



Universiteit Utrecht

The Influence of Parents and Peers on Adolescents' Problematic Social Media Use Revealed

Merel Leijse

Utrecht University

Student number: 6225101

Master Youth Studies

Master Thesis Based on Existing Data (TED)

Dr. Ina Koning

Prof. dr. Tom ter Bogt

June 2019

Amount of words (exclusive abstract, figures, tables and references): 4954 words

Abstract

Since social media use became an important part of our daily lives, especially during adolescence, more research has been conducted to investigate factors that may influence the development of its problematic use. In this study, we examined the role of the broader context of parental (time spent with parents and family support) and peer (peer support and peer pressure) factors in the development of an individual's problematic social media use in a longitudinal design. Adolescents ($N=1384$) aged between 11 and 19 years ($M_{age}=14.1$, $SD=1.03$) were included and completed a self-report questionnaire twice. Results showed that there is an effect of parent and peer factors for the risky group of social media users, but not for the problematic group. In addition, the lack of effect of parental and peer factors was not moderated by adolescents' self-control. However, self-control itself has an effect on problematic social media use. In conclusion, this study has demonstrated that general parent and peer factors can be protective for risky social media users but not for the problematic users for which individual factors seem to be more important.

Keywords: Problematic social media use, adolescence, time spent with parents, family support, peer support, peer pressure and self-control.

Samenvatting

Tegenwoordig maken we, en veelal adolescenten, dagelijks gebruik van social media en daarom is ook steeds meer onderzoek zich gaan richten op factoren die mogelijk het problematisch gebruik beïnvloeden. In deze longitudinale studie wordt de invloed van een bredere context van ouders (tijdsbesteding met de ouders en support van de familie) en leeftijdsgenoten (support en druk van leeftijdsgenoten) onderzocht in relatie tot de ontwikkeling van problematisch sociale media gebruik door het individu. Adolescenten ($N=1384$) tussen de 11 en 19 jaar ($M_{leeftijd}=14.1$, $SD=1.03$) hebben door middel van zelfrapportage de vragenlijst twee keer ingevuld. Uit de resultaten blijkt er een effect te zijn tussen ouderlijke en leeftijdsgebonden factoren voor de risicovolle sociale mediagebruikers, maar dit resultaat werd niet gevonden voor problematische gebruikers. Voor zowel de risico- als problematische gebruikers werd het verband tussen ouderlijke en leeftijdsgebonden factoren niet gemodereerd door zelfcontrole. Echter, zelfcontrole als losstaande voorspeller vertoonde wel een effect op problematisch sociale media gebruik. Kortom, deze studie laat zien dat ouderlijke en leeftijdsgebonden factoren een beschermende functie kunnen hebben voor risicovolle gebruikers, maar niet voor de problematische gebruikers waarvoor individuele factoren toch een belangrijke rol blijken te hebben.

Kernwoorden: Problematisch social media gebruik,, adolescenten, tijdsbesteding met de ouders, familiesupport, support van leeftijdsgenoten, druk van leeftijdsgenoten en zelfcontrole.

The Influence of Parents and Peers on Adolescent' Problematic Social Media Use Revealed

There is no doubt that many young people spend a lot of time on social media. Of the Dutch students between age 12 and 16, about 31% indicate to be in contact on social media all day long (Stevens et al., 2017). Especially in adolescence, the use of social media during the day increases with 9% between age 12 and 16. In addition, 8.4% of all 15-year-olds indicate that his or her social media use is problematic (Stevens et al., 2017). Therefore, it is not surprising that many researchers focus not only on the advantages, but also on the consequences to our wellbeing, such as sleep problems, low self-esteem and depression (Levenson et al., 2016; Valkenburg et al., 2017; Woods & Scott, 2016). These consequences show that social media can be problematic and such risks involved in this cannot be ignored. A recent cross-sectional study has shown that a lack of perceived social support from peers and parents was related to more involvement in problematic social media use (Pievara, Piko & Luszczynska, 2018). This is in line with previous studies that have found that perceived support from others is one of the most important factors that contribute to a variety of risk behaviour, like smoking (Gecková et al., 2005), drinking (Simons-Morton et al., 2001) or internet addiction (Gunuc & Docan, 2013) in adolescence. These cross-sectional studies indicate that social support seems to be an important protective factor related to adolescents' problematic social media use. However, little is known about the influence of support on adolescents' social media use in longitudinal studies. Thus, studying the perceived parent and peer support will give a better indication about the possible protective factors on adolescent's problematic social media use.

Currently, there is inconsistency in the literature about the definition of problematic social media use. Technological developments ensure that the field of social media changes quickly and therefore also the meaning (van den Eijnden, Lemmens & Valkenburg, 2016). However, social media in general comprise "interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated content" (Kietzmann, 2011, p. 241). Social media use can be problematic when a person shows obsessive behaviour (e.g. thinking a lot about using it), neglects everyday necessities (e.g. sleeping and eating) and cannot control the use of it (Demetrovics et al. 2008). So, social media can be defined as problematic when it influences a person's well-being negatively.

There are various factors that contribute to the development of problematic social media use. According to the Bronfenbrenner Ecological Model, there is always an interaction between the individual and context, indicating that next to individual factors such as loneliness (Darcin et al., 2015; 2016), also social factors play a role in the development of problematic social media use (Bronfenbrenner, 1979). Up to now, research has investigated

mostly individual factors, and some of them contextual factors such as internet-specific parental mediation (Koning et al., 2018; Leung, 2011). However, based on research on the role of social factors in other risk behaviors, and the Ecological model it is likely that also more general social factors such as family support, time spent with parents, peer support and peer pressure may play a role in adolescents' problematic social media use.

As problematic social media use is a relative new phenomenon, not much empirical evidence is available that has investigated the relation between this and parental and peer support. Nevertheless, the relation between social support from peers and parents have been studied for comparable features (e.g. internet use and online gaming; Prievara, Piko & Luszczynska, 2018; King & Delfabbro, 2017) and other risk behaviours (Ewing et al., 2015). First of all, several studies have found evidence for the importance of family support in adolescence in the development of risk behaviour (Li et al., 2014; Gunuc & Docan, 2012). For example, a longitudinal study has demonstrated the protective role of supportive parents in adolescents' substance use (Ewing et al., 2015). Parental support has also been investigated in relation to self-control and internet addiction (Li et al., 2014). Results show that less affective support from parents is correlated with lower self-control and subsequent internet addiction (Li et al., 2014). Based on these studies, it seems likely that parental support could be a protective factor against problematic social media use.

Not only by the level of parental support, also the time adolescents spent with their parents may be a protective factor for preventing problematic social media use. Studies have revealed the importance of time spent with family in the relation to internet addiction (Cruz López, Carlos Sendín & Jiménez, 2015; Gunuc & Docan, 2013) and other risk behaviours such as sexual activity and substance use (Barnes et al., 2006; Miller & Volk, 2002). For example, Gunuc and Docan (2013) found for a sample of Turkish adolescents that spending more time with the mother (e.g. watching television together) lowered the risk for the development of internet addiction. Also, a cross-sectional study among Spanish adolescents showed that more frequent use of the internet was associated with a poor quality of relationship with the family, indicated by less time spent with parents (Cruz López, Carlos Sendín & Jiménez, 2015). So, overall, it is likely that time spent with parents could also be a protective factor for problematic social media use. Therefore, the first hypothesis implies: *Family support and time spent with parents decreases the risk of developing problematic social media use.*

Apart from familial factors, peers also have an important role in adolescent development. In fact, during adolescence, peers become more important for individuals than parents (Fuligni & Eccles, 1993), for example by the level of support or pressure. As a

longitudinal study among a small sample of adolescents found that a higher level of peer support is associated with less risk-taking behavior (Telzer et al., 2015). Furthermore, Chak and Leung (2004) demonstrated in a cross-sectional study that less (offline) support from peers is related to shyness and anxiety which increase the possibility of problematic internet use. Therefore, it seems plausible that also peers play an important role in the development of problematic social media use, for instance by the level of support. Furthermore, Assunção and colleagues (2017) show that peer alienation (being isolated from a group) is associated with problematic Facebook use. Both studies show that less offline support from peers could contribute significantly to the development of problematic social media use. Therefore, based on mostly cross-sectional studies, it seems likely that peer support could be a protective factor against problematic social media use.

Peers can also be a risk factor for the development of risk behaviors such as problematic social media use. For example, Esen and Gündođdu (2010) showed that a higher level of peer pressure was associated with a greater level of internet addiction. This relation has also been found in a cross-sectional study (Wei Wu et al., 2015) who showed that individuals who observe internet usage among their peers, like watching video's or photo's on Instagram, will gain more positive expectancies on these online contents which increase the internet use and the risk for problematic social media use. Given these results about the impact of peer support and peer pressure on problematic internet use it may also apply to problematic social media use. Therefore, the second hypothesis of this study implies: *Peer support decreases, and peer pressure increases the risk of developing problematic social media use.*

In line with the Bronfenbrenner Ecological Model theory, it is expected that the role of parents and peers in adolescents' problematic social media use may be depending on individual characteristics, such as self-control. Self-control is a well-known factor in the development of addictive behaviour (Guerra & Bradshaw, 2008). Like Özdemir and colleagues (2014) found a significant link of a lower self-control and a greater dependence on use of internet. Self-control has also been studied in relation with parental factors. Jones, Cauffman and Piquero (2007) investigated self-control in relation between parental support and antisocial behaviour. They found that support from parents has more influence on antisocial behavior for those who reported low impulse control. It's plausible that also for problematic social media use, adolescence with less self-control will benefit more from parental involvement than adolescents with more self-control (Jones, Cauffman & Piquero, 2007). Furthermore, studies have shown that poor self-control in adolescence moderates the relation between deviant peer affiliation with antisocial behavior (Mobarake et al., 2014) and

indirect for problematic internet use (Li et al., 2013). For problematic internet use, an indirect moderating link was found for adolescent's poor self-control, experiences of less school connectedness, more deviant peer affiliation and more problematic social media use (Li et al., 2013). So, this indicates that adolescents with poor self-control experiences less peer support and more peer pressure and therefore more problematic social media use. Therefore, the third hypothesis reads: *For individuals with less self-control, more parental involvement (e.g. time spent with parents and family support) and peer support will decrease the risk for problematic social media use, whereas peer pressure will increase it more.*

In conclusion, this study aims to investigate to what extent family (support and time spent with parents) and peer factors (support and pressure) influence adolescents' problematic social media use and how this relation is moderated by adolescents' self-control (Figure 1). Where previous studies only looked for parental or peer factor in relation to adolescent's problematic social media use, this study is unique by looking at a broader framework of individual and both parental and peer factors in the relation to adolescent's problematic social media use in a longitudinal design.

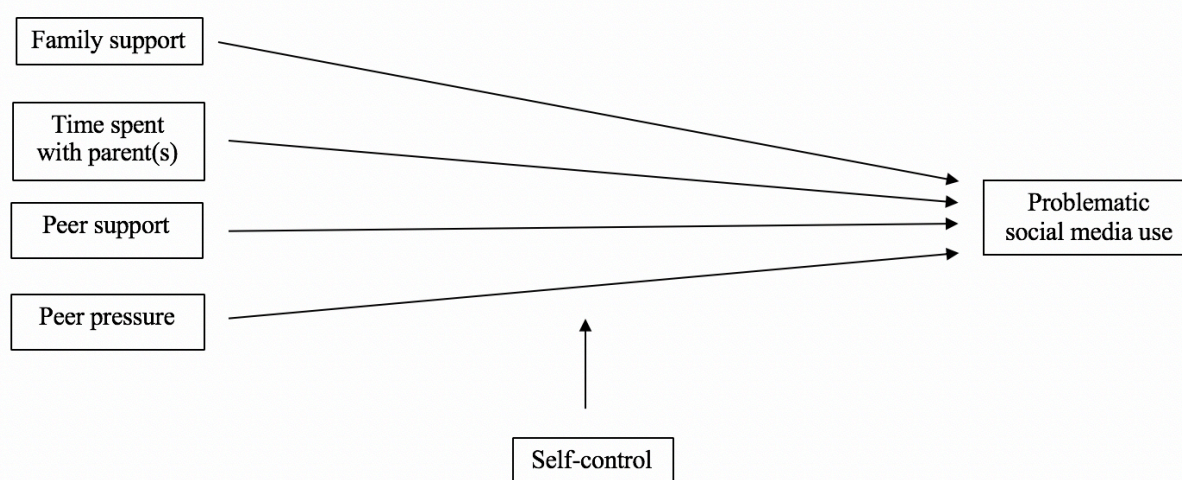


Figure 1. Conceptual Model of Parents and Peers Factors on Problematic Social Media Use

Methods

Procedure and Participants

This longitudinal study was based on existing data of the LEF-project. This Icelandic inspired project was a collaboration between the University of Utrecht and the municipality Edam-Volendam, where they investigated factors that could delay the start of drinking alcohol among youth (Koning & van der Rijst, 2018). The project included variables that

measured environmental and individual factors and problematic social media use. For the LEF-project, two secondary schools in Edam-Volendam participate in the survey. Before the data collection started, approval of the Faculty Ethical Review Committee (FETC18-060) was obtained. Furthermore, the target group were underage students, so extra care was required regard to the data- collection and analysis. Therefore, the data from the participants is anonymous, which means that the researchers cannot trace the results to an individual. Besides that, the schools and parents gave active permission for the participation of their students and child in the study. The online questionnaires were conducted during schooltime in the school's computer rooms under supervision of a teacher and student assistant. The students were notified that the study would be about 'factors that can stimulate the development of young people in a good and healthy way'.

The dataset included a longitudinal design with two measurement moments with 6-month interval. The first wave (T1) was conducted in May 2018 where 2166 filled out the questionnaire. On the second wave (T2) in November 2018, 2069 students participated again. Reason for attrition ($N=782$) were students who left the school at T2 after their exams. The data was controlled for inconsistency, uncomplete surveys and the requirements on the variables, therefore another $N=685$ respondents were excluded from the dataset. A remaining $N=1384$ respondents between age 11 and 19 participated on T1 and T2. Missing's were found on the Social Media Disorder (SMD) scale on T1 and T2 (both noticed 16 missing's), the peer support scale (8 missing's) and the peer pressure scale (15 missing's). Therefore, attrition analyse was performed which shows that non-responders at T2 ($M=14.1$, $SD=1.03$) were significant younger ($t=-28.83$, $p<.001$) than responders at T2 ($M=15.6$, $SD=1.29$). Also, non-responders at T2 ($M=3.99$, $SD=1.62$) were significant higher educated ($t=7.38$, $p<.001$) than responders at T2 ($M=3.45$, $SD=1.69$) and non-responders at T2 ($M=6.16$, $SD=1.13$) scored significant higher on family support ($t=3.59$, $p<.001$) than the responders ($M=5.97$, $SD=1.28$). Thus, results have been carefully interpreted.

Measures

Demographic data. Respondents were asked to fill in their gender (male / female), date of birth and education level coded as low (VMBO-B, VMBO-T) and high (VMBO-T/HAVO,HAVO and VWO).

Problematic social media use. The SMD-scale was used to measure problematic social media use (van den Eijnden, Lemmens & Valkenburg, 2016). Respondents were asked to fill in 9 statements about their social media use (like Instagram, Facebook, Twitter etc.) at T1 and T2. The question was "How often did you have last year.." and one example of an item include ".. that you couldn't regularly think about nothing else than the moment when

you could start using social media again?" Respondents could answer these statements with a 2-point scale (1=*no* and 2=*yes*). All 9 items were recoded to calculate the sum score from 0-9 (0=*no* and 1=*yes*). A higher score for this scale indicated a stronger degree of problematic social media use. However, due to the fact that this variable was very skewed, the scores on the SMD-scale have been recoded from 9 into 3 categories (*scores 0 and 1=0, scores 2 till 4=1 and scores 5 or higher=2*), in line with the findings of de Boer and colleagues (2019) to distinguish normative, risky and problematic social media users. Cronbach's $\alpha=.750$ on T1 and a Cronbach's $\alpha=.775$ on T2 showed that the internal consistency of both measurements was reliable for this sample.

Family support. The level of family support was measured by the Family Support Scale (Zimet et al., 1988). The scale had 4 items with different statements about family support, for example "The people in my family really try to help me". The respondents answered the four items on a 7-point Likert scale (1=*strongly disagree* and 7=*strongly agree*). The mean score was calculated, in which a higher score represented more family support. The internal consistency of this sample was found to be reliable (Cronbach's $\alpha=.887$).

Time spent with parents. The time spent with parents was assessed by asking "How much time do you spend together with your parent(s) each day?" for "school days" and "weekend days". The respondent could answer on a 7-point Likert-scale (1=*less than 5 minutes* and 7=*more than 4 hours*). A sum score of both items was calculated in which a higher score indicated more time was spent with the parents. Last, the internal consistency was found reliable for this sample ($r=.702, p < 0.01, N=1384$).

Peer support. The level of support the adolescent perceived from their peers was measured by the Peer Support Scale (Zimet et al., 1988). The measure contained 4 items such as "My friends are really trying to help me". The respondents answered the items on a 7-point Likert-scale (1=*strongly disagree* and 7=*strongly agree*). A mean score was calculated in which a higher score represented more peer support. Last, the internal consistency was found reliable for this sample (Cronbach's $\alpha=.912$).

Peer pressure. The level of pressure the adolescent experienced was measured by the Peer Pressure Scale (Moffitt et al, 2016). Respondents were asked to answer 6 items which included different claims on the question "Some young people do certain things that they would not do because otherwise they..". An example of one item was: "..will be ridiculed by friends." The respondent had the possibility to answer the statements on a 5-point Likert-scale (1=*definitely does not apply to me* and 5=*applies to me very often*). The mean score was calculated which resulted in a score between 1 and 5. A higher score on this scale indicated

more pressure. The internal consistency of this sample was found to be reliable (Cronbach's $\alpha=.876$).

Self-control. The Self-control Scale was used to measure the respondent's level of self-control (Tangney, Baumeister & Boone, 2004). This scale contained 13 items which the respondent could answer by a 5-point Likert scale (1=*never* and 5=*very often*). An example of an item was: "I say things that I do not need to say". From 13 items, 9 items were recoded. Furthermore, the mean score was calculated with a higher score reflecting a higher degree of self-control. Finally, Cronbach's $\alpha=.798$ showed that the internal consistency was reliable for this sample.

Analysis

To investigate to what extent parental and peer factors influence adolescent's problematic social media use and to what extent this relation is moderated by self-control, a Multinomial Logistic Regression (MLR) was performed in IBM SPSS 24. Before conducting the analyses, assumptions of a the MLR have been checked.

Outliers have been detected by boxplots and the Mahalanobis distance. The results show a quite number of outliers on the dependent variable problematic social media use. However, due to a noncritical score on the Mahalanobis χ^2 for $df= 4$ (at $\alpha=.001$) of 18.467 and the fact that outliers on the SMD-scale can be very interesting, because it can indicate an extreme extent of social media use, it's been decided to retain all outliers in the dataset.

To investigate the influence of parents and peers on problematic social media use and the extent of self-control to this relationship, different models were conducted to analyze these relationships separately. In every model, the MLR was run for the normative, risky and problematic group with the normative as reference group. First, the influence of parents on problematic social media use was measured by an MLR with SMD-scale on T2 as dependent variable, family support and time spent with parents as independent variables and age, gender and SMD T1 as control variables. A second MLR was conducted only for peer factors (support and pressure). Then, a third MLR included parental and peer factors on problematic social media use. Finally, model 4 tested an interaction effect for self-control to investigate the impact of an individual's self-control in relation to parental and peer factors on problematic social media use. For this model an MLR was also conducted after centering self-control with its interaction with every independent variable.

Results

Problematic Social Media Users

As descriptive statistics show in Table 1, the different groups of problematic social media users; normative, risky and problematic at T2 show, on average, that males use social

media more normative (36.2%) and females are more risky users (15.2%). However, problematic users show no major differences on gender. With respect to the level of education it shows that high educated people are the most normative (50.9%) and risky users (16.2%). Yet, for problematic users', there is a slight increase for the lower educated.

Table 1

Mean (M) and Percentages (%) of the Total Sample on T1 and T2 and the Categories of the Outcome Variable Problematic Social Media Use (T2).

Variable	T1 N=1384	T2 N=1355	Normative N= 941	Risk N= 332	Problematic N= 95
Age (M)	14.1	14.6	14.2	14.1	14.0
Gender (%)					
Female	51.6	51.6	32.7	15.2	3.7
Male	48.4	48.4	36.2	9.1	3.1
Education (%)					
Low	30.2	34.1	17.9	8.0	3.7
High	69.9	65.9	50.9	16.2	3.3

Correlations between problematic social media use (T2), parental, peer and individual factors are shown in Table 2. For family factors, it's not time spent with parents but family support that is related to problematic social media use (T2). Furthermore, it's found that peer pressure is positively associated with problematic social media use (T2). However, no relation was found for peer support. Finally, self-control as individual factor shows a negative correlation with problematic social media use (T2), indicating that a higher score on self-control decreases the possibility for problematic social media use.

Table 2

Correlations Between problematic Social Media Use (T2), Age, Gender, Education Level, Problematic Social Media Use (T1), Time Spent with Parents, Family Support, Peer Support, Peer Pressure and Self-Control.

Variables	1	2	3	4	5	6	7	8	9	10
1. Problematic social media use (T2)	-									
2. Age	-.055*	-								
3. Gender	.102**	-.009	-							
4. Education level	-.159**	.216**	-.042	-						
5. Problematic social media use (T1)	.394**	-.015	.094**	-.152**	-					
6. Family support	-.131**	-.069**	-.036	.086**	-.193**	-				
7. Time spent with parents	-.005	.028	.108**	.121**	-.076**	.157**	-			
8. Peer support	-.043	-.001	.322**	.003	-.061*	.085**	.284**	-		
9. Peer pressure	.156**	-.046	-.174**	-.086**	.278**	-.072**	-.181**	-.281**	-	
10. Self-control	-.297**	-.093**	-.017	.100**	-.394**	.136**	.312**	.181**	-.323**	-

Note. $N=1355$. * $p < .05$, ** $p < .01$.

The Influence of Parental and Peer Factors on Problematic Social Media Use

Using a multinomial logistic regression, we investigated the influence of parent and peer factors at T1 on problematic social media use among adolescents at T2, while controlling for gender, age, education level and problematic social media use at T1. In the first model that only includes parental factors, the results show that more family support lowers the risk of being a risky user compared to normative users ($OR=.830, p=.001$). Also, for the category of risky users compared to normative users more time spent with parents has a marginally significant effect ($OR=1.408, p=.065$) on problematic social media use at T2. Second, for problematic users no significant effect was found for family support ($OR=.900, p=.281$) and time spent with parents ($OR=1.057, p=.846$).

In the second model, only peer factors were added. For the group of risky users, a negative significant effect was found for peer support (OR=.889, $p=.043$) and a positive effect was found for peer pressure (OR=1.273, $p=.021$). However, for problematic users no significant effects were found for peer support (OR=.980, $p=.843$) and peer pressure (OR=1.270, $p=.142$).

In a third model, both parental and peer factors were added. For the risky group (compared to the normative group), family support significantly decreases the risk of problematic social media use at T2 where time spent with parents is marginally significant. Also, more peer pressure significantly predicted a greater chance to be a risky social media user, but not problematic user, compared to normative user. Last, the results show that peer support has no effect on both risky and problematic social media users at T2.

The Interaction of Self-control with Parent and Peer Factors

To investigate whether self-control moderates the relation between parental and peer factors in relation to problematic social media use, an interaction variable of every dependent variable with self-control was computed and added separately to the model. The results show that for the risky social media group at T2, compared to the normative group, no significant interaction effects were found for self-control with family support (OR=.857, $p=.114$), time spent with parents (OR=.603, $p=.104$), peer support (OR=.918, $p=.332$) and peer pressure (OR=1.211, $p=.280$) on T1. Also, for the problematic social media users (reference is the normative group) at T2 no significant interaction effects were found of self-control with family support (OR=1.113, $p=.525$), time spent with parents (OR=.647, $p=.365$), peer support (OR=1.164, $p=.312$) and peer pressure (OR=.919, $p=.758$) on T1. This indicates that the influence of parent and peer factors on adolescents' problematic social media use does not depend on the degree of someone's self-control.

Table 3

Multinomial Logistic Regression Analyses of Parent and Peer Factors on Risk and Problematic Social Media Users (Reference Group are Normative Users).

	Risky group			Problematic group		
	<i>B</i> (SE)	OR	95% CI	<i>B</i> (SE)	OR	95% CI
Age	-.09(.07)	.91	.80-1.04	-.22(.12)	.80	.63-1.01
Gender	.67(.15)***	1.96	1.46-2.63	.28(.26)	1.32	.80-2.19
Problematic social media use T1	.35(.04)***	1.41	1.30-1.53	.56(.06)***	1.75	1.57-1.95
Family support	-.14(.06)*	.87	.77-.98	-.08(.10)	.92	.75-1.13
Time spent with parents	.34(.19)	1.41	.98-2.03	.06(.29)	1.06	.61-1.85
Peer support	-.08(.06)	.92	.82-1.04	-.00(.10)	1.00	.814-1.22
Peer pressure	.22(.11)*	1.25	1.02-1.54	.22(.16)	1.25	.91-1.73

Note. $R^2 = .158$ (Cox & Snell), $.199$ (Nagelkerke). Model $\chi^2(14) = 232,33$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Self-control as Predictor for Problematic Social Media Use

Since the results showed a strong correlation for self-control on problematic social media use (see Table 2), one additional analysis was conducted for self-control at T1 as main effect on problematic social media use at T2. Results show a strong effect of self-control (T1) on the group of risky social media users (OR=.524, $p < .001$) as well for the problematic group (OR=.347, $p < .001$) compared to the normative group. Thus, the level of self-control itself increases the risk of becoming a risky and problematic social media user.

Discussion

This study is, as far as we know, the first that investigated both parental and peer factors (e.g. family support, time spent with parents, peer support and peer pressure) in relation to adolescent's problematic social media use and how this relation is moderated by self-control in a longitudinal design. Results have shown that for adolescents, family and peer factors increases the chance of belonging to the risky social media user group, but not the problematic group compared to normative group. Furthermore, the influence of parental and peer factors on problematic social media use do not dependent on the level of self-control. Although, self-control itself reduced adolescents' problematic social media usage. These results imply that general parent and peer factors can be protective for risky users but not for problematic users for which individual factors seems to play a more important role.

Where earlier research found strong evidence for family support and time spent with parents as protective factors against internet addiction (Cruz López, Carlos Sendín & Jiménez, 2015; Gunuc & Docan, 2012; 2013; Li et al., 2014), the results of the current study showed no significant influence of parental factors for problematic users. However, risky users noticed a significant protective influence of family support and a marginally significant effect for time spent with parents. With these results the first hypothesis is partly supported because results show that for risky users, family support and time spent with parents decreases the development of problematic social media use in adolescence. Also, for peer factors, against our hypotheses, but in line with the results of the parental factors, no effect was found of peer factors for problematic users. Yet there was an effect of peer factors on the risky social media users compared to normative users. This means that also the second hypothesis could partly be supported. Last, this study also analyzed parental and peer factors together in one model. Besides peer support, the same effects were found for the parental and peer factors for both risky and problematic users. However, these effects were less strong than in the parental and peer models separately. Also, this model showed that for risky users, peer support has no influence when it's controlled for other parental and peer factors. In conclusion, parents and peers can be both only a protective factor for the risky group in the development of problematic social media use.

There may be several explanations contributing to the understanding of the effects of parental and peer factors to mostly risky and not problematic social media use. The first could be due to the operationalization of social media disorder. Whereas previous research used a continuous scale of problematic internet / social media use (Assunção, 2017; Gunuc & Docan, 2012; 2013; Li et al., 2014; Telzer et al., 2015; Wei Wu et al., 2015), this study distinguished three categories of use (i.e. normative, risky and problematic). Hence, this could also explain the main effect previous studies found for parental and peer factors, which came probably from the risky users. Second, it is likely that parental influence is greater when social media use is normative or risky than once adolescents use social media more problematically when personal factors become more relevant. For example, studies found that poor family function in childhood increased the possibility for problematic cellular phone use (Terras & Ramsay, 2016; Wang et al., 2014). Therefore, it's plausible that also for problematic user's, family support could have more influence during childhood, when social media use is not problematic yet. Third, next to parental factors, also peers show that they cannot have a protective influence against problematic social media users, but they do for normative and risky users. Research has shown that also peers can be more important during earlier phases of social media use, for example by the quality of peer relationships (Park, Kang and Kim,

2014). In addition, it's shown that poor relationship with peers can, especially in adolescence, be very stressful and online interaction through the internet can compensate for that (Park, Kang & Kim, 2014). So, same as for parents, also peers can have a more protective role during earlier stages of social media use. Therefore, future studies should focus more on parental and peer factors during earlier phases of social media use, for instance in childhood, that can protect future adolescence against problematic social media use.

Besides contextual factors, this study also looked how self-control, as individual factor, interact between parental and peer factors in the risk for problematic social media use. However, the effects of parental and peer factors on risky and problematic use has found to be the same for adolescents with lower and higher levels of self-control. This means that our third hypothesis has been rejected. Although, self-control is found to be a direct predictor for both risky and problematic social media users. This supports our statement of earlier findings for the problematic group for whom personal factors become more relevant. In addition, this is in line with previous studies that found that internal factors, like stress and loneliness, are related to adolescence problematic social media use (Li, 2010; Caplan, 2007). So, a closer examination of self-control in relation to risky and problematic use can give a better understanding about how parents and peers can probably improve it.

Strengths and Limitations

This study was one of the first that tried to get a deeper insight in the mechanism related to problematic social media use. By using a longitudinal design in a large sample of adolescents it was possible to understand more about the influence of parental, peer and individual factors on problematic social media use. However, despite the strengths there are some limitations that should be mentioned. First, the results in this study are based on adolescents' self-report which could led to a bias. However, earlier research has shown that self-report for SMD has proven to be a valid and reliable method (van den Eijnden, Lemmens & Valkenburg, 2016). Second, attrition showed, for some variables, differences between the responders and non-responders on T2. Although, results were carefully interpreted, future research should look for methods to include more responders on T2. Third, as also mentioned in the discussion, problematic social media use has only been measured by the SMD-scale. Therefore, future research must also look to the frequencies of social media use to give more reliable results about SMD. Last, because this study was based on a broader study of the LEF-project, respondents came from 2 municipalities in the Netherlands which means that the results could be biased due to demographic factors. Although, it was a large sample, future research should pick up a more demographic representative sample.

Conclusion and Implications

The current study investigated to what extent family and peer factors have an influence on adolescents' problematic social media use and how this relation is moderated by adolescents' self-control. It was found that parental and peer factors have no influence on the problematic group of social media users, but they do for the risky group. These results show that parents and peers can be important factors when adolescents haven't developed a problematic use of social media yet, for example during childhood. Therefore, future research should focus more on the development of social media use in childhood (age 4-11) and the role of parents and peer herein. Besides that, the study also showed that individual factors are a more important predictor for problematic users than for the risky group. To get a better understanding about these individual factors, future studies should focus to what extent parents and peers can influence social media use during childhood and how they can intervene in the improvement of internal factors like self-control.

References

- Assunção, R. S., Costa, P. & Tagliabue, S. (2017). Problematic facebook use in adolescents: Associations with parental attachment and alienation to peers. *Journal of Child Family Studies*, 26, 2990-2998. doi:10.1007/s10826-017-0817-2
- Barnes, G. M., Hoffman, J. H., Welte, J.W. Farrell, M.P. & Dintheff, B.A. (2007). Adolescents' time use: Effects on substance use, delinquency and sexual activity. *Journal of Youth and Adolescence*, 36, 697-710. doi:10.1007/s10964-006-9075-0
- Boer, M., Stevens, G., Koning, I., Finkenauer, C. & van den Eijnden, R. (2019). Problematic social media use: Further validation of the Social Media Disorder Scale in adolescents. Manuscript in preparation.
- Bronfenbrenner, U. (1979). *The Ecology of Human Development*. Cambridge: Harvard University Press.
- Caplan, S. E. (2007). Relations among loneliness, social anxiety, and problematic Internet use. *CyberPsychology & Behavior*, 10, 234-242. doi:10.1089/cpb.2006.9963
- Chak, K. & Leung, L. (2004). Shyness and locus of control as predictors of Internet addiction and internet use. *CyberPsychology & Behavior*, 7, 559-570. doi:10.1089/cpb.2004.7.559
- Cruz López, M., Carlos Sendín, J. & Jiménez, A. G. (2015). Problematic internet use among Spanish adolescents: The predictive role of Internet preference and family relationships. *European Journal of Communication*, 30, 470-485. doi:10.1177/0267323115586725
- Darcin, A. E., Kose, S., Noyan, C. O., Nurmedov, S., Yilmaz, O. & Dilbaz, N. (2016). Smartphone addiction and its relationship with social anxiety and loneliness. *Behaviour & Information Technology*, 35, 520-525. doi:10.1080/0144929X.2016.1158319
- Darcin, A.E., Noyan, C., Nurmedov, S., Yilmaz, O & Dilbaz, N. (2015). Smartphone addiction in relation with social anxiety and loneliness among university students in Turkey. *European Psychiatry*, 30, 28-31. doi:10.1016/S0924-9338(15)30398-9
- Demetrovics, Z., Szeredi, B. & Rózsa, S. (2008). The three-factor model of internet addiction: The development of the Problematic Internet Use Questionnaire. *Behavior Research Methods*, 40, 563-574. doi:10.3758/BRM.40.2.563
- Eijnden, van den, R. J. J. M., Lemmens, J. S & Valkenburg, P. M. (2016). The Social Media Disorder Scale. *Computers in Human Behaviour*, 61, 478-487. doi:10.1016/j.chb.2016.03.038

- Esen, B. K. & Gündoğdu, M. (2010). The relationship between Internet addiction, peer pressure and perceived social support among adolescents. *The International Journal of Educational Researchers*, 2(1), 29-36.
- Ewing, B. A., Chan Osilla, K., Pedersen, E. R., Hunter, S. B., Miles, J. N. V. & D'Amico, E. J. (2015). Longitudinal family effects on substance use among an at-risk adolescent sample. *Addictive behaviors*, 41, 185-191. doi:10.1016/j.addbeh.2014.10.017
- Fulgini, A. J., & Eccles, J. S. (1993). Perceived parent-child relationships and early adolescents' orientation toward peers. *Developmental Psychology*, 29, 622-632. doi:10.1037/0012-1649.29.4.622
- Gecková, A. M., Stewart, R., van Dijk, J. P., Orosová, O., Groothoff, J. W. & Post, D. (2005). Influence of socio-economic status, parents and peers on smoking behaviour of adolescents. *European Addiction Research*, 11, 204-209. doi:10.1159/0000864
- Guerra, N. G. & Bradshaw, C. P. (2008). Linking the prevention of problem behaviors and positive youth development: Core competencies for positive youth development and risk prevention. *New Directions for Child and Adolescent Development*, 208, 1-17. doi:10.1002/cd.225
- Gunuc, S. & Dogan, A. (2013). The relationships between Turkish adolescents' Internet addiction, their perceived social support and family activities. *Computers in Human Behavior*, 29, 2197-2207. doi:10.1016/j.chb.2013.04.011
- Jones, S., Cauffman, E. & Piquero, A. R. (2007). The influence of parental support among incarcerated adolescent offenders: The moderating effects of self-control. *Criminal Justice and Behavior*, 34, 229-245. doi:10.1177/0093854806288710
- Kietzmann, J. H., Hermkens, K., McCarthy, I. P. & Silvestre B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*, 54, 241-251. doi:10.1016/j.bushor.2011.01.005
- King, D. L. & Delfabbro, P. H. (2017). Problematic Internet use, social needs, and social support among youth. *International Journal Mental Health Addiction*, 15, 1270-1283. doi:10.1007/s11469-016-9699-6
- Koning, I. M., Peeters, M., Finkenauer, C. & Eijnden, van den, R. J. J. M. (2018). Bidirectional effects of Internet-specific parenting practices and compulsive social media and Internet game use. *Journal of Behavioral Addictions*, 7, 624-632. doi:10.1556/2006.7.2018.68

- Koning, I. M., Rijst, van der, V. (2018). Programma LEF: Het uitstellen van het beginnen met drinken onder minderjarige jongeren in Edam-Volendam. Accessed at May 22th 2019, retrieved from <https://www.lef-edvo.nl/wp-content/uploads/2019/03/Bijlage-1-Onderzoeksrapport-programma-LEF.pdf>
- Leung, L. (2011). Loneliness, social support, and preference for online social interaction: The mediating effects of identity experimentation online among children and adolescents. *Chinese Journal of Communication, 4*, 381–399. doi:10.1080/17544750.2011.616285
- Li, D., Li, X., Wang, Y., Zhao, L., Bao, Z. & Wen, F. (2013). School connectedness and problematic Internet use in adolescents: A moderated mediation model of deviant peer affiliation and self-control. *Journal of Abnormal Child Psychology, 41*, 1231-1242. doi:10.1007/s10802-013-9761-9
- Li, C., Dang, J., Zhang, X., Zhang, Q. & Guo, J. (2014). Internet addiction among Chinese adolescents: The effect of parental behavior and self-control. *Computers in Human Behavior, 41*, 1-7. doi:10.1016/j.chb.2014.09.001
- Li, D., Zhang, W., Li, X., Zhen, S. & Wang, Y. (2010) Stressful life events and problematic Internet use by adolescents females and males: A mediated moderation model. *Computers in Human Behavior, 26*, 1199-1207. doi:10.1016/j.chb.2010.03.031
- Levenson, J. C., Shensa, A., Sidani, J. E., Colditz, J. B., & Primack, B. A. (2016). The association between social media use and sleep disturbance among young adults. *Preventive Medicine, 85*, 36-41. doi:10.1016/j.ypmed.2016.01.001
- Miller, T. Q., & Volk, R. J. (2002). Family relationships and adolescent cigarette smoking: Results from a national longitudinal survey. *Journal of Drug Issues, 32*, 945–972. doi:10.1177/002204260203200314
- Mobarake, R. K., Juhari, R., Yaacob, S. N. & Esmaeili, N. S. (2014). The moderating role of self-control in the relationship between peer affiliation and adolescents antisocial behavior in Tehran, Iran. *Asian Social Science, 10*, 71-81. doi:10.5539/ass.v10n9p71
- Moffit, F. A., Steglich, T. E., Dijkstra, J. K., Harakeh, Z., Vollebergh, W. (2016). The role of self-control and early adolescents' friendships in the development of externalizing behavior: The SNARE Study. *Journal of Youth and Adolescence, 45*, 1800-1811. doi:10.1007/s10964-015-0287-z
- Özdemir, Y., Kuzucu, Y. & Ak, S. (2014). Depression, loneliness and Internet addiction: How important is low self-control? *Computers in Human Behavior, 34*, 284-290. doi:10.1016/j.chb.2014.02.009

- Park, S., Kang, M. & Kim, E. (2014). Social relationship on problematic Internet use (PIU) among adolescents in South Korea: A moderated mediation model of self-esteem and self-control. *Computers in Human Behavior*, 38, 349-357. doi:10.1016/j.chb.2014.06.005
- Prievara, D. K., Piko, B. F. & Luszczynska, A. (2018). Problematic Internet use, social needs, and social support among youth. *International Journal of Mental Health and Addiction*, 68, 1-12. doi:10.1007/s11469-018-9973-x
- Simons-Morton, B., Haynie, D. L., Crump, A. D., Eitel, P. & Saylor, K. E. (2001). Peer and parent influences on smoking and drinking among early adolescents. *Health Education & Behavior*, 28, 97-107. doi:10.1177/109019810102800109
- Stevens, G. W. J. M., Dorsselaer, van, S. A. F. M., Boer, M., Roos, de, S., Duinhof, E. Bogt, ter, T. F. M., ... Looze, de, M. (2017). HBSC 2017: Gezondheid en Welzijn van Jongeren in Nederland. Retrieved from <https://hbsc-nederland.nl/wp-content/uploads/2018/09/Rapport-HBSC-2017.pdf>
- Tangney, J. P., Baumeister, R. F. & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72, 271-322. doi:10.1111/j.0022-3506.2004.00263.x
- Telzer, E. H., Fuligni, A. J., Lieberman, M. D., Miernicki, M. E. & Galván, A. (2015). The quality of adolescents' peer relationships modulates neural sensitivity to risk taking. *Social Cognitive and Affective Neuroscience*, 10, 389-398. doi:10.1093/scan/nsu064
- Terras, M. M. & Ramsay, J. (2016). Family digital literacy practices and children's mobile phone use. *Frontiers in Psychology*, 7, 1957. doi:10.3389/fpsyg.2016.01957
- Wang, P., Liu, T., Ko, C., Lin, H., Huang, M., Yeh, Y. & Yen, C. (2014). Association between problematic cellular phone use and suicide: The moderating effect of family function and depression. *Comprehensive Psychiatry*, 55, 342-348. doi:10.1016/j.comppsy.2013.09.006
- Woods, H. C. & Scott, H. (2016). #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of Adolescence*, 51, 1-49. doi:10.1016/j.adolescence.2016.05.008.
- Wei Wu, J. Y., Ko, H., Wong, T., Wu, L. & Po Oei, T. (2016). Positive outcome expectancy mediates the relationship between peer influence and Internet gaming addiction among adolescents in Taiwan. *Cyberpsychology, Behavior and Social Networking*, 19, 48-55. doi:10.1089/cyber.2015.0345

Valkenburg, P. M., Koutamanis, M. & Vossen, H. G. M. (2017). The concurrent and longitudinal relationships between adolescents' use of social network sites and their social self-esteem. *Computers in Human Behavior, 76*, 35-41.

doi:10.1016/j.chb.2017.07.008

Zimet, G. D., Dahlem, N. W, Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*, 30–41.

doi:10.1207/s15327752jpa5201_2

Appendix A. Interdisciplinary Approach

This research is performed in context of the course 'Master Thesis Based on Existing Data' which belongs to the master 'Youth Studies'. The master program is part of Interdisciplinary Social Sciences which means that a social phenomenon or issue will be studied from different perspectives of social sciences like psychology, sociology and pedagogy. This can also apply to the current study "The Influence of Parents and Peers on Adolescents Problematic Social Media Use Revealed".

First of all, the topic indicates that different aspects will be studied: An individual problem of problematic social media use in a broader context due to the interaction with parents and peers. Bronfenbrenner (1979) has described this in an Ecological Model where he states that different systems around the individual adolescent influence the development of the adolescent. This theory has also been applied as theory for the current study where adolescents' problematic social media use will be studied in the interaction with their parents and peers. Furthermore, with the use of different theories originating from disciplines like psychology, psychiatry and sociology explanations are given about the interaction between parents and peers as possible protective factor for adolescents' problematic social media use. For example, the article of Demetrovics, Szeredi and Rózsa (2008) gives an explanation from the psychology about what we mean by 'problematic social media use'. Furthermore, by looking at explanations about the individual's degree of self-control the article of Guerra and Bradshaw (2008) gives an explanation from a developmental psychological view. the study of Prievara, Piko and Luszczynska (2018) is a typical example of looking at an individual problem from a more sociological perspective to seek for explanation more from the society which probably affects adolescents' problematic social media use.

Although, this study found mainly explanations for individual factors like loneliness or stress that seems to be better predictors for the problematic group of social media users than parental and peer factors and therefore mainly literature from the psychology has been used to declare these results. However, the study also looked at the parental and peer factors and found therefore explanations from studies who focus on the interaction between persons, but also with the context (Kuss & Griffiths, 2017; Oulasvirta et al., 2011; Terras and Ramsay, 2016; Wang et al., 2014). Thus, this study used an interdisciplinary view by looking at individual, parental and peer factors on problematic social media use and consulting the relevant literature.