

## Structural Equations Modeling of the Relationship between Virtual Addictions, Attachment Styles, and Demographic Variables with Pubbing

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### Abstract

**Introduction:** Pubbing is an emerging concept in the pathological literature and is a communicational phenomenon, which refers to smartphone dependency disorder. Despite the important relationship between pubbing and internet, game and social media addiction and psychological variables such as attachment styles, this issue has not been evaluated in Iranian society. This study was aimed to examine the relationship between internet addiction, attachment styles and demographic variables with the phenomenon of pubbing. **Methods:** This study was conducted in the form of a descriptive correlational design based on structural equation modeling. For this purpose, 356 individuals were selected by stratified random sampling from men and women of Qom city during April to August 2019.. Seven scales of pubbing, Internet Addiction, Game Addiction, Social Media Addiction, Mobile phone Addiction, Texting Addiction, and Attachment Styles Questionnaire were used to collect data. **Results:** The results showed that the tested model has a (what do you mean? CHANGE THE wording). The direct effect of mobile phone addiction (0.50), SMS addiction (0.18) and attachment (0.50) on pubbing was positive and significant at level of 0.01. Also, the indirect effect of game addiction and texting addiction was significant on pubbing at level of 0.01. It also explained 76% of the variance of pubbing for game addiction, texting addiction and attachment. However, the indirect effects of the addiction variables on pubbing through age variable were not significant. **Conclusion:** The findings of this study can be useful in planning the advancement horizons in prevention and management of pubbing phenomena and could have clinical applications.

**Declaration of Interest:** None

**Key words:** Virtual, Attachment, Pubbing, Addiction.

### Introduction

Smartphones are a new generation of communication tools that have revolutionized the field of communication. Smartphones have

the features of a pocket PC and have a variety of features including internet, camera, writing and program design for games. In parallel with this evolution, a new issue called "Pubbing"

has begun (1, 2). Pubbing is a process whereby a person engages with his or her phone during a conversation with others and avoids from interpersonal communication, and this can cause significant harm to social interactions (1). The word "Pubbing" was first coined by being included in an updated version of the Macquarie Dictionary. The updating team coined the term "pubbing" to refer to smartphone addiction by combining the two words "phone" and "snubbing" (1). According to the latest GSMA (Global System for Mobile Communications) Intelligence report, smartphone adoption in 2017 surpassed 57% of the total 7.8 billion mobile connections worldwide (3). It is anticipated that it will reach to 77% by 2025. For example, a study in South Korea found that about one million people were exposed to smartphone addiction, with the majority of them being teenagers and then preschoolers (4). According to the Ciber report, parental reports of counseling for their children range from 8 to 10 cases per week (5). According to the findings of the study by Davey et al. (6), the prevalence of pubbing among Polish youth was 49.3%.

Due to the structure of smartphones, the pubbing is a disorder that is common in many addictions. The disease can lead to addiction-like symptoms such as overactive syndrome, tolerance, withdrawal, and disruption of daily life.(2,7-8). Most smartphone users are not even willing to lose any of their messages (9). Pubbing has a multi-dimensional structure. These dimensions include (a) mobile phone addiction, (b) internet addiction, (c) social media addiction, and (d) game addiction. These components have dependent dimensions.

On the other hand, social networks have a significant impact on smartphone addiction (10). Smartphones allow access to social networks, which is an important addictive factor in computers (11). Facebook (12),

Instagram (13) and Twitter (14) are at the top of the list of social media platforms and their habit of using them has become a form of addiction.

Facebook, whose main motivation is entertainment and social interaction, is a complex combination of multiple multimedia tools (12). Playing is also an important factor that can be addictive within and beyond social media. Factors such as long-term dependence on game, immediate rewards after even the slightest improvement in the game, and changes in levels based on one's performance increase the likelihood addiction to these games. In light of the importance and need of the community, in 2013, the American Psychiatric Association introduced the Internet Game Disorder in an annexed version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as conditions that require further research (15).

On the other hand, relevant studies have suggested that the relationship between social media addiction and attachment styles is problematic (16). Problematic attachment to social media refers to negative emotions, destructive mental states, and over-dependence. In this sense, attachment refers to creating a style of interaction between users and social media when the user is overly reliant on social media to satisfy their social needs for communication and popularity (17).

In this regard, there is a major focus on the use of Internet for gambling, gaming, and addictive behavior among expertise in the field. (18). Regarding the importance of addressing emerging phenomena and considering the lack of awareness about pubbing among Iranian population , this study was conducted to evaluate the structural equation modeling of Internet addiction, attachment styles and demographic variables with pubbing.

## Methods

The present study was a correlational study carried out in a cross-sectional design using structural equation modeling. The data of the present study were collected during the period of April to August 2019. The study population consisted of all men and women living in Qom. The sample size was 356 people according to Klein's suggestion and the number of studied parameters and according to the rule 16:1. The sample population was selected using stratified sampling method. Inclusion criteria were: 1) age range of 18-45 years; 2) living in Qom and its suburbs with a distance of 15 km from the center. In this study demographic questionnaire, Pubbing Scale, Internet Addiction Scale, Game Addiction Scale, Social Media Addiction Scale, Mobile Phone Addiction Scale, Texting Addiction Scale, and Attachment Styles Questionnaire were used. Data were collected over three months. The collected data were analyzed by SPSS and Amos software. All stages of the research were conducted after obtaining informed consent and based on the latest version of the Helsinki declaration

NOTES: more detail about the research design (e.g., how data were calculated, was there any control group? Or any other conditions for participants?) Method section should include enough detailed information so anyone should be able to replicate or conduct the study.

**1. Pubbing Scale:** This scale was designed by Karadag et al. (2) to evaluate pubbing index. This scale consists of 10 items that are scored on a 5-point Likert scale. The results of the study by Bendayan & Blanca (11) indicated acceptable concurrent validity and favorable psychometric criteria of this scale. The reliability of this tool in the present study was calculated as 0.88 using Cronbach's alpha method.

**2. Internet Addiction Scale:** This scale was designed by Karadag et al. (2) for the purpose of evaluating Internet addiction. This scale

contains 6 items that are scored on a 5-point Likert scale. The reliability of this tool was calculated as 0.78 using Cronbach's alpha method.

**3. Game Addiction Scale:** This scale was designed by Karadag et al. (2). This scale contains 8 items. Based on the data obtained from the students, an exploratory factor analysis was performed using a principal axis factor analysis with minimal mile rotation. As a result of principal component analysis, a one-factor structure explaining 61.66% of the variance was proposed (KMO = 0.82, Bartlett test  $P < 0.01$ ) based on exploratory factor analysis performed using minimal mile axis rotation that only found in one factor, 8 cases loaded more than 1.

**4. Social Media Addiction Scale:** This scale was designed by Karadag et al. (2) and consists of 10 items. In the present study, the reliability of the pubbing scale was calculated as 0.81 using Cronbach's alpha method.

**5. Mobile Phone Addiction Scale:** This scale was designed by Karadag et al. (2). In the present study, the reliability of the pubbing scale was calculated as 0.79 using Cronbach's alpha method.

**6. SMS Addiction Scale:** This scale was also designed by Karadag et al. (2) and consists of 6 items. In the present study, the reliability of the pubbing scale was calculated as 0.83 using Cronbach's alpha method.

**7. Attachment Styles Questionnaire:** This scale contains 40 items that are scored on a 6-point Likert scale. This tool is a self-report questionnaire designed based on *Ainsworth's* triple attachment styles (safety, avoidance, ambivalence). The psychometric criteria for this tool have been reported acceptable in the study by Tarantino et al. (19).

## Results

To select the statistical test, the assumptions of structural equation modeling were first examined. Missing values were verified using

the Expectation Maximization (EM) Imputation method and the criterion was validated. The distribution of data was also found to be normal. The assumption of linear relationships was verified using distribution graphs method. Also the assumption of linear multiplicity was tested and verified by

Table 1- Descriptive indices of research participants

Variable	Mean	Standard deviation	skewness	elongation
Age	26.44	11.26	0.89	0.7
Attachment	7.94	2.97	0.27	-0.64
Pubbing	26.05	8.81	0.36	-0.49
Mobile phone addiction	40.78	12.53	0.09	-0.62
Social media addiction	25.69	9.15	0.21	0.74
SMS addiction	15.28	5.93	0.25	-0.72
Game addiction	19.49	8	0.31	-0.85
Internet addiction	14.70	6.17	0.42	-0.87

According to the findings in **Table 1**, the causal modeling assumption that the variables are normal is established.

tolerance and Variance Inflation Factor (VIF). A total of 356 participants including 190 men and 166 women were studied. Descriptive indices of research participants in the studied variables are presented in **Table 1**.

The correlation relationships between the research variables are presented in **Table 2**.

Table 2- Correlation Matrix between research variables

Variable	Pubbing	Age	Attachment	SMS addiction	Social media addiction	Game addiction	Mobile phone addiction	Internet addiction
Pubbing	1							
Age	-0.15	1						
Attachment	0.50**	-0.08	1					
SMS addiction	0.66**	-0.059	0.70**	1				
Social media addiction	0.66	-0.10	0.55**	0.72**	1			
Game addiction	0.52**	-0.25**	0.51**	0.58**	0.59**	1		
Mobile phone addiction	0.75**	-0.11*	0.49**	0.68**	0.77**	0.57**	1	
Internet addiction	0.66**	-0.13*	0.57**	0.72**	0.80**	0.62*	0.77**	1

The model fit index is presented in **Table 3**.

Table 3- Path Model Fit Index

df/X <sup>2</sup>	IFI	NFI	CFI	TLI	RMSEA
2.11	0.99	0.99	0.99	0.97	0.05

According to the findings of Table 3, the tested model has a good fit. **Table 4** also

reports the direct, indirect, total effects and variance of the variables.

Table 4 - Direct, indirect, total effects and explained variance of the research variables

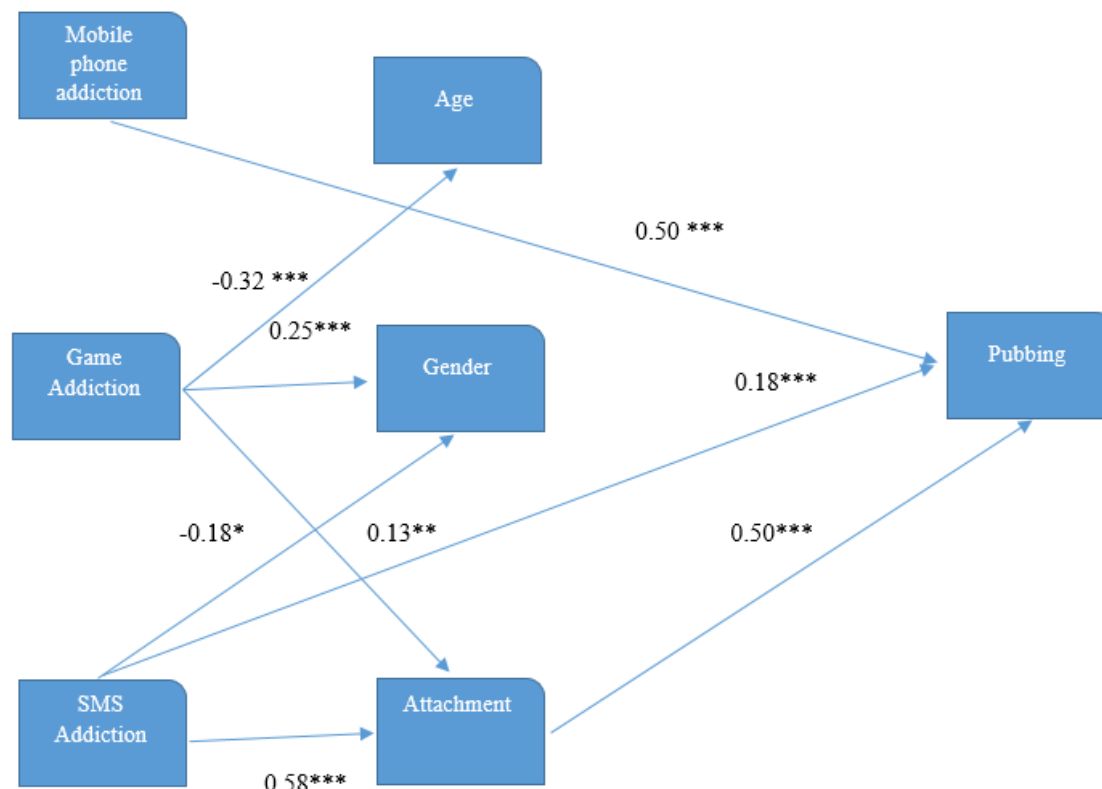
Paths	Direct effects	Indirect effects	Total effects	Percentage of explained variance
On attachment of:				0.051
Mobile phone addiction	-0.86	-	-0.86	
Social media addiction	0.50	-	0.50	
Internet addiction	0.09	-	0.09	
Game Addiction	0.13**	-	0.13**	
SMS Addiction	0.58**	-	0.58**	
On the age of:				0.07
Mobile phone addiction	-0.26	-	-0.26	
Social media addiction	0.048	-	0.048	
Internet addiction	-0.053	-	-0.053	
Game Addiction	-0.32**	-	-0.32**	
SMS Addiction	0.15	-	0.15	
On pubbing of:		By mediating of age		0.062
Mobile phone addiction	0.50	-0.002	0.498**	
Social media addiction	0.053	0.041	0.094	
Internet addiction	0.054	-0.004	0.05	
Game Addiction	0.071	0.027	0.098	
SMS Addiction	0.18**	0.012	0.19**	
Age	0.028	-	0.028	
Attachment	0.50**	-	0.50**	
On pubbing of:		By mediating attachment		0.076
Mobile phone addiction	-0.086	-0.043	-0.129	
Social media addiction	0.5	0.025	0.52	
Internet addiction	0.09	0.045	0.135	
Game Addiction	0.13**	0.065**	0.19**	
SMS addiction	0.58**	0.29**	0.87**	

As

can be seen from the findings in **Table 4**, attachment has a mediating role in the relationship between the two variables of computer game addiction and SMS addiction. Game addiction, SMS addiction and attachment explain 76% of the variance of the

pubbing. However, the indirect effects of the addictive variables on pubbing through the age variable are not significant. Therefore, the age variable does not play a mediating role in the relationship between the variables of addiction and the pubbing. The empirical model of

research after eliminating non-significant paths is presented in **Figure 1**.



**Figure 1. Experimental research model after eliminating non-significant paths**

### Discussion

This study was conducted to examine the structural equations of the relationship between virtual addiction, attachment styles and demographic variables with the phenomenon of pubbing. The results showed that the tested model had a good fit. The direct effect of mobile phone addiction, SMS addiction, and attachment on pubbing was positive and significant at the level of 0.01 that explained 62% of the variance of pubbing. Also, the indirect effect of game addiction and SMS addiction on pubbing was observed significant at the level of 0.01. Game addiction and SMS addiction and attachment explained 76% of the variance of pubbing. However, the indirect effects of addiction variables on pubbing through age variable were not significant.

The results of this study is consistent with previous findings. For example, the results of the Davey et al. (6) study showed that the most

important predictors of pubbing are internet addiction and smart phone addiction. Adolescents in developing countries such as India are now more inclined toward using mobile phones for activities other than communication due to the fact that at that stage, they are susceptible to the changing fashion trends, style, and are getting more tech savvy. Adolescents and youth of India need special guidance from government adolescent clinics or colleges or even families to control this habit in order to promote better physical, mental, and social health. Also, the findings of Karadag et al. (2) showed that mobile, SMS,

social networking and internet addiction are the most important predictors of pubbing. Although the findings show that the highest correlation value explaining phubbing is a mobile phone addiction, the other correlation values reflect a dependency on the phone. Frequent use of SMS requires constant physical and mental contact with the cellphone and waiting for a response that result in mobile phone addiction. As a result, one must wait for a response while working with the SMS, and the response acts as a reinforcing factor, so it can be said that SMS use becomes a form of addiction commensurate with the factor conditionality principle. There is an increasing tendency towards mobile phone use, and this tendency prepares the basis of phubbing. Part of the findings of the present study showed that attachment style had a direct effect on pubbing. In this regard, the findings of the Şenormancı et al. (20) study showed that patients with Internet addiction have an anxiety attachment style that has been associated with family dysfunction. Therapy for problematic smartphone use should be carried out in light of patient's attachment style. Further research into other factors of mental stress and personality is needed to better understand problematic smartphone use. Also the findings of Kalaitzaki and Birchnell (21) showed that parental style has a direct impact on Internet addiction. Parenting style has an indirect impact on Internet Addiction, through the mediating role of negative relating to others or sadness in later life. Both family-based and individual-based prevention and intervention efforts may reduce the incidence of Internet Addiction. In this regard, the findings of the study by Wartberg et al. (22) showed that good communication between parents and children plays a role in preventing internet-related harms. A good family functioning as well as a good communication between parents and adolescents, a positive parent-child relationship, and supportive

parental monitoring proved to help prevent pathological adolescent internet use.

Contrary to these findings, the results of the study by Kim et al. (23) showed that anxiety attachment has no significant relationship with smartphone addiction. One of the differences between the study of Kim and the present study is the mood status of the participants. In the study of Kim et al. (23), participants with anxiety and depression syndrome were used. Even laboratory findings suggest brain changes while using smartphones (7). It can be concluded that people with anxious attachment styles focus on technology-related objects such as mobile phones in order to reduce their anxiety. These findings suggest that people with anxious attachment styles resort to virtual media messaging and computer games with prolonged use of mobile phones.

The present study had some limitations in the implementation process. The mere use of the questionnaire can be biased. It is recommended that future studies in addition to paper and pen tools, biological evaluation be used to evaluate the effectiveness of treatment. Also, conducting a youth screening study could be a good way for future research.

Findings of the present study showed that the tested model has a good fit. This model shows that computer game addiction, mobile phone addiction, SMS addiction and attachment have direct and indirect effects on the pubbing. This model suggests that in order to reduce the pubbing of internet addiction, one should consider the attachment styles, the extreme use of computer games. This study can be helpful for researchers and experts to understand the phenomenon of pubbing.

### ***Conflict of interest***

The authors did not declare any conflict of interest.

### ***Acknowledgement***

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