



# THE FEAR OF MISSING OUT



*A study about the relationship  
between Fear of Missing Out and  
youth' social media use*

**Social Media and the Fear of Missing Out among Adolescents:  
The Role of Peer Pressure**

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### **Abstract**

Fear of Missing Out (FoMO) is associated with more social media use. Individuals who experience more FoMO have the desire to be continuously connected with others and want to keep up to date with what others are doing. Therefore, adolescents with more FoMO will fulfil their psychological needs to have social contact by increasingly using social media, as these platforms allow adolescents to constantly stay in touch with others. The aim of current cross-sectional research among Dutch adolescents aged 16-25 ( $N = 338$ ), who participated in an online survey, was to examine whether FoMO relates to both intensity of social media use (ISMU) and problematic social media use (PSMU). In addition, the extent to what sensitivity to peer pressure influences this relationship is investigated. The results showed support for the hypothesis that adolescents with high FoMO use social media more intensively and problematically. Furthermore, sensitivity to peer pressure only strengthens the impact of FoMO on PSMU. These findings can be used to educate adolescents about FoMO and (problematic) social media use. Moreover, schools could boost adolescents' social skills and self-efficacy to help them cope with peer pressure.

*Keywords:* Fear of Missing Out, peer pressure, intensity of social media use, problematic social media use, adolescents

### **Samenvatting**

Fear of Missing Out (FoMO) wordt in verband gebracht met hoog gebruik van sociale media. Individuen die meer FoMO ervaren willen continu verbonden zijn met anderen en willen op de hoogte blijven van wat anderen doen. Daarom zullen adolescenten met meer FoMO hun psychologische behoeften om sociaal contact te hebben vervullen door in toenemende mate sociale media te gebruiken, aangezien deze platforms adolescenten in staat stellen constant in contact te blijven met anderen. Het doel van huidig cross-sectioneel onderzoek onder Nederlandse adolescenten van 16-25 jaar ( $N = 338$ ), die deelnamen aan een online vragenlijst, was om te onderzoeken of FoMO gerelateerd is aan zowel de intensiteit van socialemediagebruik (ISMU) als het problematisch socialemediagebruik (PSMU). Daarnaast is onderzocht in hoeverre gevoeligheid voor groepsdruk deze relatie beïnvloedt. De resultaten ondersteunden de hypothese dat adolescenten met meer FoMO sociale media intensiever en problematischer gebruiken. Bovendien versterkt de gevoeligheid voor groepsdruk alleen de impact van FoMO op PSMU. Deze bevindingen kunnen worden gebruikt om adolescenten voor te lichten over FoMO en (problematisch) socialemediagebruik. Bovendien zouden scholen de sociale vaardigheden en zelfeffectiviteit van adolescenten kunnen versterken om hen te helpen om te gaan met groepsdruk.

*Sleutelwoorden:* Fear of Missing Out, groepsdruk, intensiteit socialemediagebruik, problematisch socialemediagebruik, adolescenten

## **Introduction**

The use of digital media has increased immensely in recent years. Particularly for adolescents, no day goes by without having used digital media, such as games and social media. In 2019, nearly all Dutch adolescents aged 12-25 (96.8%) used social media, such as Instagram and WhatsApp (CBS, 2020). In fact, adolescents themselves indicate that most of them think their screen time is too much (Netwerk Mediawijsheid, 2020). This screen time is mainly spent on social media, with adolescents aged 13-24 using social media on average for more than three hours a day (Peters & Dekker, 2020). Besides some advantages of social media use for adolescent development, such as creating their own identities and developing self-presentation and self-disclosure (Reid & Weigle, 2014), high social media use can also have several negative consequences for adolescent health. For example, studies have demonstrated negative effects of high social media use on showing more aggression, having low school performances, feeling anxious or having sleep problems (Chassiakos et al., 2016; Valkenburg, 2002). Moreover, high social media use can even lead to a social media addiction, which is characterized by compulsive, excessive, pathological, or problematic use of social media (Meerkerk et al., 2008). It is therefore warranted to gain more insight into the factors predictive of intensive and problematic social media use. One of the factors that has strongly been linked to social media use is the Fear of Missing Out (FoMO). Hence, this study will investigate the relationship of Fear of Missing Out with both intensive and problematic social media use among adolescents (16-25 years) and the role of peer pressure herein.

### **Fear of Missing Out and Social Media Use**

Different factors contribute to the diverse use of social media among adolescents. In line with the Uses and Gratification Theory (Blumler, 1979), humans have the basic psychological need to be connected with others, which is referred to as the need to belong (Deci & Ryan, 2000). As described in this theory, social media can fulfil this need to belong, as these platforms allow adolescents to constantly stay in touch with others and give them access to information about activities and conversations with others (Alutaybi et al., 2018). Individual differences in the motivations to use social media can be psychological traits, such as Fear of Missing Out (FoMO). FoMO can be defined as the fear that others might have rewarding experiences (e.g., activities, events) that one is absent from (Przybylski et al., 2013). Adolescents in particular are susceptible to experience FoMO, since they are more likely to have internalized the social norm of 'being continuously online' and importantly, they are in a crucial developmental period of identity development (Barry et al., 2017). In a

recent Dutch study, more than one-third (34%) of adolescents (18-25 years) indicated that they had experienced FoMO during their lifetime (Van Beuningen & Kloosterman, 2018). Individuals with more FoMO have the desire to be continuously connected with others and want to keep up to date with what others are doing (Beyens et al., 2016; Przybylski et al., 2013). Thus, adolescents with more FoMO will fulfil their psychological needs to have social contact by increasingly using social media and possibly developing addictive tendencies.

The positive relation between FoMO and more social media use is corroborated in several existing studies (e.g., Abel et al., 2016; Alt & Boniel-Nissim, 2018; Blackwell et al., 2017; Park et al., 2013). For example, cross-sectional studies among American college students have shown that FoMO is positively associated with problematic phone use and the intensity of social media use (Roberts & David, 2020; Wolniewicz et al., 2018). In a similar study among Israeli youth aged 13-18, Alt and Boniel-Nissim (2018) found a positive relationship between FoMO and problematic internet use. Furthermore, it seems that students with more FoMO are more likely to have urges to check social media (Abel et al., 2016; Przybylski et al., 2013). However, most of these studies on the relationship between FoMO and social media use include college students from the U.S. and Asia, whereas insight into this relation among European adolescents, such as in the Netherlands, is lacking. Moreover, social media is constantly changing, so it remains important to research this relationship not for a specific social media platform. The current study therefore investigates the relation between FoMO and both intensity of social media use and problematic social media use among Dutch adolescents aged 16-25.

*H1: Fear of Missing Out (FoMO) is positively associated with (a) intensity of social media use and (b) problematic social media use*

### **The Strengthening Role of Sensitivity to Peer Pressure**

Previous research has demonstrated a significant positive relation between FoMO and more social media use. However, based on the differential susceptibility hypothesis (Belsky, 2004) this relation is likely to differ across groups of adolescents. In this case, the relation between FoMO and social media use may depend on the sensitivity of the adolescent to peer pressure. Peers play an important role in the lives of adolescents and are crucial actors in the socialization and use of social media by adolescents (Esen & Gündoğdu, 2010). Adolescents are especially sensitive to the pressure of their peers, since they like to associate and compare themselves with members of their peer group (Helsen et al., 2000). According to the Social

Identification Theory, adolescents have the need to gain social acceptance by their peers, since they have to construct their social identity (Tajfel & Turner, 1979). The experience of peer pressure among adolescents has increased enormously in recent years, partly due to the opportunity to be in constant contact with each other online (Nationale Academie voor Media en Maatschappij, 2012). Thus, sensitivity to peer pressure may play a role in the relation between FoMO and both intensity of social media use (ISMU) and problematic social media use (PSMU). However, to our knowledge, there is no research into the role of peer pressure in the relation between FoMO and social media use.

Peer pressure can be defined as an experience of feeling pressured, urged, or dared by peers to do certain things, or doing certain things because peers have pressured, urged, or dared you to (Brown et al., 1986). Individuals who are sensitive to peer pressure have difficulty with saying 'no' to their peers, for example about risky behavior (e.g., intensive/problematic social media use) (Santor et al., 2000). This means that, for instance, adolescents feel obliged to respond immediately to messages received, because they fear that they will be blamed if they do not respond quickly. Research showed a positive relation between sensitivity to peer pressure and more social media use (e.g., Balogh et al., 2013; Choi & Chung, 2013; Esen & Gündoğdu, 2010; Zhu et al., 2015). It seems that individuals who are more sensitive to peer pressure use social media more because they want to maintain their connection with others and because they feel that the group they belong to expects them to use social media for group communication (Choi & Chung, 2013; Lee et al., 2012). Research found that the experience of general peer pressure is linked to excessive internet use by adolescents (Esen & Gündoğdu, 2010), since adolescents may internalize their peers' attitudes towards risky behavior (e.g., increased social media use) and therefore normalize this behavior (McGloin & Thomas, 2019).

Peer pressure is significantly related to the level of social media use, and in addition research confirmed that sensitivity to peer pressure is also related to more FoMO (Alutaybi et al., 2020). This relation can be understood by the Self-Construal Theory (Markus & Kitayama, 1991), which describes that people can have both an independent and an interdependent self-construal, with one of those often being most salient (Kiuchi, 2006). Individuals with an independent self-construal are more autonomous, individualistic, and self-contained. In contrast, individuals with an interdependent self-construal are more collective, interdependent, and connected to others. Because of this, individuals with an interdependent self-construal value the opinion of others more and are thus more likely to be sensitive to peer pressure (Markus & Kitayama, 1991). Since FoMO is mainly about the fear of missing

rewarding experiences that others are experiencing, it can be assumed that adolescents with an interdependent self-construal, who are more sensitive to peer pressure, experience more FoMO because they are more concerned about what others are doing (Markus & Kitayama, 1991).

Furthermore, a cross-sectional study among Turkish students aged 15-18 years showed that low self-esteem strengthened the relationship between FoMO and problematic mobile phone use (Coskun & Muslu, 2019). Adolescents with low self-esteem are also generally more sensitive to peer pressure, since they want to conform to peer norms in order to avoid peer rejection (Uslu, 2013; Zimmerman et al., 1997). For example, they can highly value the acceptance gained through the use of social media and discount the potential costs of (problematic) social media use. Based on these studies, it is expected that among adolescents who are more sensitive to peer pressure, the impact of FoMO on both their intensity of social media use and their problematic social media use is greater.

*H2a: The positive relationship between Fear of Missing Out (FoMO) and intensity of social media use (ISMU) is stronger when adolescents are more sensitive to peer pressure*

*H2b: The positive relationship between Fear of Missing Out (FoMO) and problematic social media use (PSMU) is stronger when adolescents are more sensitive to peer pressure*

### **Current Research**

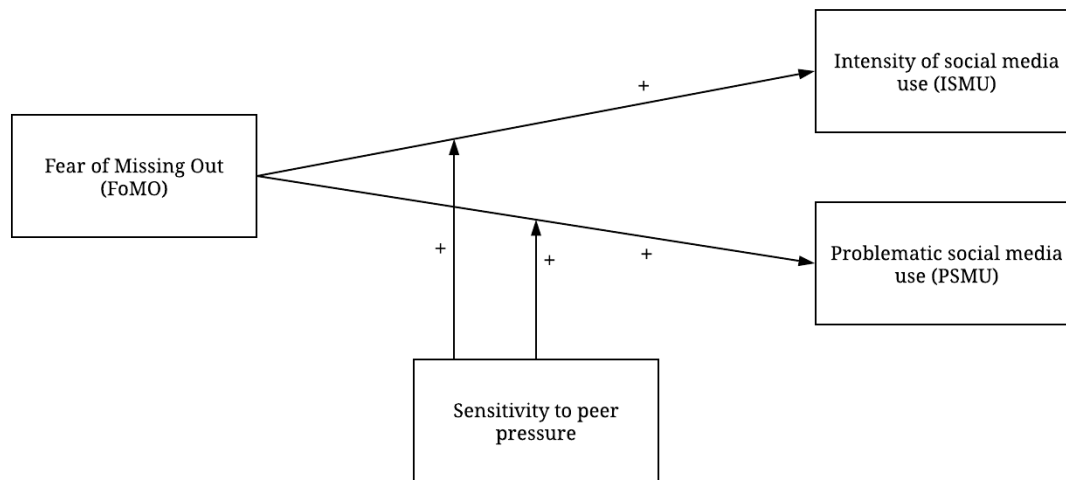
Given the scale and consequences of increased social media use among adolescents, it is important to understand the risk factors, so that intensive/problematic social media use can possibly be prevented. The purpose of this cross-sectional study is, in collaboration with Netwerk Mediawijsheid, to gain insight into the relation between FoMO and social media use and the role of peer pressure herein (see Figure 1). Therefore, the following research question will be examined:

*To what extent is Fear of Missing Out related to both the intensity of social media use and problematic social media use among Dutch adolescents aged 16-25 and to what extent is this relationship influenced by sensitivity to peer pressure?*



**Figure 1**

*Research Model of the Relation between FoMO, ISMU, PSMU and Sensitivity to Peer Pressure*



## Methods

### Sample and Procedure

In the current research a quantitative research design was used. For three weeks in March/April 2021, an online self-report questionnaire (Appendix A) was conducted using Qualtrics online survey software. By using a questionnaire, attitudes and behaviors of individuals can be measured adequately (Van der Pligt & Blankers, 2013). For the current cross-sectional study, Dutch adolescents aged 16-25 were asked to participate in the survey, since these are the greatest users of social media (Chassiakos et al., 2016). A snowball sampling method was used, in which participants provided new respondents to the study. Participants were recruited through the network of the researcher and Netwerk Mediawijsheid via social media platforms, such as Facebook, WhatsApp and LinkedIn. Furthermore, network partners of Netwerk Mediawijsheid who target youth were asked by e-mail to distribute the questionnaire to youth in their network. The link to the questionnaire was also included in the biweekly newsletter of Netwerk Mediawijsheid. Moreover, the survey was distributed via e-mail to students from one secondary school in order to obtain more younger participants. Completing the survey took approximately ten minutes. The online questionnaire started with a brief introduction to the aim of the study, the privacy conditions (e.g., anonymity and confidentiality of the data), and the voluntary participation in the study. By means of active informed consent, the participants approved their participation in the study. Current research

has been approved by the Ethics Committee of the Faculty of Social and Behavioral Sciences of Utrecht University (21-0307).

In total, 411 respondents participated in the current study, of which 73 participants (17.8%) had a missing value on one or more variables. A missing value analysis was performed on the missing values to test whether the pattern of the missing values is completely random. The Little's MCAR test was not significant ( $p = .559$ ), indicating that listwise deletion is legitimated to use. After filtering the missings at the variable level, the final sample consisted of 338 participants, of whom 238 women (70.4%). The age of the respondents is between 16 and 25 years ( $M = 21.997$ ,  $SD = 2.266$ ). Most respondents are highly educated (25.7% master, 26.6% bachelor, 30.5% applied bachelor). In addition, 16.3% of the respondents are middle educated (high school and mbo) and 0.9% has a low education (primary school).

## Measurements

### *Social Media Use*

The dependent variable, *Social media use*, included the extent to which participants use social network sites (e.g., Facebook, Instagram, Twitter, TikTok, YouTube) and instant messengers (e.g., WhatsApp, Snapchat, Facebook messenger) in their daily lives. This was measured with two different scales. One measured the intensity of social media use and one measured problematic social media use.

**Intensity of Social Media Use (ISMU).** The dependent variable, *ISMU*, was measured by asking five items about the participants' active and passive social media use (Van den Eijnden et al., 2018). For example, "How many times a WEEK do you post a message, photo, or video, on social network sites?" and "How many times a DAY do you check your smartphone on messages, photos, or videos, via for example, WhatsApp, Snapchat or chat?". Response options were scored between 1 (resp. never or less than once a day or week; less than once a day) and 7 (resp. more than 40 times a day or week; more than 80 times a day). A mean score of the five items was calculated, with higher scores representing a higher intensity of social media use. Cronbach's  $\alpha$  value was .639.

**Problematic Social Media Use (PSMU).** The dependent variable, *PSMU*, was measured by nine dichotomous (0 = no, 1 = yes) items of the Social Media Disorder (SMD) scale (Van den Eijnden et al., 2016), which represent the symptoms of a social media disorder. Participants were, for example, asked "During the past year, have you ... often felt

bad when you could not use social media?”. A sum score was calculated, where higher scores represent more problematic social media use. Cronbach’s  $\alpha$  value was .677.

### ***Fear of Missing Out***

The independent variable, *Fear of Missing Out (FoMO)*, was measured by the translated scale of Przybylski et al. (2013). This scale consisted of ten items regarding the distress related to missing out on social activities. The items were scored on a scale of 1 (not true for me at all) to 5 (totally true for me) and included statements such as: “I fear others have more rewarding experiences than me” and “When I miss out on a planned get-together it bothers me”. An average score of the ten items was calculated, whereby the higher the score, the more the participant experiences FoMO. Cronbach’s  $\alpha$  value was .842.

### ***Sensitivity to Peer Pressure***

To measure the moderating variable, *Sensitivity to peer pressure*, the translated scale of Santor et al. (2000) was used. This scale consisted of 11 items related to the susceptibility of peers’ pressure, such as: “I have skipped classes, when others have urged me to” and “I have felt pressured to do get drunk at parties”. Items were scored on a scale from 1 (strongly disagree) to 5 (strongly agree). A mean score of the 11 items was calculated, where the higher the score, the more sensitive the participant is to peer pressure. Cronbach’s  $\alpha$  value was .846.

### ***Control Variables***

Research suggests that younger people are using social media more intensively and problematically than older people (Lenhart et al., 2010). Moreover, younger people are more susceptible to experience FoMO and peer pressure than older adolescents, since they are still developing their identity (Abel et al., 2016; Helsen et al., 2000). Therefore, *Age* was included as a control variable, which was measured with the open question: “What is your age in years?”.

To measure the control variable *Education* participants were asked: “What is the highest level of education that you are currently following or have completed?”. The participant could choose from seven different levels: no education completed, primary education, high school, mbo, applied bachelor, bachelor (university), or master (university). The categories ‘no education completed’ and ‘primary school’ were merged into the category low educated. The categories ‘high school’ and ‘mbo’ were classified as middle educated. In addition, the categories ‘applied bachelor’, ‘bachelor’, and ‘master’ were merged into the

category highly educated. Two dummies were made, with low education being the reference group. For the dummy *Middle education*, category 1 was middle education and category 0 were the other categories. For the dummy *High education*, 1 = high education and 0 = the other categories.

The control variable *Gender* was measured by asking the participants: “What is your gender?”. This is a dichotomous variable where men = 0 and women = 1.

### **Data Analysis**

The analyses within this study were performed with SPSS 26. First, the descriptive statistics and frequencies of all variables were requested. The means, standard deviation and the range from all variables were retrieved, so that an overview of the scores on all items and of the total sample was obtained. Moreover, a One Sample *t* Test was performed to compare the sample mean with the mean of the scales of the variables *FoMO*, *Peer pressure*, *ISMU* and *PSMU*. Next, Pearson’s correlations for all variables were performed, to analyze how the variables are interrelated and to analyze whether there was multicollinearity between the independent variables.

Before performing the analyses, the assumptions of the multiple regression were first tested. The P-P plots and the scatter plots of the residuals of the continuous variables showed that the assumptions of normality, linearity, and homoscedasticity were generally met. In addition, there was no multicollinearity between the variables. The Mahalanobis Distance, Leverage and Standardized Residuals indicated that there were only a few small outliers and influential cases. It was decided to keep these cases in the analyses, since otherwise valuable data would be lost.

Finally, two multiple linear regression analyses were performed with respectively *ISMU* and *PSMU* as dependent variables in Model 1, and the control variables *Age*, *Education* and *Gender* as independent variables. To test the hypotheses the independent variable *FoMO* was added in Model 2, which made it possible to test the direct effect of FoMO on both ISMU and PSMU. Subsequently, in Model 3, the interaction effect of *Peer pressure*\**FoMO* was included, as well as the main effect of *Peer pressure*. Before computing the interaction variable, both the independent variable (*FoMO*) and the moderator (*Peer pressure*) were centred.

## Results

### Descriptive Statistics

Table 1 shows the descriptive statistics of all variables from current research, showing the mean and standard deviation of the total sample. On the scale of *FoMO*, scores were significantly higher ( $M = 2.654$ ,  $SD = .674$ ) than the middle of the scale ( $t(337) = 4.203$ ,  $p < .001$ ). This indicates that participants experienced on average much FoMO. Additionally, scores were significantly lower on the scale of *Peer pressure* ( $M = 1.979$ ,  $SD = .694$ ) than the centre of the scale ( $t(337) = -13.795$ ,  $p < .001$ ). This shows that participants were generally not that sensitive to peer pressure. The mean of the scale *ISMU* was significantly higher ( $M = 3.983$ ,  $SD = .982$ ) than the middle of the scale ( $t(337) = 9.053$ ,  $p < .001$ ), indicating that participants on average were using social media intensively. Moreover, on the scale of *PSMU*, scores were significantly lower ( $M = 1.281$ ,  $SD = 1.539$ ) than the centre of the scale ( $t(337) = -44.423$ ,  $p < .001$ ). This shows that participants generally do not use social media problematically.

### Correlations

Table 1 also shows the Pearson's correlations between the variables. *Fear of Missing Out (FoMO)* was significantly positively associated with both *Intensity of social media use (ISMU)* ( $r = .320$ ,  $p < .001$ ) and *Problematic social media use (PSMU)* ( $r = .422$ ,  $p < .001$ ). This means that adolescents who experience higher levels of FoMO reported higher intensity and more problematic symptoms of social media use. In addition, *Peer pressure* was significantly positively associated with *PSMU* ( $r = .389$ ,  $p < .001$ ), indicating that adolescents who are more sensitive to peer pressure reported more problematic social media use. Furthermore, the results show a significant positive relationship between *FoMO* and *Peer pressure* ( $r = .470$ ,  $p < .001$ ). This means that adolescents who reported higher levels of FoMO were also generally more sensitive to peer pressure. The independent variables did not highly correlate with each other, indicating that there is no multicollinearity.

**Table 1***Descriptive Statistics and Pearson's Correlation of the Variables*

	Range	%/M (SD)	1	2	3	4	5	6	7
1. Gender <sup>a</sup> (% women)	0-1	70.4%	-						
2. Age	16-25	21.997 (2.266)	-.009	-					
3. Education	2-7	5.46 (1.316)	.157**	.584***	-				
4. Intensity of social media use (ISMU)	1-7	3.983 (.982)	.006	-.141**	-.122*	-			
5. Problematic social media use (PSMU)	0-9	1.281 (1.539)	.022	-.101	-.109*	.250***	-		
6. Fear of Missing Out (FoMO)	1-5	2.654 (.674)	.146**	-.082	-.001	.320***	.422***	-	
7. Sensitivity to peer pressure	1-5	1.979 (.694)	-.117*	.052	.041	.143**	.389***	.470***	-

Note. <sup>a</sup>0 = men.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$  (two-sided).

### Effect of Fear of Missing Out (FoMO) on Intensity of Social Media Use (ISMU)

To estimate the proportion of variance in intensity of social media use (ISMU) that can be explained by FoMO and in interaction with peer pressure, a multiple regression analysis was performed. The results for this analysis can be found in Table 2.

First of all, the control variables *Gender*, *Age* and *Education* have been added to Model 1. The control variables accounted for a non-significant 2.2% of the variability in *ISMU* ( $R^2 = .022$ ,  $F(4, 333) = 1.871$ ,  $p = .115$ ).

In Model 2, the independent variable *FoMO* had a significant positive effect on *ISMU* ( $b^* = .318$ ,  $t = 6.082$ ,  $p < .001$ , 95% CI [.313, .612]). When experiencing more FoMO, adolescents use social media more intensively. Adding the independent variable in Model 2 significantly increased the explained variance in *ISMU* by 9.8% ( $R^2_{\text{change}} = .098$ ,  $F_{\text{change}}(1, 332) = 36.996$ ,  $p < .001$ ).

In Model 3, testing the moderation of *Peer pressure*, the interaction variable *FoMO\*Peer pressure* had a non-significant effect on *ISMU*. The addition of the interaction variable in Model 3 did not significantly increase the explained variance ( $R^2_{\text{change}} = .005$ ,  $F_{\text{change}}(2, 330) = .872$ ,  $p = .419$ ). The variables of the models together significantly explained 12.5% of the variance in *ISMU* ( $R^2 = .125$ ,  $F(7, 330) = 6.714$ ,  $p < .001$ ).

**Table 2**

*Standardized Regression Coefficients (b\*) and Standard Error (SE) for each Predictor Variable of Intensity of Social Media Use (ISMU)*

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Intercept	4.924*** (.736)	4.709*** (.701)	4.690*** (.701)
Age	-.147* (.028)	-.122* (.027)	-.119 (.027)
Gender (men = 0)	.002 (.117)	-.044 (.113)	-.044 (.115)
Middle education	.180 (.586)	.198 (.557)	.205 (.557)
High education	.175 (.593)	.193 (.564)	.202 (.564)
Fear of Missing Out (FoMO)		.318*** (.076)	.309*** (.089)
Sensitivity to peer pressure			.018 (.088)
FoMO*Peer pressure			-.071 (.110)
$R^2$	.022	.120***	.125***

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$  (two-sided).

### **Effect of Fear of Missing Out (FoMO) on Problematic Social Media Use (PSMU)**

Results for the model that examined problematic social media use (PSMU) as an outcome can be found in Table 3. The control variables tested in Model 1, did not have a significant effect on *PSMU* and accounted for a non-significant 1.2% of the variability in *PSMU* ( $R^2 = .012$ ,  $F(4, 333) = 1.024$ ,  $p = .395$ ).

In Model 2, the independent variable *FoMO* had a significant positive effect on *PSMU* ( $b^* = .423$ ,  $t = 8.412$ ,  $p < .001$ , 95% CI [.739, 1.190]). Thus, adolescents who experience more *FoMO* use social media more problematically. Adding *FoMO* in Model 2 also significantly increased the explained variance in *PSMU* by 17.4% ( $R^2_{\text{change}} = .174$ ,  $F_{\text{change}}(1, 332) = 70.754$ ,  $p < .001$ ).

**Table 3**

Standardized Regression Coefficients ( $b^*$ ) and Standard Error (SE) for each Predictor Variable of Problematic Social Media Use (PSMU)

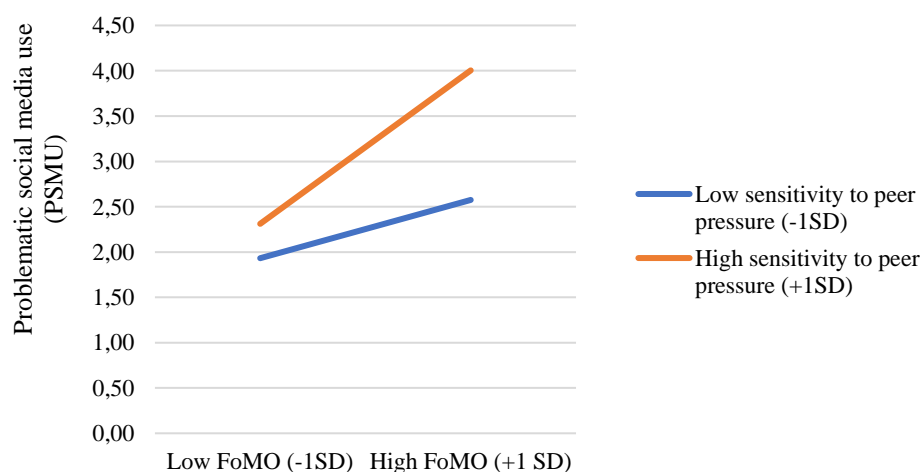
	Model 1	Model 2	Model 3
Intercept	2.833* (1.160)	2.384* (1.057)	2.597** (1.022)
Age	-.076 (.044)	-.043 (.040)	-.070 (.039)
Gender (men = 0)	.026 (.185)	-.036 (.170)	.011 (.168)
Middle education	-.085 (.923)	-.060 (.839)	-.054 (.812)
High education	-.124 (.935)	-.100 (.850)	-.099 (.822)
Fear of Missing Out (FoMO)		.423*** (.115)	.309*** (.129)
Sensitivity to peer pressure			.223*** (.129)
FoMO*Peer pressure			.103* (.160)
$R^2$	.012	.186***	.244***

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$  (two-sided).

In Model 3, testing the moderation of *Peer pressure*, the interaction variable *FoMO\*Peer pressure* had a significant positive effect on *PSMU* ( $b^* = .103$ ,  $t = 2.059$ ,  $p < .05$ , 95% CI [.015, .644]). The effect of FoMO on problematic social media use (PSMU) depended on the sensitivity to peer pressure. For participants who scored higher on sensitivity to peer pressure, FoMO contributed to a greater extent to increased problematic social media use. A visual representation of the interaction effect is shown in Figure 2. The addition of the interaction variable in Model 3 significantly increased the explained variance in *PSMU* by 5.8% ( $R^2_{\text{change}} = .058$ ,  $F_{\text{change}}(2, 330) = 12.715$ ,  $p < .001$ ). The variables of the models together significantly explained 24.4% of the variance in *PSMU* ( $R^2 = .244$ ,  $F(7, 330) = 15.212$ ,  $p < .001$ ).

**Figure 2**

Visual Representation of the Interaction Between Fear of Missing Out (FoMO) and Sensitivity to Peer Pressure





### Discussion

For adolescents, no day goes by without having used social media. The relationship between Fear of Missing Out (FoMO) and social media use has been investigated several times (e.g., Abel et al., 2016; Alt & Boniel-Nissim, 2018; Blackwell et al., 2017; Park et al., 2013). However, these studies mainly focused on college students from the U.S. and Asia. Research on this topic for European adolescents, such as in the Netherlands, was lacking. Moreover, no research has yet been found that examined the role of peer pressure in this relationship. Therefore, the current study aimed to investigate the role of Fear of Missing Out (FoMO) in relation to intensity of social media use (ISMU) and problematic social media use (PSMU). In addition, sensitivity to peer pressure has been included as additional factor influencing this relationship. Results of the current research showed that there was a positive effect of FoMO on both ISMU and PSMU, and that sensitivity to peer pressure partly influenced this relationship.

Consistent with previous research (e.g., Abel et al., 2016; Alt and Boniel-Nissim, 2018; Blackwell et al., 2017; Park et al., 2013; Wolniewicz et al., 2018) and the Uses and Gratifications Theory (Blumler, 1979), FoMO was found to be related to both intensity of social media use (ISMU) and problematic social media use (PSMU). Based on these studies, it was expected that adolescents with more FoMO have the desire to be continuously connected with others (Beyens et al., 2016; Przybylski et al., 2013) and are therefore using social media more in order to fulfill their psychological needs to have social contact. In line with our hypothesis, Dutch adolescents who experience higher levels of FoMO use social media more intensively and problematically. Therefore, based on the current research, the role of FoMO in adolescents' social media use seems crucial.

According to the differential susceptibility hypothesis (Belsky, 2004), the positive relation between FoMO and social media use was expected to differ across groups of adolescents. The current study partly corroborated previous research (Coskun & Muslu, 2019; Markus & Kitayama, 1991) by demonstrating that a higher sensitivity to peer pressure strengthened the impact of Fear of Missing Out (FoMO) on problematic social media use (PSMU), but not the intensity of use. This means that for adolescents who are more sensitive to peer pressure, the impact of FoMO on PSMU is stronger. This finding extends prior studies that focused on the role of FoMO, but that has not reported on the moderating influence of sensitivity to peer pressure. However, no significant moderating effect of sensitivity to peer pressure on the relationship between FoMO and ISMU was found. This therefore indicates that among Dutch adolescents FoMO is positively related to ISMU, regardless of their

sensitivity to peer pressure. Thus, peer pressure only plays an important role in the relation between FoMO and problematic social media use, which is characterized by addictive tendencies (Van den Eijnden et al., 2018). That is, problematic social media use is characterized by being constantly engaged in social media and being unable to stop using social media. A possible explanation for this finding is that adolescents who are a more problematic social media user have lower social skills and therefore have more difficulty resisting peer pressure (Esen & Gündoğdu, 2010; Harman et al., 2005), more so than adolescents who use social media only intensively instead of compulsively. This is also supported by literature, which only found a positive relation between sensitivity to peer pressure and problematic social media use (e.g., Li et al., 2016; McGloin & Thomas, 2019; Zhu et al., 2015). It is likely that in addition to adolescents reporting more FoMO who are using social media more intensively, those who are also more sensitive to peer pressure are more likely to transit from intensive use to problematic use.

The current study is very valuable and innovative because, to our knowledge, this is the first study that investigated the relationship between FoMO and ISMU/PSMU and sensitivity to peer pressure. Despite the strengths of the current study, such as the large sample size and the replicability of the study since it is described very systematically, there are some limitations that should be mentioned. First, caution should be taken when generalizing conclusions to all Dutch adolescents, because the participants consisted largely of highly educated women. Therefore, the sample is not a representative reflection of the actual population of Dutch adolescents. The difference between educational levels and between gender could cause a difference in the use of social media (Lenhart et al., 2010; Perrin, 2015). For that reason, it would be interesting for future research to pay attention to differences in education and gender. Moreover, the results of the current research have been collected using adolescent self-reports, which might cause bias. However, self-reports for specific content appear to be a reasonably reliable method of measuring social media usage (Romantan et al., 2018; Scharkow, 2016). Finally, due to the cross-sectional design of the current study, the association found may also be the result of a reverse process in which adolescents who use social media more intensively or problematically have a greater experience of FoMO. Longitudinal follow-up research should explore the direction of the relationship.

It can be concluded that adolescents experiencing high levels of FoMO appear to use social media more intensively and problematically. Besides, if adolescents are sensitive to peer pressure, the impact of FoMO on PSMU is even stronger. It is therefore wise to keep a

close eye on this target group, because this is a reasonably new research area where new developments can quickly emerge (Nationale Academie voor Media & Maatschappij, 2012). The findings from the current study can be used to educate adolescents about FoMO and to raise awareness of possible risks or signals for (problematic) social media use. In addition, research suggests that peer pressure self-efficacy is an important inhibitor of compulsive use of social networking sites (Turel & Osatuyi, 2017). Therefore, schools could provide adolescents with and stimulate social skills, communication skills and self-efficacy to help cope with peer pressure.

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Q11. Hoe vaak PER DAG kijk je op je smartphone om te zien of er een berichtje, foto of filmpje is binnen gekomen, bijvoorbeeld een WhatsApp, Chat, SnapChat of SMS?

Minder dan 1 keer per dag	1 - 5 keer per dag	6 - 10 keer per dag	11 - 20 keer per dag	21 - 40 keer per dag	41 - 80 keer per dag	Meer dan 80 keer
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q12. Hoe vaak PER DAG stuur je zelf een berichtje, foto of filmpje via je smartphone, bijvoorbeeld een WhatsApp, Chat, SnapChat of SMS?

Minder dan 1 keer per dag	1 - 5 keer per dag	6 - 10 keer per dag	11 - 20 keer per dag	21 - 40 keer per dag	41 - 80 keer per dag	Meer dan 80 keer
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Denk bij het beantwoorden van de volgende vragen aan JOUW ervaringen met het gebruik van sociale media in het afgelopen jaar.

1. Ja
2. Nee

Q13. Heb je het afgelopen jaar...

... regelmatig geen interesse gehad in hobby's of andere bezigheden omdat je liever met sociale media bezig was?

... regelmatig aan niets anders kunnen denken dan aan het moment dat je weer sociale media kon gaan gebruiken?

... niet kunnen stoppen met het gebruik van sociale media, terwijl anderen zeiden dat je dit echt moest doen?

... je vaak rot gevoeld als je geen sociale media kon gebruiken?

... je regelmatig ontevreden gevoeld omdat je meer tijd aan sociale media had willen besteden?

... vaak stiekem sociale media gebruikt?

... vaak sociale media gebruikt om niet aan vervelende dingen te hoeven denken?

... regelmatig ruzie gekregen met anderen door jouw socialemediagebruik?

... serieuze problemen met je ouders, broer(s) of zus(sen) of vrienden gehad door je socialemediagebruik?

Hieronder vind je een aantal uitspraken over JOUW dagelijkse ervaringen. Geef met behulp van de schaal aan in hoeverre elke uitspraak waar is volgens jouw algemene ervaringen. Beantwoord alsjeblieft op basis van wat jouw ervaringen echt weerspiegelen in plaats van wat je denkt dat jouw ervaringen zouden moeten zijn. Behandel elk item afzonderlijk van elk ander item.

1. Klopt helemaal niet
2. Klopt niet
3. Klopt een beetje
4. Klopt wel
5. Klopt helemaal

Q14. Ik ben bang dat anderen meer plezier hebben dan ik

Q15. Ik ben bang dat mijn vrienden meer plezier hebben dan ik

Q16. Ik maak me zorgen als ik erachter kom dat mijn vrienden plezier hebben zonder mij

Q17. Ik word onrustig als ik niet weet wat mijn vrienden doen

Q18. Het is belangrijk dat ik de onderlinge grapjes (inside jokes) van mijn vrienden begrijp

Q19. Soms vraag ik mij af of ik te veel tijd besteed aan het bijhouden van wat er in mijn omgeving gebeurt

Q20. Ik stoer mij eraan wanneer ik een kans mis om af te spreken met vrienden

Q21. Als ik plezier heb vind ik het belangrijk om dit online te delen (bijvoorbeeld posten van een Instagram story)

Q22. Als ik een geplande afspraak met vrienden moet missen, dan maak ik me daar zorgen over

Q23. Als ik op vakantie ben, wil ik continu op de hoogte zijn van wat vrienden doen

Hieronder volgen enkele uitspraken over JOU. Kruis het antwoord aan dat het beste bij je past.

1. Helemaal mee oneens
2. Enigszins mee oneens
3. Neutraal
4. Enigszins mee eens
5. Helemaal mee eens

- Q24. Mijn vrienden kunnen mij ertoe aanzetten om zo ongeveer alles te doen
- Q25. Ik geef gemakkelijk toe aan groepsdruk
- Q26. Als een groep mensen op school/studie mij zou vragen iets te doen, zou ik het moeilijk vinden om nee te zeggen
- Q27. Soms heb ik regels overtreden, omdat anderen mij hierin hebben aangespoord
- Q28. Soms heb ik gevaarlijke of dwaze dingen gedaan omdat anderen mij dan uitdaagden
- Q29. Ik voel mij vaak onder druk gezet om dingen te doen die ik normaal niet zou doen
- Q30. Als mijn vrienden alcohol drinken, kan ik het moeilijk vinden om een drankje te weerstaan
- Q31. Ik heb wel eens een les op school/studie gemist, omdat anderen mij hierin hebben aangespoord
- Q32. Ik heb mij onder druk gezet gevoeld om seks te hebben, omdat veel mensen van mijn leeftijd al seks hebben gehad
- Q33. Ik heb mij onder druk gezet gevoeld om dronken te worden op feestjes
- Q34. Ik heb mij onder druk gezet gevoeld om drugs te gebruiken, omdat anderen er ook bij mij op aandrongen

## **Appendix B**

### **Reflection on interdisciplinarity**

Social media use is a complex problem that can be viewed from different disciplines. The Ecological Model of Bronfenbrenner (1979) states that different systems around an individual influences the development of an individual. These different systems can be the individual, the microsystem, the mesosystem, the exosystem and the macrosystem. The Uses and Gratification Theory (Blumler, 1979) sheds light on the problem from the perspective of psychology and sociology. According to this theory, individuals use social media to fulfil their social and psychological needs. Adolescents use social media for different reasons and there are individual differences in gratification. The psychological aspect shows that one of these individual motivations is the psychological trait Fear of Missing Out (FoMO). Some adolescents have the fear of missing out rewarding experiences that others are experiencing (FoMO) and are therefore using social media more in order not to miss the activities and conversations of others. These individual differences in FoMO, which lead to individual differences in the use of social media, is at the individual level of the Ecological Model and fits within the field of psychology.

Furthermore, the Uses and Gratification Theory states that this individual trait (FoMO) is connected to the motivation for relatedness, which can be viewed from the sociological side. Adolescents with more FoMO use social media more, since they want to maintain relationships and have the need to belong. This need for social relationships and connection with others is more on the micro level of the Ecological Model, because peers are involved in this. Besides, other research also focuses on the sociological aspect of more social media use (Li et al., 2016; Zhu et al., 2015). This research suggests that peers also influence the social media use of adolescents. Since some adolescents are more sensitive to what their peers are urging them to do, they will use social media more because they have the desire to fit in and value the opinion of their peers. This peer pressure is more related to the environment of adolescents, which is linked to the microsystem of the adolescent and fits within sociology. Moreover, the impact of FoMO on more social media use may be different for adolescents who are more sensitive to peer pressure, which shows the interaction between the individual and environment.

It is important to look at the increased social media use among adolescents from both the psychological and sociological perspective. This is because the psychological aspect shows how individuals differ in using social media, resulting in more social media use for those who experience more FoMO. While the sociological aspect reflects how peers influence



more social media use among adolescents. This creates a more complete picture of the problem of increased social media use in current society. By focusing only on the psychological aspect, the thoughts and feelings of an adolescent as individual can be explained, but it is more difficult to explain the social problem of more social media use within psychology. The sociological aspect helps with this by focusing more on groups and social structures, so that society can be better understood. The integration of these two perspectives makes it possible to investigate the complex relationship between the individual behavior and feelings of adolescents and their social context.