Path Analytic Model of Social Media Disorder Related to Life Satisfaction and Resilience with Personality Traits as Mediating Factors[1]

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Abstract: Increased use of social media platforms that result in psychological and behavioral problems suggest an effort to increase nomological network of social media disorder with psychological constructs. The main purpose of this research was to test the effect of resilience and satisfaction with life on social media disorder and mediating role of the neuroticism, negative valence and openness to experience. The variables selected for this research are based on theoretical explanations of recent studies. Due to the lack of a scale to measure social media use disorder for university students, reliability and validy study of an existing scale available in English was performed primarily. Later, a path analytic model was constructed and tested. The model was tested with a sample of 638 students from 9 different faculties. The conclusions drawn from this study are substantial, in sum, this study generated evidence that neuroticism, negative valence, resilience and life satisfaction have direct influence on social media disorder among university students. In addition, the results indicated that neuroticism and negative valence plays a mediating role for some circumstances. These conclusions offer researchers and health professionals' better understanding of social media disorders and stresses on the importance of personality traits when developing interventions to minimize the negative effects of social media disorder.

Keywords: social media disorder, personality, resilience, life satisfaction.

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Sosyal Medya Bozukluğu ile İlgili Yaşam Doyumu ve Psikolojik Dayanıklılıkta Arabulucu Faktörler Olarak Kişilik Özelliklerinin Yol Analiz Modeli

Öz: Psikolojik ve davranışsal sorunlara yol açan sosyal medya platformlarının artan kullanımı, sosyal medya bozukluğunun diğer psikolojik yapılarla arasındaki nomolojik ağın arttırılmasına yönelik çalışmaların gerçekleştirilmesini önermektedir. Bu araştırmanın temel amacı, sağlamlık ve yaşam doyumunun sosyal medya bozukluğu üzerindeki etkisini incelemek ve nevrotiklik, olumsuz değerlilik ve deneyime açıklığın aracı rolünü belirlemektir Bu araştırma için seçilen değişkenler son çalışmaların kuramsal açıklamalarına dayanmaktadır. Üniversite öğrencileri için sosyal medya kullanım bozukluğunu ölçecek bir ölçek bulunmamasından dolayı, İngilizce dilinde mevcut bir ölçeğin güvenilirliği ve geçerlilik çalışması yapılmıştır. Daha sonra, bir yol analiz modeli oluşturularak bu model test edilmiştir. Modelin test edilmesinde kullanılan veri 9 fakültede öğrenim gören 638 öğrencinin görüşlerine başvurularak toplanmıştır. Çalışma sonucunda elde edilen bulgulara göre nevrotiklik, olumsuz değerlilik, dayanıklılık ve yaşam doyumunun üniversite öğrencileri arasında sosyal medya bozukluğunu doğrudan etkilediğine dair kanıtlar oluşturduğu görülmüştür. Ek olarak, sonuçlar, nevrotikliğin ve negatif değerliliğin bazı durumlar için aracı bir rol oynadığını göstermiştir. Bu sonuçlar araştırmacılara ve sağlık çalışanları tarafından sosyal medya bozukluklarının daha iyi anlaşılması sağlamıştır ve sosyal medya bozukluğunun olumsuz etkilerini en aza indirmek için müdahaleler geliştirirken kişilik özelliklerinin önemini dikkate almayı vurgulamaktadır

Anahtar Kelimeler: sosyal medya bozukluğu, kişilik, psikolojik dayanıklılık, yaşam doyumu.

Introduction

In the last 20 years, there has been a significant increase in the use of internet regardless of developmental stage people are in. The growth in internet technology contributes in the development of communication technology. This led to further increase in technological mediators rather than face to face communication. Most prominently, social media platforms became the leading communication platforms to connect with other people (Kuss & Griffiths, 2011)

According to the Global Digital Report released in 2018, the number of people around the world using the internet is now 4.021 billion, the number of smartphone and social media users is approximately 5.135 and 3.196 billion respectively. According to GlobalStats website, as of January 2019, percentages of people using social media platforms were as follows; 50.18% Facebook, 16.53% Pinterest, 13.4% Youtube,11.6% Twitter and 5.47% Instagram.

Moreover, there are several reasons for this abrupt escalation in social media and internet usage. A detailed possible reasons were cited in Whiting & Williams (2013). Using social media for a certain period of time can make people's life efficient to some extent. On the other hand, spending too much time on social network sites can weaken and even deteriorate familial and social bonds thus result in failure to accomplish life goals (Burrow & Rainone, 2016; Ekşi & Çiftçi, 2017). With the substantial rise in the number of social media users, the problems related to excessive use and social media addiction can arise. The number of people addicted to social media has been increasing due to the variation in the communication types (Aftab, Çelik & Sarıçam, 2015; Andreassen, 2015; Andreassen, Pallesen & Griffiths, 2017). Griffiths, Kuss, & Demetrovics (2014) emphasized on the significance of further analysis of social media addiction. Social media addiction is a growing concern that might become harmful and injurious to one's function of daily operations (Elphinston & Noller, 2011).

Despite increased growth of social media usage and negative effects on individuals, internet addiction is not included in DSM-5 as a mental disorder. The omission of this condition prevents the further discussion of negative psychological effects of internet addiction in a broader context. In addition to this, multiple tools offered by the Internet make harder to identify internet addiction as a behavioral disorder (Griffiths, Hussain, Grüsser, Thalemann, Cole, Davies & Chappell, 2013). In this respect, only internet gaming disorder (IGD) has found a place on DSM-5. Even though social media disorder is not counted in DSM-5, there is an emerging bulk of researches showing excessive use of social media as a mental disorder (Pantic, 2014; Kuss, Griffiths & Binder, 2013a; Kuss, Van Rooıj, Shorter, Griffiths and Van de Mheen,, 2013b; Kuss, Griffiths, Karila & Billieux, 2014). Nine criteria's which are used to categorize IGD have permitted for the identification and measurement of

social media disorder (Van den Eijnden, Lemmens & Valkenburg, 2016). The criteria used for IGD and adapted for SMD are briefly as follows; preoccupation, tolerance, withdrawal, continued use, avoidance, problems, deceiving, relocation, conflict.

To be precise, most of the university students who are at a critical stage of their life have a laptop that facilitates academic assignments, and a smart phone that allows them to connect to social media in any environment. Nonetheless, numerous studies found that the excessive use of internet that result in addiction have become a serious mental health problem and may have negative effect on university students i.e. (Wu, Chen, Han, Meng, Luo & Nydegger, 2013; Derbyshire, Lust, Schreiber, Odlaug, Christenson, Golden & Grant, 2013).

Personality traits are the criteria with which social media disorder is scrutinized most frequently. Many studies confirm the correlation between personality traits and problematic usage of social media. After careful examination of the findings obtained in this course, it's realized that problematic social media usage correlates with conscientiousness trait of Big Five personality theory. (Błachnio & Przepiorka, 2016; Kuss, Van Rooij, Shorter, Griffiths & Van de Mheen, 2013b), extraversion (Amichai-Hamburger and Vinitzky , 2010; Hughes, Rowe, Batey & Lee, 2012; Andreassen, Torsheim, Brunborg & Pallesen, 2012; Błachnio & Przepiorka, 2016), emotional stability (Błachnio & Przepiorka, 2016) and neuroticism (Tang, Chen, Yang & Chung, 2016; Kuss, Griffiths & Binder, 2013a). In view of that, conscious and extrovert people show less challenging behavior on social media use (Wang, Jackson, Zhang & Su, 2012). Moreover, a study found that introvert, agreeable and neurotic individuals showed more problematic behavior on social media use (Kircaburun, Alhabash, Tosuntaş & Griffiths, 2018). Even though comparatively less investigated, there is no study demonstrating negative valence -another subscale of personality- impact on social media usage. On the other hand, negative valence is known to be associated with problematic internet use (Kostic, Pedović, & Panić, 2018).

Personality traits not only determine the behaviors of individuals, but also their other psychological characteristics. Among the most vital of these is resilience (Narayanan, 2008; Lounsbury, 2004). For instance, Campbell-Sills, Cohan & Stein (2006) stated that resilience

and neuroticism were negatively correlated, and on the other hand, extroversion and conscientiousness dimensions were positively correlated. The findings were confirmed by Makaya, Oshio & Kaneko (2006) and Friborg, Barlaug, Martinussen, Rosenvinge & Hjemdal (2005). It is stated that individuals with low levels of resilience and well-being spend more time on these platforms and display signs of social media disorder (Van Rooij & Prause, 2014). A study found that there is a negative relationship between smart phone applications and resilience levels of young individuals (Lepp, Barkley & Karpinski, 2014). Another study showed that there was a negative relationship between problematic use of social media and resilience and that increasing resilience level would have a positive effect on eliminating the negative effects caused by problematic internet use (Hou, Wang, Guo, Gaskin, Rost & Wang, 2017).

Additional concept which is related with personality traits is life satisfaction. Findings from a study conducted by Hosseinkhanzadeh and Taher (2013) suggested a correlation between life satisfaction, extraversion, openness to experience and conscientiousness. Similar findings were also confirmed by other studies (Herringer, 1998; Schimmack, Oishi, Furr & Funder, 2004; Schimmack, Diener & Oishi, 2002). These findings show that personality traits are significant factors in determining life satisfaction of the individual. With growing usage of the Internet, individuals become reluctant to join social activities, which cause social bonds to weaken, therefore their well-being is adversely affected (Kraut, Mukhopadhyay, Szczypula, Kiesler & Scherlis, 1998). Individuals with damaged social bonds would also use social networking sites to compensate for real-life social bonds (Barker, 2009). According to other study the young adults spending too much time on social media platforms feel socially isolated at higher level and experience loneliness in their real lives which leads to low social skills subsequently (Caplan, 2007). This situation is the reason for increased loneliness and sadness for these individuals (Lavin, Yuen, Weinman & Kozak, 2004). Ultimately, people with fewer interpersonal networks are more inclined to use social media platforms to compensate for their introverted personality, low self-esteem and low life satisfaction level (Hong, Huang, Lin & Chiu, 2014). Various studies confirmed that individuals with low life satisfaction use social media more intensively and that excessive use of social media negatively affects life satisfaction (Kross, 2013).

There are many diverse path analytic models in the literature describing problematic Internet use (Davis, 2001; Savci & Aysan, 2017; Tokunaga & Rains, 2010; Griffiths, 2005).Studies investigating social media use are comparatively more recent e.g. (Hawi & Samaha, 2016; Wang, Wang X & Wu Y, 2018). Moreover, the path analytic studies, which investigate the psychological patterns that identify social media disorder, are relatively few and conducted in the recent years. Extensive use of social media and its confirmed negative effects on the individual lay emphasis on the importance of conducting these studies further to better understand the psychological background of this problem. In addition, examining path analytic models, helps to form nomological network of a construct with other ones. In past literature, there are no studies in which the effects of resilience and life satisfaction and problematic social media use are inspected. So, there is a possibility that if resilience and life satisfaction have influence on the problematic use of social media in a direct way, there may also be indirect effects of resilience and life satisfaction on the problematic use of social media through personality traits. Thus, we created this model with the aim of testing whether or not neuroticism, negative valence and openness to experience play a mediating role for the effect of resilience and life satisfaction on social media disorder.

Method

Participants

The sample for this study consists of Turkish university students. The data collection process was carried out at two steps: (1) scale adaptation process, (2) testing path analytic model. This study's sample groups were selected from a multi campus university located in a big city in Turkey. To increase the generalizability of the study, data was collected from various campuses and faculties. During the adaptation process of Social Media Disorder Scale (SMDS) to Turkish, A total of 209 students (137 female and 72 male) aged between 18 and 26 ($\overline{X}$ = 21.57 ± 2.61) participated to the first step to carry out confirmatory factor analysis. First sample group was selected from three different faculties (Faculty of Education, Faculty of Dentistry and Faculty of Health Sciences). In addition, as a part of test adaptation process, 37 senior English teaching department students were included in the study to estimate the

correlation between the scores obtained from Turkish and English versions of SDMS. Moreover, test-retest reliability and criterion related reliability was carried out with the data collected from 44 senior psychological counseling department students. For estimating test-retest reliability, the same students were again included in the study with three-week interval. In the second phase of study, a total of 638 (590 female 148 male) aged between 18 and 27 ($\overline{X}$ = 21.40 ± 2.81) from six different faculties (Faculty of Education, Faculty of Dentistry, Faculty of Science and Literature, Faculty of Health Sciences, Justice Vocational School of Higher Education and Faculty of Theology) to test path analytic model.

Data Collection Tools

SMDS, Brief Resilience Scale (BRS), Relationship Satisfaction Scale (RAS), Satisfaction with Life Scale (SWLS) and Basic Personality Traits Inventory (BPTI) were used. In addition, During the validation of SDMS to Turkish population, criterion validity was tested with Social Media Addiction Scale-Adult Form (SMAS-AF)

SMDS was developed by Van den Eijden, Lemmens and Valkenburg (2016). we used shoeter version in this study consisting of 9 items. The items were answered dichotomously (yes-no). The original form of the scale was developed in Danish sample with 873 adolescents and confirmed a one-dimensional structure. Cronbach alpha value was found to be 0.76. SMAS-AF, developed by Şahin and Yağcı (2017), consists of 20 five-point Likert type items. The scale had two-dimensional structure, namely virtual tolerance and virtual communication and Cronbach's alpha value was found to be 0.94. BRS was developed by Smith et al. (2008) and adapted into Turkish by Doğan (2015). It consists of 6 five-point Likert type items. It has a one dimensional structure with Cronbach's alpha value 0.83. RAS was originally developed by developed by Hendrick (1988) and was adapted into Turkish by Curun (2001). It has a one dimeensionaly structure and has a Cronbach's alpha value of 0.86 in Turkish population. SWLS was originally developed by Diener, Emmons, Larsen and Griffin (1985) and consists of 5 items. It was adapted into Turkish by Durak, Şenol-Durak and Gençöz (2010). BPTI was developed by Gençöz and Öncül (2012), constructed on trait-based personality measurement approach. The scale is consisting of 45 adjectives on 6 dimensions: Extraversion (EX), Conscientiousness (CO), Agreeableness (AG), Neuroticism

(NE), Openness (OP), and Negative Valence (NV). Internal consistency coefficients for sub-dimensions vary between .71 and .84. For the purpose of this study, OP and NE and NV sub-dimensions were used.

Data Analysis

For determining translational equivalency, the SMDS, the English and Turkish forms of the scale were distributed among senior English Teaching students with three weeks' interval. Relationship between scores calculated and paired sample t test was also used to determine whether there was a difference between arithmetic means of the scores in both forms. The CFA analysis was carried out to test construct validity of SMDS with data from 207 university students. The MPLUS 6 (Muthén & Muthén, 1998-2012) program was used during the implementation of the CFA analysis. Criterion related validity of SMDS was investigated by calculating Pearson correlation coefficient between the scores of SMDS and SMAS-AF. Test-retest reliability was explored by using Pearson correlation coefficients between scores obtained with three weeks' interval. These analyses were achieved using SPSS version 21.0 (IBM SPSS Statistics for Windows, Version 21.0, 2012). Path analysis was used to test proposed model. Fit indices of χ^2, CFI, TLI, RMSEA and SRMR were used as both were suitable to the research model.

Ethics

During the data collection process, participants were informed not to provide any personal information that would reveal their identity, except for questions involving demographics, in order to allow the participants to express sincere views on themselves.

Findings

Adaption of Social Media Disorder Scale to Turkish

After obtaining the permission for the use of the scale in this study Regina J.J.M. van den Eijnden via e-mail, the translation was carried out. The recommendations made by Hambleton (2001) considered for enabling the lingual equivalency. Consequently, forward and back-translation was achieved with assistance of five experts having at least PhD degree.

Linguistic equivalency of SMDS was further tested by computing the correlation scores between both languages of the scale. For this purpose, the Turkish form and original form were applied to 37 4th grade students in the Department of English Teaching in Marmara University. The correlation coefficient between English and Turkish forms was found to be .77 (*p<0.01*). Similarly, the mean scores between the forms were not different significantly at *p<0.05* level. Both forward and back-translation process and statistical analysis confirm lingual equivalency of SMDS.Construct validity of SDMS was investigated with 209 students participated to the study. To decide on model fit, Weighted Root Mean Square Residual (WRMR) (Categorical), Chi Square test, Root Mean Square Error of Approximation (RMSEA), confirmatory fit index (CFI) and Tucker-Lewis index (TLI) were used to evaluate model fit. As shown in Figure 1. the fit index values (χ^2/df= 1.31 RMSEA= 0.039. CFI = 0.984 TLI = 0.979. WRMR = 0.755) are at good fit level (Hair, Black, Babin & Anderson, 2010; Awang, 2012). Furthermore, the factor loadings varied between .45 and .80. The results of the model being tested are presented in Figure 1.
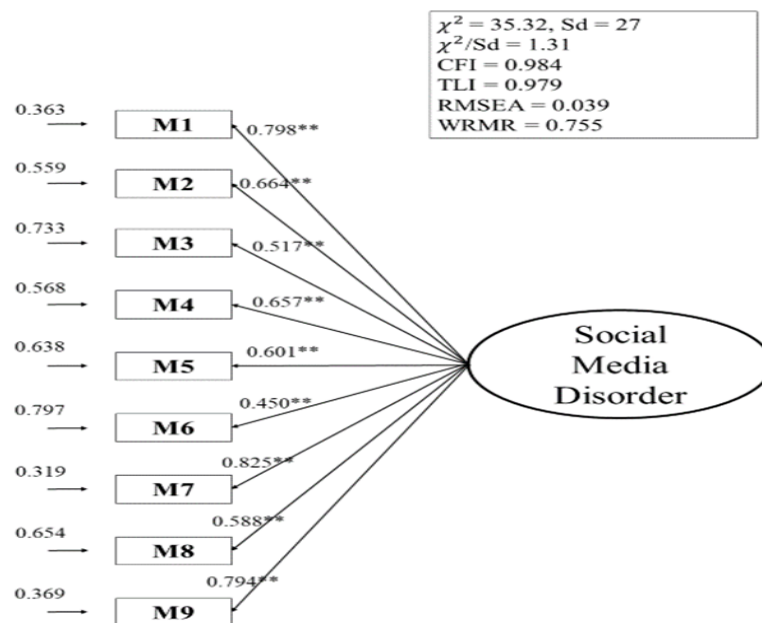

Figure 1. Social Media Disorder Scale CFA results

Criterion related valididty was tested as outlined in the method section and it was found that the scores of SMDS and SMAS-AF were highly correlated (*r=.68. p<0.01*). The test-

retest reliability of SMDS were found to be .62. (*p<0.01*). Finally, internal consistency of SMDS were determined by calculating Cronbach Alpha Coefficient and found to be .73.

Adaption of Social Media Disorder Scale to Turkish

To test the mediating role of neuroticism, negative valence and openness to experience on the effect of resilience and life satisfaction on SMD. a path analytic model was tested. To achieve this goal, the scales were applied to 638 university students.

The decision to evaluate the level of model fit cut off values set by Hair et al (2010) and Awang (2012)were taken into consideration. The results for path analysis shows that goodness of fit indices of the tested model (χ^2 (2) = 4.55. p = 0.103. RMSEA = 0.045. CFI = 0.994. TLI = 0.982. SRMR = 0.014) was found to be upright, satisfactory and acceptable.
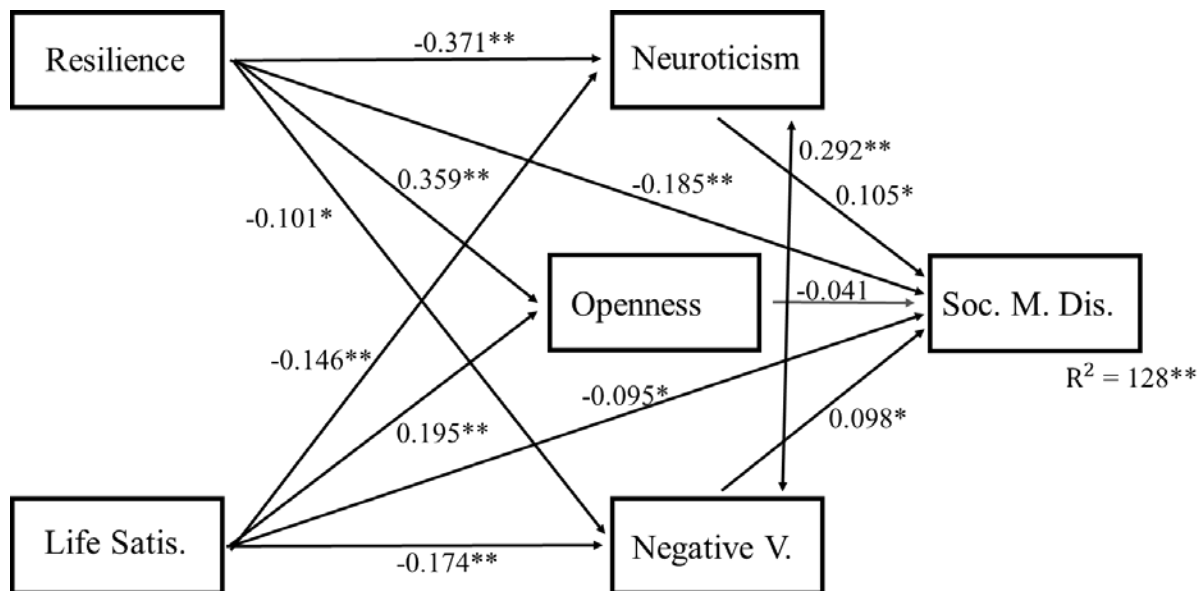

Figure 2. Path analytic model of social media disorder related to life satisfaction and resilience with personality traits as mediating factors.

As anticipated, our psychological analysts (negative valence, neuroticism, life satisfaction and resilience) had substantial direct effect on social media disorder. More specifically we found that negative valence predicted social media disorder significantly (β = .10. p<.05): higher negative valence is positively related to higher social media disorder. Correspondingly, neuroticism was found to predict social media disorder significantly (β = .11. p<.05). Openness to experience was however negatively related to social media disorder but the effect is not statistically important (β = .04. p>.05). It was the only non-significant

variable in our tested model. For non-personality variables resilience was found to be negatively related to social media disorder (β = -.18. p<.01): higher resilience level is related to lower social media disorder. Life satisfaction was also found to be negatively related to social media disorder (β = -.10. p<.05): higher level of life satisfaction lead to lower level of social media disorder. Overall the proposed psychological factors proposed in this study predicted 13% of social media disorder.

Mediating role of personality related factors on resilience and life satisfaction was tested Sobel test (Sobel, 1982). It was shown that neuroticism is significant mediator between the relationship resilience and social media disorder (*z*= -2.42. p<0.05). On the other hand, openness to experience is not important mediator between the relationship resilience and social media disorder (*z*=-0.96. p>0.05). Likewise, negative valence is found to be non-significant mediator between resilience and social media disorder (*z*=-1.74. p>0.05).

For life satisfaction variable neuroticism was discovered to have substantial mediating effect on the relationship between life satisfaction and social media disorder (*z*=2.11. p<0.05). As like neuroticism. negative valence also was found to be significant predictor between life satisfaction and social media disorder (*z*=2.11. p<0.05). Alternatively, openness to experience were not revealed to have mediating effect (*z*=-0.94. p>0.05). All in all, mediating role of personality related variables were found partly for the effect of resilience and life satisfaction on social media disorder.

Results and Discussion

The crucial purpose of this study is to scrutinize the effects of the psychological characteristics of university students on social media disorder. For this aim, SMD, which was already adapted to Turkish language and culture for high school students, was revised and readapted for university students. Conclusions have revealed that SMDS provides valid and reliable results for university students.

Subsequently, the effects of life satisfaction and resilience on personality traits were inspected and the mediating role of some personality traits on this effect was tested.

Inclusive, the discoveries have extended our knowledge about the dynamics of psychological factors that lie behind the problematic use of social media. The findings presented that neuroticism, negative valence, resilience and life satisfaction had significant direct effects on social media use. These conclusions were found to be similar to those from previous studies (etc. (Kircaburun, Alhabash, Tosuntaş & Griffiths, 2018; Hou, Wang, Guo, Gaskin, Rost & Wang, 2017; Kostic, Pedović, & Panić, , 2018; Hong, Huang, Lin & Chiu , 2014).

Alternatively, it is revealed that there was no significant direct effect of openness to experience on social media use. This conclusion does not stand firm with the evidence in the past literature (Andreassen, Torsheim, Brunborg & Pallesen, 2012; Błachnio & Przepiorka, 2016). Openness to experience is related to the individual's originality and open mindedness (Čukić & Bates, 2014). These individuals are known to use social networking sites to gain different experiences (Amichai-Hamburger and Vinitzky , 2010)and desire diverse communication platforms except for popular ones (Guadagno, Okdie & Eno, 2008). In this study, it is not recognized which social media platforms are preferred by the participants and for which purposes they prefer those networking sites. Therefore, additional studies should be conducted to understand the nature of the relationship between openness to experience and the use of social media.

Additionally, mediating effects of personality traits were found to be substantial. For example, neuroticism variable has a significant mediating effect on the relationship between resilience and social media disorder. Hence, social media disorder decreases in resilient individuals if they are less neurotic. There is a huge group of literature (i.e. (Grant, Guille & Sen, 2013; Gloria & Steinhardt, 2016) highlight the protective nature of resilience from adverse psychological effects. Also, Hou et al. (2017) states that resilience protects an individual from adverse effects of social media use. On the Contrary, it is acknowledged that neurotic people use social media platforms more to conceal their disappointments in the real life (Amichai-Hamburger and Vinitzky, 2010). So, it could be implied that neurotic individuals use social media to hinder their disappointments which perhaps interrupt the protective nature of resilience over problematic internet use.

Correspondingly, neuroticism and negative valence variables have significant mediating roles on the relationship between life satisfaction and social media disorder. More explicitly, individuals more satisfied with life become less prone to social media disorder except those who show neuroticism and negative valence. Valenzuela & Kee (2009) states that life satisfaction of an individual could benefit from social network use if used appropriately. On the other hand, if people with less life satisfaction prefer it more than internet use turns to be problematic. (Bozoglan, Demirer & Sahin, 2013). This outcome demonstrates that, the dynamic relationship between life satisfaction and problematic social network usage further affected from showing hostile behaviors and negative feelings.

This research has some limitations. For this research, the greatest concern is that it included students from one university. Even students prefer this university from nearly all part of Turkey, inclusion of different universities – especially private ones – will increase the validity of the results. Secondly, even there are six sub-dimension of personality, only three of them were included considering previous studies in the literature. Future studies should include the other dimensions of personality to get clearer picture. In addition, adaptation of SMDS was conducted with a sample of 209 students. Even technically it is big enough, future studies could replicate validation process with bigger sample.

All things considered, we believe that this study broadens the nomological network of social media disorder with other psychological constructs. This research is also unique from the previous ones in terms of the different variables included in the model. Specifically, negative valence, as a less cited personality trait included in the model. There are limited number of studies using, personality traits as mediators in cyber psychology literature. As stated in the introduction part, personality of an individual has direct effect on almost all psychological constructs. These findings and the framework of this research offer researchers and health professionals better understanding of social media disorders and importance of personality traits when developing interventions to minimize the negative effects of social media disorder. To conclude, when analyzing the factors affecting social media disorder, it was suggested that the mediating effect of personality has to be taken into account and findings excluding this effect should be interpreted in more elaborate manner.

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