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Examination of the relationship between nursing student's internet and smartphone addictions

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Abstract

Aim: The study examines the relationship between college nursing students' smartphone addiction and internet addictions.

Material and Method: The sample of this descriptive relationship-seeking study included 788 college nursing students. A personal information form, the Smartphone Addiction Scale and the Internet Addiction Scale were used as data collection tools.

Results: The participants had high smartphone and internet addiction scores. The males were more prone to exhibit addictive behavior. The addiction scores of the students who cannot stand to be away from their phones were higher. Students involved in sports and students with reading habits had lower addiction scores. A strong positive correlation was found between students' smartphone and internet addiction scores.

Conclusions: Due to the strong correlation between smartphone and internet addiction, it was concluded that further research is needed to investigate addictive behaviors, particularly for smartphone addiction.

Keywords: Smartphones; internet; addiction; nursing students.

Introduction

Developments in internet and smartphone technology have made our lives more full and fun than ever. Day by day these developments make our lives easier. Internet-enabled mobile phones make it easier to email, chat, manage personal data, reach online newspapers, get road assistance and directions through navigation and maps, access educational materials, use social media and even access health-related clinical information (Choi et al., 2014; Davey & Davey, 2014; Jun, 2015). Smartphones lead to social and psychological behavioral consequences that affect individual and collective habits, social competencies, personality and relationships (A. King et al., 2013). The increase in the use of internet and smartphones has led researchers to study this subject. Although smartphones have significant benefits for communication, problematic use poses risks to human life. These include personal information infringements, harmful or inaccurate information, copyright infringement and psychosocial issues related to overuse (Jun, 2015; Totten, Lipscomb, Cook, & Lesch, 2005).

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Internet addiction is a multidimensional syndrome with cognitive and behavioral symptoms that cause adverse social, academic and professional outcomes. Psychosocial problems (e.g., loneliness, poor social skills) lead to negative consequences due to online activities. Researchers have found a relationship between psychosocial health and internet addiction during adolescence and adulthood (F. Lin et al., 2012; Mittal, Tessner, & Walker, 2007; S. C. Yang & Tung, 2007; J. Y. Yen et al., 2008). Similar considerations may arise for smartphone addiction because smartphone use triggers internet use. The combination of many different features and easy internet access on smartphones facilitates the emergence of addiction (Ezoe & Toda, 2013; Ha, Chin, Park, Ryu, & Yu, 2008; Kwon et al., 2013). The popularity of smartphones also increases anxieties about the negative consequences of their overuse (Y. Kim et al., 2016). Studies of the overuse of smartphones report that it causes physical health problems such as musculoskeletal disorders in the hands, wrists and neck (Lee & Seo, 2014). Health problems due to the overuse of smartphones include eye symptoms, sleep disorders, aggression and attention deficit (Y.-S. Yang, Yen, Ko, Cheng, & Yen, 2010; Zheng et al., 2014). However, there are no established diagnostic criteria for disorders caused by excessive phone use. Whether the concept of addiction is appropriate for this situation is being discussed by researchers. On the other hand, the number of studies, clinical cases and reports supporting the fact that this phenomenon looks like addiction have rapidly increased in recent years. Several symptoms similar to addictive disorders have been shown in DSM-5 and include withdrawal symptoms (Y. Kim et al., 2016). Smartphone abuse is gradually increasing in this century. Adolescents who were using smartphones as a leisure activity have already passed to full-time use, which can be a sign of overuse and smartphone addiction (Davey & Davey, 2014; H. Kim, 2013).

Young people who exhibit smartphone addiction characteristics suffer from deterioration in daily life, poor academic performance, worsened social relations and reduced social interaction in real life (J Kuss, D Griffiths, Karila, & Billieux, 2014; Kwon et al., 2013). Many researchers point out that the overuse of smartphones can cause addiction. However, nothing is clear about smartphone addiction (Choi et al., 2014). The most basic feature of smartphones is that almost all applications require internet access. Smartphone and internet use have similar features.

Purpose of the research: Therefore, this study examines the relationship between college nursing students' smartphone and internet addictions and some of their features.

Method

This is a descriptive relationship-seeking study.

Study Universe and Sample

This study's population consisted of 1,125 students in the nursing department of a university in Turkey. No sampling was done, and all the students were included in the study. A survey was conducted with 788 nursing students who agreed to participate.

Data Collection Tools

The research data were collected using a Personal Information Form, the Internet Addiction Scale and the Smartphone Addiction Scale.

The Personal Information Form

This form was prepared by the researchers. It includes 12 questions concerning age, gender, working status, internet access on their smartphones, income status and smartphone use. The form consists of multiple choice and open-ended questions and can be completed in 5-10 minutes.

The Internet Addiction Scale

This present study used; developed by Griffiths the Turkish version of the internet addiction scale (IAS) and translated into Turkish and tested for validity and reliability by Canan et al. (2010). This scale originally included 36 items; however, the items incompatible with the validity and reliability study were excluded. There are 27 items in its Turkish version. The responses range from 1 to 5 (1=never, 2=rarely, 3=sometimes, 4=frequently, 5=always), and are

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added to obtain the total score. Score over 81 indicate internet addiction (Canan, Ataoglu, Nichols, Yildirim, & Ozturk, 2010).

The Smartphone Addiction Scale

The smartphone addiction scale (SAS) is a Likert type scale developed by Kwon et al. (2013). There are 33 questions on this scale with options ranging from 1 point to 6 points (1=definitely no, 2=no, 3=partly no, 4=partly yes, 5=yes, 6=definitely yes). The lowest and highest possible scores on the scale are 33 and 198, respectively. The scale consists of seven subscales: disturbance of daily life and tolerance with 8 questions (1, 2, 5, 29, 30, 31, 32, 33), withdrawal symptoms with 7 questions (10, 11, 12, 13, 14, 15, 16), positive expectations with 5 questions (6, 7, 8, 9, 20), cyber-focused relationships with 4 questions (21, 22, 23, 26), overuse with 4 questions (17, 18, 19, 28)), social network addiction with 2 questions (24, 25) and physical symptoms with 3 questions (3, 4, 27). There is no cutoff point, but the higher the score on the test, the greater the risk of addiction (Demirci, Orhan, Demirdas, Akpinar, & Sert, 2014). The adaptation of the scale to Turkish was performed by Demirci et al. (2014) with a seven factor structure similar to the original scale. The Cronbach's alpha internal consistency factor of the scale was 0.947 (Demirci et al., 2014).

Data Analysis

SPSS 18.0 software was used for the statistical analysis. The distribution of the data was examined using analytical methods (the Kolmogorov-Smirnov and Shapiro-Wilk tests). Student's t test and the one-way Anova test were used for data analysis because the data had a normal distribution. The data are presented as arithmetic means±standard deviations. Since both variables were normally distributed, the Pearson test was used for correlation analysis. The threshold for statistical significance was $p<0.05$.

Results

The mean age of the students who participated in the survey was 20.80±2.67 years. Of them, 58% were female, and 42% were male. Of them, 39.6% had sports habits, and 76.6% had reading habits. Of the students, 94.9% had phones with internet connections. The 40 participants who said that they did not have internet connections on their phones used the university's wireless internet. The majority of them did not have jobs. Of them, 26.4% had less income than their expenses, 56.3% had incomes that equaled their expenses, and 17.3% had more income than their expenses. Of the students, 66% reported that when they reached their internet quota they waited for the next month, and 34% reported that they had reopened their internet quota by cutting other expenditures. In addition, 21.8% reported that they started to use their phones when the phones were charged a little bit, 56.9% used their phones while charging, and 21.3% waited to charge their phones fully. None of them left their phones outside of the room while sleeping, and 82.2% left their phones at an accessible distance (under or inside the pillowcase, by their bedside, etc.), whereas 17.8% left their phones at an non-accessible distance. Of them, 77.7% checked their phones or used a phone application first thing when they woke up in the morning. It was determined that 47.7% of them used their phones during classes (Table 1).

The participants' mean score on the smartphone addiction scale was 90.58. Their mean scores on its subscales were 23.38 for disturbance of daily life and tolerance, 18.02 for withdrawal symptoms, 16.32 for positive expectations, 7.57 for cyber-focused relations, 11.53 for overuse, 5.00 for social network addiction and 8.74 for physical symptoms. Their mean score on the internet addiction scale was 68.60 (Table 2).

The mean scores on the internet and smartphone addiction scales and subscales were compared to the participants' demographic characteristics. The male students scored high except on the internet and smartphone addiction scales and the social network addiction subscale of the smartphone addiction scale. No significant difference in the social network addiction subscale was found between genders. The participants with sports habits obtained significantly lower mean scores on the internet and smartphone addiction scales and the subscales of disturbance of

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daily life and tolerance, withdrawal symptoms, positive expectations, cyber-focused relationships, overuse, and physical symptoms. Sports habits had no effect on social network addiction. The participants with reading habits had significantly lower mean scores on the internet and smartphone addiction scales and the subscales of disturbance of daily life and tolerance, withdrawal symptoms, positive expectations, overuse, and physical symptoms. Statistically significant differences were found between the participants who started to use their phones when they were charged a little bit, those who used their phones while charging and those who waited to charge their phones fully. The participants with less income than their expenses were determined to have the highest mean addiction score. A statistically significant difference was also found between the income groups in terms of all scales and subscales except the subscale of positive expectations. The participants who reopened their internet quota by cutting other expenditures when they reached their monthly internet quota, and those who left their phones within reach while sleeping had significantly higher internet and smartphone addiction mean scores. The participants who checked their phones or used a phone application first thing in the morning obtained significantly higher internet and smartphone addiction mean scores. The participants who used their phones during classes also had significantly higher mean scores on the internet and smartphone addiction scales and the subscales of disturbance of daily life and tolerance, withdrawal symptoms, positive expectations, overuse, social network addiction and physical symptoms (Table 3).

A strong positive correlation was found between the students' mean scores on the internet and smartphone addiction scales. A strong positive correlation was also found between their mean scores on the internet addiction scale and the subscales of disturbance of daily life and tolerance, withdrawal symptoms, positive expectations, overuse and physical symptoms on the smartphone addiction scale. A moderate positive correlation was found between their mean scores on the internet addiction scale and the subscales of social network addiction and cyber-focused relationships on the smartphone addiction scale. The lowest positive correlation was found between the mean scores on the internet addiction scale and the subscale of cyber-focused relationships on the smartphone addiction scale (Table 4).

Discussion

Smartphone use is increasing day by day and can affect important aspects of everyday life. Concerns about the negative consequences of excessive smartphone use caused by the popularity of smartphones are also growing (Y. Kim et al., 2016; C.-F. Yen et al., 2009). This study determined that male students had higher levels of smartphone and internet addiction. Other studies have also reported that males use smartphones more than females (Aljomaa, Qudah, Albursan, Bakhiet, & Abduljabbar, 2016; Bianchi & Phillips, 2005; Şar, 2013) and have higher levels of internet addiction (Canan et al., 2010; Erdoğan, 2015; Esen, 2010; Üneri & Tanıdır, 2011; J. Y. Yen et al., 2008). The reason for the male students' higher mean scores on both scales is that they have a higher tendency to use technology. There are also studies showing that female students have higher levels of addiction (Joiner et al., 2012; Y.-S. Yang et al., 2010; C.-F. Yen et al., 2009). Studies have reported differences between male and female internet use patterns, stating that internet use for social purposes is more important for females while surfing on the internet is more important for males (Chen, 2012; Joiner et al., 2012; Kang, 2007). This study found smartphone and internet addiction mean scores similar to those found in the relevant literature (Billieux, Maurage, Lopez-Fernandez, Kuss, & Griffiths, 2015; Chen, 2012; Kwon et al., 2013; Şar, 2013; Yayan, Arikan, Saban, Gürarslan Baş, & Özel Özcan, 2016).

A study of high school students found mean scores on the smartphone addiction scale and subscales similar to this study (Çakır & Oğuz, 2017). Recent studies have shown that the rate of internet and smartphone addiction gradually rises each year (Aljomaa et al., 2016; Çakır & Oğuz, 2017; Jun, 2015; Y. Kim et al., 2016; Kwon et al., 2013; Y.-H. Lin et al., 2014; Yayan et al., 2016), and this study's results are similar to the literature. This study found statistically significant

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differences between the income groups of participants on all scales and subscales except for the subscale of positive expectations, and those with less income than their expenses had the highest mean internet and smartphone addiction scores. Koivusilta et al. (2007) found that adolescents from low socioeconomic levels spent more time using smartphones than those from high socioeconomic levels (Koivusilta, Lintonen, & Rimpelä, 2007). This study found that students with sports and reading habits had very low smartphone and internet addiction scores. Sports and reading habits can help students to use their time more effectively and reduce addiction because these habits prevent them from spending too much time on their smartphones. This is supported by the fact that the most important effect of smartphone and internet addiction is reported to be overuse (Cao & Su, 2007; Ezoe & Toda, 2013; Y. Kim et al., 2016; Kwon et al., 2013; Şar, 2013; C.-F. Yen et al., 2009; Zheng et al., 2014).

The levels of both smartphone and internet addiction were found to be high among the participants who left their phones within reach while sleeping, those who check their phones first thing in the morning, those who used their phones during classes, those who reopened their internet quota by cutting other expenditures and those who use their phones while charging them. Studies have mentioned a new concept, nomophobia, which refers to people who are afraid of being separated from their smartphones (Erdem, Kalkın, Türen, & Deniz, 2016; A. L. S. King et al., 2014). A study conducted in England reported that individuals take their smartphones wherever they go, keep them at their bedside while sleeping and worry about being away from them (SecurEnvoy, 2012). An empirical study of individuals who cannot be separated from their smartphones reported that they felt being anxious and in an emotional vacuum when they were away from their smartphones (A. L. S. King et al., 2014). Studies have also reported that people who use their smartphones at night exhibit more signs of addiction (Zheng et al., 2014). Smartphones' easy access to the internet are considered to trigger this. The greatest fear of students who cannot stand to be separated from their smartphones is being unable to communicate and access information (Yildirim & Correia, 2015). The most important feature of a smartphone its ability to communicate more cheaply than other communication tools (Valkenburg, Peter, & Schouten, 2006). Students do not want to be separated from their phones while sleeping or awake and thus have higher levels of addiction due to overuse. A study of university students found that when they were separated from their smartphones, they exhibited anxiety symptoms that increased with their levels of excessive use (Cheever, Rosen, Carrier, & Chavez, 2014).

This study found a high correlation between internet and smartphone addiction. A study of adolescents in Korea found a relationship between internet and smartphone addiction. It also analyzed their addiction levels from 2011 to 2014 and determined that, although their internet and smartphone addiction levels were similar in 2011, their level of smartphone addiction rapidly increased to 29.2% during the research period, but their level of internet addiction did not change significantly. The study did not examine the relationship between internet and smartphone addiction because it considered smartphone addiction an independent concept. However, smartphone addiction shares basic features with internet addiction (Jun, 2015). People should be encouraged to create their own healthy lifestyle by acquiring positive health behaviors to protect and improve their health (Tambağ, 2011).

Conclusion and Recommendations

Even if the concept of addiction is traditionally seen as involving the ingestion of substances, internet and smartphone addiction should be examined as an example of behavioral addiction. This study results will help to understand the basic features of internet and smartphone addiction and support advanced research on this subject. Further research should examine the relationship between smartphone and internet addiction in depth.

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Tables:

Table 1. Demographic Characteristics and Some Variables of Smartphone Usage

Age	Mean	20.80±2.67	
		n	%
Gender	Female	457	58.0
	Male	331	42.0
Sports habit	Yes	312	39.6
	No	476	60.4
Reading habit	Yes	604	76.6
	No	184	23.4
Phone with internet access	Yes	748	94.9
	No	40	5.1
Behavior when the monthly internet quota is exceeded	I wait for the next month	520	66.0
	I cut my expenditures to open the internet access	268	34.0
Having a job	Yes	40	5.1
	No	748	94.9
Behavior when the battery runs out of charge	I use my phone after some charging	172	21.8
	I use my phone while charging	448	56.9
	I do not use my phone while charging	168	21.3
Location of the phone while sleeping	I keep my phone at an accessible distance	648	82.2
	I keep my phone at a non-accessible distance	140	17.8
Checking the phone first thing in the morning	I check my phone first	612	77.7
	I check my phone after morning routine	176	22.3
Using the phone during classes	Yes	376	47.7
	No	412	52.3
Income level	My income is less than my expenses	208	26.4
	My income is equal to my expenses	444	56.3
	My income is greater than my expenses	136	17.3

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Table 2. Mean Scores on the Internet and Smartphone Addiction Scales and Subscales

	Min.	Max.	Mean±SD
Internet Addiction Scale	28.00	118.00	68.60±21.56
Smartphone Addiction Scale	33.00	167.00	90.58±29.44
Disturbance of Daily Life and Tolerance	8.00	47.00	23.38±9.18
Withdrawal Symptoms	7.00	42.00	18.02±8.01
Positive Expectations	5.00	30.00	16.32±5.39
Cyber-Focused Relations	4.00	22.00	7.57±3.63
Overuse	4.00	24.00	11.53±4.96
Social Network Addiction	2.00	12.00	5.00±2.81
Physical Symptoms	3.00	18.00	8.74±3.53

Table 3. Comparison of the Students' Demographic Characteristics and Their Mean Scores on the Internet and Smartphone Addiction Scales and Subscales

		IAS	SAS	Disturbance of Daily Life and Tolerance	Withdrawal Symptoms	Positive Expectations	Cyber-Focused Relations	Overuse	Social Network Addiction	Physical Symptoms
Gender	Female	71.63±21.17	95.47±28.97	24.53±8.99	19.30±8.44	17.04±4.99	7.89±3.50	12.41±5.00	5.04±2.67	9.23±3.42
	Male	64.41±21.43	83.83±28.78	21.78±9.21	16.25±7.03	15.34±5.75	7.12±3.76	10.32±4.64	4.93±3.00	8.07±3.58
	p Test value*	0.000 4.703	0.000 5.582	0.000 4.195	0.000 5.351	0.000 4.431	0.003 2.971	0.000 5.963	0.574 0.563	0.000 4.610
Sports habit	Yes	63.96±20.97	85.70±29.35	22.30±9.52	17.11±6.99	15.42±6.05	7.16±4.02	10.44±4.96	4.92±3.11	8.32±3.76
	No	71.64±21.43	93.78±29.09	24.08±8.88	18.62±8.57	16.92±4.82	7.84±3.32	12.24±4.83	5.05±2.60	9.02±3.34
	p Test value*	0.00 4.965	0.000 3.801	0.008 2.667	0.010 2.588	0.000 3.855	0.011 2.554	0.00 5.040	0.536 0.620	0.06 2.748
Reading habit	Yes	66.31±20.69	88.60±28.34	23.06±8.82	17.41±7.73	15.87±5.44	7.46±3.65	11.31±4.96	4.84±2.82	8.63±3.49
	No	76.13±22.68	97.08±32.02	24.41±10.23	20.04±8.62	17.82±4.94	7.93±3.55	12.23±4.92	5.52±2.74	9.10±3.64
	p Test value*	0.00 5.506	0.001 3.443	0.081 1.744	0.00 3.935	0.00 4.347	0.124 1.541	0.027 2.209	0.004 2.880	0.112 1.590
Behavior when the battery runs out of charge	I use my phone after some charging	87.00±31.32	65.55±22.89	22.93±9.75	17.81±7.99	14.86±5.23	7.53±3.46	10.95±4.62	4.83±2.57	8.06±3.35
	I use my phone while charging	96.91±28.34	74.85±19.33	25.13±8.93	19.08±8.11	17.39±4.98	8.02±3.94	12.57±5.09	5.47±2.95	9.24±3.42
	I do not use my phone while charging	77.38±25.18	55.04±18.84	19.16±7.74	15.42±7.17	15.00±5.94	6.40±2.52	9.35±4.09	3.90±2.33	8.11±3.79
	p Test value**	0.00 30.684	0.00 62.059	0.00 27.855	0.00 13.138	0.00 21.236	0.00 12.541	0.00 29.041	0.00 20.214	0.00 10.424

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		IAS	SAS	Disturbance of Daily Life and Tolerance	Withdrawal Symptoms	Positive Expectations	Cyber-Focused Relations	Overuse	Social Network Addiction	Physical Symptoms
Income level	My income is less than my expenses	100.15±29.54	73.17±21.44	26.01±8.60	20.40±8.17	16.55±5.44	9.03±3.78	13.00±5.01	5.73±2.94	9.40±3.23
	My income is equal to my expenses	87.97±27.78	68.31±21.22	22.54±9.01	17.53±7.40	16.21±5.26	7.19±3.41	11.18±4.71	4.97±2.75	8.32±3.58
	My income is greater than my expenses	84.50±31.33	62.55±21.41	22.08±9.82	16.00±8.88	16.35±5.76	6.55±3.46	10.41±5.21	3.97±2.51	9.11±3.64
	p Test value**	0.00 16.238	0.00 10.285	0.00 12.131	0.00 14.832	0.752 0.285	0.00 26.141	0.00 14.067	0.00 16.714	0.001 7.637
Behavior when the monthly internet quota is exceeded	I wait for the next month	61.83±18.89	84.26±27.54	21.94±8.89	16.51±7.16	15.60±5.36	6.97±3.01	10.37±4.47	4.51±2.56	8.29±3.44
	I cut my expenditures to open the internet access	81.74±20.35	102.94±29.13	26.16±9.09	20.95±8.75	17.74±5.16	8.73±4.38	13.77±5.10	5.94±3.04	9.62±3.55
	P Test value*	0.00 13.648	0.00 8.860	0.00 6.256	0.00 7.625	0.00 5.386	0.00 6.591	0.00 9.621	0.00 6.918	0.00 5.099
Location of the phone while sleeping	I keep my phone at an accessible distance	70.72±21.21	93.81±29.49	24.20±9.18	18.54±8.21	16.87±5.30	7.72±3.83	12.15±4.98	5.19±2.89	9.11±3.48
	I keep my phone at a non-accessible distance	58.80±20.53	75.65±24.24	19.57±8.15	15.62±6.57	13.80±5.08	6.85±2.36	8.65±3.72	4.11±2.22	7.02±3.24
	P Test value*	0.00 6.064	0.00 6.804	0.00 5.514	0.00 3.935	0.00 6.269	0.010 2.582	0.00 7.844	0.00 4.141	0.00 6.503
Checking the phone first thing in the morning	I check my phone first	73.21±20.16	97.42±27.72	25.45±8.71	19.46±7.91	17.07±5.22	7.98±3.81	12.53±4.82	5.53±2.88	9.37±3.39
	I check my phone after morning routine	52.56±18.43	66.81±21.98	16.15±6.80	13.02±6.15	13.75±5.16	6.15±2.45	8.04±3.70	3.13±1.49	6.54±3.10
	P Test value*	0.00 12.197	0.00 13.474	0.00 13.054	0.00 9.960	0.00 7.447	0.00 5.988	0.00 11.410	0.00 10.636	0.00 9.935
Using the phone during classes	Yes	75.77±21.81	96.59±32.07	25.02±10.34	19.53±8.83	17.03±5.40	7.74±3.76	12.81±5.12	5.45±3.07	8.98±3.66
	No	62.05±19.14	85.10±25.65	21.88±7.68	16.65±6.92	15.68±5.30	7.41±3.51	10.35±4.50	4.58±2.48	8.52±3.39
	P Test value*	0.00 9.399	0.00 5.574	0.00 4.861	0.00 5.118	0.00 3.516	0.207 1.263	0.00 7.166	0.00 4.401	0.065 1.847

* Sample T Test
** One-Way ANOVA

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Table 4. Correlation of the Internet Addiction Scale and the Subscales of the Smartphone Addiction Scale

		Internet Addiction Scale
Disturbance of Daily Life and Tolerance	r	**.716****
	p	.000
Withdrawal Symptoms	r	**.592****
	p	.000
Positive Expectations	r	**.508****
	p	.000
Cyber-Focused Relations	r	**.380****
	p	.000
Overuse	r	**.628****
	p	.000
Social Network Addiction	r	**.484****
	p	.000
Physical Symptoms	r	**.515****
	p	.000
Smartphone Addiction Scale	r	**.739****
	p	.000

P<0.001 Bivariate Correlate