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## Relationship between Impulsivity, Social Media Usage and Loneliness

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### Abstract

The purpose of this study is to examine the relationships between impulsivity, social media usage, and loneliness and to test the structural hypothetical model developed based on the literature. The study was conducted on 307 (164 female, 143 male) university students. Data collection instruments of the study were the Barratt Impulsivity Scale Short Form (BIS-11-SF), Social Media Usage Scale (SMUS), and UCLA Loneliness Scale Short Form (ULS-8). The measurement models of the latent variables were tested initially and it was observed that the scales of the latent variables were efficient enough to be included in the structural equation model. In addition, the suggested hypothetical model was tested. According to the analysis, it was observed that impulsivity directly, positively and significantly predicts social media usage, that social media usage directly, positively and significantly predicts loneliness, and that impulsivity indirectly, positively and significantly predicts loneliness.

**Keywords:** impulsivity, social media usage, loneliness, Facebook, Twitter.



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## Introduction

Impulsivity is linked to various features such as impatience, carelessness, taking risks, seeking excitement, lack of deep thinking, being aware of undesired events less than expected, being unable to use current information in analyzing behavioral outcomes, abandoning big rewards for temporary desires, and being unable to display strong motor skills (Chamberlain & Sahakian, 2007; Ho, Mobini, Chiang, Bradshaw, & Szabadi, 1999; Hollander & Evers, 2001). In studies, impulsivity is regarded as a risk factor for obesity, sex addiction, alcohol and drug addiction, internet addiction, pathologic game playing, and risky behaviors (Beard & Wolf, 2001; Cyders & Smith, 2008; Petrie & Gunn, 1998; Spinella, 2007).

Impulsivity is also a crucial risk factor for insensible and excessive use of social media (Wu, Cheung, Ku, & Hung, 2013). Individuals who display impulsive behaviors are observed to fail to spend their time effectively, fail to plan and to act before thinking (Patton, Stanford, & Barratt, 1995). When the characteristics of individual's who excessively use social media are considered, it is evident that they carry impulsive features such as failing to spend time effectively, failing to plan, and developing an addiction for social media (Kuss & Griffiths, 2011). Impulsivity can be regarded as an important factor in the excessive use of social media. Excessive usage of social media is an effective factor on internet addiction (Whang, Lee, & Chang, 2003), social media addiction (Kuss & Griffiths, 2011), and online game addiction (Zhou, 2010). In other words, excessive social media usage can be a crucial factor in the emergence of technology addiction.

Social media tools such as Facebook, Twitter, Instagram, and WhatsApp offer their millions of users the chance to communicate, get in touch, access information, research and chat. However, it is known that various pathologies occur due to the insensible, in other words excessive, use of these social media tools (Kuss & Griffiths, 2011). Studies have emphasized that individuals who spend their time online are lonelier in their real life (Shaw & Gant, 2002; Turkmen, 2016; Weiser, 2001). LaRose, Eastin, and Gregg (2001) define virtual environment as being alone in the crowd. Chou and Hsiao (2000) state that being online decreases the time spent on social relationships and face-to-face relationships, causes social isolation and increases loneliness in these individuals. According to a study conducted by Demir and Kutlu (2015), loneliness makes the individual unhappy.

Impulsivity, which becomes evident through symptoms such as lack of self-control, acting without planning, seeking excitement, failing to think of behavioral outcomes, and carelessness, is a crucial risk factor for problems categorized as impulsive control deficiency (Cyders & Smith, 2008; Colak, Altinkurt, & Yilmaz, 2014; Spinella, 2007). Excessive use of social media is affected primarily by impulsivity. Individuals, who have difficulty in self-control and planning, are assumed to have tendencies towards excessive use of social media (Wu et al., 2013). Overusing social media causes the individual to be lonely by taking him or her apart from social settings (Chou & Hsiao, 2000).

The purpose of this study is to test the structural hypothetical model, which was developed based on the literature to examine the relationships between impulsivity, social media usage and loneliness, as shown in Figure 1.



**Figure 1.** Suggested Hypothetical Model

The hypotheses, determined based on this purpose, are given below:

- Impulsivity directly, positively and statistically significantly affects social media usage.
- Social media usage directly, positively and statistically significantly affects loneliness.
- Impulsivity indirectly, positively and statistically significantly affects loneliness.

This study, which examines the relationships between impulsivity, social media usage and loneliness, is believed to contribute to data accumulation for the literature, to the precautions against addictions resulting from social media usage (internet, game and social media etc.), and to the intervention studies on these subjects.

## Methodology

This study is a descriptive study examining the relationships between impulsivity, social media usage and loneliness. The hypothetical model displayed as Figure 1 was tested in the study. This study was conducted on 307 university students, 164 female (53.4%), 143 male (46.6%), with ages in the range of 18-27 and who were studying in Firat University, Faculty of Education during the 2014-2015 academic year. The data collection instruments used in the study were;

*Barratt Impulsivity Scale Short Form (BIS-11-SF)*. Developed by Spinella (2007) and adapted into Turkish by Tamam, Gulec, and Karatas (2013), the scale consists of three sub-dimensions (planning, motor impulsivity and attention impulsivity) and 15 items. BIS-11-SF has a 4-point (1=rarely/never to 4=almost always/always) Likert-type grading. According to Explanatory Factor Analysis (EFA), the internal consistency reliability coefficient for the whole BIS-11-SF scale was .82 with values ranging between .64 and .80. Five items in the scale were scored reversely. The scores that can be obtained from the scale range from 15 to 60. High scores obtained from the sub-dimensions and from the whole scale indicate a high level of impulsivity (Tamam et al., 2013).

*Social Media Usage Scale (SMUS)*. Developed by Jenkins-Guarnieri, Wright, and Johnson (2013) and adapted into Turkish by Akin, Ozbay, and Baykut (2015), the scale consists of two sub-dimensions and 10 items. Whether or not the original two-dimensional structure of the scale would be confirmed in the Turkish culture was examined by Akin et al. (2015) through Confirmatory Factor Analysis. The CFA indicated that the SMUS had a good fit to the Turkish culture ( $\chi^2= 74.92$ ,  $sd= 31$ ,  $\chi^2/sd= 2.42$ ,  $RMSEA= .076$ ,  $NFI= .93$ ,  $NNFI= .94$ ,  $CFI= .96$ ,  $IFI= .96$ ,  $GFI= .94$ ,  $SRMR= .049$ ). The Cronbach alpha internal consistency reliability coefficients were .87 for the social integration and emotional connection sub-scales, .71 for social routine integration, and .87 for the whole scale. One item of the scale was scored reversely. High scores obtained from the scale's sub-dimensions and from the whole scale indicate a high level of social media usage (Akin et al., 2015).

*UCLA Loneliness Scale Short Form (ULS-8)*. Developed by Hays and DiMatteo (1987) and adapted into Turkish by Yildiz and Duy (2014), the scale consists of seven items and one dimension. Whether or not the original one-dimensional structure of the scale would be confirmed in the Turkish culture was examined by Yildiz and Duy (2014) through Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). As a result of the EFA, scale items were observed to be placed under a single dimension. The one-dimensional structure was examined through CFA. The CFA indicated that the ULS-8 had a good fit to the Turkish culture ( $\chi^2= 27.12$ ,  $sd= 14$ ,  $\chi^2/df= 1.94$ ,  $RMSEA= .06$ ,  $RMR= .03$ ,  $SRMR= .04$ ,  $GFI= .97$ ,  $AGFI= .95$ ,  $CFI= .98$ ,  $NFI= .96$ ,  $NNFI= .97$ ). The internal consistency coefficient of the scale was .74 and the test-retest reliability coefficient was .84. One item of the scale was scored reversely. The scores that can be obtained from the scale range from 7 to 28. High scores obtained from the scale indicate a high level of loneliness (Yildiz & Duy, 2014).

The forms were conducted on voluntary participants in the classrooms in which they took their lessons. The implementation took 25-30 minutes. The data collected from the implementation were examined one-by-one and nine forms which were incorrectly completed and invalid were removed from the study. Thus, the analyses were carried out on 307 forms. The data were analyzed with AMOS 20 and SPSS 20 statistical software. The assumptions required for the analyses were tested before carrying out the analyses.

At this point, the normality and multi-connection problem conditions were examined. Absolute values between -3 and +3 based on the z scores were taken as the basis, and it was observed that there were no data with values beyond this range. Based on this finding, it can be asserted that there were no extreme values in the dataset and that the data were distributed in a normal pattern. It is evident from Table 2 that there are no correlation values at and above  $r > .90$  in the correlations between the latent variables. This finding suggests that there are no multi-connection problems among the latent variables (Cokluk, Sekercioglu, & Buyukozturk, 2012). The measuring model and the structural model tests were conducted with a co-variance matrix through the maximum likelihood method. Whether or not the measuring models and the structural model will be confirmed was examined through  $\chi^2/sd$ , RMSEA, GFI, CFI, IFI, and TLI (NNFI) fit indices. Commonly accepted fit indices and acceptable limits regarding the structural equation model are given in Table 1.

**Table 1.** Goodness of Fit Indices and Acceptable Limits

Indices	Acceptable Limits
$\chi^2/sd$	$\leq 5$ acceptable fit, $\leq 3$ perfect fit (Kline, 2005; Sumer, 2000)
RMSEA	$\leq .10$ weak fit, $\leq .08$ good fit, $\leq .05$ perfect fit ( Sumer, 2000; Tabachnick & Fidell, 2001)
GFI	$\geq .90$ good fit (Sumer, 2000)
CFI	$\geq .90$ acceptable fit, $\geq .95$ good fit (Hu & Bentler, 1999; Sumer, 2000)
IFI	$\geq .90$ acceptable fit, $\geq .95$ good fit (Hu & Bentler, 1999)
TLI (NNFI)	$\geq .90$ acceptable fit, $\geq .95$ good fit (Hu & Bentler, 1999; Tabachnick & Fidell, 2001)

## Findings

Correlation values between the latent variables in the hypothetical model are given in Table 2. According to Table 2, there is a significant positive relationships between impulsivity and social media usage ( $r= .50$ ), between impulsivity and loneliness ( $r= .36$ ), and between social media usage and loneliness ( $r= .37$ ).

**Table 2.** Correlations between the Latent Variables

	Impulsivity	Social Media Usage	Loneliness
Impulsivity	1	.50**	.36**
Social Media Usage		1	.37**
Loneliness			1

\*\* $p < .01$

Before testing the suggested hypothetical model, measuring models of each scale was subject to Confirmatory Factor Analysis in order to determine whether or not the scales for latent variables were efficient enough to be included in the structural model. Measuring model of the impulsivity variable was tested with first level, measuring models of social media usage, and loneliness variables were tested with second level confirmatory factor analysis.

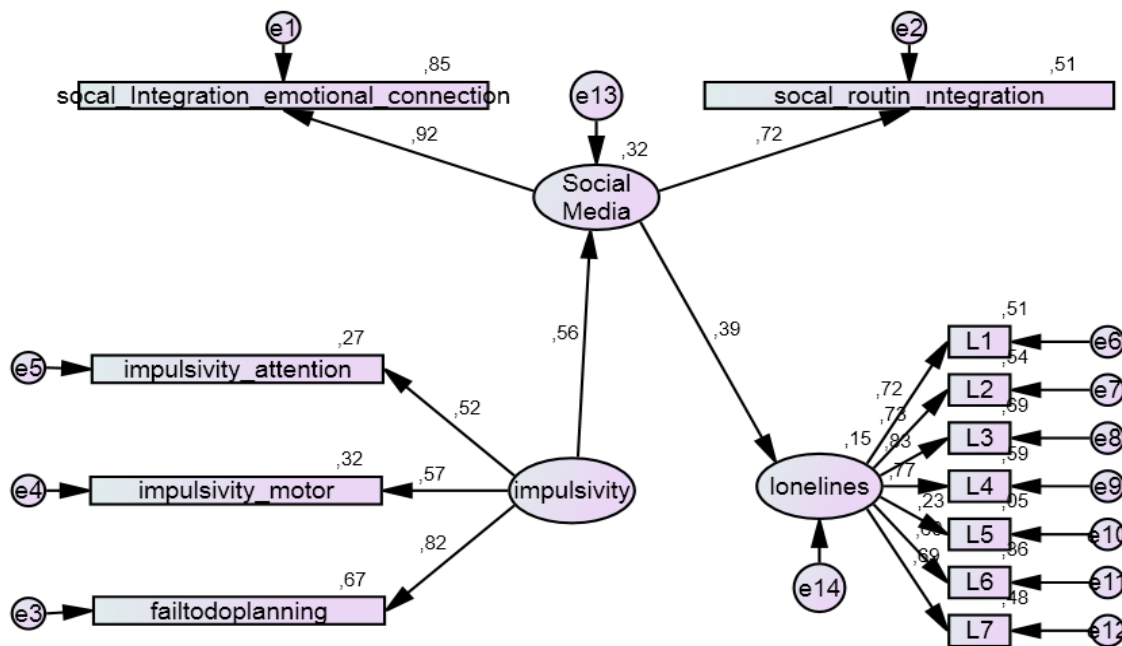
The Barratt Impulsivity Scale Short Form (BIS-11-SF) measuring model was examined with second level confirmatory factor analysis. The  $t$  values of the scale items and sub-dimensions were statistically significant at .001 level. The CFA indicated that the Barratt Impulsivity Scale Short Form measuring model had a good fit ( $\chi^2= 146,285$ ,  $sd= 85$ ,  $\chi^2/sd= 1.721$ ,  $RMSEA= .049$ ;  $GFI= .94$ ,  $CFI= .94$ ,  $IFI= .94$ ,  $TLI (NNFI)= .92$ ). These findings indicate that the Barratt Impulsivity Scale Short Form, consisting of 15 items and three dimensions, has a good fit with the study data and the scale can be included in the structural model.

The Social Media Usage Scale measuring model, the other latent variable of the hypothetical model, was examined through first level confirmatory factor analysis. All results of the Social Media Usage model were at .001 level and statistically significant. The indices resulting from the CFA indicated that the Social Media Usage Scale measuring model had a good fit ( $\chi^2= 115,339$ ,  $sd= 33$ ,  $\chi^2/sd= 3.495$ ,  $RMSEA= .090$ ;  $GFI= .93$ ,  $CFI= .95$ ,  $IFI= .96$ ,  $TLI (NNFI)= .94$ ). These findings resulting from the CFA indicate that the Social Media Usage Scale, consisting of 10 items and two dimensions, has a good fit and that the scale can be included in the structural model.

The UCLA Loneliness Scale Short Form measuring model was examined through first level confirmatory factor analysis. All results of the measuring model were at .001 level and statistically significant. The indices resulting from the CFA indicate that the UCLA Loneliness Scale Short Form has a good fit ( $\chi^2= 36,523$ ,  $sd= 13$ ,  $\chi^2/sd= 2.809$ ,  $RMSEA= .077$ ;  $GFI= .97$ ,  $CFI= .97$ ,  $IFI= .97$ ,  $TLI (NNFI)= .95$ ). These findings indicate that the UCLA Loneliness Scale Short Form, consisting of seven items and one dimension, has a good fit and the scale can be included in the structural model.

The hypothetical model, developed with a theoretical background and which examines the relationships between impulsivity, social media usage, and loneliness, was tested through co-variance matrix and maximum likelihood methods. Analysis results show that all

results of the measuring model were at .001 level and statistically significant. The fit index values regarding the tested hypothetical model ( $\chi^2 = 102,811$ ,  $sd = 52$ ,  $\chi^2/sd = 1.977$ ,  $RMSEA = .057$ ;  $GFI = .95$ ,  $CFI = .96$ ,  $IFI = .96$ ,  $TLI (NNFI) = .95$ ) prove that the model has a perfect fit with the study data. These findings suggest that the hypothetical model examining the relationships between impulsivity, social media usage and loneliness is confirmed. Path analysis results concerning the confirmed model are illustrated in Figure 2.



**Figure 2.** Structural Equation Model Results regarding the Hypothetical Model

Analysis results concerning the hypothetical model are given in Figure 2. The path coefficient between impulsivity and social media usage is .56, and the path coefficient between social media usage and loneliness is .39. It is evident from Figure 2 that impulsivity explains .32 of social media usage variance, and that social media usage explains .15 of loneliness variance.

When the direct effects between latent variables are considered, the .56 standardized path coefficient between impulsivity and social media usage indicates that impulsivity positively predicts social media usage. Thus, it is obvious that social media usage frequency increases as impulsivity level increases. The .56 standardized path coefficient between the two latent variables indicates a high-level effect. When the .39 standardized path coefficient between social media usage and loneliness is considered, it is evident that social media usage positively predicts social media usage. In other words, the level of loneliness increases when social media usage level increases. The .39 standardized path coefficient between the two latent variables indicates a moderate-level effect.

When indirect effects between latent variables are considered, it was observed that the standardized path coefficient of the significant .001 level effect between impulsivity and loneliness was .22. This finding suggests that impulsivity positively predicts loneliness. In other words increases in impulsivity lead to loneliness. The .22 standardized path coefficient

between the two latent variables indicates a low-level effect. When the direct and indirect effects are considered together, it can be observed that the study hypotheses are confirmed.

### **Conclusion and Discussion**

The hypothetical model, developed based on the literature (Figure 1) in order to examine the relationships between impulsivity, social media usage, and loneliness, was confirmed with the study data. Each of the three hypotheses were confirmed. According to the initial confirmed hypothesis of the study, impulsivity directly, positively, and statistically significantly affects social media usage. This finding suggests that loneliness increases as social media usage increases. Impulsive control deficiency was observed to be the main source of the problems related to social media usage (internet addiction, social media addiction, online game addiction). In other words, individuals with impulsive symptoms tend to use social media excessively. Self-control is a crucial factor in social media environments. It is emphasized that impulsive individuals, who have difficulty in achieving self-control, are more disadvantaged in using social media effectively (Wu et al., 2013). Studies have put forward that social media addiction and addictions related to social media usage are linked to impulsivity (Cao, Su, Liu, & Gao, 2007; Vitaro, Arseneault, & Tremblay, 1999).

According to the second confirmed hypothesis of the study, and at the same time the second result, social media usage directly, positively, and statistically significantly affects loneliness. This finding suggests that loneliness increases as social media usage increases. There are ongoing debates in the literature as to whether or not excessive social media usage causes loneliness or whether loneliness causes excessive social media usage. Young and Roger (1998) state that loneliness and social isolation directs individuals away from the actual environment (reality) to virtual environments. On the other hand, Kim, LaRose, and Peng (2009) underlined that virtual environments take individuals away from actual environments and expose them to loneliness. Similarly, Zhou (2010) states that as a result of excessive social media usage, individuals experience higher levels of loneliness. Morahan-Martin and Schumacher (2000) underline that individuals addicted to the internet experience higher levels of loneliness than non-addicted individuals. In a meta-analysis conducted by Tokunaga and Rains (2010), it was suggested that internet addiction is positively related to loneliness. In conclusion, despite the fact that social media tools offer people ways to make new friends, communicate, chat, and get/keep in touch with each other, they also cause individuals to become isolated from actual social environments.

According to the third confirmed hypothesis of the study, and at the same time the third result, impulsivity indirectly, positively, and statistically significantly affects loneliness. This finding indicates that impulsivity has an indirect effect on loneliness. In addition, social media usage increases as impulsivity increases and thus, so does loneliness. Loneliness is linked to self-control in the literature. Self-control is regarded as a crucial dimension of impulsivity (Spinella, 2007). According to Hamama, Ronen, and Feigin (2000), individuals with high levels of self-control experience lower levels of loneliness. Fujisawa, Nishitani, Ishii, and Shinohara (2010) also emphasize that impulsivity is positively related to loneliness. In other words, the feeling of loneliness increases as impulsive symptoms increase.

When the study results are considered as a whole, it can be concluded that impulsivity positively affects social media usage and social media usage positively affects loneliness. In other words, social media usage increases in parallel with impulsive symptoms and



Loneliness increases as social media usage increases. Thus, loneliness increases as impulsivity increases. The following statements can be said when the findings of the study are considered.

- It can be asserted that this study sheds light on the reasons (impulsivity) and the probably outcomes (loneliness) of excessive social media usage.
- This study will offer guidance to which psychological structure should be considered when interfering with excessive social media usage and the addictions that can result.
- This study should be re-conducted with the clinical sampling method.
- Using self-rating scales in the study can be regarded as a restriction.
- Using the convenience sampling method is another restriction of the study.

## Notes

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