Original Research

Investigating the Relationship between Attachment Styles and Internet Addiction and Daytime Sleepiness in Students

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Abstract

Background and Objective: Sleep is one of the important elements in life that is accompanied by physical and mental rehabilitation. Suitable sleep quality is necessary for health and it has a direct relationship with physical and mental health of the person. The objective of this study is to investigate the relationship between attachment styles and internet addiction and daytime sleepiness of students.

Materials and Methods: The statistical population of this study included students of Islamic Azad University, Saveh Branch, Saveh, Iran, including 1200 students. Using the random sampling method and according to Morgan's table, 291 students were selected as the study sample and the Attachment Style Questionnaire (ASQ) by Hazan and Shaver, Young's Internet Addiction Diagnostic Questionnaire (IADQ), and Epworth Sleepiness Scale (ESS) were distributed among them and data were analyzed by SPSS software.

Results: The results showed that a significant and positive relationship exists between sleepiness and avoidant attachment style as well as internet addiction and daytime sleepiness. The results of data analysis with regression showed that attachment styles and internet addiction predict 62% of daytime sleepiness changes.

Conclusion: According to the results of this study, it can be concluded that attachment styles and internet addiction are good predictors for daytime sleepiness.

Introduction

One of the most important theories that addresses the relationship between parents and children and its consequences in adulthood is Bowlby's Attachment Theory that is founded by Bowlby's works. He refers attachment to a kind of special set of relationships in which the person forms an emotional bond with another person (1).

Attachment is a deep and consistent relationship that is created between a child and the caregiver in the first year of life. This issue deeply influences all life aspects of the person such as mind, body, emotions, relationships, and values. In other words, attachment is a two-way process of emotional relationship that influences psychological, physical, and cognitive development of the child and it functions as a basis for child's trust and distrust, in addition to forming his/her relationship with the world and determining learning and relationship throughout life (2).

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Therefore, this phenomenon occurs during the childhood for the first time and includes attachment to the known person in stressful and dangerous positions. The Attachment Theory proposed by Bowlby states that all people are born with an inherent desire to connect to other people and the purpose of this connection is to increase the survival rate. People create the sense of security according to their attempts to connect to others. This sense of security (or insecurity) is the basis for personal attachments that are stable throughout the life. Therefore, attachment is a behavioral system that Bowlby took it from natural behavior that is an emotional bond between the growing child and the mother who is the main responsible for providing care for the child. According to Bowlby's theory, attachment is created when a warm, close, and consistent relationship exists between the child and the mother that is satisfactorily for both of them (3).

Attachment insecurity can cause many psychological disorders such as anxiety, drug abuse, and personal and mental disorders (4).

Internet and social media are indispensable parts of today's life the excessive use of which is accompanied by negative consequences (5, 6). With the passage of time, new generations get familiar with the internet and rely on it and higher exposure to internet may cause internet addiction (7). Internet addicts, to reduce negative feelings and forget personal problems, spend a lot of time on the internet and social media and gradually, their dependence on the internet increases and they obtain a low level of satisfaction (8).

Sleep disorders and sleep deprivation are common problems for students and these disorders have an increasing trend (9). Insomnia and lack of sleep lead to increased irregular sleep patterns, daytime sleepiness, fatigue, inattention, and mood disorders and other health related issues (10).

Studies show that students who use internet more have limited time for sleep and experience high levels of fatigue (11). So far, various studies have been conducted on attachment styles (12), internet and technology addiction (13), and sleepiness (14), but these variables have not been compared and no model has been presented so far in this regard. Accordingly, this study aims to investigate the relationship between these variables as a regression model.

Given importance of the sleep regularity among students who constitute an important part of the society (15), this study aims to answer this question: Can attachment styles and internet addiction predict daytime sleepiness?

Materials and Methods

The present study was a descriptive-correlational study with the statistical population including students of the Saveh Branch, Islamic Azad University including 1200 students. Using the random sampling method and Morgan's table, 291 students were selected as the sample of the study. Additionally, 74% and 26% of the subjects were females and males, respectively. Moreover, 83% of the population was between 20 and 40 years old and 90% of them had a bachelor's degree. In order to observe ethical principles, it was explained to the participants that their information would remain confidential and be discarded after the study. They were initially informed that their participation was voluntary and that they could withdraw from the study at any time.

The inclusion criteria were mental and physical health, studying at Islamic Azad University, and willingness to answer the questions. The exclusion criteria included distorted answers to the questions. In order to observe ethical considerations of the study, it was explained to the participants that participation in the study was voluntary and their information would remain confidential and be destroyed after the study. Furthermore, the personal information of the participants in the study and questionnaires would never be used.

Attachment Style Questionnaire (ASQ) by Hazan and Shaver: In this study, attachment to parents was specified according to answering the questions proposed by Hazan and Shaver. The subjects answered the questions in a 5-point Likert scale from 1 (very low) to 5 (very high). This questionnaire consists of 15 items 5 of which are related to secure attachment style (items 6 to 10), 5 items are related to insecure-avoidant attachment style (items 1 to 5), and 5 items are related to insecure-ambivalence style (ambivalence 11 to 15). The respondents were asked to select the options that described them in close relationships and the subscale in which the respondent received the highest score would be considered as the attachment style. Hazan and Shaver reported the test-retest reliability of this questionnaire as 0.81 and obtained its reliability using Cronbach's alpha as 0.87 (16). The validity and reliability of this questionnaire were examined by many researchers (17).

Internet Addiction Diagnostic Questionnaire (IADQ): This questionnaire was designed by

Young. This questionnaire includes 20 items. Participants should answer the questions based on a 6-point Likert scale from never (0) to always (5). The score range of this questionnaire is from 0 to 100 and higher scores show more dependence on the internet that is resulted from excessive internet use. Scores 20 to 49, 50 to 79, and 80 to 100 show normal users, endangered users, and internet-dependent users, respectively (18, 19). Alavi et al., using factor analysis based on the principal component analysis (PCA) method with Varimax rotation, extracted social problems, impacts on performance, lack of control, use of chat room, and inattention to career and academic duties; in this study, only the total score of the scale was used. The content validity and convergent validity, test-retest reliability (r = 0.82), internal consistency (IC) (a = 0.87), and split-half reliability (r = 0.72) were estimated and were in an acceptable level (19). The reliability of the questionnaire in the current study was obtained using Cronbach's alpha coefficient (0.81).

Epworth Sleepiness Scale (ESS) is a valid scale with 8 items that assess mental sleepiness status of people and the conditions in which people feel more sleepiness. Scores vary between 0 and 3. The total range of sleepiness score is from 0 (no sleepiness) to 24 (high sleepiness in all 8 conditions). The total ESS score in the 0-8, 9-12, 13-16, and above 16 ranges shows natural, weak, moderate, and severe sleepiness, respectively. Clinically, in this scale, scores above 10 indicate sleepiness (20). The validity of this scale has been confirmed by different researchers (21). For data analysis, descriptive [mean and standard deviation (SD)] and inferential (correlation coefficient and regression) statistics were used.

Results

The demographic characteristics of the participants (i.e. age, gender, and education) are presented in table 1.

After investigating the normal data distribution using Kolmogorov-Smirnov (KS) test, parametric tests were used to analyze data.

In table 2, descriptive characteristics and correlation coefficient between the study variables are presented.

Table 2 shows that a significant relationship exists between sleepiness and avoidant attachment and internet addiction (P < 0.05) and no significant relationship exists between sleepiness and secure attachment and ambivalence. In order to investigate multiple correlation and predict sleepiness changes using independent tests, regression test was used. Table 3 presents the results of the regression test.

Table 1. Demographic characteristics of the study participants

Demographic characteristics		n*	(%)
Gender	Female	215	73.9
	Male	76	26.1
Age (year)	Under 20	58	19.9
	20-25	119	40.9
	26-30	61	21.0
	31-35	32	11.0
	Above 36	21	7.2
Education	Associate's degree	6	2.1
	Bachelor's degree	253	86.9
	Master's degree	28	9.6
	4.00	4	1.4

* The total number of patients was 291.

Table 3 indicates that attachment styles, internet addiction, and attachment styles + internet addiction predict 5%, 33%, and 39% of sleepiness changes.

Since these values show significance less than 0.05, it can be said that independent variables can predict dependent variable changes.

In table 4, beta coefficient of the independent variables in explaining the dependent variable changes are investigated.

When the variables of age, gender, and education were added to the model, it was observed that they have no significant effect on the increased adjusted R-squared coefficient.

Table 4 shows that when the attachment styles enter the model as independent variables, the avoidant attachment style has the largest beta coefficient, however when the attachment styles plus internet addiction enter the model, the ambivalence style and internet addiction have the largest impact on the dependent variable.

Table 2. Descriptive characteristics and correlation coefficient

Mean	SD	Secure attachment	Ambivalence	Avoidant attachment	Internet addiction	Sleepiness
Secure attachment	19.47	6.18	1				
Ambivalence	16.62	6.34	-0.633**	1			
Avoidant attachment	17.35	5.98	-0.426**	0.145*	1		
Internet addiction	45.66	22.30	-0.133*	0.376**	0.430**	1	
Sleepiness	9.58	3.59	-0.031	0.055	0.217**	0.584**	1

SD: Standard deviation; **P < 0.010; *P < 0.050

Table 3. Model summary

		R	R-squared	Adjusted R-squared	F	P-value
Model 1	Attachment styles	0.243ᵃ	0.059	0.049	6.009	0.001**
Model 2	Internet addiction	0.584ᵃ	0.341	0.339	149.462	< 0.001**
Model 3	Attachment styles + internet addiction	0.625ᵃ	0.391	0.382	45.883	< 0.001**
Model 4	Attachment styles + internet Addiction + age + gender + education	0.626a	0.392	0.377	0.626a	< 0.001**

$^{**}P < 0.010$; $^*P < 0.050$

Discussion

Sleep is one of the important elements in life that is accompanied by physical and mental recovery. Humans spend one third of their life in sleep. Insomnia or hypersomnia influence quality of life (QOL).

This study aimed to investigate the relationship between internet addiction, attachment styles, and sleepiness among students. The results showed that there was a significant relationship between sleepiness and avoidant style and internet addiction, but no significant relationship was observed between sleepiness and secure and ambivalence styles. To investigate multiple correlation and predict sleepiness changes using independent variables, regression test was used. The results of the regression test showed that attachment styles and internet addiction explain 62% of the sleepiness changes.

In model 3 where internet addiction and attachment styles entered the model together, the results showed that internet addiction beside other attachment styles had a mediating role, and attachment styles influenced internet addiction through this variable and this needs more studies with larger sample sizes and modeling to confirm the mediating role. In explaining the findings of this study,

it can be said that attachment has a relative stability over time. This means that it predicts future personal relationships with peers and friends and is important in healthy development and mental health of the person. People who show high anxiety relative to attachment, report high levels of anxiety and concern. People who are at a high rank in terms of avoidance related to attachment, show hatred against emotional relationship of others and rarely rely on other people. Individuals with a secure attachment are at lower ranks and not only are at standard and secure levels in terms of their expectations, but are also more interested in having friendly and close relationships with others and ask for support when needed. For this reason, it can be claimed that insecure people, due to high anxiety in daily life, experience less sleep. Insecure people, through influencing excessive internet use, experience less sleep.

The findings of this study are consistent with those of the study by Niko Verdecias et al. who investigated the relationship between attachment styles and sleep measures (22), Escolas et al. who investigated the effect of attachment styles on sleep in post-deployed service members (23), and Mahoney who investigated the relationship between attachment styles and sleep quality (24).

Table 4. Standardized and unstandardized coefficients

		Unstandardized Coefficients		Standardized Coefficients	t	P-value
		B	Std. Error	Beta		
Model 1	(Constant)	3.992	1.850		2.158	0.032**
	Secure attachment	0.090	0.048	0.154	1.874	0.062
	Two-way	0.065	0.043	0.114	1.513	0.131
	Avoidant	0.160	0.039	0.266	4.136	< 0.001**
Model 2	(Constant)	5.283	0.391		13.498	< 0.001**
	Internet addiction	0.094	0.008	0.584	12.225	< 0.001**
Model 3	(Constant)	11.007	1.594		6.907	< 0.001**
	Secure attachment	-0.118	0.042	-0.202	-2.805	0.005**
	Two-way	-0.188	0.040	-0.332	-4.717	< 0.001**
	Avoidant	-0.084	0.037	-0.140	-2.294	0.022*
	Internet addiction	0.120	0.010	0.742	12.481	< 0.001**
Model 4	(Constant)	10.285	1.902		5.407	< 0.001**
	Attachment	-0.112	0.043	-0.193	-2.632	0.009**
	Ambivalent	-0.183	0.040	-0.323	-4.530	< 0.001**
	Avoidant	-0.079	0.038	-0.132	-2.117	0.035*
	Addiction	0.119	0.010	0.739	12.261	< 0.001**
	Gender	0.058	0.390	0.007	0.150	0.881
	Age	0.025	0.156	0.008	0.162	0.872
	education	0.305	0.375	0.040	0.814	0.416

$^{**}P < 0.010$; $^*P < 0.050$

Furthermore, the results showed that internet addiction has a significant and positive relationship with sleepiness and in explaining the findings of this section, it can be declared that exposure to light and screens affects the sleep cycle.

Some researchers believe that excessive internet and computer use can increase the activity level of the neural system and lead to increased consciousness and over time, sleep duration decreases and as a result, sleepiness occurs during the day. The findings of this hypothesis are consistent with those of the study by Alimoradi et al. who investigated the relationship between internet addiction and sleep disorders (25), Jahan et al. who investigated the relationship between internet addiction and sleep disorders (26), and Khayat et al. who addressed sleep quality and internet addiction level among university students (27).

This study was along with some limitations. First, the sample only included students and it is necessary to conduct this study on other populations. Second, other data collection tools such as observation and interviews were not employed in this study that have to be taken into consideration in the future studies, since traditional methods were employed in this study.

Conclusion

According to the findings of this study, it can be said that attachment styles have an important role in the use of internet by the students and those students who have safer attachment style, use internet more appropriately and according to the importance of using technology and internet and their effect on sleepiness, more studies are needed in this respect.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

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