

# THE PROBLEMATIC USE OF SMARTPHONE AND FOMO AS ANTECEDENTS OF FACEBOOK ADDICTION

Houssem Edine Nasr, University of Tunis El Manar  
Kaouther Saied Ben Rached, University of Tunis El Manar

## ABSTRACT

*This paper tries to determine the Facebook addiction as a reality that is gaining momentum around the world and as a result of technology development, which is linked to the smartphone use, through Fear of Missing Out (FoMO) and the problematic use of smartphone. The results of this study showed that these two variables are antecedents of Facebook addiction.*

**Keywords:** Facebook Addiction, Antecedents, FoMo, Problematic use of Smartphone.

## INTRODUCTION

Communication technologies gave birth to Facebook which was founded in 2004 by Marc Zuckerberg. Indeed. Its total users went over the 2.2 billion persons in 2018 (Facebook.com), and become a social phenomenon with an excellent potential and has favoured a particular behaviour among its consumers, namely the 'Addiction' Facebook is becoming increasingly widespread as a communication platform (Biolcati et al., 2018). "Facebook Addiction Disorder" (FAD) was classified as a form of obsessive-compulsive disorder in the fifth and latest version of the DSM (Diagnostic and Statistical Manual of Mental Disorders) and has created, subsequently, several problems to these users.

The problematic use of the smartphone is, generally recognized, as a recent phenomenon that is gaining more and more importance thanks to the technological development and the unprecedented development of smartphone's use which created some pathological disorders. The smartphone's use has altered the user's habits, and this gives new orientations to a new field of academic research. In this article, we will demonstrate that Fear of Missing Out (FoMO), which is the fear of missing something, and the problematic use of smartphone are the antecedents of the addiction to Facebook.

Recently, many researchers have focused on the study of potential relationships between social networks and mental health problems including pathological disorders (Blachnio et al., 2016).

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Facebook Addiction

Addiction is a feeling of loss of the action's control and its continuation in spite of the knowledge of these negative acquaintances (Goodman, 1990). The extension of Facebook addiction leads to grouping entities, "addictions without drugs" including the classic pathological gambling and emerging forms of Internet addiction (Valleur & Matysiak, 2004). Facebook

addiction sites is complicated and probably mixed and biological, psychological, social and cultural factors (Andreassen, 2015).

The popularization and strong use of Facebook have given rise to an addictive behaviour of some users of this social network. A research in Marketing has focused on this phenomenon, which is gaining momentum around the world (Nasr & Ben Rached, 2016). Lightstone (2010) assures that addiction to Facebook has certainly attracted the attention of psychiatrists. Social networks mainly Facebook, creates problems for users who spend hours chatting on their browsing profiles with their friends. This behaviour is transformed into a compulsive habit of looking at their profiles several times a day to check for "updates" status changes, and comments on photos and videos.

There are millions of Facebook users around the world who spend eight hours a day on the platform (Viswanathan, 2015). Facebook, which is a very popular social networking site, has a time-consuming activity for its users. They connect at least once a day and some even keep their Facebook accounts online on their smartphones throughout the day which can create an addiction to this website. Facebook is slowly dominating the daily life of Internet users. This social network has become indispensable (Norman et al., 2017).

### **The Problematic Use of Smartphones**

Smartphones are omnipresent in a world migrating to digital. Moreover it is useful because it supports and simplifies many tasks (Sha et al., 2019). Smartphones are breaking with the older versions of cell phones and are replacing older cell phones (Samaha & Hawi, 2016). The smartphone dependence is characterized by an excessive and problematic consumption of the latter. It is a behavioural addiction that is characterized by: a preoccupation, a compulsive behaviour, a lack of control and a functional deterioration. Smartphone addiction could be seen as a new form of internet addiction because many young people own a smartphone and use it excessively throughout the day and access the Internet via this device (Tateno et al., 2019). Today, most smartphone studies focus on the causes and psychological effects, and assume that this intensive use focuses on the harmful consequences of smartphone addiction. . As a result, previous studies failed to capture various types of smartphone dependencies that vary with each user (Park, 2019).

A smartphone is an upgraded and more technologically sophisticated phone. It allows the users to connect to the web, watch videos on YouTube or communicate and share via Facebook (Haug et al., 2015). Dennison et al. (2013) find that smartphones present entertainment, education, banking and games services for these users through applications. Smartphones are generally used to connect to social networks such as "Facebook" because they make it easier to communicate online. Excessive use of smartphones can cause addiction to Facebook. Consequently, we conclude that a problematic use of the Smartphone can cause Facebook addiction.

*H1: The problematic use of the smartphone is an antecedent of Facebook addiction.*

### **The Fear of Missing Out (FoMO)**

Social media provides a platform for information sharing and it has quickly become a popular method to relate to others regardless of the time and geographical distance. Yet, this wealth of connectivity and availability of information can lead to the experience of the Fear of

Missing Out (FoMO). This typically refers to a preoccupation of the users of social media about lost opportunities when they are offline (Alutaybi et al., 2019).

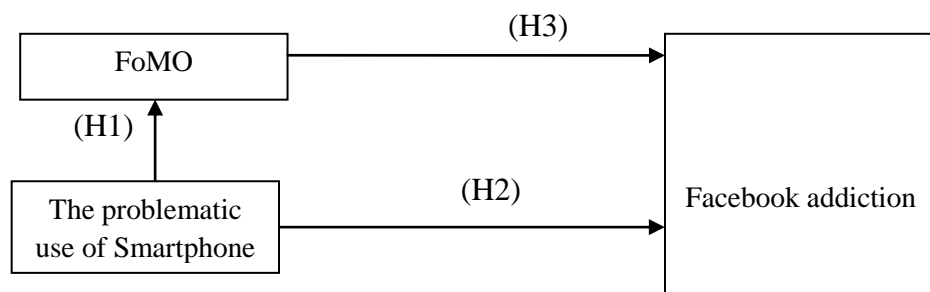
FoMO is the feeling that others experience a rewarding experience when they are away. Because it is associated with the desire to remain socially connected (Riordan et al., 2018), this social anxiety is characterized by a desire to stay constantly in touch with what others are doing and to follow their news in a continual way. FoMO is a state of mental and emotional stress caused by missing an opportunity to maintain a social bond. It is usually a party or an excursion with friends (Bhatia, 2016). The Fear of Missing Out is also characterized by anxiety. This phobia has become more popular with the popularization of online social media (Germaine-Bewley, 2016). FoMO has often been understood as a new phenomenon that has emerged as a result of the growing popularity of social media (Reer et al., 2019).

Smith (2012) finds that FoMO is a state of mind that reaches mobile phone users who are connected to social networks almost constantly and whose average is over forty minutes per day on Facebook. According to Martin-Juchat (2014), Facebook is not only associated with pure pleasure, because this application is diverted to support group work. However, even if Facebook or Apple is not only synonymous with positive emotions for this type of population, this logic, specific to online application providers, meets a little resistance. Martin-Juchat finds that the dependency's rate assumed by students in digital from waking up in bed until evening. Students defend their dependence by evoking the impossibility of not being connected by risk of exclusion. Thus, they pay for their addictions by fear of missing something important, requiring a permanent tension towards the digital. As a result, we notice a relationship between the problematic use of the smartphone and FoMO.

*H2: The problematic use of the smartphone is related to FoMO.*

FoMO became an issue of concern in relation to the use of Social Network Sites (Alutaybi et al., 2018). FoMO has experienced an extraordinary growth in recent years with the explosion of virtual sharing in real time through social networks. Smartphones and tablets create constant opportunities for the growth of the Fear of the Missing Out phenomenon (Conlin et al., 2016). Daven (2014) relies on the article by Przybylski et al. (2013) who discovers that FoMO (the Fear of missing out) has been negatively associated with a psychological well-being. The general mood and overall life satisfaction are considered low in the case of a FoMO. Wallace (2014) finds that social anxiety can also be a consequence of the Internet overuse. FoMO can be one of the main reasons for students to check social media a hundred times, day or night. Indeed, the frequent use of Facebook tends to reduce the feeling of well-being among teenagers rather than make them feel more connected and less socially anxious. Kuss & Griffiths (2017) argue that the fear of missing out can cause addiction to social networking platform. Individuals who are worried and unable to connect to networking websites may develop habits that are often impulsive and over time may become addictive. Hence, we see a relationship between FoMO and Facebook addiction because we believe that FoMO can even cause an addiction to this social network service. In this case, the hypothesis H3 of the model is in figure 1:

*H3: The Fear of Missing Out is an antecedent of Facebook addiction.*



**FIGURE 1**  
**THE PROBLEMATIC USE OF SMARTPHONE AND FOMO AS ANTECEDENTS OF**  
**FACEBOOK ADDICTION**

### METHODOLOGY

The sample of this study is made up of 251 respondents from Tunisia in June 2017. The only condition one had to meet to take part in the study was having a Facebook account. The participants received no remuneration. In the instruction they were informed that the study concerned Facebook activity and that their contributions were anonymous. In addition, this sample is also composed of women, who represent 55%, 63.7% of respondents are young people between the ages of 20 and 29.

The responders were asked through the snowball method. According to Penrod et al. (2003) the snowball sampling method is summarized as a non-probabilistic form of sampling in which people originally selected for the sample are used as intermediaries to locate other people with different backgrounds.

### RESULTS

This model integrates within it two independent variables which are: the problematic use of the Smartphone and FoMO. The reliability and the validity of the two variables composing this model will be tested including the variable to explain, in this case: Facebook addiction.

#### **The Dependent Variable: Addiction to Facebook: Dimensionality, Reliability and Convergent Validity**

The measure of Facebook addiction, we resorted to scale (Andreassen et al., 2012). This scale consists of 6 items, each of which is measured in 7 points ranging from "never" to "always". The dimensionality test of the Facebook addiction scale involves an exploratory factor analysis (EFA). To test the dimensionality of this scale, we conducted a PCA on the 6 items of the scale (KMO=0.863, approximate chi-square=583.643, significant Bartlett sphericity test,  $p=0.00$ ).

The PCA conducted on the items of Facebook addictions scale makes emerge a one-dimensional structure which restores to 58% of the variance. The 6 selected items will then undergo a reliability test on SPSS using the command "*a if item deleted*" which will at the same time calculate a reliability index that is the  $\alpha$  of Cronbach and ways to improve it. If needed the obtained  $\alpha$  is  $0.854 > 0.7$ , which means that the scale of the Facebook addiction is reliable.

The test of the convergent validity of the scale passes by a confirmatory factor analysis on the AMOS software version 18. The index of fit is all in the norms evoked by (Hair et al, 2006).

$\chi^2 / dl=0.122$ , (Satorra & Bentler, 1994);  $p=0.034<0.05$ ;  $GFI=0.999>0.9$ ;  $AGFI=0.997>0.9$   $CFI=0.997>0.9$  (Bentler, 1990);  $NFI=0.999>0.9$  (Bonnet & Bentler, 1980);  $RMSEA=0.000<0.8$  (Steiger & Lind 1980). All t students are greater than 1.96 which confirms that they are significantly correlated with their latent variable. Then, the 6 items introduced generate a  $\rho$  of convergent validity slightly lower than the generally recommended threshold of  $0.499<0.5$  and a  $\rho$  of Jöreskog  $0.832>0.8$ . Being this, the convergent validity of Facebook addiction scale is pronounced.

## **The Independent Variables: Fomo and the Problematic Use of Smartphone**

### **FoMO: dimensionality, reliability and convergent validity**

For the measurement of FoMO, the scale we used is that of Przybylski et al. (2013). This is broken down into 10 items which is measured by a 7-point Likert scale ranging from "*completely disagree*" to "*completely agree*". The dimensionality test of the FoMO scale involves an exploratory factor analysis (EFA). To test the dimensionality of this scale, we conducted a principal component analysis on the 10 items of the scale ( $KMO=0.877$ , approximate chi-square=1518.755, meaningful Bartlett sphericity test,  $p=0.00$ ). The EFA shows two axes, the first monopolizes 34,370% of the variance and the second resituates 32,468%, which is in contradiction with the initial structure considered by literature. The solution consists in purifying the scale by the elimination of the items (FoMO 6, FoMO 7, FoMO 8 and FoMO 9) correlated with the axis 2. We finally arrive at an optimal structure after EFA with rotation Varimax that saturates at 72.135% of the total variance. Six items are retained after deletion of items whose representation quality is less than 0.5 which are: FoMO 1; FoMO 2; FoMO 3; FoMO 4; FoMO 5; FoMO 9. The six selected items will then undergo a reliability test on SPSS by means of the " *$\alpha$  item deleted*" command which will at the same time make it possible to calculate a reliability index that is the  $\alpha$  of Cronbach and the means of the improve if necessary. The obtained is  $0.888>0.7$  which means that the scale of FoMO is reliable.

The test of the convergent validity of the scale passes by a confirmatory factor analysis on the AMOS software version 18. The fit indexes are all in the norms evoked by (Hair et al., 2006).

$\chi^2 / dl=3.1$  (Satorra and Bentler, 1994)  $p=0.005 <0.05$ ;  $GFI=0.977>0.9$ ;  $AGFI=0.920>0.9$ ;  $CFI=0.991>0.9$  (Bentler, 1990);  $NFI=0.981>0.9$  (Bentler & Bonnet, 1980);  $RMSEA=0.092<0.8$  (Steiger & Lind, 1980). However, the six items introduced generate a  $\rho$  of convergent validity slightly higher than the generally recommended threshold of  $0.573>0.5$  and a  $\rho$  of Jöreskog  $0.886>0.8$ .

### **The problematic use of smartphone: dimensionality, reliability and convergent validity**

We used the scale measurement (Bianchi & Philips, 2005) measured in 7 points ranging from "*never*" to "*always*". To test the dimensionality of the problematic use of the Smartphone we conducted an exploratory factor analysis (EFA). The 27 items on the scale ( $KMO=0.777$ , approximate chi-square=1014.567 significant Bartlett sphericity test,  $p=0.00$ ). The process of

purifying the UPS scale (problematic use of the mobile phone), a first PCA, gives us an initial structure in six factors explaining 57% of the variance. The first factor alone explains 34% of the variance; the 5 additional axes show weak additional information. According to Kaiser's criterion the first factor explains 34% of the variance; the second axis explains only 5.7%. The purification process led us to a final solution: the scale is unidimensional in seven items explaining 55.537% of the variance. (PUS 3, PUS 9, PUS12, PUS 18, PUS 20, PUS 21, PUS 24). The seven selected items will then undergo a reliability test on SPSS by means of the command "*alpha item deleted*" which will at the same time calculate a reliability index that is the  $\alpha$  of Cronbach and ways to improve it if need is. The obtained  $\alpha$  is  $0.865 > 0.8$  which means that the scale of the problematic use of the smartphone is reliable. The test of the convergent validity of the scale passes by a confirmatory factor analysis on the AMOS software version 18. The indexes of fit are all in the norms evoked by (Hair et al., 2006).

$\chi^2 / df = 2.967$  (Satorra & Bentler, 1994),  $p = 0.001 < 0.05$ ; GFI =  $0.963 > 0.9$ ; AGFI =  $0.922 > 0.9$ ; CFI =  $0.967 > 0.9$  (Bentler, 1990); NFI =  $0.95 > 0.9$  (Bonnet & Bentler, 1980); RMSEA =  $0.082 < 0.8$  (Steiger & Lind, 1980). However, the seven items introduced generate a  $\rho$  of convergent validity that is slightly lower than the generally recommended threshold of  $0.476 < 0.5$  and a  $\rho$  of Jöreskog  $0.884 > 0.8$ .

### Determination of the Discriminant Validity of the Conceptual Model

After making sure of the convergent validity of the tested latent variables of the model, we proceed to the discriminant validity test. This consists in putting into practice the discrimination of the latent variables of the structural model. To ensure this validity, it is recommended to verify that the variance that each latent variable shares with its observable variables is greater than the squared correlation of the latent variables of the structural model (Fornell & Larcker, 1981).

### Estimation of the Structural Model

The constitutive variables of this model that are the problematic use of the smartphone and the FoMO as well as the variable to explain namely Facebook addiction will be estimated simultaneously. The indexes of fit are all in the norms evoked by (Hair et al., 2006).

The indexes of fit obtained are:

$\chi^2 = 225,969$ ;  $df = 121$ ;  $\chi^2 / df = 1.868$ ,  $p = 0.000 < 0.05$ ; GFI =  $0.907 > 0.9$ ; AFM =  $0.869$ ; CFI =  $0.958 > 0.9$ ; NFI =  $0.914 > 0.9$ ; RMSEA =  $0.059 < 0.8$ ;  $R^2 = 0.47$

<b>Relations</b>	<b><math>\beta</math></b>	<b>t</b>	<b>p</b>	<b>The relation's signifiacnce</b>	<b>The relation's sign</b>
Problematic use of Smartphone → Facebook addiction	0.829	7.616	0.00	OK	positive
FoMO → Facebook addiction	0.242	3.654	0.000	OK	positive
Problematic use of Smartphone → FoMO	0.530	5.834	0.00	OK	positive

## DISCUSSION

After the popularization of smartphones and the massive use of social networks especially Facebook, several researchers were interested in the relation between these two variables. The quick increase in online communication and the development of social media have generated into new opportunities and new challenges at the same time (Park et al., 2013). The increase in the use of smartphones by individuals, especially young people, the introduction of mobile phones in societies and in everyone's life are increasing. This is followed by the rapid growth in the use of online social networking (SNS) services. As of the first quarter of 2019, Facebook had 2.38 billion monthly active users (Statista.com). Overuse of this technology can be addictive. The Salehan & Negahban (2013) study concludes that the use of SNS mobile apps is an important predictor of mobile dependency. The result also shows that the use of SNS mobile applications is affected by both the size of the network and the intensity of the social network site

This confirms the hypothesis H1 and the empirical results of our research, so the problematic use of smartphones is an antecedent of Facebook addiction

The problematic use of the smartphone is a major challenge for public health and it is usually related to a poor mental state of the subject. A research has been done on this topic and researchers do not know much about the mechanisms that maintain this behaviour. The study is made on a sample of 308 participants on the Amazon site. Participants responded to problematic use of smartphones, and the frequency of use of smartphones, depression and anxiety and possible mechanisms, including the need to touch the smartphone, the fear of missing something (FoMO), and the regulation of emotions.

The problematic use of smartphones has been most correlated with anxiety, the need to touch the smartphone and FoMO (Elhai et al., 2016). The purpose of the Chotpitayasunondh & Douglas (2016) study is to examine some of the psychological antecedents and consequences of phubbing behaviour (the act of ignoring physically present persons by consulting their phone rather than communicating with them). The authors examined the roles that contribute to Internet addiction, FoMO, self-control, and addiction to smartphones. The results of this study revealed that Internet addiction, FoMO, and self-control cause addiction to smartphones.

The Fear of Missing Out has a huge impact on the use of mobile phones because teens and adults even manage to chat in SMS while driving and this because of the possibility of a link that is more important than their own lives and the lives of others (Dossey, 2014).

FoMO is an important variable related to Facebook addiction. FoMO is an old phenomenon that has reappeared because of social media (Eduards, 2016). Facebook users suffer from FoMO and believe that what is happening on Facebook is more interesting than real life (Offline). So people affected by FoMO interrupt face-to-face conversations to connect to Facebook. It makes sense in this case to assume that the desire to use this social network to not miss anything will result in greater addiction to it (Steggink, 2015). People affected by the Fear of Missing Out give a great deal of importance to the state of mind of others involved in positive social interactions and expose a greater need for the approval. This need for approval could lead to excessive use of social media that could ultimately lead to dependence on them (EILai et al., 2016). This confirms our hypothesis H3 and the results of our research which finds that FoMO or the "*Fear of Missing Out*" is an antecedent of Facebook addiction.

### CONCLUSION

The results of this study showed that the problematic use of the smartphone and FoMO are Facebook’s antecedents. The problematic use of the Smartphone is also related to the Fear of Missing Out. Companies are increasingly focusing on digital and viral marketing and Web 2.0 as they increasingly notice the importance of social networks and especially Facebook as a tool for communication and interaction with consumers.

Social marketing should be adopted by the state and civil society to educate Facebook users about the dangers of overuse of Facebook. Future research must show the drawbacks of dependency on this site. Moreover, Lavack (2007) states that the development of a social marketing campaign is done through partnerships that can be created with addiction agencies, non-governmental organizations, ministries, medical organizations, the media or corporate sponsors so that we can to raise awareness about the dangers of addiction or the discrimination against victims of this psychological trouble.

### Appendix

Table of the discriminant validity of the variables of the model

Variables	FoMO	The problematic use of Smartphone
FoMO	1	0.214 (0,573)
The problematic use of Smartphone	0.214 (0.476)	1

Table of factorial loadings that present the variables of the model

Items by explanatory variable tested	Factor	
	1	2
<b>The Problematic use of Smartphone</b>		
PUS_3		0.767
PUS_9		0.661
PUS_12		0.613
PUS_18		0.716
PUS_20		0.810
PUS_21		0.580
PUS_24		0.622
<b>FoMO</b>		
FoMO_1	0.841	
FoMO_2	0.893	
FoMO_3	0.869	
FoMO_4	0.869	
FoMO_5	0.455	
FoMO_9	0.565	

### REFERENCES

Alutaybi, A., McAlaney, J., Arden-Close, E., Stefanidis, A., Phalp, K., & Ali, R. (2019). Fear of Missing Out (FoMO) as Really Lived: *Five Classifications and one Ecology*.  
 Alutaybi, A., McAlaney, J., Stefanidis, A., Phalp, K., & Ali, R. (2018). Designing social networks to combat fear of missing out. *In Proceedings of British HCI, 18*, 1.



- Andreassen, C.S. (2015). Online social network site addiction: A comprehensive review. *Current Addiction Reports*, 2(2), 175-184.
- Andreassen, C.S., Torsheim, T., Brunborg, G.S., & Pallesen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports*, 110(2), 501-517.
- Bentler, P.M. (1990). Comparative Fit Indexes in Structural Models. *Psychological Bulletin*, 107(2), 238-46.
- Bentler, P.M., & Bonnet, D.C. (1980). Significance Tests and Goodness of Fit in the Analysis of Covariance Structures. *Psychological Bulletin*, 88(3), 588-606.
- Bhatia, K. (2016). Disconnect and Stay Connected. *International Journal of Advanced Research and Review*, 1(9), 93-98.
- Bianchi, A., & Phillips, J.G. (2005). Psychological predictors of problem mobile phone use. *CyberPsychology & Behavior*, 8(1), 39-51.
- Biolcati, R., Mancini, G., Pupi, V., & Mugheddu, V. (2018). Facebook addiction: Onset predictors. *Journal of Clinical Medicine*, 7(6), 118.
- Błachnio, A., Przepiorka, A., & Pantic, I. (2016). Association between Facebook addiction, self-esteem and life satisfaction: A cross-sectional study. *Computers in Human Behavior*, 55, 701-705.
- Chotpitayasunondh, V., & Douglas, K.M. (2016). How “phubbing” becomes the norm: The antecedents and consequences of snubbing via Smartphone. *Computers in Human Behavior*, 63, 9-18.
- Conlin, L., Billings, A., & Auverset, L. (2016). Time-shifting vs. appointment viewing: the role of fear of missing out within TV consumption behaviors. *Comunicación y So Ciedad*, 29(4), 151-164.
- Daven, A. (2014). Going off the mobile grid. *Dynamics of Human Health*, 1(2).
- Dennison, L., Morrison, L., Conway, G., & Yardley L. (2013). Opportunities and challenges for smartphone applications in supporting health behavior change: qualitative study. *Journal of Medical Internet Research*, 15(4), 86.
- Dossey, L. (2014). FOMO, digital dementia, and our dangerous experiment. *Explore: The Journal of Science and Healing*, 10(2), 69-73.
- Eduards, F. (2016). The Authentic Self: Attention-seeking quests through social media usage Facebook and the forty-something generation.
- Elhai, J.D., Levine, J.C., Dvorak, R.D., & Hall, B.J. (2016). Fear of missing out, need for touch, anxiety and depression are related to problematic smartphone use. *Computers in Human Behavior*, 63, 509-516.
- Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 39-50.
- Germaine-Bewley, J.N. (2016). Fear of Missing Out in Relationship to Emotional Stability and Social Media Use. *Scholarly & Creative Works Conference*.
- Goodman, A. (1990). Addiction: definition and implications. *British journal of addiction*, 85(11), 1403-1408.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., & Tatham, R.L. (2006). Multivariate data analysis. Upper Saddle River, É.-U: *Pearson Prentice Hall*.
- Haug, S., Castro, R.P., Kwon, M., Filler, A., Kowatsch, T., & Schaub, M.P. (2015). Smartphone use and smartphone addiction among young people in Switzerland. *Journal of Behavioral Addictions*, 4(4), 299-307.
- Kuss, D.J., & Griffiths, M.D. (2011). Online social networking and addiction-A review of the psychological literature. *International Journal of Environmental Research and Public Health*, 8(9), 3528-3552.
- Lightstone, A. (2010). The Scourge of Social Media: Why Ontario Schools Should Ban Access to Facebook and Other Social Media Sites.
- Martin-Juchat, F. (2014). La dynamique de marchandisation de la communication affective. *Revue française des Sciences de l'information et de la communication*, (5).
- Nasr, H.D., & Ben Rached, K.S. (2016). Les antécédents psychologiques de l'addiction au réseau social Facebook: Une étude qualitative. *ATM: Association Tunisienne du Marketing*.
- Norman, P., Elavarasan, K., & Dhandapani, T. (2017). Facebook addiction and depression in adults [19 years-64 years]. *International Journal of Community Medicine and Public Health*, 4(8), 2999-3004.
- Park, C.S. (2019). Examination of smartphone dependence: Functionally and existentially dependent behavior on the smartphone. *Computers in Human Behavior*, 93, 123-128.
- Park, K.G., Han, S., & Kaid, L.L. (2013). Does social networking service usage mediate the association between smartphone usage and social capital?. *New Media & Society*, 15(7), 1077-1093.
- Penrod, J., Preston, D.B., Cain, R.E., & Starks, M.T. (2003). A discussion of chain referral as a method of sampling hard-to-reach populations. *Journal of Transcultural Nursing*, 14(2), 100-107.
- Przybylski, A.K., Murayama, K., DeHaan, C.R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, 29, 1841-1848.

- Reer, F., Tang, W.Y., & Quandt, T. (2019). Psychosocial well-being and social media engagement: The mediating roles of social comparison orientation and fear of missing out. *New Media & Society*, 1-20.
- Riordan, B.C., Flett, J.A., Hunter, J.A., Scarf, D., & Conner, T.S. (2018). Fear of missing out (FoMO): The relationship between FoMO, alcohol use, and alcohol-related consequences in college students. *Journal of Psychiatry and Brain Functions*, 2(1), 9.
- Salehan, M., & Negahban, A. (2013). Social networking on smartphones: When mobile phones become addictive. *Computers in Human Behavior*, 29(6), 2632-2639.
- Samaha, M., & Hawi, N.S. (2016). Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. *Computers in Human Behavior*, 57, 321-325.
- Satorra, A., & Bentler, P.M. (1994). Corrections to test statistics and standard errors in covariance structure analysis.
- Sha, P., Sariyska, R., Riedl, R., Lachmann, B., & Montag, C. (2019). Linking Internet Communication and Smartphone Use Disorder by taking a closer look at the Facebook and WhatsApp applications. *Addictive Behaviors Reports*, 9, 100148.
- Smith, A. (2012). The Best (and Worst) of Mobile Connectivity. *Pew Internet*.
- Steggink, B.W. (2015). Facebook addiction: Where does it come from? A study based on the Bergen Facebook Addiction Scale. University of Twente, *Department of Communication Science*.
- Steiger, J.H., & Lind, J.C. (1980). Statically based tests for the number of common factors. *Presented at the annual meeting of the Psychometric Society*, Iowa, USA
- Tateno, M., Kim, D.J., Teo, A.R., Skokauskas, N., Guerrero, A.P., & Kato, T.A. (2019). Smartphone Addiction in Japanese College Students: Usefulness of the Japanese Version of the Smartphone Addiction Scale as a Screening Tool for a New Form of Internet Addiction. *Psychiatry Investigation*, 16(2), 115.
- Valleur, M., & Matysiak, J.C. (2004). Les nouvelles formes d'addiction. Flammarion, Paris.
- Vishwanath, A. (2015). Habitual Facebook use and its impact on getting deceived on social media. *Journal of Computer-Mediated Communication*, 20(1), 83-98
- Wallace, P. (2014). Internet addiction disorder and youth. *EMBO Reports*, 15(1), 12-16.