Title: Exploring the Bidirectional Relationship between FoMO, Intensive, and Problematic Social Media Use: The Role of Friendship Quality

Name and student number: Babette Tallen, 6788114

Name supervisor: Regina van den Eijnden

Master program: Youth Development & Social Change

Month and year: June 2024

Word count: 5901

Disclaimer: *This thesis has been written as a study assignment under the supervision of a Utrecht University teacher. Ethical permission has been granted for this thesis project by the ethics board of the Faculty of Social and Behavioural Sciences, Utrecht University, and the thesis has been assessed by two university teachers. However, the thesis has not undergone a thorough peer-review process so conclusions and findings should be read as such.*

Abstract

Widespread use of social media among Dutch adolescents raises concerns regarding (Problematic) Social Media Use, Fear of Missing Out and its related consequences. However, the relationship between FoMO, (P)SMU and quality of friendships remains scarcely studied. This research aimed to explore the bidirectional relationship between FoMO and (P)SMU, and the possible moderating effect of quality of friendships. Data from a longitudinal study conducted in the Netherlands called the Digital Youth Project (DiYo) were used. Participants (N = 1369) completed surveys regarding FoMO, (P)SMU and perceived quality of friendships across two annual waves. Findings showed a significant increase of SMU and PSMU one year later when FoMO was heightened. In addition, higher (P)SMU also predicted a heightened levels of FoMO. The impact of FoMO on (P)SMU seems to be higher when the perceived quality of friendships is relatively low and relatively high, compared to the moderate group. The results place importance on the interplay between FoMO, (P)SMU and quality of friendships, as bidirectionality was established, which could indicate a vicious cycle whereby FoMO and (P)SMU strengthen each other. Policy and intervention measures could benefit from these findings as it would prove useful to target both FoMO and (P)SMU. Additionally, attention should be paid to the finding that an interaction between (P)SMU and high perceived quality of friendships could further impact FoMO, as current research often places emphasis on the adolescent with a low quality of friendships. Having close friends could be of influence on the relationship between (P)SMU and FoMO.

Abstract

Wijdverspreid gebruik van sociale media onder Nederlandse adolescenten roept zorgen op over (Problematisch) Sociale Media gebruik, Fear of Missing Out en de gerelateerde gevolgen. Echter, de relatie tussen FoMO, (P)SMU en de kwaliteit van vriendschappen wordt schaars onderzocht. Dit onderzoek had als doel de bidirectionele relatie tussen FoMO en (P)SMU te onderzoeken, evenals het mogelijk modererende effect van waargenomen kwaliteit van vriendschappen. Gegevens van een Nederlands longitudinaal onderzoek, genaamd het Digital Youth Project (DiYo), werden gebruikt. Deelnemers (N = 1369) vulden enquêtes in over FoMO, (P)SMU en de waargenomen kwaliteit van vriendschap gedurende twee jaarlijkse golven. De bevindingen toonden een significante toename van (P)SMU een jaar later bij een verhoogd niveau van FoMO. Ook verhoogde niveaus van (P)SMU voorspelden verhoogde niveaus van FoMO. De impact van FoMO op (P)SMU lijkt groter te zijn wanneer de waargenomen kwaliteit van vriendschappen relatief laag of hoog is, vergeleken met middelmatige kwaliteit van vriendschappen. De resultaten benadrukken het belang van de wisselwerking tussen FoMO, (P)SMU en de kwaliteit van vriendschappen, aangezien bidirectionaliteit werd gevonden, wat kan wijzen op een vicieuze cirkel waarbij FoMO en (P)SMU elkaar versterken. Beleid- en interventiemaatregelen kunnen profijt halen uit deze bevindingen, aangezien het nuttig kan zijn om op zowel FoMO als (P)SMU te richten. Daarnaast moet aandacht worden besteed aan de bevinding dat een interactie tussen (P)SMU, hoge en lage waargenomen kwaliteit van vriendschap FoMO verder zou kunnen beïnvloeden, aangezien huidig onderzoek vaak de nadruk legt op adolescenten met een lage kwaliteit van vriendschap.

Introduction

Social media use is highly prevalent, with 96,8% of Dutch youth between 12 to 25 years using social media in 2019 (CBS, 2020). The high use of social media gives way to a higher prevalence of (problematic) social media use (P)SMU, with 7.38% of adolescents experiencing PSMU (Boer et al., 2020). PSMU can be characterised by addiction symptoms such as: a preoccupation with social media, developing a tolerance and withdrawal symptoms like anxiety when social media use is restricted (Bányai et al., 2017). Next to PSMU, 84% of Dutch adolescents indicated using social media (almost) daily, whereas 35.6% indicated using social media continuously throughout the day and ages 15 to 19 spending almost 3 hours daily on social media (NJI, 2023; Boer et al., 2021; Jonker et al., 2024). Intense SMU is defined by the time that is spent on social media and has been linked to an increased experience of negative emotions such as loneliness, anger and depression (Lin et al., 2017). This research will combine the terms PSMU and SMU into the term (P)SMU to refer to both the concept of problematic and intense social media use.

One of the determinants of (P)SMU was found to be Fear of Missing Out (FoMO) (Hussain et al., 2024; Roberts & David, 2019). The definition of FoMO encapsulates the pervasive anxiety or apprehension that others might be experiencing enjoyable or rewarding events or opportunities from which one feels excluded. Leading the individual to feel pressured to constantly observe what others are doing, in order to alleviate FoMO. (Przybylski et al., 2013; Servidio et al., 2024; Hussain et al., 2024). FoMO further has been found to predict later depression and anxiety (Hussain et al., 2024). Given the high prevalence rates of FoMO (27%), PSMU (7.38%) and continuous SMU (35.6%) with their own consequences, it is of importance to understand how these concepts influence each other (Hadders et al., 2017; Boer et al., 2020). Yet, current research on the interplay between these concepts is scarce (Li et al., 2024). It is further important to understand the factors

influencing these concepts, as they can both detrimentally impact the well-being of adolescents through anxieties and lower levels of life satisfaction (Hadders et al., 2017).

One such factor that might be of importance to consider when investigating (P)SMU and FoMO is the perceived quality of friendships from adolescents. Most adolescents interact on a daily basis with their peers via social media platforms (Odgers & Jensen, 2020). When these relationships are of a higher quality, more online communication is prevalent (Odgers & Jensen, 2020). On the one hand, having a high quality of friendships could possibly lead to a stronger relationship between FoMO and (P)SMU as adolescents may feel like they have to constantly follow their close friends' posts and activities, thereby leading to a continuous use of social media, possibly putting individuals at risk for (P)SMU (Tanhan et al., 2022). On the other hand, experiencing a lower quality of friendships could cause adolescents to seek this quality of friendships online to compensate for a lack thereof (Chen et al., 2021). This could possibly pose adolescents who experience a low quality of friendships at risk for (P)SMU. Therefore, the present study will first examine the bidirectional relationship between FoMO and (P)SMU. In addition, the role of quality of friendships in the relationship between (P)SMU and FoMO will be studied.

This leads to the research questions being as follows:

How does Fear of Missing Out (FoMO) influence the risk of developing Intensive and Problematic Social Media Use (P)SMU among adolescents, and conversely, how does (P)SMU influence the risk of experiencing FoMO, and what is the role of quality of friendships in this relationship?

FoMO and (P)SMU

A possible mechanism through which FoMO could lead to (P)SMU is provided by Social Determination Theory (SDT). SDT posits that individuals have an innate need for relatedness, with relatedness referring to the need for closeness and connection with others

(Ryan & Deci, 2000). Relatedness could be especially relevant for adolescents, since peer relationships grow in importance when moving to early adolescence. Adolescents experience an increased sensitivity to social input and orientate themselves toward peer relationship (Schacter et al., 2021). This growing importance and reliance on relatedness could possibly explain that adolescents who experience FoMO have an urge to stay connected with their peers. This could be to fulfil the need for relatedness and to release themselves of the feelings of FoMO (Li et al., 2024). A way adolescents could secure this connection is through social media use to continuously stay connected with their peers (Zhu & Xiong, 2022).

Consequently, this continuous use of social media motivated by a need for social interaction and communication might lead to higher levels of (P)SMU as it can become automatic and impulsive. Research has indeed shown that FoMO is a possible strong predictor of SMU, and PSMU was also found to be positively associated with FoMO (Baltaci & Ersoz, 2022; Kostić et al., 2022; Zhu & Xiong, 2022). This leads the first hypothesis to be as follows:

H1: Adolescents who experience FoMO are more likely to develop patterns of Intensive or Problematic Social Media Use.

(P)SMU and FoMO

It can be assumed that other mechanisms play a role when considering that (P)SMU may also lead to higher levels of FoMO. This possible mechanism is rooted in Social Comparison Theory (SCT). This theory posits that individuals have an internal drive to compare themselves to peers to evaluate their own abilities and opinions (Festinger, 1954). Social media can activate these social comparison processes since adolescents mainly tend to engage in positive self-presentation (Vogel & Rose, 2016). By just posting the positive side of their lives, the chance that others engage in upward social comparison is increased. Upward social

comparison refers to the phenomenon that an individual perceives others to have a better life than they have themselves (Burnell et al., 2019). When adolescents engage in social media use and are confronted with positive images of others, this can trigger a sense of FoMO (Burnell et al., 2019). Adolescents with higher (P)MSU may engage in more upward social comparison due to their higher social media exposure. Indeed, preliminary research has shown that individuals who spend more time on social media experience more FoMO (Bissell & Chou, 2023). This leads to the second hypothesis being:

H2: Adolescents who engage in Intensive or Problematic Social Media Use are more likely to experience FoMO.

The role of lower and higher perceived quality of friendships

Looking at the perceived quality of friendships, the relationship between (P)SMU and FoMO may be stronger for those who experience a low quality of friendships. The innate need for relatedness posed by SDT may be especially salient for these adolescents, as the need for relatedness is increased during this developmental period (West et al., 2021). Adolescents move away from their parents and expand their social worlds with their peers. Adolescents particularly benefit from high quality friendships, characterised by high levels of intimacy, support and trust (Schacter et al., 2021). When adolescents lack these high-quality friendships, they can experience an unmet need of relatedness. To compensate for this unmet need, they may seek connection with others through social media (Pupi, 2023). However, when participating on these social media platforms, these adolescents may be confronted with the many positive images posted by their peers (Burnell et al., 2019). By engaging with social media platforms to alleviate negative feelings such as loneliness, these adolescents may actually feel lonelier and socially disconnected (Gupta & Sharma, 2021). Thus, when the need of relatedness is not satisfied due to a low quality of friendships, intensive and

problematic social media use may more strongly lead to FoMO due to the confrontation of these positive images. Research indeed found that FoMO can possibly stem from the unmet internal need for relatedness to others (Gupta & Sharma, 2021).

Opposingly, for adolescents with a higher quality of friendships, the relationship between (P)SMU and FoMO may also be stronger. This is expected since adolescents may care more about the social media information and messages of friendships that are perceived to be of higher quality. While no research known by this study directly investigated this relationship, certain empirical findings suggest that a higher quality of friendships may lead higher levels of (P)SMU to predict a heightened experience of FoMO. Firstly, in a qualitative study by De Groote and Van Ouytsel (2022), adolescents indicated that they replied more promptly to their close friends than to acquaintances, regardless of urgency or importance of the received message. The interviewed adolescents indicated that it was expected and the logical thing to do to reply to good friends promptly, whereas they would often ignore an acquaintance. Possibly pointing to adolescents caring more about the information provided by their friendships that are perceived to be of higher quality. Secondly, individuals tend to compare themselves to similar individuals (Buunk & Oldersma, 2003). During the life course, but especially during adolescence, similarity of individuals is a key factor to form close friendships (Laursen, 2017). This leads to high quality friendships possibly being characterised by a higher level of social comparison. These findings suggest that adolescents might be particularly sensitive to social comparison information provided by their high-quality friendships. As hypothesised before, these social comparisons in online situations are often upward, since adolescents tend to engage in positive self-presentation (Burnell et al., 2019; Vogel & Rose, 2016). By caring more about and comparing more to high quality friendships, the relationship between (P)SMU and FoMO may be stronger for those with high quality friendships.

Taken together, the present study will test the following two opposing hypotheses:

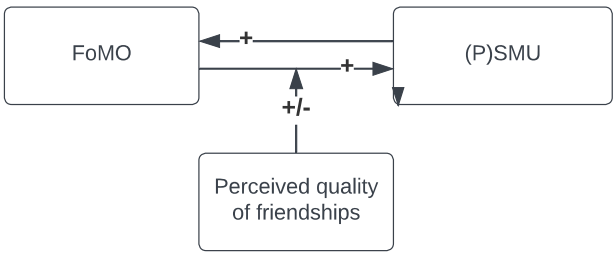
H3: Having a low perceived quality of friendships (in comparison to a medium perceived quality) increases the effect that (P)SMU has on the development of FoMO.

H4: Having a high perceived quality of friendships (in comparison to a medium perceived quality) increases the effect that (P)SMU has on the development of FoMO.

These four hypotheses lead to the conceptual model to be as follows:

Model 1

A visual representation of the theoretical model



Note. Fear of Missing Out (FoMO). (Problematic) Social Media Use (P)SMU.

The current study

Given the growing body of literature showing that FoMO and (P)SMU predict negative mental health outcomes, it is important to gain insight into the bidirectional relationship between FoMO and (P)SMU. It is further important to consider concepts that might influence this relationship, this study will therefore consider the possible moderating role of perceived quality of friendship on the relationship between (PS)MU and FoMO. Data came from a longitudinal study of 1369 Dutch secondary school students across two annual waves who participated in the Digital Youth Project (DiYO).

Methods

Design and sample

The data used in this study were from an existing database called the Digital Youth Project (DiYo). DiYo is a national longitudinal study, including 5 annual measurement waves, conducted in the Netherlands at several secondary schools from 2015 to 2019. Emails were sent out to parents of children at these schools, where passive consent was established, thus parents who did not consent had to explicitly report this. The study, conducted by the University of Utrecht, measures the possible positive and negative consequences of social media use and gaming on the psychosocial well-being and academic achievements of youth through an online self-report questionnaire at school. Qualtrics survey software was used to collect the online self-report questionnaire in Dutch during school hours. The current research studying FoMO, (P)SMU and quality of friendships used the data of two waves, 2017 and 2018, which will be referred to as T1 (2017) and T2 (2018).

The sample consisted of 1369 participants that both filled in the relevant variables on the questionnaire at T1 and T2, whereas 2639 filled it in at T1, leaving a 51.9% nonresponse rate. This nonresponse can be explained due to scheduling difficulties for participation and class withdrawal. The sample at T1 consisted of 50.5% (N = 692) participants identifying as male and 49.5% (N = 677) identifying as female, the mean age at T1 was 13.6 (N = 1369, SD = 1.17) Looking at educational level, 32.6% was in pre-vocational education (N = 193), 14.1% (N = 14.1%) was in pre-vocational and senior general education, 39.9% (N = 546) was in senior general or pre-university education and finally 13.4% (N = 184) was in pre-university education.

Procedure and ethics

Parents and their children were notified of the study through an informed consent letter about the content of the study such as the subject and purpose of the study and they could refuse participation of their adolescent child. Adolescents could also refuse participation at any moment. Adolescents and their parents were informed that the study is voluntary, anonymous and that they could stop the questionnaire at any moment. The study was approved by the ethical board of the Faculty of Social Sciences at Utrecht University (FETC16-075 Eijnden). For this specific research ethical approval was also granted (FETC24-1229 Tallen).

Instruments

Age, gender and education

Participants were asked to indicate their age in whole years, with a range of 11 to 18 used. To measure gender, participants could indicate if they identified as a boy or girl. For education, the respondents were asked what secondary educational level they followed, four options were included.

SMU

SMU was measured using six items asking about the frequency of SMU, operationalised as Social Media Intensity (SMI). Respondents were asked questions such as “How often per week do you ‘like’ a message, picture of video from others on social network sites (for example Facebook, Twitter, Instagram Google+ or Pinterest)?” Respondents got seven answer options, never or less than once a week, 1-2 times per week, 3-5 times per week, 6-10 times per week, 11-20 times per week, 21-40 times per week or more than 40 times. The Cronbach’s alpha for the six included items was found to be .83, which is a good level of reliability.

PSMU

PSMU was measured using the Social Media Disorder (SMD) scale, the development of this scale was done in order to discover the prevalence of disordered social media use among adolescents (Van den Eijnden et al., 2016). This scale is based on the DSM-5 criteria for Internet Gaming Disorder (Lemmens et al., 2015). This scale consists of nine items that could be answered with "yes" or "no." Respondents were asked to answer based on the past year. Questions were used such as, "Have you in the past year often felt bad when you could not use social media?" The Cronbach's alpha for the nine included items was found to be .64, which is an acceptable level of reliability, it might be lower due to the dichotomous nature of the items. However, the distribution of the scale was too skewed to perform a linear regression. Thus, two groups were identified, respondents that answered 0 to 1 times with 'yes' were coded zero (no disordered social media use), whereas participants that answered 2 or more times with 'yes' were coded one (problematic social media use). The decision for the group thresholds at 0 to 1 and 2+ was made due to a low sample size of those indicating higher scores of (6+) SMD. Additionally, research by Boer et al. (2021) found those with scores of 2+ to be more prone than normative users to experience adverse consequences due to their SMU, and thus considered this group as at-risk. Still, almost three quarters of the sample were coded to be the group without disordered social media use.

FoMO

FoMO was measured using the Fear of Missing Out scale (Przybylski et al., 2013). This scale originally consists of ten items, however the DiYO project only uses five statements such as "I am afraid others are having more fun than I am." These statements could be answered on a 5-point Likert scale, ranging from "Totally right" to "Totally wrong," indicating if the statement fits the respondent. The Cronbach's alpha for these five items was .83, indicating a high level of reliability.

Perceived friendships quality

Perceived quality of friendships was measured using the Competency Experience Close Friendships scale (Straathof & Treffers, 1989). The scale consisted of five items, of which four were reverse coded. Statements were used where the respondent could answer on a 5-point Likert scale, ranging from "Totally right" to "Totally wrong." An exemplar statements is as follows: "I do not have a good friend with whom I can share a secret." The distribution of this scale was too skewed, as most participants indicated a high quality of friendships. Three groups were made, low, medium and high quality of friendships, using medium quality of friendships as a reference category. Two variables were made, a category where a low perceived quality of friendships was coded 1, based on the scores 5 to 13, as compared to a medium perceived quality, which consisted of scores 14 to 18, coded as 0. Next, a variable was made to compare a high perceived quality of friendships to a medium perceived quality, high quality of friendships was coded 1, based on the scores between 19 to 25, medium scores were again 0. The Cronbach's alpha calculated was 0.58, indicating a low level of reliability, which could be due to the skewness of the data.

Data analysis

Firstly, descriptive statistics were calculated for all variables included. For demographic variables the data from T1 were used, however for all other used variables, SMD, SMI, FoMO and Friendship Quality, the data on both T1 and T2 were used. Next, a correlation table was made to check for correlations between the demographic variables at T1, and other used variables at T1 and T2. Correlations are used to compare univariate and multivariate relationships between variables.

For most hypotheses, a linear regression analysis was used to test the relationship under investigation. This included the relationship between FoMO at T1 and SMU at T2,

(P)SMU at T1 and FoMO at T2 and both interaction effects of quality of friendships with (P)SMU. However, for the relationship between FoMO at T1 and PSMU at T2, a logistic regression was used since the dependent variable was categorical. For all analyses, gender, age, educational level and the dependent variable at T1 were included as control variables.

For the moderation effect, two variables were made where a low quality of friendships was compared to medium quality, and a high perceived quality of friendships compared to medium quality. These two dummies were multiplied by the continuous variables of SMI and SMD to create the interaction terms used in the linear regressions.

For the descriptive statistics and correlations below, the continuous versions of the variables quality of friendships and SMD are used. SMD was further used as a continuous variable in the regression of the interaction effect of quality of friendship on the relationship between SMI, SMD and FoMO. However, for the regressions calculated, quality of friendships and SMD are used as a dichotomous variable due to the skewed distribution of the used data.

Results

Descriptive statistics

In Table 1, the descriptive statistics of variables used at T1 and T2 can be seen. SMI, SMD and Perceived Quality of Friendships are relatively stable across the two waves when looking at mean scores. However, a small increase in the mean FoMO from T1 to T2 can be seen of $M = 0.26$.

Table 1

Descriptive statistics of all variables at T1 and T2

	n	*M*	*SD*	*Minimum*	*Maximum*
SMI T1	1369	22.82	8.02	6	42
SMI T2	1369	22.57	7.42	6	42
SMD T1	1369	1.24	1.53	0	9
SMD T2	1369	1.17	1.53	0	9

FoMO T1	1369	8.90	3.61	5	25
FoMO T2	1369	9.16	3.73	5	25
Friend T1	1369	21.59	3.48	5	25
Friend T2	1369	21.62	3.52	5	25

Note. SMI = Social Media Intensity. SMD = Social Media Disorder. FoMO = Fear of Missing Out. Friend = Quality of Friendships.

Correlations were conducted to see how the control variables, variables at T1 and T2 correlate. As can be seen below in Table 2, all variables significantly correlated with each other, except for education and age. Additionally, quality of friendships at both waves did not correlate with age, and SMD at T2 did not correlate with gender and age.

Table 2

Correlations between FoMO, SMI, SMD, quality of friendships, age and gender.

	1	2	3	4	5	6	7	8	9	10	11
1. Gender[a] T1	—										
2. Age T1	-.06***	—									
3. Education T1	.11***	.01	—								
4. SMI T1	.14***	.09***	-.11***	—							
5. SMI T2	.08**	.13***	-.13***	.66***	—						
6. SMD T1	.08***	-.04*	-.15***	.32***	.26***	—					
7. SMD T2	.04	-.03	-.14***	.21***	.29***	.46***	—				
8. FoMO T1	.10***	.05**	.13***	.14***	.15***	.27***	.28***	—			
9. FoMO T2	.12***	.10***	.14***	.12***	.17***	.18***	.33***	.49***	—		
10. Friend T1	.16***	-.02	.05**	.10***	.10***	-.14***	-.11***	-.19***	-.16***	—	
11. Friend T2	.13***	-.003	.12***	.09***	.07***	-.14***	-.18***	-.11***	-.18***	.41***	—

Note. Pearson's correlation was used for all correlations. [a]Reference category = boys. *p<.05. **p<.01. ***p<.001.

Effect of FoMO on SMI and SMD

A linear regression analysis was conducted to predict SMI at T2 based on FoMO at T1. After controlling for gender, age, education and SMI at T1, it was found that FoMO T1 significantly predicted SMI T2. Meaning that when higher levels of FoMO are experienced,

more intensive SMU is predicted, as seen in Table 3. The control variables show that gender has no effect on this relationship. However, an increase of age show a predicted increase of SMI, and adolescents with a lower educational level also show higher levels of SMI. Lastly, higher levels of SMI at T1 predicted higher levels of SMI at T2. Thus, adolescents already experiencing SMI at T1 are also more likely to experience SMI at T2.

Table 3

The linear regression for the effect of FoMO at T1 on SMI at T2

Predictor	*B*	*SE*	*β*	*p*	*Δ R^2*
Step 1					.45***
Gender[a]	.13	.31	.01	.68	
Age	.44	.13	.07	<.001***	
Education level	-.42	.10	-.09	<.001***	
SMI T1	.59	.02	.64	<.001***	
Step 2					.003**
FoMO T1	.12	.04	.06	.005**	

Note. [a]Reference category = boys. *p < .05. **p < .01. ***p < .001.

Logistic regression was used to investigate the relationship between FoMO at T1 and SMD at T2. After controlling for gender, age, educational level and SMD at T1, the logistical regression for the effect of FoMO at T1 on SMD at T2 was statistically significant, indicating that higher levels of FoMO at T1 predicted an increase of experienced SMD at T2, which is shown in Table 4. Gender and age did not have a significant effect on SMD, however, a lower educational level did predicted a higher level of SMD at T2. An initial high score of SMD also predicted higher scores of SMD at T2.

Table 4

Predictor	*BIC*	*SE*	*OR*	*Wald Test*			*95% Confidence Interval*		*Nagelkerke R^2*	*p*
				Wald Statistic	*df*	*p*	*Lower bound*	*Upper bound*		
Step 1	516.55									
Gender[a]		.27	1.11	.15	1	.70	.66	1.88		
Age		.13	.90	.68	1	.41	.71	1.15		
Education level		.10	.73	10.98	1	<.001***	.61	.88		
SMD T1		.34	9.01	42.92	1	< .001***	4.67	17.39		
Step 2	517.95								.014	.016**
FoMO T1		.03	1.09	6.04	1	.014**	1.02	1.16		

Note. [a]Reference category = boys. *p < .05. **p < .01. ***p < .001.

The effect of SMD and SMI at T1 on FoMO at T2

A linear regression was calculated to predict FoMO at T2 based on SMI at T1. It was found that SMI at T1 marginally significantly predicted FoMO at T2 which can be seen in Table 5. This finding indicates that higher scores of SMI at T1 predicted a somewhat increase in FoMO at T2. Additionally, a linear regression was calculated to predict FoMO at T2 based on SMD at T1. It was found that SMD significantly predicted FoMO as can be seen in Table 5. Thus, adolescents with higher scores of FoMO at T1 experience higher levels of SMD at T2. All control variables were significant meaning that girls, older adolescents and a higher educational level predict a higher level of FoMO at T2. Furthermore, a higher level of FoMO at T1 also predicted an increase of experienced FoMO at T2.

Table 5

The linear regression for the effect of SMI and SMD at T1 on FoMO at T2

Predictor	*B*	*SE*	*β*	*p*	*Δ R^2*
Step 1					0.25***
Gender[1]	.53	.18	.07	.003**	
Age	.15	.08	.05	.05*	

Education level	.16	.06	.06	.008**	
FoMO T1	.49	.03	.47	<.001***	
Step 2a[2]					0.002†
SMI T1	.02	.01	.05	.05†	
Step 2b[2]					.003*
SMD T1	1.04	.44	.06	.02**	

Note. [1]Reference category = boys. p = .05†. p < .05. **p < .01. ***p < .001. [2]Step 2a and 2b are the results of two separate linear regressions.

The moderation effect of perceived quality of friendships on the relationship between SMI/ SMD at T1 and FoMO at T2

A linear regression was conducted to look at the interaction effect of a low and high perceived quality of friendships (compared to a medium perceived quality of friendship) on the relationship between SMI at T1 and FoMO at T1. When controlling for gender, age, educational level and FoMO at T1, it was found that the interaction term of a low perceived quality of friendships and SMI at T1 significantly predicted higher levels of FoMO at T2, which can be seen in Table 6. Thus, for those with a lower perceived quality of friendships, higher levels of SMI at T1 more strongly predict increased levels of FoMO at T2. Furthermore, for those with a high perceived quality of friendship, it was found that the interaction term of a high quality of friendships and SMI significantly predicted FoMO at T2, which can be seen in Table 6. So, when a higher perceived quality of friendships is experienced, higher levels of SMI at T1 predict an increase of FoMO at T2. Lastly, the main effects of a high perceived quality of friendship was also found to be significant. Meaning that for those with a high perceived quality of friendship, an increase in FoMO at T2 is predicted.

Looking at the control variables, the model for a low perceived quality of friendship showed no significant effects of age and educational level. However, for girls and initial

increased levels of FoMO at T1 an increase of FoMO at T2 is predicted. For the model with a high perceived quality of friendship, all control variables except for age were found to be significant, meaning that for girls, a higher educational level and higher levels of FoMO at T1, an increased experience of FoMO at T2 is predicted.

Table 6

The linear regression for the interaction and main effect of low and high perceived quality of friendships compared to medium, SMI at T1 on FoMO at T2.

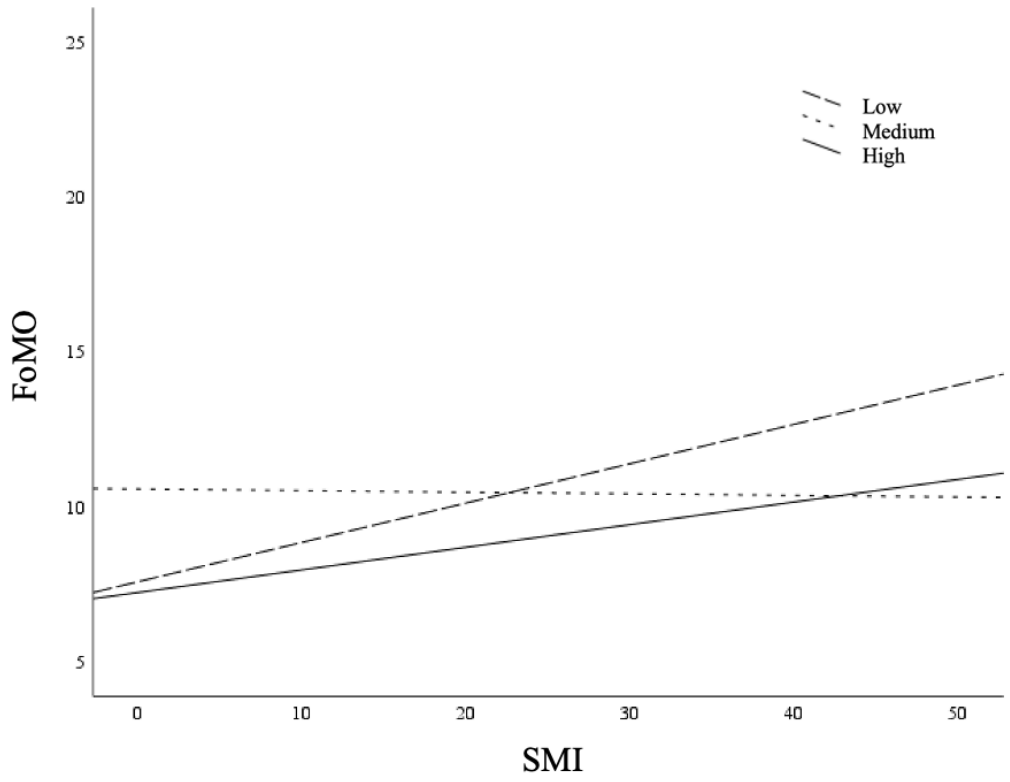
Predictor	*N*	*B*	*SE*	*β*	*p*	*Δ R^2*
Step 1a[1]						.14***
Gender[2]	239	1.07	.52	.13	.04*	
Age	239	.23	.22	.07	.29	
Education level	239	.24	.16	.10	.13	
FoMO T1	239	.30	.06	.30	<.001***	
Step 1b[1]						.26***
Gender[2]	1326	.54	.18	.07	.003**	
Age	1326	.12	.08	.04	.12	
Education level	1326	.18	.06	.07	.003**	
FoMO T1	1326	.50	.03	.47	<.001***	
Step 2a[1]						.002
Friend Low	239	-.46	.65	-.04	.47	
SMI T1	239	-.01	.03	-.02	.74	
Step 2b[1]						.007**
Friend High	1340	-.83	.25	-.08	.001**	
SMI T1	1340	.02	.01	.05	.07	
Step 3a[1]						.016*
Friend Low x SMI	239	.15	.07	.32	.04*	
Step 3b[1]						.003**
Friend High x SMI	1340	.09	.03	.25	.003*	

Note. [1]Steps 1a, 2a and 3a are in a linear regression together, whereas 1b, 2b, 3b, are in a different linear regression together. [2] Reference category = boys. *p < .05. **p < .01. ***p < .001.

In Figure 1, the significant interaction that was found between a low and high perceived quality of friendships compared to a medium perceived quality of friendships and SMI can be seen. For individuals with a perceived low and high quality of friendships compared to medium, an increase in FoMO can be seen among those with more intensive social media use.

Figure 1

A visual representation of the interaction between SMD and friendships quality at T1 and FoMO at T2



Next, another linear regression was conducted to look at the interaction effect of a low and high perceived quality of friendships (compared to a medium perceived quality of friendship) on the relationship between SMD at T1 and FoMO at T1. It was found that the interaction

term between a high quality of friendships and SMD significantly predicted FoMO at T2, which can be seen in Table 7. Thus, higher levels of SMD at T1 predict an increase of FoMO at T2 for those with a higher perceived quality of friendship. This effect was not found to be significant for the interaction effect of a lower quality of friendship and SMD at T1 on FoMO at T2. Furthermore, a main effect of a higher perceived quality of friendships and SMD at T1 on FoMO was also found to be significant. Meaning that for those with a higher perceived quality of friendships and higher levels of SMD at T1, an increase in FoMO at T2 is predicted.

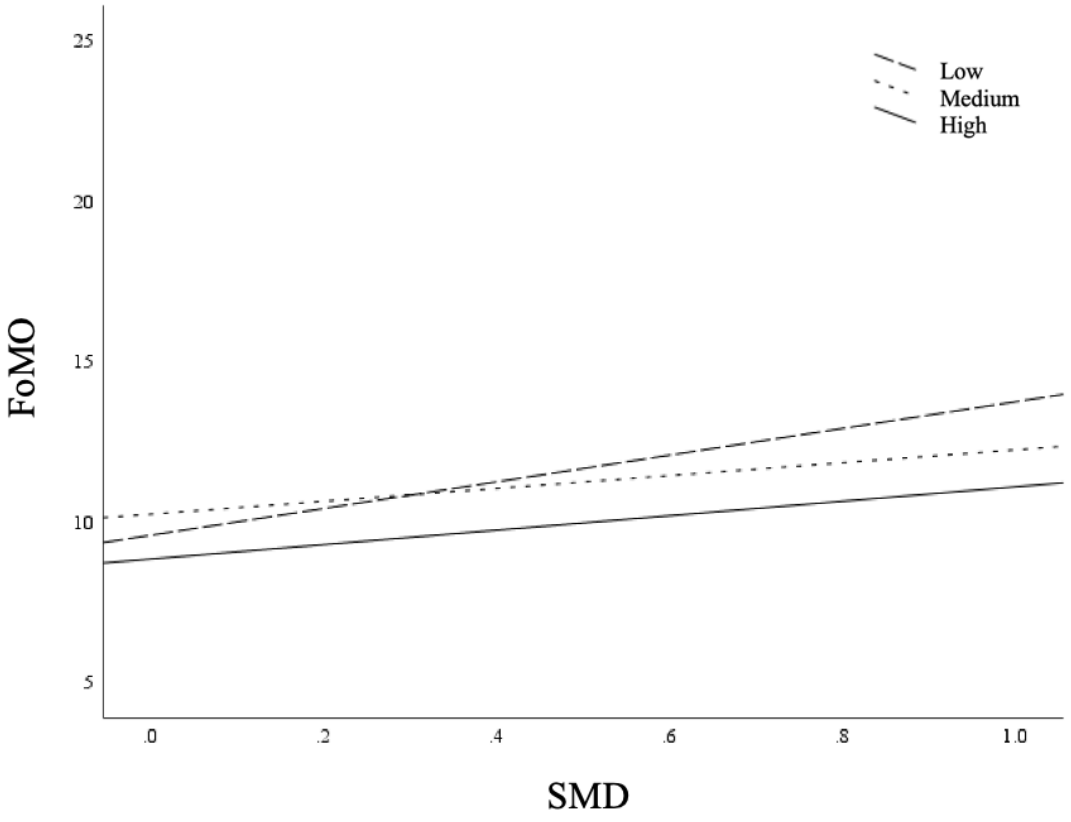
Predictor	*N*	*B*	*SE*	*β*	*p*	*Δ R^2*
Step 1a[2]						.14***
Gender[2]	239	1.07	.52	.13	.04*	
Age	239	.23	.22	.07	.29	
Education level	239	.24	.16	.10	.13	
FoMO T1	239	.30	.06	.30	<.001***	
Step 1b[2]						.26***
Gender[a]	1326	.54	.18	.07	.003**	
Age	1326	.12	.08	.04	.12	
Education level	1326	.18	.06	.07	.003**	
FoMO T1	1326	.50	.03	.47	<.001***	
Step 2a[2]						.006
Friend Low	239	-.44	.64	-.04	.49	
SMD T1	239	.16	.15	.07	.29	
Step 2b[2]						.009***
Friend High	1326	-.75	.25	-.07	.003*	
SMD T1	1326	.15	.06	.06	.02*	
Step 3a[2]						.012
Friend Low x SMD	239	.64	.36	.67	.07	
Step 3b[2]						.002*
Friend High x SMD	1326	.30	.15	.31	.04*	

Note. [1]Steps 1a, 2a and 3a are in a linear regression together, whereas 1b, 2b, 3b, are in a different linear regression together. [2] Reference category = boys. *p < .05. **p < .01. ***p < .001.

In Figure 2, the interaction between a low and high quality of friendships compared to a medium quality and SMD at T1 on FoMO at T2 can be seen. For those with a higher perceived quality of friendships compared to medium, an increase can be seen in FoMO among those experiencing higher levels of SMD. For those with a lower quality of friendships compared to medium, a trend can be seen of increase in FoMO among those with a higher quality in friendships, however, this effect was not found to be significant.

Figure 2

A visual representation of the interaction between SMD and friendships quality at T1 and FoMO at T2



Discussion

The present study aimed to shed light on the longitudinal relationship between Intensive and Problematic SMU (referred to as (P)SMU), FoMO and perceived quality of friendships among adolescents. To study these relationships the research question was as follows: How does Fear of Missing Out (FoMO) influence the risk of developing (P)SMU among adolescents, and conversely, how does (P(SMU) influence the risk of experiencing FoMO, and what is the role of quality of friendships in this relationship? It was found that higher levels of FoMO predicted higher levels of both intensive and problematic SMU, and that higher levels of both intensive and problematic SMU predicted a higher level of FoMO (although intensive SMU only showed a marginally significant effect). Regarding the interaction between (P)SMU and quality of friendships, it was found that for adolescents with a higher quality of friendships, compared to a medium quality of friendships, (P)SMU more strongly predicted FoMO. Interestingly, however, a similar effect was found for adolescents with a low quality of friendships, compared to a medium quality of friendships (although this effect was only marginally significant for problematic SMU). Thus, for adolescents with a higher and lower quality of friendships, compared to those with a medium quality of friendships, higher levels of intensive and problematic SMU predicted an increased experience of FoMO. Furthermore, it was found that a low and high quality of friendships in itself also predicted higher levels of FoMO, when compared to a medium quality of friendships (although only marginally significant in the model with a low quality of friendships and PSMU).

In line with hypothesis 1, adolescents who experience higher levels of FoMO are more likely to experience higher levels intensive or problematic social media use. This finding aligns with the cross-sectional research by Zhu & Xiong (2022), which found that those with higher levels of FoMO are more likely to experience problematic SMU. The

present research was further in line with research by Kostiç et al., (2022), where FoMO was found to predict a higher level of SMU. This could be explained by the concept of the need for relatedness posed by Social Determination Theory, since adolescents experience an increased sensitivity for social output, peer relationships and relatedness (Ryan & Deci, 2000). These sensitivities could lead to adolescents being vulnerable to the urge that FoMO creates to stay connected, consequently leading to a higher intensity and problematic SMU.

While previous research often posited that increased levels of FoMO predicted higher levels of (P)SMU, this study has found that the reverse is also true. Meaning that, consistent with hypothesis 2, those with increased levels of intensive and problematic were also more likely to experience higher levels of FoMO. This is in line with preliminary research by Bissell & Chou (2023), who found that individuals who spend more time on social media are more likely to experience increased FoMO. However, when looking at the relationship between intensive SMU and FoMO, only a marginally significant effect was found. This difference may be explained by the possibility that adolescents who experience problematic SMU are more vulnerable to upward social comparison than adolescents engaging in intensive SMU because their need for relatedness might be less satisfied. Since the result is only marginally significant, it means that the evidence found is not strong enough to conclude a relationship between FoMO and intensive SMU. To gain a better understanding and stronger evidence, future research should conduct additional studies to determine if there is a specific condition where the relationship is significant. This could help explain if the found marginal significance is a consistent finding or a result of explanations such as those with problematic SMU experiencing a heightened vulnerability for social comparison.

In partial agreement with hypothesis 3, the findings show that for those with a lower perceived quality of friendships (compared to those with a medium quality of friendships), the relationship between intensive SMU and FoMO was stronger. This finding is in

accordance with research by Gupta & Sharma (2021), who found that FoMO can possibly stem from an unmet need for relatedness, as for those with a low perceived quality of friendships the need for relatedness is unmet (Schacter et al., 2021). Due to this low perceived quality of friendship, these adolescents may seek this connection through SMU, where they are exposed with positive images of their peers, leading to increased levels of FoMO (Pupi, 2023; Burnell et al., 2019). However, for PSMU, the interaction effect with a low perceived quality of friendship was not found to be significant. Although Figure 2 visually suggest a trend of increased FoMO for those with a low perceived quality of friendships experiencing increased PSMU. The plot indicates a steeper line compared to the significant effect found for the interaction of high perceived quality of friendships and intensive SMU. A possible explanation for this effect could be the low number of adolescents with a low perceived quality of friendship and PSMU. Future research should investigate this effect in a larger sample of adolescents with a low perceived quality of friendships experiencing PSMU, to see if the effect can be replicated.

Opposingly, this study also found results in line with hypothesis 4, meaning that for adolescents with a higher perceived quality of friendships, the relationship between (P)SMU and FoMO was stronger. Although no prior research, that this study is aware of, has investigated this relationship before, it was expected based on Social Comparison Theory (Festinger, 1954). As high quality friendships during adolescence are characterized by similarity and those who share a higher similarity compare themselves to each other more frequently, it was expected that especially these high perceived quality friendships would lead to social comparison (Laursen, 2017; Buunk & Oldersma, 2003). These social comparisons are often upward, potentially triggering FoMO due to increased exposure from intensive and problematic SMU. This study confirms that higher perceived quality of friendships have an moderating effect on the relationship between (P)SMU and FoMO. Thus,

for those with a higher perceived quality of friendships, compared to medium, increased intensive and problematic SMU could possibly lead to higher levels of FoMO.

Strengths and limitations

The strengths of the present study lie in the longitudinal design, the large dataset utilised from the DiYo project, and the statistical tests with control variables for the outcome variable at T1 and demographic factors. A longitudinal design provides research with information about a sequence of effects, which is relevant to establish cause-and-effect relationships, due to a measurement at two waves, instead of one timepoint. A large sample size further is a strength that provides greater generalisability and increased statistical power. Controlling for the outcome at a previous measurement wave and for demographic factors enhances internal validity and generalisability as effects originating from these factors are accounted for in the conducted analysis.

However, several limitations should also be considered. Firstly, the used data were based on self-report from adolescents. A recommendation for future research would be to use more objective measures, such as tracking the intensity of social media instead of relying on how much adolescents say they use social media. Secondly, the effect of SMU on FoMO was only marginally significant. However, since standardised coefficients and a longitudinal research design were used, this finding should not be ignored as it could show a possible trend that should further be investigated. Additionally, this research was limited by the low number of adolescents with a low perceived quality of friendships and PSMU which may not accurately represent the population, thus limiting generalisability and further may overlook smaller but meaningful effects. Lastly, a limitation that should be noted is the statistical choice to consider high and low quality of friendships in separate models. Future research should consider these concepts in the same linear regression to offer a comparison of high and low quality of friendships to see how they relate to each other.

Implications and future recommendations

This research has several scientific and practical implications. Regarding the scientific implications, this research adds knowledge to the literature regarding the bidirectional relationship between FoMO and (P)SMU. Practically, this suggests that interventions targeting a reduction of FoMO or (P)SMU should consider the reciprocal relationship that exists between these variables. Furthermore, the research provides scientific implications by being among the first to investigate the interacting effect of (P)SMU and perceive quality of friendships on FoMO, suggesting that both those with a low and those with a high perceived quality of friendships experience relatively more FoMO as a function of (P)SMU, in comparison to those with a moderate quality of friendships. Particularly the findings regarding adolescents with a relative high quality of friendships are innovative. This relationship could prove interesting to replicate and further investigate in future research. The mechanisms underlying this curvilinear effect should be further studied to better understand how the underlying mechanisms work as the current research only hypothesised about the underlying mechanisms. These findings could imply that interventions aiming at FoMO and (P)SMU must take quality of friendships into account when considering how to lower FoMO and (P)SMU among adolescents. Lastly, future research could explore if a perceived low and high quality of friendships also impacts the relationship between FoMO and (P)SMU.

Concluding, the findings of the present research call for a more nuanced understanding of FoMO, (P)SMU and quality of friendships, noting a relationship that could be influenced by friendship quality of adolescents. Interventions should take this knowledge into account and consider the role of perceived high and low quality friendships, which can impact the relationship between (P)SMU and FoMO. Social media will continue to be a central part of adolescent lives. It is thus important to understand which mechanisms drive

common concepts in the experience of adolescents like (P)SMU and FoMO, and how interventions can successfully mitigate negative consequences associated with these concepts.

References

Akbari, E., & Simons, R. (2018). Efficacy of Using social Networks in learning and Teaching Based on Self-Determination Theory: an interventional study. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, *In Press*(In Press). https://doi.org/10.5812/ijvlms.84540

Alfasi, Y. (2019). The grass is always greener on my Friends' profiles: The effect of Facebook social comparison on state self-esteem and depression. *Personality and Individual Differences*, *147*, 111–117. https://doi.org/10.1016/j.paid.2019.04.032

Boer, M., Stevens, G. W. J. M., Finkenauer, C., Koning, I. M., & Van Den Eijnden, R. J. J. M. (2021). Validation of the Social Media Disorder Scale in Adolescents: Findings from a Large-Scale Nationally Representative sample. *Assessment*, *29*(8), 1658–1675. https://doi.org/10.1177/10731911211027232

Boer, M., Van Dorsselaer, S., De Looze, M., De Roos, S., Brons, H., Van Den Eijnden, R., Monshouwer, K., Huijnk, W., Ter Bogt, T., Vollebergh, W., & Stevens, G. (2021). *HBSC 2021 Gezondheid en welzijn van jongeren in Nederland*. Drukkerij Zalsman Zwolle. https://www.trimbos.nl/wp-content/uploads/2022/09/AF2022-HBSC-2021-Gezondheid-en-welzijn-van-jongeren-in-Nederland.pdf

Boer, M., Van Den Eijnden, R., Boniel-Nissim, M., Lo Fo Wong, S., Inchley, J., Baďura, P., Craig, W., Gobiņa, I., Kleszczewska, D., Klanšček, H. J., & Stevens, G. W. J. M. (2020). Adolescents' intense and problematic Social media use and their Well-Being in 29 countries. *Journal of Adolescent Health*, *66*(6), S89–S99. https://doi.org/10.1016/j.jadohealth.2020.02.014

Boer, M., Stevens, G. W. J. M., Finkenauer, C., Koning, I. M., & Van Den Eijnden, R. J. J. M. (2022). Validation of the Social Media Disorder Scale in Adolescents: Findings from a Large-Scale Nationally Representative sample. *Assessment*, *29*(8), 1658–1675. https://doi.org/10.1177/10731911211027232

Baltaci, S., & Ersoz, A. R. (2022). Social media engagement, fear of missing out and problematic ınternet use in secondary school children, *International Online Journal of Educational Sciences*, *14*(1), 197-210.

Bányai, F., Zsila, Á., Király, O., Maráz, A., Elekes, Z., Griffiths, M. D., Andreassen, C. S., & Demetrovics, Z. (2017). Problematic Social Media Use: Results from a Large-Scale Nationally Representative Adolescent Sample. *PLOS ONE*, *12*(1), e0169839. https://doi.org/10.1371/journal.pone.0169839

Bissell, K., & Chou, S. (2023b). Living for the likes: Social media use, fear of missing out, and body and life satisfaction in women. *Psychology of Popular Media*. https://doi.org/10.1037/ppm0000507

Burnell, K., George, M. J., Vollet, J. W., Ehrenreich, S. E., & Underwood, M. K. (2019). Passive social networking site use and well-being: The mediating roles of social comparison and the fear of missing out. *Cyberpsychology*, *13*(3). https://doi.org/10.5817/cp2019-3-5

Buunk, B. P., & Oldersma, F. L. (2003). Social comparison and close relationships. *Blackwell handbook of social psychology: Interpersonal processes*, 388-408.

CBS. (2020, 18 december). *Wie gebruikt het vaakst sociale media? - Nederland in cijfers 2020*. Wie Gebruikt het Vaakst Sociale Media? - Nederland in Cijfers 2020 | CBS. https://longreads.cbs.nl/nederland-in-cijfers-2020/wie-gebruikt-het-vaakst-sociale-media/

Chen, Y., Li, R., & Liu, X. (2021). Relatedness frustration and compensatory behaviors in social networking sites among Chinese college students: Role of self-control failure. *Current Psychology (New Brunswick, N.J.)*, *42*(1), 307–316. https://doi.org/10.1007/s12144-021-01440-

Festinger, L. (1954). A theory of social comparison processes. Human Relations, 7, 117–140.

Gupta, M., & Sharma, A. (2021). Fear of missing out: A brief overview of origin, theoretical underpinnings and relationship with mental health. *World Journal of Clinical Cases*, *9*(19), 4881–4889. https://doi.org/10.12998/wjcc.v9.i19.4881

Hadders, S., Van Iperen, G., & Your Message – Stichting TeamAlert. (2017). *Jongeren en social media*. https://teamalert.nl/media/4czfcuvs/infographic-en-facsheet_jongeren-en-social-media_2023.pdf

Hussain, Z., Elhai, J. D., Montag, C., Wegmann, E., & Rozgonjuk, D. (2024). The role of trait and state fear of missing out on problematic social networking site use and problematic smartphone use severity. *Emerging Trends in Drugs, Addictions, And Health*, *4*, 100140. https://doi.org/10.1016/j.etdah.2023.100140

Kostić, J. O., Pedović, I., & Stošić, M. (2022). Predicting social media use intensity in late adolescence: The role of attachment to friends and fear of missing out. *Acta Psychologica*, *229*, 103667. https://doi.org/10.1016/j.actpsy.2022.103667

Laursen, B. (2017). Making and keeping friends: the importance of being similar. *Child Development Perspectives*, *11*(4), 282–289. https://doi.org/10.1111/cdep.12246

Lemmens, J. S., Valkenburg, P. M., & Gentile, D. A. (2015). The internet gaming disorder scale. *Psychological Assessment*, *27*(2), 567–582. https://doi.org/10.1037/pas0000062

Li, Y., Koning, I. M., Finkenauer, C., Boer, M., & Van Den Eijnden, R. (2024). The bidirectional relationships between fear of missing out, problematic social media use and adolescents' well-being: A random intercept cross-lagged panel

model. *Computers in Human Behavior (Print)*, 108160. https://doi.org/10.1016/j.chb.2024.108160

Li, J., Zhou, Y., Liu, Y., Yu, Z., & Gao, X. (2024). Profiles of fear of missing out and their social media use among young adults: A six-month longitudinal study. *Addictive Behaviors*, *149*, 107899. https://doi.org/10.1016/j.addbeh.2023.107899

Lin, J., Lee, Y., Jin, Y., & Gilbreath, B. (2017). Personality traits, motivations, and emotional consequences of social media usage. *Cyberpsychology, Behavior and Social Networking*, *20*(10), 615–623. https://doi.org/10.1089/cyber.2017.0043

Miller, L. M., & Prior, D. D. (2010). Online social networks and friending behaviour: A self-determination theory perspective. In *Proceedings of the Australia and New Zealand Marketing Academy Annual Conference, Christchurch, New Zealand* (pp. 1-9).

Nederlands Jeugdinstituut. (2023, March). *Cijfers over mediagebruik.* https://www.nji.nl/cijfers/mediagebruik

Jonker, T., Van Der Veer, N., & Boekee, S. (2024). *Nationaal Social Media Onderzoek 2024*. Newcom Research & Consultancy B.V. https://newcom.nl

Odgers, C. L., & Jensen, M. R. (2020). Annual research review: Adolescent mental health in the digital age: Facts, fears, and future directions. *Journal of Child Psychology and Psychiatry*, *61*(3), 336–348. https://doi.org/10.1111/jcpp.13190

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, *29*(4), 1841–1848. https://doi.org/10.1016/j.chb.2013.02.014

Pupi, V. (2023). From emerging adults' unmet psychosocial needs to their problematic use of social networking sites: the mediating role of Fear of Missing Out.

Roberts, J. A., & David, M. E. (2019). The Social Media Party: Fear of Missing Out (FOMO), Social Media Intensity, Connection, and Well-Being. *International Journal*

of Human-computer Interaction, *36*(4), 386–392. https://doi.org/10.1080/10447318.2019.1646517

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://doi.org/10.1037/0003-066x.55.1.68

Schacter, H. L., Lessard, L. M., Kiperman, S., Bakth, F., Ehrhardt, A., & Uganski, J. (2021). Can friendships protect against the health consequences of peer victimization in adolescence? A Systematic review. *School Mental Health (Print)*, *13*(3), 578–601. https://doi.org/10.1007/s12310-021-09417-x

Servidio, R., Soraci, P., Griffiths, M. D., Boca, S., & Demetrovics, Z. (2024). Fear of missing out and problematic social media use: A serial mediation model of social comparison and self-esteem. *Addictive Behaviors Reports*, 100536. https://doi.org/10.1016/j.abrep.2024.100536

Tanhan, F., Özok, H. İ., & TayiZ, V. (2022). Gelişmeleri Kaçırma Korkusu (FoMO): Güncel bir derleme. *Psikiyatride Guncel Yaklasimlar - Current Approaches in Psychiatry*, *14*(1), 74–85. https://doi.org/10.18863/pgy.942431

Van Den Eijnden, R. J., Lemmens, J. S., & Valkenburg, P. M. (2016). The Social Media Disorder Scale. *Computers in Human Behavior*, *61*, 478–487. https://doi.org/10.1016/j.chb.2016.03.038

Vogel, E. A., & Rose, J. P. (2016). Self-reflection and interpersonal connection: Making the most of self-presentation on social media. *Translational Issues in Psychological Science*, *2*(3), 294–302. https://doi.org/10.1037/tps0000076

West, M., Rice, S., & Vella-Brodrick, D. (2021). Exploring the “Social” in Social Media: Adolescent Relatedness—Thwarted and supported. *Journal of Adolescent Research*, 074355842110621. https://doi.org/10.1177/07435584211062158

Zhu, X., & Xiong, Z. (2022). Exploring association between social media addiction, fear of missing out, and Self-Presentation online among university students: a Cross-Sectional study. *Frontiers in Psychiatry*, *13*. https://doi.org/10.3389/fpsyt.2022.896762

Appendix 1: Reflection on Interdisciplinarity

The problem under investigation, FoMO, (P)SMU and quality of friendships among adolescents is a multifaceted problem that benefits from interdisciplinary approaches, enhancing understanding apart and in relation to each other. Theoretical insights from different scientific (sub)disciplines are useful, as each offers a unique perspective, which combined, leads to a holistic view of the discussed problem. For example, when focusing on just psychology, the sociological perspective about normative behaviour among adolescents in peer groups and dynamics is lost, which is important to consider when considering quality of friendships.

Several disciplines were used in the current thesis, being psychology, sociology, and communication studies. Within psychology, the subdisciplines clinical, social and developmental psychology are used. For communication studies, the subdisciplines interpersonal communication and media psychology can be seen. These (sub)disciplines are valuable to consider for the studied research question as they all add to the understanding of the problem. Psychology informs the research question by providing psychological theories such as SDT and SCT, that consider the internal processes behind FoMO and (P)SMU. The different subdisciplines within psychology each add their own understanding of human behaviour and its consequences. Clinical psychology considers normative and disordered SMU and what mental health issues derive from disordered SMU, such as loneliness, depression and anxiety. Furthermore, social psychology looks at how social influences affect individual behaviour, such as social comparisons on social media. Developmental psychology adds to this by looking at how adolescents are especially affected by FoMO and an unsatisfied need for relatedness, as this point in development is characterised by a need for relatedness.

Looking at sociology, the research question is informed by the impact of social structures on SMU, such as peer groups. Due to peer groups, an adolescent is more likely to experience FoMO when their peer group is together and they are not present. Considering communication studies, quality of friendships is rooted in communication between adolescents and SMU is an important aspect in interacting and maintaining their relationships. Interpersonal communication is an important aspect to understand the research question, as it considers how adolescents communicate with each other, which is important to understand why quality of friendships could possibly impact SMU. Within communication studies, media psychology is further of value, as it shows how media can affect an adolescents' feelings and behaviour. Taken together, these disciplines each add a valuable perspective, where psychology focuses more on the individual, it is supplemented with sociology that focuses more the group, which are both relevant to consider as the impact of FoMO, (P)SMU and quality of friendships is both individual and shared.

Considering stakeholders outside academia is important, as this provides first hand experiences of the problem at hand, combining theory and experiences adds to the holistic view of the problem. The stakeholders that are particularly important in crossing the boundary between science and practice are adolescents, mental health professionals and educators. Since a preliminary finding was found that a high quality of friendships interacts with (P)SMU it is important to verify this with adolescents their experiences. Mental health professionals are important as they treat adolescents with disordered SMU, which was found to predict increased FoMO, asking them how they see this issue and what the role of friendships is could lead to more insights. Lastly, educators constantly see adolescents at school and need to deal with SMU at schools, asking them what they think is the effect of the variables at hand could further inform the research question. It is critical to engage with stakeholders, as this could ensure that findings are relevant in real-world contexts.

The use of multiple scientific research methods such as a combination of qualitative and quantitative perspectives could lead to a deeper understanding as they inform each other. Quantitative methods can lead to a broader reach of participants and more data. However, qualitative data such as focus groups can provide detailed insights into first-hand experiences where the researcher can ask more about certain topics and discover underlying reasons for social media use and FoMO. Mixed methods enrich the research by providing a more nuanced understanding of the complex problem at hand.

Building upon this, multiple analytical levels, such as personal, interpersonal and societal, further add depth to the understanding of the research question. Personal experiences, behavioural patterns and emotional states can provide an insight about what exacerbates and mitigates the problem at hand. An interpersonal level is further important due to the interpersonal nature of quality of friendships, uncovering relationship dynamics and social interactions are important to thoroughly understand the problem. Lastly, a societal level can inform the research through looking at cultural norms, societal trends and social structures. These levels capture the complexity of the research problem, acknowledging that all these levels influence each other. Considering them together could provide a comprehensive framework to understand the variables at hand.