescent period was confirmed to be the protection factor that prevents cell phone dependence by adjusting and controlling themselves.

## LIMITATIONS

This study has a few limitations as follows. First, the survey for this study was done targeting middle school students in limited areas in Korea, so it is hard to generalize the result. Second, this study mentions the relation of parental attachment and self-esteem as the factor that affects teenager's cell phone dependence, so when more various factors are researched broadly, the information of protection factors and practical intervention can be more detailed. Lastly, the basis of various protection factors can be accumulated when vertical and qualitative research on teenager's cell phone dependence is tried instead of simple horizontal research in the time process.

## SUGGESTIONS

Accordingly, it is necessary to develop various programs for improvement of self-esteem in addition to active intervention. Besides, it is required that schools should make multilateral efforts to prevent teenagers from being dependent on cell phones. Schools during an adolescence period are important space for formation of self-esteem, so they need to make an active effort for education and manual development for healthy cell phone culture establishment.

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