

## **Investigating Direct and Indirect Effects of Social Media Addiction, Social Media Usage and Personality Traits on FOMO**

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### **Abstract**

In this study, it is aimed to investigate direct and indirect effects of Social Media Addiction (SMA), Social Media Usage (DSMU) and Personality Traits beyond BIG 5 on Fear of Missing Out (FOMO). The research was based on quantitative research methods conducted in accordance with the relational survey model and 845 prospective students studying at Sakarya University Faculty of Education were included by stratified sampling method. The path analysis was performed to examine the direct and indirect effects of the variables by AMOS and SPSS. The results show that FOMO directly and positively predicted by SMA, and DSMU had a significant and positive effect on SMA while DSMU having no effect on FOMO. Finally, the results on personality traits and FOMO indicated that agreeableness (AGR) personality trait had a positive effect on FOMO while other personality traits did not. In the study, results were discussed within the framework of the literature.

**Keywords:** FOMO, personality traits, social media addiction, social media usage, prospective teachers.

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## INTRODUCTION

Social media is defined as web 2.0 skills such as creating and sharing contents and collaborating online (Kuss and Griffiths, 2017). Accordingly, when it comes to social media usage, a wide range of social applications such as collaborative projects, blogs, content communities, social networking sites, virtual game worlds come to mind, all of which form social media (Kaplan and Haenlein, 2010). Social networking sites as some of the most well-known tools of social media are widely used especially by young people via mobile applications that can be accessed fast and easily with the development of mobile technologies (Zheng & Lee, 2016). In general, social networking sites are defined as virtual communities where users can create their individual profiles, interact with real-life friends and meet other people depending on their common interests (Kuss and Griffiths, 2011). According to the We are Social (2018) report, 42% of the world's population actively uses social media, and 39% of them use social media actively on mobile devices. While there used to be 51 million active social media users, which amount to 51% of the population in Turkey, it has been reported that there are now 54 million active social media users, which amount to 54% of the population, with smartphones having become popular. Furthermore, regarding the actively used social network applications stated in the report, the most actively used social media platform is YouTube, which is followed by Facebook, Instagram particularly for story and photo posting, Twitter and Google+, respectively.

Wide range of features provided by social networking sites to users causes them to use these tools for different purposes. Facebook and Instagram, two of the most commonly used ones, seem to be used more by adolescents and university students. As Howe and Strauss (1991) stated, the use of social networking sites in the Y and Z generation is more common and popular. Although social networking sites are used among university students for different purposes, it is seen that the use of applications such as Instagram, Facebook and WhatsApp are more common than others (Gezgin, Hamutoglu, Gemikonakli and Raman, 2017; Lambić, 2016). Among the university students, social networking sites are used rather for video and photo posting, following up the posts, communication with new acquaintances or current friends, following up family members / friends and for entertainment (Cheung et al., 2011; Lee and Long, 2012; Lenhart and Madden, 2007). Furthermore, social networks are also used frequently to make new friends, kill time, get information, chat online, exchange ideas and have fun (upload photos to the profile, play games) (Solmaz, Tekin, Herzem & Demir, 2013; Vural & Bat, 2010). It is also stated that university students often use social networks for educational-instructional purposes such as sharing the course content, communicating with instructors and friends in writing or verbally, participating in educational activities, making plans, expressing opinions in common study platforms (forums), getting motivated during homework, and having academic discussions (Barczyk and Duncan, 2013; Calvo-Armengol, Patacchini, Yves, 2008; Paul, Baker and Cochran, 2012; Kabilan, Ahmad and Abidin, 2010). The study conducted by Rosen et al. (2013) showed that the students preferred Facebook more when it came to using social media for educational purposes, and the university students were more likely to see Facebook as a tool for education. Moreover, universities and institutes are already using social networking sites such as Facebook and LinkedIn to communicate with potential people and groups to make academic exchanges (Paul, Baker, Cochran, 2012). Eren-Şişman (2014) stated that social networks are used for interpersonal interaction and course preparation, and Karal and Kokoç (2010) observed that that social networks are used for familiarization/recognition and education as well as for social interaction-communication purposes. Consequently, social network users introduce themselves to the people and institutions they are connected to through a profile they create, establish friendship relations through this profile, participate in groups and activities that they are interested in and share their experiences by discussing their thoughts with other group members. It is accordingly observed that university students use social networking sites for different purposes.

Common and intensive use of social media especially by adolescents and university students may bring about adversities such as problematic social media usage, social media addiction, and fear of missing out. Social media addiction, which is defined as the inability to control the use of social media and the disruption of other activities in an individual's life due to excessive use (Ryan, Chester,

Reece, & Xenos, 2014), is regarded as a sub-factor of Internet addiction (Young, 2009). Social media addiction can affect individual's life negatively due to consequences such as weakened interpersonal communication skills and decreased quality of communication (Nyland et al., 2007; Tokunaga, 2011), decreased self-efficacy (Valkenburg et al., 2006; Hawi and Samaha, 2017) and adversely affected well-being and mental health (Pantic, 2014). Studies in the literature show that women are more likely to be social media addicts than men (Andreassen, 2015; Griffiths, Kuss, & Demetrovics, 2014) and younger people have higher tendency to have social media addiction compared to older people (Kuss, Griffiths, Karila, & Billieux, 2014). Daily social media usage is an important variable that can be used to predict social media addiction (Yang and Tung, 2007; Al-Menayes, 2015) and social media addiction tend to be affected by experience (Al-Menayes, 2015) and daily social media usage (Al-Menayes, 2015; Kırık, Arslan, Çetinkaya, & Mehmet, 2015). In addition, it is stated that social media addiction can be caused by social drives, severe depression, anxiety and insomnia (Koc and Gulyagci, 2013), but it may also be due to fear of missing out (FOMO) the developments in these environments (Blackwell et al., 2017).

FOMO is defined as a new type of addiction which causes individuals to spend much longer time on social networks as they are afraid of missing out the developments and failing to be informed of developments on social networking sites (Buglass, Binder, Betts and Underwood, 2017; Dossey, 2014 Oberst, Wegmann, Stodt, Brand and Chamarro, 2017; Przybylski, Murayama, DeHaan and Gladwell, 2013). FOMO has also been reported to increase social media usage among young people (Alt, 2015; Przybylski et al., 2013). Moreover, Chamarro and Oberst (2016) reported that FOMO triggers problematic social networking and is associated with social media addiction. Considering that social media is mostly used via mobile devices, several studies also showed that FOMO causes problematic smartphone usage (Alt, 2015; Clayton et al., 2015; El Hai et al., 2016; Przybylski, 2013). Kuss and Griffiths (2017) stated in the light of the relevant literature that FOMO can be a strong predictor of social media addiction. There are more and more studies on FOMO in Turkey. Gökler et al. (2016) found in their study on university students that the students using social network accounts intensively and with many social media accounts had higher FOMO levels. In the said study, they stated that there was a positive relationship between FOMO levels and increased social network usage. Gezgin et al. (2017) showed in their study on preservice teachers that the preservice teachers using social media actively for longer than seven hours during the day had higher FOMO levels. The same study reported that the preservice teachers using Twitter, Instagram, Swarm and Snapchat applications also had higher FOMO levels. Another study observed that the university students with a tendency of FOMO were spending at least 7 hours on social media actively every day and had 4 different accounts on 4 different social networking sites (Hoşgör, Tütüncü, Hoşgör and Tandoğan, 2017). In the light of these findings, it is obviously important to explore the relationship between social media addiction, daily social media usage and FOMO, which would contribute to the literature. Studies in the literature indicate that the FOMO variable should be addressed in studies on social media usage and social media addiction (Blackwell, Leaman, Tramposch, Osborne, & Liss, 2017).

Besides FOMO, personality traits are some of the variables that can affect the use of social media. The five-factor personality model is one of the most widely used models (Judge et al., 1999). It is a broad model that tries to explain conditions related to personality structures (McCrae & Costa, 1987; Digman, 1990). The model, which was adapted to Turkish language and culture as "*Beş Faktörlü Kişilik Ölçeği*" ("Big Five Personality Traits Scale"), consists of five personality traits which are extraversion, agreeableness, conscientiousness and neuroticism and openness to experience (Horzum, Ayas, & Padir, 2017). Extravert individuals are friendly people who are eager to establish social relationships (Lounsbury and Gibson, 2009). Agreeable individuals are polite, trustworthy, cooperative and tolerant (Glass, Prichard, Lafortune, & Schwab, 2013). Conscientiousness means that individuals are planned, organized, responsible and have high self-control (Barrick, & Mount, 1991). Neuroticism is about whether an individual is angry, anxious, depressive, insecure or nervous and refers to being inclined to such emotions (Barrick, & Mount, 1991). Openness to experience refers to imagination, being sophisticated, curiosity, aesthetics, sensibility, intelligence and being broad-minded (Barrick, & Mount, 1991). Studies show that personality traits are important in predicting technology use, technology acceptance and use of social media (Jeong, & Kim, 2016; Xay et al., 2016; Deveraj,

Easley, & Crant, 2008; Andreassen, Torsheim, Brunborg, & Pallesen, 2012; Blackwell, Leaman, Tramosch, Osborne, & Liss, 2017). The five-factor personality model is considered a variable that is used to explain social media addiction. For instance, a positive relationship is observed between individuals' social media addiction tendencies and extraversion (Ryan, & Xenos, 2011; Wilson, Fornasier, & White, 2010). On the other hand, a negative relationship was observed between individuals' social media addictions and personality trait of conscientiousness (Wilson, Fornasier, & White, 2010). While some studies argue a positive relationship between neuroticism and social media usage frequency (Correa, Hinsley, & Zungia, 2010), other studies have observed a negative relationship between Facebook addiction and personality traits of conscientiousness and openness to experience (Andreassen et al., 2013).

This study aimed to investigate direct and indirect effects of Social Media Addiction (SMA), Social Media Usage (DSMU) and Personality Traits beyond BIG 5 on Fear of Missing Out (FOMO). It is thought that identifying the effects of social media addiction, daily social media usage, and personality traits on FOMO may have important outcomes academically, socially and educationally. It is accordingly anticipated that discussing the integration of social networking sites into courses via usage in educational-instructional processes within the framework of social media addiction and FOMO will provide beneficial suggestions.

### **Purpose of Research and Research Questions**

This study discussed "Social Media Addiction", "FOMO", "Daily Social Media Usage" and "Personality Traits" which are known to be positively interrelated in the literature and sought answers to the following questions for identifying their direct and indirect effects on FOMO with a path analysis:

1. How does Social Media Addiction affect FOMO?
2. How does Daily Social Media Usage affect Social Media Addiction?
3. How does Daily Social Media Usage affect FOMO?
4. How do personality traits of EXT, AGR, CON, NER and OE affect FOMO?

### **METHOD**

This study mainly aimed to investigate the direct and indirect effects of variables that affect FOMO. The participants of the research were included in the study group with the stratified sampling method, and the research was planned and conducted in accordance with the relational survey model of quantitative research methods. Survey studies summarize the characteristics of participant individuals, groups or physical environments (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2017) rather than the causes of opinions and characteristics regardless of the effort to change and influence the situation in question (Fraenkel & Wallen, 2006). Relational survey models aim to measure the presence and degree of the change between two or more variables (Karasar, 2008, p. 81).

#### **Participants**

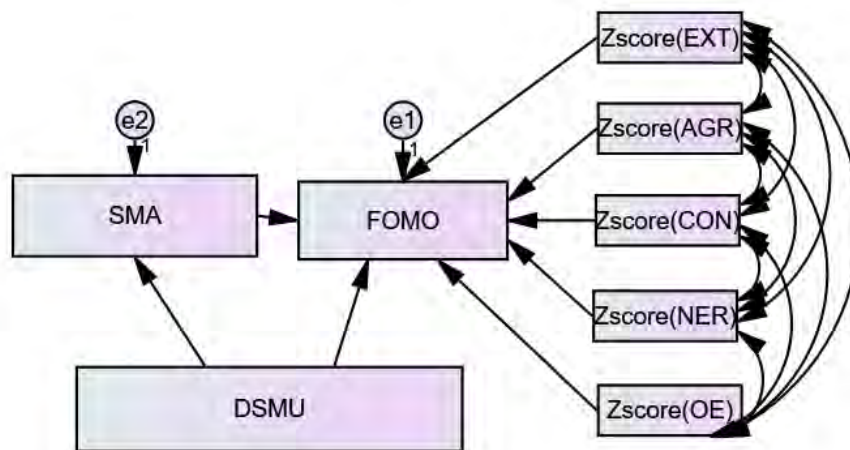
Participants were 845 prospective students being educated at Sakarya University Faculty of Education, and participants age ranged from 18 to 26 ( $M=4.54$ ;  $sd=1.64$ ). It was asked to participants that voluntarily complete the questionnaire. Stratified sampling method was used for the selection of participants from all departments and grade level. 845 students was selected based on 3% confidence interval from 3547 students (Anderson, 1990). Detailed information presented at Table 1.

**Table 1. Participants of the study selected b stratified sampling method**

Departments	Total number of students					
	1. Grade	2. Grade	3. Grade	4. Grade	Total (obtained)	Total (valid)
Computer Education & Instructional Technologies	10	18	18	22	68	64
Science Education	19	18	17	17	71	71
Mathematics Education	18	16	18	16	68	68
English Language Teaching	15	11	11	10	47	47
Preschool Education	18	25	16	16	75	139
Preschool Education (Evening Education)	19	17	15	13	64	35
Special Education	14	14	7	-	35	35
Guidance and Psychological Counselling	17	25	23	30	74	155
Guidance and Psychological Counselling (Evening Education)	20	25	22	15	82	72
Elementary Education	21	19	20	12	72	63
Social Studies Education	17	16	16	14	63	68
Turkish Language Education	16	17	19	16	68	29
Teaching for Mentally Handicapped	-	5	10	14	29	63
Teaching for Mentally Handicapped (Evening Education)	-	9	13	12	34	845
Total	204	226	225	189	850	845

### Procedure

The path analysis of structural equation models was performed to examine direct and indirect effects of the variables that are theoretically interrelated in the study. Path analysis operates only through the observed variables (Raykov & Marcoulides, 2006) and is a method which allows for examining the causation between two or more variables. Path analysis enables analyses that can be performed using multiple regression analysis techniques for causative modelling (Bordens & Abbott, 2011) to be conducted only on a chart. Effect size values were also calculated for each structural equation. Permission for conduct was obtained from the administration of Sakarya University Faculty of Education. The test model is shown in Figure 1.



**Figure 1. Model examined with Path Analysis**

### Data Analysis

The data were collected on voluntary basis, and SPSS 23 and AMOS 23 software packages were utilized in the analysis. Furthermore, the effect size was calculated using the Microsoft Excel software package in the research.

## FINDINGS

The path analysis which is a type of structural equation modeling was used to test the model developed in the study. The analysis examined the relationships between “FOMO”, “SMA”, “DSMU” and different personality traits of “EXT”, “AGR”, “CON”, “NER” and “OE” and identified direct and indirect effects between these variables. Table 1 summarizes the mean, standard deviation and correlation values, and Table 2 sums up the fit values achieved in regard to the path analysis.

**Table 2. Mean, Standard Deviation and Correlation Values of Data**

	N	Min.	Max.	Mean.	sd	Skewness	Kurtosis	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
FOMO (1)	845	12	46	29.06	5,99	,192	,239	1								
SMA (2)	845	32	80	56.84	8,33	-,185	-,037	,487**	1							
DSMU (hour)(3)	845	0	6	3.16	1,47	,015	-,561	,234**	,419**	1						
EXT (4)	845	3	9	5.96	1,03	,303	,864	,061	,069	,027	1					
									*							
AGR (5)	845	4	10	6.92	1,19	,237	,058	,121	,081	,020	,130**	1				
								**	*							
CON (6)	845	3	10	6.51	1,28	,165	,401	,044	,028	-,036	,113	,122	1			
										**	**					
NER (7)	845	2	10	6.40	1,51	-,049	-,216	,003	,044	,003	,002	,164	,048	1		
												**				
OE (8)	845	3	10	6.25	1,28	,184	,132	,065	,051	-,038	-,003	,090	,125	,113	1	
												**	**	**		

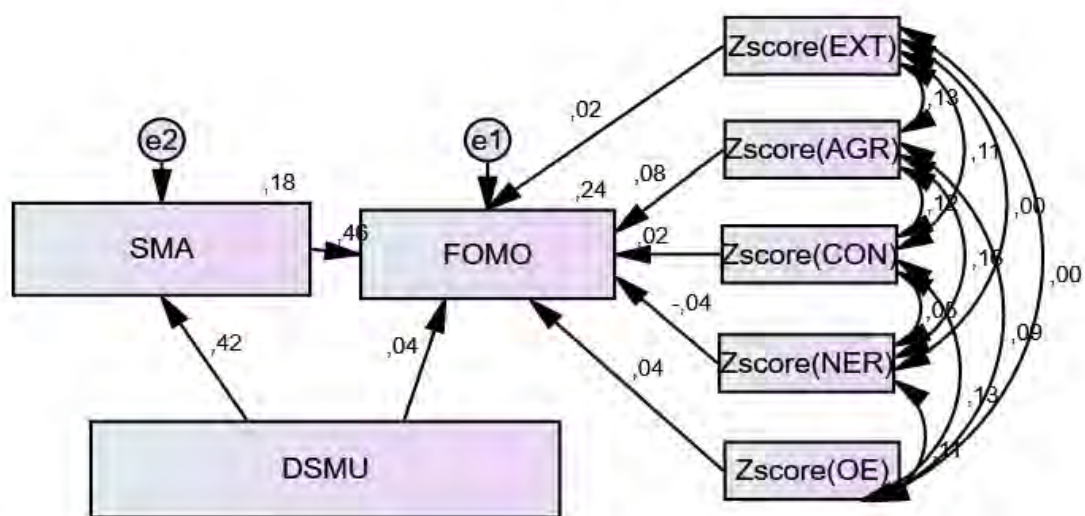
FOMO: Fear of missing out; SMA: Social media addiction; DSMU: Duration of daily social media usage; EXT: Extraversion; AGR: Agreeableness; CON: Conscientiousness; NER: Nervousness; OE: Openness to experience  
 \*p .05 \*\* p< .01

As seen in Table 2, the relationships between the variables were significant and at the expected level. These results also argue that there were important and significant effects between the variables. Tolerance (>0.2) and VIF (<10) values were examined to identify the problem of multicollinearity between the variables in the data analysis, and no problem was detected whatsoever. Furthermore, the data were normally distributed according to the skewness and kurtosis values in the table (Mertler & Vannatta, 2005). Given the relationships between the variables, it was observed that  $r_{\text{FOMO-SMA}} = 0.487$ ;  $r_{\text{FOMO-DSMU}} = 0.234$ ;  $r_{\text{SMA-DSMU}} = 0.419$ ; and  $r_{\text{AGR-FOMO}} = 0.121$ . Accordingly, it can be argued that there were moderate positive relationships between FOMO and SMA, and SMA and DSMU but low positive relationships between FOMO and DSMU, and AGR and FOMO (Davis, 1971).

**Table 3. Perfect and acceptable fit values in regard to the path analysis**

Fit indices	Perfect Fit indices	Accepted fit indices	Achieved values
( $\chi^2/df$ )	$\leq 3$	$\leq 4-5$	1.63
AGFI	$\geq 0.90$	$\geq 0.85$	0.98
GFI	$\geq 0.90$	$\geq 0.85$	0.99
CFI	$\geq 0.97$	$\geq 0.90$	0.99
RMSEA	$\leq 0.05$	0.06-0.08	0.03
SRMR	$\leq 0.05$	0.06-0.08	0.02

According to the fit values in Table 2, the model has acceptable and perfect fit values ( $\chi^2 = 16.321$ ,  $sd = 10$ ,  $\chi^2/sd = 1.63$ ;  $RMSEA = 0.03$ ;  $SRMR = 0.02$ ;  $CFI = 0.99$ ;  $GFI = 0.99$ ;  $AGFI = 0.98$ ) (Arbuckle, 2007; Baumgartner & Homburg, 1996; Bentler & Bonett, 1980; Bollen, 1990; Browne & Cudeck, 1993; Byrne, 2001; Hu and Bentler, 1999; Joreskog & Sorbom, 1993; Kline, 2011; Marsh, Hau, Artelt, Baumert & Peschar, 2006; Steiger, 2007; Schermelleh-Engel & Moosbrugger, 2003; Tanaka & Huba, 1985). The developed and tested path analysis is shown in Figure 2. The information on direct and indirect effects on the variable tested in the model is provided in Table 4.



**Figure 2. Findings Achieved in the Path Analysis**

**Table 4. Direct and indirect effects on the variables of FOMO and SMA**

Independent variables	Dependent variables	Total effect	Direct effect	Indirect effect	Standard error	Critical ratio (t)
SMA	FOMO	0.46	0.46	-	0.034	14.024***
DSMU	FOMO	0.24	0.04	0.19	0.033	1.266
DSMU	SMA	0.42	0.42	-	0.031	13.390***

EXT	FOMO	0.02	0.02	-	0.035	0.534
AGR	FOMO	0.08	0.08	-	0.032	2.624**
CON	FOMO	0.02	0.02	-	0.032	0.584
NER	FOMO	-0.04	-0.04	-	0.031	-1.169
OE	FOMO	0.04	0.04	-	0.031	1.244

FOMO: Fear of missing out; SMA: Social media addiction; DSMU: Duration of daily social media usage; EXT: Extraversion; AGR: Agreeableness; CON: Conscientiousness; NER: Nervousness; OE: Openness to experience  
 \*\*\* p < 0.001 ; \*\* p < 0.01; \* p < 0.05

In the model, the independent variable “Daily Social Media Usage- DSMU” had no significant effect on “FOMO” ( $\beta = 0.04, p > 0.05$ ) while affecting the variable “Social Media Addiction-SMA” ( $\beta = 0.42, p < 0.001$ ) directly and positively. It can also be said that the independent variable SMA had a direct and positive effect ( $\beta = 0.46, p < 0.001$ ) on FOMO. Moreover, the independent variable AGR ( $\beta = 0.08, p < 0.001$ ) had a direct, positive and significant effect on the dependent variable of FOMO whereas the independent variables of EXT ( $\beta = 0.02, p > 0.05$ ), CON ( $\beta = 0.02, p > 0.05$ ), NER ( $\beta = -0.04, p > 0.05$ ) and OE ( $\beta = 0.04, p > 0.05$ ) did not affect FOMO significantly. Accordingly, 24% ( $R^2 = 0.24$ ) of FOMO was explained by the independent variables of SMA and AGR. On the other hand, the independent variable of DSMU alone explained the dependent variable of SMA at 18% ( $R^2 = 0.18$ ).

### Effect Size

To test whether the result achieved in the research was significant and its significance in practice, the standardized ( $f^2$ ) value was calculated, which was suggested by Cohen (1988) for regression analyses and linear models.  $f^2$  value is calculated by the division of multiple correlation coefficient ( $R^2$ ) by its subtraction from 1 ( $1 - R^2$ ) ( $f^2 = R^2 / (1 - R^2)$ ). Accordingly,  $0.02 \leq f^2 < 0.15$  refers to small effect,  $0.15 \leq f^2 < 0.35$  to medium effect and  $0.35 \leq f^2$  to large effect (Cohen, 1988). The research concluded a medium effect size ( $R^2 = 0.18; f^2 = 0.22$ ). The effect sizes calculated for each variable in the equation are shown in Table 5.

**Table 5. Effect sizes**

Structural Equation	$R^2$	$f^2$
FOMO	0.24	0.31
SMA	0.18	0.22

FOMO: Fear of missing out; SMA: Social media addiction

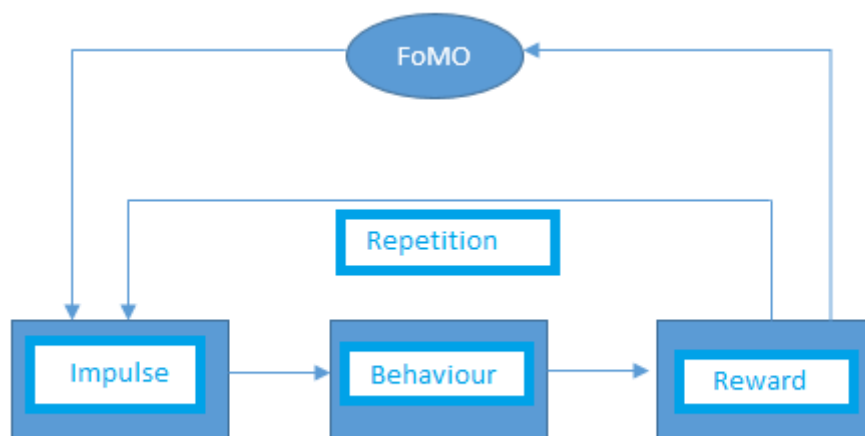
As seen in Table 5, the independent variables of SMA and AGR had a medium effect on FOMO ( $R^2 = 0.24; f^2 = 0.31$ ) and DSMU had a small effect on SMA ( $R^2 = 0.02; f^2 = 0.02$ ).

## CONCLUSION AND DISCUSSION

The findings of this study examining the relationship between social media addiction, FOMO and personality traits showed social media addiction’s effect on FOMO. The literature indicates that FOMO causes problematic and intensive social media use (Alt, 2015; Beyens, Frison and Eggermont, 2016; Przybylski et al, 2013; Al-Menayes, 2016). Nonetheless, individuals may become addicted due to the intensive social media usage caused by FOMO (Gil, Chamarro and Oberst, 2015). The idea that the addicted individual may have increased FOMO levels can be considered in the light of the results of this study because the SMA variable had a positive effect on FOMO in the study. It can be accordingly implied that increased social media addiction can make students more curious about



events and posts on social media, therefore increasing their FOMO levels. It is thought that addiction may reinforce FOMO, and then, social media offering rewarding experiences will an effect on the drive to check individuals' own profile and friends' profiles and spend time on social networks by building up the desire to be in connection with what others do (Dossey, 2014; Przybylski et al., 2013) in the mechanism of drive, behavior and reward in regard to addiction. This mechanism and the suggested mutual effects of SMA and FOMO are shown in Figure 3.



**Figure 3. Place of FOMO in the Cycle of Social Media Addiction**

Some of the studies in the literature support this finding (Blackwell, Leaman, Tramposch, Osborne, & Liss, 2017; Al-Menayes, 2016). It is, however, mentioned in the literature that high FOMO levels are associated with high Facebook engagement and may have consequences such as social media usage when using tools during courses (Przybylski, Murayama, DeHaan, & Gladwell, 2013). In addition, FOMO is considered an important variable in predicting problematic social media use (Al-Menayes, 2016).

Regarding the findings on daily social media usage, the DSMU variable had a significant and positive effect on SMA. This is a finding frequently mentioned in the literature (Yang and Tung, 2007; Al-Menayes, 2015; Kırık, Arslan, Çetinkaya, & Mehmet, 2015) and expected by researchers and experts of the field. Furthermore, the analyses made in regard to the relationship between FOMO and DSMU indicated that DSMU was effective on SMA while having no effect on FOMO. Even though there are studies showing that the students with high levels of FOMO had higher DSMU (Alt, 2015; Gezgin et al., 2017; Gökler et al., 2017; Przybylski et al., 2013), the analysis performed on the data obtained in the research concluded no effect of DSMU on FOMO levels.

The findings achieved in the analysis for identifying the relationship between personality traits and FOMO indicated that AGR had a positive effect on FOMO while other personality traits (EXT, CON, NER, OE) did not. On the other hand, Stead & Bibby (2017) reported a negative relationship between FOMO and CON and a positive relationship between FOMO and CON. Hadlington & Scase (2018) stated in their study on individuals at the age of 18-65 that there was a negative relationship between FOMO and CON, and on contrary to the findings of this research, a negative relationship between FOMO and AGR.

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## **Declaration**

### **Availability of data and material**

Not applicable.

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### **Competing interests**

The authors declare that they have no competing interests.

### **Statements on open data and ethics**

This research was carried out considering Committee on Publication Ethics' (COPE) the ethical guidelines. The participants consist of prospective teachers and they participated to the study voluntarily. The participants informed about the privacy of the study and ensured their names were not taken. The views taken from the participants do not match with any of their demographics in case of not being disadvantaged.

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