

Factors Affecting Internet Gaming Addiction: SNS Addiction Tendencies, Self-Esteem, and Interpersonal Relationships among Male Middle School Students

Heejeong Kim¹ and Dahye Park^{2*}

¹Department of Nursing, Namseoul University, Cheonan, Korea

²Department of Nursing, Semyung University, Jecheon, Korea; caunurse@gmail.com

Abstract

The aims of this study were to verify SNS addiction tendencies, self-esteem, and interpersonal relationships and to construct a hypothetical structural model which explains internet game addiction in male middle school students and to test the fitness with collected data. The data were collected via structural questionnaires completed by 213 male students attending a middle school located in Seoul who agreed to participate in this study. There was a statistically significant negative correlation between SNS addiction tendencies and self-esteem, and there were positive correlations among SNS addiction tendencies, interpersonal relationships, and internet gaming addiction. Also, there was a statistically significant positive correlation between interpersonal relationships and self-esteem and a negative correlation between internet gaming addiction and interpersonal relationships. AMOS 20.0 analysis was used to determine the influence of internet game addiction and to identify its correlation with SNS addiction tendencies. The overall fitness indices hypothetical model was good: ($\chi^2 = 78.981$, $p < .001$), $\chi^2/df = 3.43$, CFI = .962, TLI = .941, RMSEA = .080. Out of 5 paths, 5 were statistically significant. SNS addiction had the greatest impact on Internet game addiction among the male middle school students in this model.

Keywords: Internet Gaming Addiction, Interpersonal Relationships, Self-Esteem, SNS Addiction

1. Introduction

The smartphone came out in 2009 for the first time in Korea. Recently, smartphones are being popularized quickly with the rapid expansion of the mobile market. The percentage of smartphone users has more than doubled from 31% in 2011 to 63.5% in 2012¹. It is the world's seventh highest level and ranks as the world's highest per population ratio. Smartphones are very addictive with more than double the addictiveness of social network services and have better accessibility than computers. a reality where smartphones have become an

important communication medium in our life, there is an active discussion on the excessive usage of smartphones, especially among students. Research has revealed that adolescents prefer to carry out the most important developmental tasks of identity development and social interaction through on-line rather than off-line interaction². This social phenomenon has become so serious that it has prompted the coining of neologisms such as "Digital isolation syndrome" or "Smartphone addiction syndrome"³. Also, the computer and the internet have not only taken the place of simple leisure; they have become a major part of youth life. 92.6% of youths aged 7 to 19 uses the internet⁴.

*Author for correspondence

Internet game playing is an especially important pastime of adolescents; 84.4% of elementary school students and 88.0% of middle school students play games⁵. The internet is a new technology that has greatly impacted the world and provided many benefits to its users⁶, but it has led to adverse effects such as internet gaming addiction in teenagers who are stressed and lack self-control. So there is a need to identify the factors that affect internet gaming addiction. Thus, the present study presents the results of a survey conducted to identify SNS addiction tendencies, self-esteem, and interpersonal relationships and to measure the effects of these factors on internet game addiction among male middle school students. Also, the computer and the internet have not only taken the place of simple leisure; they have become a major part of youth life. 92.6% of youths aged 7 to 19 uses the internet⁴. Internet game playing is an especially important pastime of adolescents; 84.4% of elementary school students and 88.0% of middle school students play games⁵. The internet is a new technology that has greatly impacted the world and provided many benefits to its users⁶, but it has led to adverse effects such as internet gaming addiction in teenagers who are stressed and lack self-control. So there is a need to identify the factors that affect internet gaming addiction. Thus, the present study presents the results of a survey conducted to identify SNS addiction tendencies, self-esteem, and interpersonal relationships and to measure the effects of these factors on internet game addiction among male middle school students.

2. Methodology

2.1 Study Subjects and Ethical Considerations

This research is a descriptive correlation study designed to identify SNS addiction tendencies, self-esteem, interpersonal relationships, and internet gaming addiction among male middle school students and to identify the correlations between each variable.

The data were collected from September 2014 to October 2014 and were analyzed using SPSS 20.0 (SPSS Inc., Chicago, IL, USA). The data were collected via structural questionnaires completed by 213 male middle school students who agreed to participate in this study. The data used were collected according to the approved guidelines and screening procedures of "S" university located

in Jecheon. This research (IRB No: SMU-2014-10-002) was conducted after their deliberations on the goals and methods.

2.2 Research Variables

- SNS Addiction Tendencies

The SNS addiction tendencies questionnaire was developed by Cho and Suh⁹. For the SNS addiction tendencies questionnaire, there were 20 items with a 4-point scale. The possible scores ranged from a maximum of 80 points to a minimum of 20 points, in which higher scores indicate high SNS addiction. Cronbach's α was .86 in the original scale and .94 in the present study.

- Self-esteem

The Self-esteem questionnaire was developed by Kang¹⁰. For the Self-esteem questionnaire, there were 17 items with a 5-point scale. The possible scores ranged from a maximum of 85 points to a minimum of 17 points, in which higher scores indicate high self-esteem. Cronbach's α was .90 in the original scale and .84 in the present study.

- Interpersonal Relationships

The Interpersonal relationships questionnaire was developed by Sung and Kyung¹¹. For the Interpersonal relationships questionnaire, there were 18 items with a 5-point scale. The possible scores ranged from a maximum of 90 points to a minimum of 18 points, in which higher scores indicate good interpersonal relationships. Cronbach's α was .92 in Choi Uni's research¹¹ conducted by this measure and .94 in the present study.

- Internet Gaming Addiction

The Internet gaming addiction questionnaire was developed by Cho and Suh¹². For the Internet gaming addiction questionnaire, there were 20 items with a 4-point scale. The possible scores ranged from a maximum of 80 points to a minimum of 20 points, in which higher scores indicate high SNS addiction. Cronbach's α was .92 in the original scale and .88 in the present study.

2.3 Method of Data Analysis

The collected data were analyzed using SPSS 20.0 (SPSS Inc., Chicago, IL, USA). The general characteristics of the male middle school students were analyzed using descriptive statistics, including the means, standard deviations, frequencies, and percentages. Patterns in the differences

among study participants (according to general characteristics regarding SNS addiction tendencies, self-esteem, interpersonal relationships, and internet gaming addiction) were analyzed with ANOVA, and post hoc analysis was conducted with Duncan's. Pearson's correlation coefficient analysis was used to identify the effect of internet gaming addiction with regard to SNS addiction tendencies, self-esteem, and interpersonal relationships. We use AMOS 18.0 program to verify causal model for variables and calculated fit indices such as CFI, TLI, RMSEA.

3. Results

3.1 SNS Use Characteristics & Differences, SNS Addiction Tendencies, Self-Esteem, Interpersonal Relationships, and Internet Game Addiction of SNS Use Characteristics

The general characteristics of the participants are shown in Table 1. The study participants included 213 males (100%). There were: 53 first year students (24.9%); 77 second year students (36.2%); and 83 third year students (39%). The main media used to access SNS by the participants are shown in Table 1. The main media were: computers, 19 students (8.9%); smart phones, 191 students (89.7%); and tablet PCs, 3 students (1.4%). The main uses of SNS were: Facebook, including Twitter and Cyworld, 76 students (35.7%); Kakao Talk, including Kakao Story, 203 students (95.3%); and Others, 18 students (8.5%). SNS usage per day was reported as follows: less than 5 minutes, 32 students (15%); less than half an hour, 53 students (24.9%); less than 1 hour, 60 students (28.2%); 1-3 hours, 47 students (22.1%); and more than 3 hours, 21 students (9.9%). The main activities of SNS were: "Actively participating in conversations with others," 58 students (27.2 %); "Reading articles written by someone else or leaving comments," 133 students (62.4%); and "Making sure to read other people's posts or someone else's news," 33 students (41.3%). Degrees of SNS addiction tendencies, self-esteem, interpersonal relationships, and internet gaming addiction among male middle school students are shown in Table 1. On a five-point scale measuring perceived SNS addiction tendencies, the average score was $3.60 \pm .60$. On a five-point scale measuring perceived self-esteem, the average score was $3.36 \pm .67$. On a five-point scale measuring interpersonal relationships, the average

score was $3.42 \pm .50$. For internet gaming addiction, the average score was $1.82 \pm .66$.

3.2 Correlations between Variables

Correlations are shown in Table 2. There was a statistically significant negative correlation between SNS addiction tendencies and self-esteem, and there were positive correlations among SNS addiction tendencies, interpersonal relationships, and internet gaming addiction. Also, there was a statistically significant positive correlation between interpersonal relationships and self-esteem and a negative correlation between internet gaming addiction and interpersonal relationships.

3.3 Path Diagram for Model

The path diagram for this model is shown in Figure 1. Self-esteem directly influenced interpersonal relationships and SNS addiction, interpersonal relationships directly influenced SNS addiction, and internet game addiction as well as SNS addiction directly influenced internet game addiction.

3.4 Model Fit Statistics for CFAS

Model fit statistics are shown in Table 3. Confirmatory factor analysis was performed on the items of the scale. Such structure formed was confirmed in this study achieving a very good fit with the data ($\chi^2=78.981$, $p=.000$, CFI=.961, TLI=.941, RMSEA=.080). In addition to this, the values obtained for CFI and TLI were all above the .90 level considered as an acceptable level of fit.

3.5 Average Variance Extracted and Construct Reliability

Average variance extracted and construct reliability are shown in Table 4. AVE was greater than 0.5 and CR was greater than 0.7. These are valid because the AVE value was revealed to be greater than scale's R².

3.6 Effects of Predictor Variables in the Model

Effects of predictor variables are shown in Table 5. Self-esteem affected interpersonal relationships positively ($\beta=.197$, $p=.002$) but affected SNS addiction negatively ($\beta=-.495$, $p<.000$). Interpersonal relationships affected SNS addiction positively ($\beta=.418$, $p<.000$) but affected internet game addiction negatively ($\beta=-.217$, $p<.000$). SNS addiction affected Internet game addiction positively ($\beta=.247$, $p<.000$).

Table 1. SNS use characteristics & differences, SNS addiction tendencies, self-esteem, interpersonal relationships, and internet game addiction of SNS use characteristics. N=213

Variable	Characteristics	n (%)	SAT M(SD) Total F(p) Post hoc	SE M(SD) Total F(p) Post hoc	IR M(SD) Total F(p) Post hoc	IGA M(SD) Total F(p) Post hoc
Participants	1st year	53(24.9)	1.90(.68)	3.42(.65)	3.35(1.78)	1.78(.59)
	2nd year	77(36.2)	1.76(.63)	3.36(.67)	3.48(.45)	1.85(.69)
	3rd year	83(39.0)	1.86(.53)	3.33(.69)	3.37(.51)	3.37(.51)
			.977(.378)	.303(.739)	1.138(.322)	.164(.849)
Media	Computer	19 (8.9)	1.74(.69)	3.13(.59)	3.33(.40)	2.13(.73)
	Smart phone	191(89.7)	1.84(.59)	3.39(.68)	3.34(.52)	1.79(.64)
	Tablet PC	3 (1.4)	1.84(.59)	3.20(.33)	3.17(.25)	2.20(.65)
			.268(.765)	1.342(.263)	.758(.470)	2.837(.061)
Type of main SNS	Facebook (Twitter, Cyworld)	76 (35.7)	Double answers	Double answers	Double answers	Double answers
	Kakao Talk (Kakao Story)	203(95.3)				
	Others	18 (8.5)				
Average usage time for SNS per day	Once after 30min to 1hr.	100(46.9)	2.10(.62) ^a	3.18(.66) ^a	3.41(.49)	1.98(.65) ^b
	Once after 1 to 2 hr.	34(16.0)	1.94(.42) ^a	3.47(.61) ^{ab}	3.48(.55)	1.76(.67) ^{ab}
	Once after 2 to 6hours	29(13.6)	1.54(.31) ^a	3.63(.83) ^{ab}	3.51(.50)	1.50(.55) ^a
	Once after 6 to 24 hours	28(13.1)	1.42(.34) ^b	3.61(.63) ^b	3.43(.51)	1.69(.67) ^{ab}
	Once per 1 day	22 (3.24)	1.66 (.66) ^b	3.35(.40) ^b	3.24(.49)	1.84(.63) ^{ab}
			1.83(.60)	3.36(.67)	3.42(.50)	1.82(.66)
			18.764(<.000) a<b	4.356(.002) a<b	1.049(.383)	3.652(.007) a<b
Main activity on SNS	Actively participating in conversations with others	58 (27.2)	Double answers	Double answers	Double answers	Double answers
	Reading articles written by someone else	133 (62.4)				
	Making sure to read other people's posts or someone else's news	88 (41.3)				
	Uploading or posting photographs of daily life	25 (11.7)				
	Participating in uploading games	25 (11.7)				
	Others	7 (3.3)				

SAT: SNS addiction tendencies, SE: Self-esteem, IR: Interpersonal relationship, IGA: Internet game addiction.

4. Discussion

This study attempts to identify SNS addiction tendencies, self-esteem, interpersonal relationships, and internet gaming addiction and to identify correlations between these variables among male middle school students.

This study finds that there was a negative correlation between self-esteem and internet gaming addiction, which matches the results of Joo's study, "Correlations among internet games addition, self-esteem, and physical health in middle school students".

Table 2. Correlations between variables

Variable	SAT	Self-esteem	IR	IGA
SAT	1			
Self-esteem	-.376**	1		
IR	.179**	.251**	1	
IGA	.339**	-.471**	-.140*	1

SAT: SNS addiction tendencies; IR: Interpersonal relationships; IGA: Internet gaming addiction; *** p<.001 ** p<.01 *p<.05

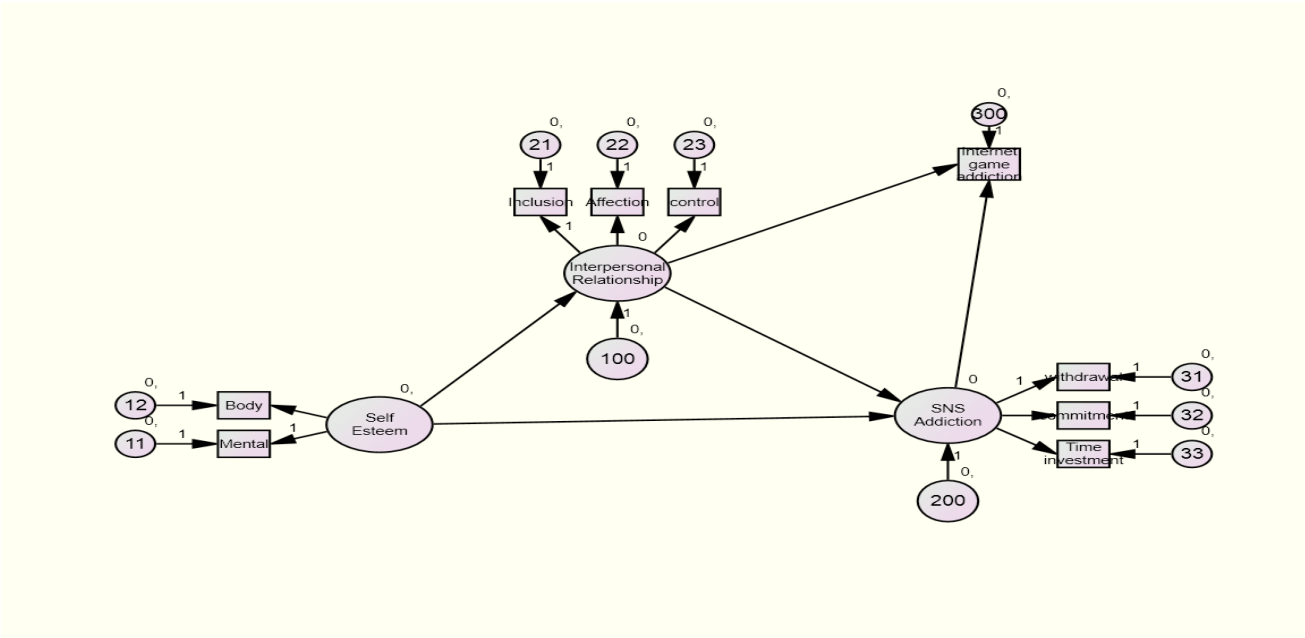


Figure 1. Path diagram for model.

Table 3. Model fit statistics for CFAS

X ²	df	p	Q	CFI	TLI	RMSEA
78.981	23	.000	3.434	.962	.941	.080

Table 4. Average variance extracted and construct reliability

	Self esteem	Interpersonal relationship	SNS addiction tendencies	C.R.	Cronbach's α
Self esteem	(.738)			.847	.84
Interpersonal relationship	.187	(.851)		.945	.94
SNS addiction tendencies	-.411	.322	(.853)	.945	.88

Table 5. Effects of predictor variables in the model

			B	SE	β	t	p
SE	→	IR	.164	.053	.197	3.086	.002
SE	→	SAT	-.422	.065	-.495	-6.483	.000
IR	→	SAT	.426	.059	.418	7.269	.000
IR	→	IGA	-.190	.048	-.217	-3.170	.000
SAT	→	IGA	.276	.080	.247	7.245	.000

SE: Self esteem;; IR: Interpersonal relationships; SAT: SNS addiction tendencies IGA: Internet gaming addiction

Additionally, there is a positive correlation between SNS addiction tendencies and internet gaming addiction ($r = .339$, $p < .01$). This study shows that there is a statistically significant relationship between SNS usage time and internet gaming addiction ($F = 5.253$, $p < .001$). That matches the results of Lee et al.'s study⁸. This data supports the conclusion that people who have difficulty in face-to-face communication due to low self-esteem spend a lot of time using SNS, which induces SNS addiction tendencies¹³⁻¹⁵. Also, this paper shows that the positive relationship between interpersonal relationships and SNS addiction tendencies is in line with previous studies that revealed the relevance of the need to belong^{16,17}, the need for social capital connections and social support¹⁸⁻²⁰, the need for communication²¹, and excessive usage of and immersion in SNS. The current study shows that interpersonal relationships are directly linked with SNS addiction and that youths have greater SNS addiction tendencies if they have low self-esteem and high-level tendencies to form interpersonal relationships. The above results matched results which show that the need for high-level interpersonal relationships induces frequent interaction, immersion, and addiction and that people who use Facebook have higher tendencies to form interpersonal relationships. Also, these results support the explanation that people who have low self-esteem try to connect with social resources by using SNS and that they want to overcome low self-esteem and improve life satisfaction^{18,22}.

5. Conclusion

This study shows that there are statistically significant correlations among SNS addiction tendencies, self-esteem, interpersonal relationships, and internet gaming addiction. These results imply that the level of interpersonal relationships needs to be

considered when counseling adolescents with low self-esteem and SNS addiction tendencies or internet gaming addictions. Furthermore, it implies that exploration of various ways to satisfy motivations for interpersonal relationships would be helpful to reduce the SNS addiction tendencies of adolescents with self-esteem problems. Finally, the limitations of the present study and suggestions for further research were discussed. However, since this research only considers a small sample of male middle school students, it will be difficult to extend the results of this study to other analyses; thus, follow-up studies must be carried out.

6. Acknowledgement

This paper was supported by the Chungang University Graduate School Department of Nursing (Ph.D) Research Grant of 2015.

7. References

1. Survey of Information and Culture. Seoul, Korea: National Information Society Agency; 2012.
2. Leung L. Loneliness, social support, and preference for online social interaction: the mediating effects of identity experimentation online among children and adolescents. *Chin J Comm.* 2011; 4(4):381-99.
3. Available from: www.sisafocus.co.kr/news [internet] Registered in Republic of Korea. Available from: www.sisafocus.co.kr/news/articleVIEW.HTML?idxno=65491/. 2015.3.29.
4. Seoul: Author. A study on developing the game addiction scale and operating of clinic for games addiction. Korea Game Industry Agency; 2005 Feb.
5. Seoul: Author. A survey of adolescent's internet use. National Youth Commission; 2004 Feb.
6. Young K. Understanding online gaming addiction and treatment issues for adolescents. *Am J Fam Ther.* 2009; 37:355-72.

7. Joo AR. Correlations among internet games addition, self-esteem and physical health in middle school students. *The Journal of Korean Academy of Community Health Nursing*. 2006; 18(2):331–9.
8. Lee HB, Kim DW, Choi JY, Shin MH. A study on Teenager's SNS use features and addiction-focus on middle school student of Gyegggi-do & Gangwon-do. *Gyenggi Research Institute*. 2014; 16(1):365–91.
9. Cho SH, Suh KH. An exploratory study on factors related with SNS addiction proneness: focus on covert narcissism, self-presentational motivation, and sense of alienation. *The Korean Journal of Health Psychology*. 2013; 18(2):236–50.
10. Kang YS. Effect of the body satisfaction and self respect for the job selection of the university students. Gyeongbuk, Korea: Graduate School of Daegu Haanny University; 2007.
11. Choi YN. The mediating effect of Maladaptive schema on Interpersonal relationship need and Peer attachment in Adolescent. Graduate School of Konkuk University; 2013.
12. A study of the development of internet game addiction scale for children and adolescents. Council of National Information Society Agency; 2006 Nov.
13. Kuss DJ, Griffiths MD, FBPSS FRSA. Social networking on the internet. *Mental NOTES*. 2012; 26–8.
14. Lee JER, Moore DC, Park EA, Park SG, Who wants to be “friend-rich”? Social compensatory friending on Facebook and the moderating role of public self-consciousness. *Comput Hum Behav*. 2012; 28(3):1036–43.
15. Tazghini S, Siedlecki KL. A mixed method approach to examining Facebook use and its relationship to self-esteem. *Comput Hum Behav*. 2013; 29(3):827–32.
16. Gangadharbatla H, Facebook me: Collective self-esteem, need to belong, and internet self-efficacy as predictors of the iGeneration's attitudes toward social networking sites. *J Interact Advert*. 2008; 8(2):5–15.
17. Nadkarni A, Hofmann SG. Why do people use Facebook?. *Pers Indiv Differ*. 2012; 52(3):243–9.
18. Ellison NB, Steinfield C, Lampe C, The benefits of Facebook “friends:” Social capital and college students’ use of online social network sites. *JCMC*. 2007; 12(4):1143–68.
19. Kim Y, Sohn D, Choi SM. Cultural difference in motivations for using social network sites: a comparative study of American and Korean college students. *Comput Hum Behav*. 2011; 27(1):365–72.
20. Raacke J, Bonds-Raacke J. MySpace and Facebook: applying the uses and gratifications theory to exploring friend-networking sites. *Cyberpsychology & behavior*. 2008; 11(2):169–74.
21. Ross C, Orr ES, Sisic M, Arseneault JM, Simmering MG, Orr RR, Personality and motivations associated with Facebook use. *Comput Hum Behav*. 2009; 25(2):578–86.
22. Steinfield C, Ellison NB, Lampe C, Social capital, self-esteem, and use of online social network sites: A longitudinal analysis. *J Appl Dev Psychol*. 2008; 29(6):434–45.