

A Cross-Sectional Study on The Relative Contribution of General and Internet-Specific Parenting Practices to Problematic Social Media Use
Among Adolescents



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Abstract

Previous studies on parenting practices and problematic social media use (PSMU) demonstrated the independent contribution of general parenting practices (GPP) and Internet-specific parenting practices (ISPP) to Internet use, while the relative contribution of GPP and ISPP to PSMU among adolescents is still unknown. Therefore, the present cross-sectional study aimed to examine the relative contribution of GPP (Responsiveness, Demandingness, and Autonomy-granting) and ISPP (Reactive restrictions and Internet-specific rules) to PSMU among adolescents, and whether these relationships were moderated by the time parents spend with their children. Adolescent data from wave 1 of the Digital Family Project were used. The sample consisted of 402 participants aged 9 to 19 ($M = 13.50$, $SD = 2.16$). As expected, results showed that responsiveness, autonomy-granting, and Internet-specific rules lowered the risk of PSMU. Contrary to the hypothesis, reactive restrictions increased the risk of PSMU. Spending time together with parents did not influence the relation between parenting and PSMU. It seems that adolescents are more protected against PSMU when experiencing high levels of responsiveness and autonomy-granting, more Internet-specific rules, and less reactive restrictions. Based on the results, interventions should focus on informing parents about their contribution to their children's social media use.

Keywords: adolescents, responsiveness, demandingness, autonomy-granting, reactive restrictions, Internet-specific rules, PSMU, time parents and children spend together

Samenvatting

Eerdere studies naar opvoedingspraktijken en problematisch sociale media gebruik (PSMG) toonden de onafhankelijke bijdrage van algemene opvoedingspraktijken (AOP) en Internet-specifieke opvoedingspraktijken (ISOP) aan Internetgebruik, terwijl de relatieve bijdrage van AOP en ISOP aan PSMG onder adolescenten onbekend is. Daarom onderzocht de huidige cross-sectionele studie de relatieve bijdrage van AOP (ontvankelijkheid, veeleisendheid en autonomie-toekenning) en ISOP (reactieve beperkingen en Internet-specifieke regels) aan PSMG onder adolescenten, en of deze relaties werden gemodereerd door de tijd die ouders besteden met hun kinderen. Adolescenten data van wave 1 van het Digital Family Project zijn gebruikt. De steekproef bestond uit 402 deelnemers van 9 tot 19 jaar ($M = 13,50$, $SD = 2,16$). Zoals verwacht toonden de resultaten aan dat ontvankelijkheid, autonomie-toekenning en Internet-specifieke regels het risico op PSMG verlaagden. In tegenstelling tot de hypothese, verhoogden reactieve beperkingen het risico op PSMG. Tijd doorbrengen met ouders had geen invloed op de relatie tussen opvoedpraktijken en PSMG. Het lijkt dat adolescenten beter beschermd zijn tegen PSMG wanneer ze een hoge mate van ontvankelijkheid en autonomie, meer Internet-specifieke regels en minder reactieve beperkingen ervaren. Gebaseerd op de resultaten moeten interventies focussen op het informeren van ouders over hun bijdrage aan het sociale mediagebruik van hun kinderen.

Kernwoorden: adolescenten, ontvankelijkheid, veeleisendheid, autonomie-toekenning, reactieve beperkingen, Internet-specifieke regels, PSMG, tijd ouders besteden met kinderen

Social media play an important role in the lives of adolescents. Of all adolescents in the Netherlands aged 12 to 18 years, 93.5% used the Internet every day (Nederlands Jeugdinstituut, 2020) and 94.6% used the Internet for social networking in 2019 (Centraal Bureau voor de Statistiek, 2020). The concept of social media includes social networking sites (e.g., Facebook and Instagram) and instant messengers (e.g., WhatsApp and Snapchat; Stevens et al., 2018; Van den Eijnden et al., 2018). Social media use (SMU) has many benefits if used in a healthy and balanced manner, like more opportunities for collaboration, improved self-esteem, communication, and access to health promotion and information (Guinta & John, 2018). However, when not used in a balanced and healthy way, SMU can become problematic. Problematic social media use (PSMU) means that an individual does not control their SMU anymore and negative consequences arise, like lower interest in other activities and getting into conflict due to SMU (Stevens et al., 2018). More negative consequences are health and emotional problems, including suicide, and social and functional disability (Guinta & John, 2018). Furthermore, problematic Internet use, which is related to PSMU, is related to stress, lower academic achievement, and less positive health behaviours (Guinta & John, 2018). Because of these possible negative consequences, it is important to determine factors that prevent PSMU among adolescents.

Parents play an important role in the lives of adolescents and their (problematic) Internet use (Bleakley et al., 2016). Particularly through their parenting practices, parents might contribute to or prevent the development of PSMU of their children. In the investigation of parenting practices, general parenting behaviours (e.g., responsiveness, demandingness, and autonomy-granting) and behaviour-specific parenting behaviours (e.g., reactive restrictions and Internet-specific rules) can be distinguished. Though the independent contribution of these two types of parenting practices to Internet use has been demonstrated, the relative contribution of general parenting practices (GPP) and Internet-specific parenting practices (ISPP) to PSMU among adolescents is still unknown. In addition, it is likely that the time parents and adolescents spend together may influence the relation between parenting and adolescents' PSMU. Therefore, this study will examine the relative contribution of GPP and ISPP to PSMU among adolescents, and to what extent this relation is moderated by the time parents spend with their children. The results are relevant for parents; especially when the relative contribution is known, parents can adapt their parenting practices knowing which behaviours will affect their child's PSMU most. When more insight is gained into the relationship between these parenting practices and PSMU, parents can be stimulated to apply parenting practices that seem most promising in preventing PSMU among their children.

Parenting practices

General parenting behaviours, i.e., parenting behaviours related to the overall socialisation, can be distinguished from behaviour-specific parenting behaviours, i.e., parenting behaviours related to specific behaviour of the child (e.g., Internet use).

General parenting practices and PSMU

The literature distinguishes three core dimensions of GPP: responsiveness, demandingness, and autonomy-granting. *Responsiveness* means parental warmth or supportiveness, and *demandingness* refers to behavioural control (Darling, 1999). *Autonomy-granting* means that parents provide their children with guidance and structure, but also respect the choices of their children when they are old enough to make their own choices (Valkenburg et al., 2013). The contribution of responsiveness, demandingness, and autonomy-granting to PSMU is unknown. However, previous studies on parenting styles and problematic Internet use in general exist. A meta-analysis including Chinese studies showed that positive parenting, including emotional warmth and understanding (responsiveness), was negatively related to Internet addiction (Li et al., 2018). Instead, positive parenting was positively related to e.g., self-control, satisfaction of life, and self-esteem (Botchkovar et al., 2015; Gong et al., 2015; Yamawaki et al., 2011). On the other hand, negative parenting, e.g., overprotection, punishment, and strictness (demandingness), was related to low self-esteem, low satisfaction of life and was additionally related to high adolescents' shame (Mintz et al., 2017; Yamawaki et al., 2011). Also, negative parenting was positively related to Internet addiction (Li et al., 2018).

Furthermore, results are found on the parenting dimensions of responsiveness, demandingness, and autonomy-granting specifically related to other problem behaviours. First, a Chinese study considering smoking shows that responsiveness was negatively related to smoking among adolescents (Li et al., 2010). Another study showed that high responsiveness (together with autonomy-granting) is related to lower levels of sexual risk-taking (Lanza et al., 2013). Therefore, responsiveness seems to be negatively related to problem behaviour among adolescents.

The study of Li et al. (2010) also showed that demandingness was higher among smokers than non-smokers. Parental demandingness might create stress among adolescents, which might make them more likely to smoke (Li et al., 2010). Further research is lacking. However, these results suggest that demandingness might be positively related to problem behaviour and therefore PSMU.

Regarding autonomy-granting, adolescents whose parents were autonomy-granting reported engaging less in cyberbullying compared with controlling parents (Legate et al., 2019). Furthermore, research suggests that autonomy-granting is associated with better academic achievement (Pinquart, 2016), high self-esteem (Zakeri & Karimpour, 2011), and autonomy-granting was negatively associated with internalising problems (e.g., psychological symptoms) and with problem behaviours (e.g., delinquency and drug use; Silk et al., 2003). This shows that autonomy-granting is linked to less problem behaviour and more positive development for adolescents (Silk et al., 2003). It is therefore assumed that autonomy-granting is negatively related to PSMU. Considering all three parenting dimensions, *it is hypothesised that higher levels of responsiveness and autonomy-granting lower the risk of PSMU, and higher levels of demandingness increase the risk of PSMU.*

Internet-specific parenting practices and PSMU

Parenting practices that relate to the socialisation of adolescents' Internet behaviours specifically are called ISPP. Most research so far is fairly inconsistent, demonstrating that the role of ISPP in adolescents' SMU differs across types of parenting practices and specific outcome measures (e.g., Collier et al., 2016; Sampasa-Kanyinga et al., 2019; Sebre et al., 2020). Filling in one gap in these inconsistencies is the role of ISPP in adolescents' *problematic* SMU. Restricting the accessibility to digital devices by applying restrictive mediation might be an important way to prevent PSMU. *Restrictive mediation* includes rule-setting and regulations about the time or content of SMU (Clark, 2011; Valkenburg et al., 1999). Koning et al. (2018) investigated the influence of two types of restrictive mediation practices, i.e., reactive restrictions and Internet-specific rules. Reactive restrictions refer to intervening responses of parents regarding adolescents' ongoing SMU. This is featured by the behaviour of parents in the presence of SMU, an immediate response to SMU, and restricting or frustrating the child's desire to SMU. Internet-specific rules show the degree to which strict rules are set regarding adolescents' access to social media (Koning et al., 2018). The study of Koning et al. (2018) showed that more Internet-specific parental rules predicted lower PSMU later on among girls (Koning et al., 2018). In contrast, another study suggests that parental rules about time spent on the Internet were positively related to compulsive Internet use (Van den Eijnden et al., 2010). However, rules about the content of Internet use might help to decrease compulsive Internet use (Van den Eijnden et al., 2010). Besides rule-setting, parental reactions, i.e., reactive restrictions, to excessive Internet use were negatively related to compulsive Internet use (Van den Eijnden et al., 2010). Furthermore, a meta-analysis of Collier et al. (2016) including experimental, cross-sectional, and longitudinal studies, showed

that restrictive mediation is associated with lower levels of problematic Internet use and can reduce the negative effects of social media. Another study also showed that restrictive mediation is negatively related to excessive Internet use (Kalmus et al., 2015). Although the literature is inconsistent and little is known, both rules and reactions tend to be negatively related to PSMU. Therefore, *it is hypothesised that more parental Internet-specific rules and more parental reactive restrictions towards Internet use lower the risk of PSMU.*

Relative contribution of parenting practices

Research on the relative contribution of general and Internet-specific parenting practices to PSMU is lacking. However, research about substance use showed that 1) alcohol-specific parenting practices were related to lower adolescents' alcohol use, whereas GPP were not related (Van Zundert et al., 2006), and 2) cannabis-specific parenting practices were more strongly related to adolescents' cannabis uses compared to GPP (Vermeulen-Smit et al., 2015). As ISPP are specifically aimed to influence Internet behaviour, including SMU, *it is therefore assumed that Internet-specific parenting practices have a higher relative contribution to PSMU than general parenting practices.*

Time parents and children spend together as moderator

Parenting behaviours are important considering PSMU among adolescents, but the contribution of parenting practices to PSMU might depend on the amount of time parents and children spend together. A higher amount of time parents and children spend together, might reflect a strong bond between parents and children as shared time decreases family conflict (Dubas & Gerris, 2002). According to the social bond/control theory of Hirschi (1969), adolescents who have a strong social bond with their parents, experience higher social control and may not want to disappoint their parents. Therefore, it is expected that adolescents who spend more time with their parents are more protected against PSMU, as these adolescents are more likely to conform to their parent's rules (Hirschi, 1969). As spending more time is related to social control, parental monitoring (Romero & Ruiz, 2007), and social support (Gunuc & Dogan, 2013), it is expected that spending time affects the relationships between both general and Internet-specific parenting practices and PSMU in a protective way. Therefore, hypothesis four implies that *(a) the negative relationships between higher levels of responsiveness and autonomy-granting and PSMU are stronger when parents and children spend more time, (b) the positive relationship between higher levels of demandingness and PSMU is weaker when parents and children spend more time, and (c) the negative relationships between more parental Internet-specific rules and reactive restrictions and PSMU are stronger when parents and children spend more time.*

Current study

Research has studied the link between parenting practices and adolescents' PSMU, yet the findings are inconsistent, and the relative contribution of general and Internet-specific parenting practices to PSMU is unknown. This is the first study to investigate both the contribution of GPP and ISPP to PSMU, as well as their relative contribution, and whether these relations are moderated by the time parents and children spend together (Figure 1). Therefore, the research question of this study is: *What is the relative contribution of general and Internet-specific parenting practices to problematic social media use among adolescents, and to what extent are these relations moderated by the time parents spend with their children?*

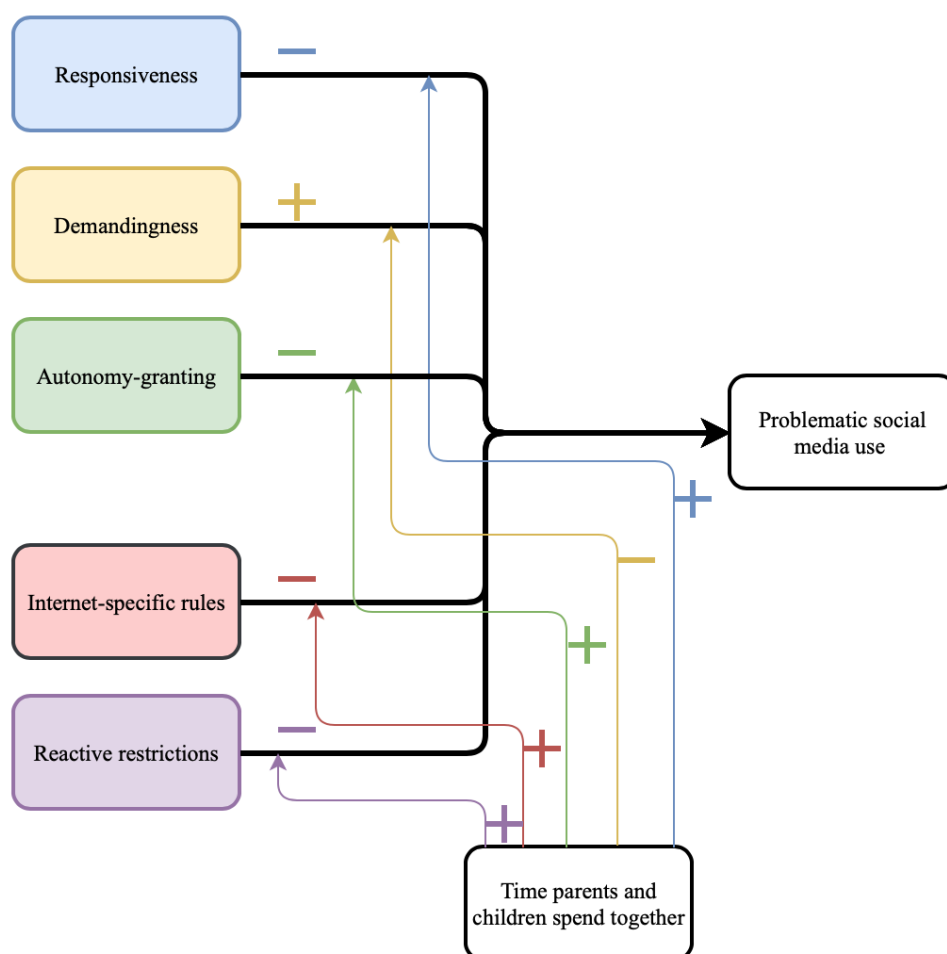


Figure 1. Research model

Method

Procedure

In this cross-sectional study, adolescent data from the first measurement wave (T1) of the Digital Family project are used. The Digital Family project is an ongoing, longitudinal research project in which adolescents and their parents are asked to fill in an online

questionnaire (max. 45 minutes) separately four times (every six months). For T1, data were collected from the end of April 2020 until the beginning of July 2020. Participants were reached via social network sites, the Digital Family website, and the personal network. Prior to the measurement, families received an information letter describing the goal and content of the study, privacy and anonymity, and monetary compensation. Furthermore, parents and adolescents separately received informed consent forms about the procedure of the study as well as for declining or ending participation. Parents also had to give informed consent for their child's participation. The study procedures were approved by the Ethics Committee of the Faculty of Social and Behavioral Sciences at Utrecht University (FETC20-192).

Participants

At T1, a total of 418 adolescents participated. However, 16 participants with missing values on all variables have been excluded. Therefore, the final sample consists of 402 participants (46.3% boys) with an average age of 13.50 ($SD = 2.16$, range: 9-19). Of these adolescents, 25.4% attended primary school, 68.9% secondary education school, 4.5% MBO, and 1.2% HBO. Of the 277 participants in secondary education schools, 23% were in lower educational levels (VMBO- beroepsgericht, VMBO-theoretisch, and VMBO/HAVO) compared to 77% attending high educational levels (HAVO, HAVO/VWO, and VWO/GYMNASIUM).

Measurements

Adolescents' problematic social media use is a type of Internet addiction, referring to compulsive SMU (Van den Eijnden et al., 2016). This is measured using the Social Media Disorder Scale consisting of nine items (Van den Eijnden et al., 2016). These nine items were based on the criteria for Internet gaming disorder as described in the Appendix of the Diagnostic and Statistical Manual of Mental Disorders fifth edition (DSM-5; American Psychiatric Association, 2013). These criteria, i.e., *Persistence*, *Tolerance*, *Withdrawal*, *Preoccupation*, *Escape*, *Problems*, *Deception*, *Displacement*, and *Conflict*, are applied to SMU (Van den Eijnden et al., 2016). An example item is: "During the past year, have you often used social media to escape from negative feelings?". Items were answered on a dichotomous scale and were recoded as such that 0=no and 1=yes. The sum score was calculated, with a higher score meaning more symptoms of PSMU. Cronbach's α was .65. This is lower than .7, as the items are dichotomous (Boer et al., 2021). As SMD was not normally distributed, the scale was recoded into a new variable with two groups: 0="normative users" with 0-1 symptoms of PSMU and 1="risky/problematic users" with 2 or more symptoms.

General parenting practices are measured according to three parenting dimensions: *responsiveness*, *demandingness*, and *autonomy-granting*. The used instrument is the Parenting Style Inventory II (PSI-II; Darling & Toyokawa, 1997), with three items for responsiveness and four items for both demandingness and autonomy-granting. Example items are for responsiveness “My parent(s) (or caregivers) hardly ever praise me for doing well.”, for demandingness “My parent(s) (or caregivers) expect me to follow family rules.”, and for autonomy-granting “My parent(s) (or caregivers) respect my privacy.”. Answer options ranged from 1 (*totally disagree*) to 5 (*totally agree*). Three negatively worded items were recoded, so that a higher mean for each dimension represents higher levels of either responsiveness, demandingness, or autonomy-granting. Cronbach’s α was .63 for responsiveness, .33 for demandingness, and .69 for autonomy-granting.

Internet-specific parenting practices include reactive restrictions and Internet-specific rules. *Reactive restrictions* reflect ad-hoc restrictive responses of parents regarding adolescents’ SMU (Koning et al., 2018). This included four items, with response options on a 5-point Likert scale ranging from 1 (*hardly never*) to 5 (*more than 5 times a day*). An example item is: “How often do your parents react that you have to turn off the computer/tablet or smartphone?”. Higher mean scores represent higher levels of reactive restrictions towards adolescents’ SMU. Cronbach’s α was .84. *Internet-specific rules* reflect the degree to which strict rules are set regarding adolescents’ access to social media (Koning et al., 2018). This variable is measured using an adapted version of the scale used by Van den Eijnden et al. (2010). An example item is: “How often did your parents (or caregivers) let you keep your smartphone/tablet with you during dinner?”. Answer options ranged from 1 (*never*) to 5 (*very often*) for eight items and were recoded, so that higher mean scores represent stricter parental rules about Internet use. A scale was created with 7 items; the item “How often did your parents (or caregivers) let you keep looking at your smartphone/tablet while your parents were talking with you?” was deleted, as alpha was higher without this item and item-rest correlation was $<.3$ for this item. Cronbach’s α was .80.

Time parents and children spend together is measured with the following item on a scale from 1 (*less than 5 minutes a day*) to 7 (*more than 4 hours a day*): “In the past two weeks, how much time a day have you spent time together with your parents or caregivers?”.

Control variables included in this study are *age in years* and *gender*. Age in years is controlled for as this might affect the relative contribution of parenting practices; when adolescents get older, there is a decrease in the role of parents and the time parents and children spend together (Maccoby, 2007). Gender (1=*boy*, 2=*girl*) is also controlled for, as

more restrictive parental rules predicted fewer social media disorder symptoms later on among girls only (Koning et al., 2018).

Data analysis

The program SPSS Statistics 26.0 is used to perform the analyses. First, the dataset was cleaned by checking for coding errors and outliers (by requesting histograms and boxplots), of which none were found. Furthermore, 16 respondents with missing values on all variables have been deleted. The maximum percentage of missing values on a variable was 0.75%. Given the low percentage of missing data, listwise deletion was used.

Second, descriptive analyses were performed to describe the variables; the percentages of the dependent variable PSMU and control variable gender, and the mean and standard deviation of all independent variables and the control variable age were requested. Furthermore, a correlation matrix with all variables has been made. The Pearson's correlation has been used for two continuous variables, the point-biserial correlation for a dichotomous and a continuous variable, and Phi and Cramer's V for two dichotomous variables.

Finally, the research questions were answered by means of multivariate logistic regression analyses. The assumptions, e.g., independence of observations, no multicollinearity, and linearity of the logit, were met. For all analyses, the control variables have been added to the model in the first block and the independent variables in block two. In block two, the parenting practices were first added for GPP and ISPP separately, whereafter all significant parenting practices from the previous analyses were added jointly to test the relative contribution to PSMU. Finally, multivariate logistic regression analyses with interaction were done to test whether the relations between parenting practices and PSMU were moderated by the time parents and children spend together. The moderation was tested for the five parenting practices separately. All independent variables had been centred and interaction terms had been calculated. The moderation analyses consisted of three blocks: the control variables in block one, the parenting practices in block two, and time and the interaction term in block three.

Results

Descriptive statistics and correlations

Table 1 shows the descriptive statistics and pairwise correlations of all variables. Adolescents who experienced higher levels of parental responsiveness, also experienced higher levels of autonomy-granting ($r = .388, p < .001$) and generally spent more time with their parents ($r = .379, p < .001$). Furthermore, adolescents who were older had less parental Internet-specific rules ($r = -.565, p < .001$).

Table 1

Descriptive Statistics and Pairwise Correlations

Variable	%/M (SD)	1	2	3	4	5	6	7	8	9
1. Gender (% boys)	46.3	—								
2. Age	13.505 (2.156)	.036 ^a	—							
3. Responsiveness	4.323 (0.593)	.122* ^a	-.150**	—						
4. Demandingness	3.644 (0.482)	-.006 ^a	-.122*	.245***	—					
5. Autonomy-granting	3.993 (0.627)	.091 ^a	.060	.388***	.008	—				
6. Reactive restrictions	1.859 (0.804)	-.183*** ^a	-.271***	-.058	.050	-.190***	—			
7. Internet-specific rules	3.395 (0.936)	-.101* ^a	-.565***	.204***	.268***	-.142**	.334***	—		
8. Time spend together	4.42 (1.423)	.075 ^a	.002	.379***	.158**	.151**	-.026	.036	—	
9. PSMU (% risky/problematic users)	40.0	.137** ^b	.051 ^a	-.236*** ^a	-.120* ^a	-.181*** ^a	.166*** ^a	-.157*** ^a	-.154*** ^a	—

Note. PSMU: problematic social media use.

^aPoint-biserial correlation coefficient, ^bPhi and Cramer's V.

*** $p < .001$. ** $p < .01$. * $p < .05$ (two-tailed).

RELATIVE CONTRIBUTION OF PARENTING PRACTICES

Regression analyses

Relationship between general parenting practices and PSMU

First, the logistic analysis of risky/problematic social media use on GPP has been performed. In step 1, the control variables age and gender have been added (Table 2). Second, responsiveness, demandingness, and autonomy-granting have been added in step 2. Responsiveness, $\beta = -.692$, Wald $\chi^2(1) = 10.970$, $p = .001$, and autonomy-granting, $\beta = -.442$, Wald $\chi^2(1) = 5.402$, $p = .020$, were significantly negatively related to PSMU, meaning that higher levels of parental responsiveness and autonomy-granting lower the risk of PSMU for adolescents. Demandingness was not significantly related to PSMU.

Table 2

Multiple Logistic Regression Analysis to Test the Contribution of General Parenting Practices to Problematic Social Media Use (Normative Versus Risky/Problematic) among Adolescents

Variable	Step 1		Step 2	
	OR	95% CI	OR	95% CI
Age	1.050	[.955, 1.153]	1.020	[.923, 1.127]
Gender (1=boy)	1.749**	[1.162, 2.634]	2.151***	[1.389, 3.332]
Responsiveness			.501***	[.332, .754]
Demandingness			.701	[.439, 1.120]
Autonomy-granting			.643*	[.443, .933]
R^2		.028*		.133***

Note. OR = odds ratio; CI = confidence interval.

*** $p < .001$. ** $p < .01$. * $p < .05$ (two-tailed).

Relationship between Internet-specific parenting practices and PSMU

Second, the logistic analysis of risky/problematic social media use on ISPP has been performed. In step 1, the control variables age and gender have been added (Table 3). In step 2, reactive restrictions and Internet-specific rules were significantly related to PSMU. More parental reactive restrictions, $\beta = .758$, Wald $\chi^2(1) = 23.628$, $p < .001$, increase the risk of PSMU for adolescents. On the other hand, more parental Internet-specific rules, $\beta = -.565$, Wald $\chi^2(1) = 14.611$, $p < .001$, lower the risk of PSMU for adolescents.

Table 3

Multiple Logistic Regression Analysis to Test the Contribution of Internet-Specific Parenting Practices to Problematic Social Media Use (Normative Versus Risky/Problematic) among Adolescents

Variable	Step 1		Step 2	
	OR	95% CI	OR	95% CI
Age	1.048	[.954, 1.152]	.991	[.878, 1.117]
Gender (1=boy)	1.786*	[1.187, 2.686]	2.148***	[1.383, 3.334]
Reactive restrictions			2.134***	[1.572, 2.896]
Internet-specific rules			.568***	[.425, .759]
R^2	.030*		.138***	

Note. OR = odds ratio; CI = confidence interval.

*** $p < .001$. ** $p < .01$. * $p < .05$ (two-tailed).

Relative contribution of significant parenting practices to PSMU

Next, the significant predictors following from the previous analyses were included in one model to examine their relative contribution to PSMU. In step 2, the included parenting practices all remained significantly related to PSMU (Table 4). That is, higher levels of parental responsiveness, $\beta = -.624$, Wald $\chi^2(1) = 8.457$, $p = .004$, and autonomy-granting, $\beta = -.446$, Wald $\chi^2(1) = 5.019$, $p = .025$, lower the risk of PSMU for adolescents. More parental Internet-specific rules, $\beta = -.555$, Wald $\chi^2(1) = 12.603$, $p < .001$, lower the risk of PSMU for adolescents as well. On the other hand, more parental reactive restrictions, $\beta = .697$, Wald $\chi^2(1) = 19.112$, $p < .001$, increase the risk of PSMU for adolescents.

Table 4

Multiple Logistic Regression Analysis to Test the Relative Contribution of General and Internet-Specific Parenting Practices to Problematic Social Media Use (Normative Versus Risky/Problematic) among Adolescents

Variable	Step 1		Step 2	
	OR	95% CI	OR	95% CI
Age	1.050	[.955, 1.153]	.970	[.858, 1.098]
Gender (1=boy)	1.749**	[1.162, 2.634]	2.451***	[1.543, 3.893]
Responsiveness			.536**	[.352, .816]
Autonomy-granting			.640*	[.434, .946]
Reactive restrictions			2.007***	[1.469, 2.744]
Internet-specific rules			.574***	[.422, .780]
R^2	.028*		.208***	

Note. OR = odds ratio; CI = confidence interval.

*** $p < .001$. ** $p < .01$. * $p < .05$ (two-tailed).

The moderating role of time parents spend with their children

To test the moderating role of the time parents and children spend together, five logistic analyses have been performed; one for each interaction term between parenting practice*time spend with parents. No significant interactions between parenting practices and time spend with parents were found: responsiveness and time ($OR = 1.086$, $p = .538$), demandingness and time ($OR = 1.054$, $p = .750$), autonomy-granting and time ($OR = 1.085$, $p = .502$), reactive restrictions and time ($OR = 1.035$, $p = .714$), and Internet-specific rules and time ($OR = .969$, $p = .725$), were not significantly related to PSMU. The time parents and children spend together does not affect the relationships between parenting practices and PSMU for adolescents.

Discussion

As far as we know, this is the first study that investigated both the individual and relative contribution of general and Internet-specific parenting to PSMU. In addition, this study investigated whether these relations were moderated by the time parents and children spend together. Results showed that the GPP ‘responsiveness’ and ‘autonomy-granting’ and the ISPP ‘Internet-specific rules’ are associated with a lower risk of PSMU, whereas Internet-specific reactive restrictions are associated with a higher risk of PSMU. These relations were not moderated by the time parents and children spend together. The results suggest that

responsiveness, autonomy-granting, and Internet-specific rules might be relevant protective parenting strategies to lower the risk of PSMU among adolescents.

The findings of the current study show that, in line with our hypothesis, higher levels of responsiveness and autonomy-granting, both GPP, are associated with a lower risk of PSMU. This is in line with research on other risk behaviour showing that responsiveness was negatively related to smoking and sexual risk-taking (Lanza et al., 2013; Li et al., 2010). Also, positive parenting, including emotional warmth and understanding (responsiveness), was negatively related to Internet addiction (Li et al., 2018). Furthermore, previous research showed that autonomy-granting was linked to less problem behaviour and more positive development for adolescents (Legate et al., 2019; Pinquart, 2016; Silk et al., 2003; Zakeri & Karimpour, 2011). This implies that responsiveness and autonomy-granting (parental warmth, support, and responsibility) are protective factors against PSMU for adolescents. An explanation for this relationship might be that parental warmth, support, and autonomy predict a higher social competence and psychosocial functioning of adolescents (Darling, 1999). Low psychosocial well-being, in turn, is associated with PSMU (Worsley et al., 2018).

Moreover, we did not find a significant relation between demandingness and PSMU, while we did find a positive relationship between reactive restrictions and PSMU. An explanation might be that specific demandingness (reactive restrictions) results in stress and fear of missing out because adolescents are forced to stop using social media immediately. Stress and fear of missing out, in turn, could increase the risk of PSMU (Franchina et al., 2018; Savci et al., 2020; Vanden Abeele & Van Rooij, 2016; Wartberg et al., 2021). However, general demandingness does not necessarily result in more stress related to social media use and might therefore not be related to PSMU. Nevertheless, these results are not in line with previous research showing that reactive restrictions were negatively related to Internet use and SMU (Collier et al., 2016; Kalmus et al., 2015; Van den Eijnden et al., 2010). However, Koning et al. (2018) showed that reactive restrictions did not predict the level of PSMU. An explanation for the relation between more reactive restrictions and PSMU could be the operationalisation of PSMU; the dependent variable PSMU was dichotomised, while other studies used a continuous scale of problematic Internet use/SMU (Kalmus et al., 2015; Koning et al., 2018). Also, the operationalisation of reactive restrictions could explain the difference in results with the study of Kalmus et al. (2015); in their study restrictive mediation included parents' rules to restrict the child's use, whereas reactive restrictions in this study reflected ad-hoc restrictive responses of parents. Furthermore, the non-significant relation between reactive restrictions and PSMU of Koning et al. (2018) could be explained by the

fact that they examined this relationship over time, whereas this is a cross-sectional study. Therefore, it seems that the negative relationship between reactive restrictions and PSMU does not hold when studying this longitudinally. Finally, causality cannot be determined with this cross-sectional study. For demandingness, another explanation may be that the measurement instrument is not reliable, as only three items of the original scale were used, and Cronbach's alpha was .327. Future studies should therefore examine whether demandingness is related to PSMU by measuring demandingness with a more reliable scale.

In line with hypothesis 2a, more parental Internet-specific rules lower the risk of PSMU. This is in line with previous research showing that more Internet-specific parental rules predicted lower PSMU later on (among girls; Koning et al., 2018). Based on these findings, we can conclude that, in contrast to applying restrictive measures in a response to SMU, setting clear rules regarding SMU in advance might be helpful in preventing PSMU.

The third hypothesis stating that ISPP have a higher relative contribution to PSMU than GPP is not confirmed. Overall, results showed that the protective parenting practices (responsiveness, autonomy-granting, and Internet-specific rules) are equally strongly related to PSMU, whereas the riskier parenting practice (reactive restrictions) contributes more to PSMU. This is the first study showing still significant relations with PSMU when all parenting practices are tested in one model. With respect to the protective parenting practices, there is no difference between the strength of the contribution of ISPP and GPP with PSMU. This is not in line with previous research about substance use (Van Zundert et al., 2006; Vermeulen-Smit et al., 2015). An explanation for this inconsistency may be that substance use is a fairly different concept than social media use. Substance use is often limited to a bounded day and time of the week and formally allowed at a specific age. Therefore, parental alcohol-specific rules influence the social context where adolescents usually use substances (Koning et al., 2020). This is not the case for SMU as this is not limited to specific age groups, time, or place. When parents do not allow their children to drink alcohol, adolescents are also less likely to be in situations where peers drink alcohol and may therefore have fewer opportunities to drink (Koning et al., 2020). SMU on the other hand is an issue of everyday life, having less distinction between specific and general parenting practices and may therefore also evenly be related to general parenting. This difference has major implications for interventions aiming at parents' socialisation practices, which cannot be based on existing knowledge on substance use prevention.

Finally, the time parents and children spend together does not moderate the relations between parenting practices and PSMU. That is, the associations between parenting and

PSMU are not strengthened or weakened by the time parents and children spend together. Research shows that adolescents spending more time with parents report a higher level of social support, a lower level of Internet addiction (Gunuc & Dogan, 2013), and increased parental monitoring (Romero & Ruiz, 2007). Spending time with parents is therefore found to be a protective factor against Internet addiction. On the opposite, Internet use reduces time spend with family (Lee & Chae, 2007). Therefore, it seems that spending time might not be a moderator, but more likely a direct predictor or outcome of PSMU. Future research should examine the bidirectional relationship between time spend and PSMU.

Strengths and Limitations

This study is the first study considering both GPP and ISPP with their relative contribution. Also, the findings of the current study can be replicated as the research process is systematically described. Furthermore, the study includes a large sample size. Besides these strengths, the limitations of the study must be reported. First, the study is cross-sectional. Thus, no causal relationships can be determined. Second, the data are based on adolescents' self-report, which could imply bias. However, self-reports showed to be a reliable and valid method to measure PSMU (Van den Eijnden et al., 2016). Third, given the non-normal distribution of PSMU and the low number of adolescents that could be classified as problematic users, this dependent variable was dichotomised with risky and problematic social media users being grouped together as a separate category from normative users. This might have resulted in smaller effect sizes, as the difference between the two categories (normative versus risky/problematic users) is smaller (compared to normative versus problematic users). Fourth, the data used consisted of sibling data. Since we did not adjust for this clustered nature of the data, the results need to be interpreted with caution. Finally, the sample is not representative of all Dutch adolescents, as the sample consisted mostly of highly educated adolescents. As adolescents' educational level might influence the effect of parenting (Li et al., 2018), the results are not generalisable to lower educated adolescents.

Conclusions and Implications

The current study investigated the relative contribution of GPP and ISPP to PSMU among adolescents, and whether these relations are moderated by the time parents and children spend together. Results showed that responsiveness, autonomy-granting, and Internet-specific rules are protective factors against PSMU for adolescents. Reactive restrictions are on the other hand a risk factor for PSMU. The time parents and children spend together does not affect these relationships. These results show that both parents' GPP and ISPP contribute to PSMU among adolescents. Therefore, interventions should focus on

informing parents about the contribution of their behaviours to the social media use of their children and supporting them in this.

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Appendices

Appendix 1: Interdisciplinarity of this research

The research topic of this study concerning general and Internet-specific parenting practices in relation to problematic social media use among adolescents can be considered as interdisciplinary research. Different disciplines are useful, as well as the ecological model of Bronfenbrenner (1979).

To understand the problem of PSMU, it is useful to integrate several scientific disciplines. The problem of PSMU is not a problem on its own. PSMU takes place within a context, as well as parenting practices take place within a family context. The problem of PSMU cannot be understood when it is considered separately. Instead, the individual, as well as the context and their interaction, need to be considered to understand the problem of PSMU and the influence of parenting practices. Also, the time spent between parents and children is considered, which also is an interactive component between parents and children.

Therefore, these insights need to be combined using several disciplines. Most importantly, psychology, specifically developmental psychology, sociology, and pedagogical sciences are important. Also, the model of Bronfenbrenner can be considered here. Psychology, in general, is important as PSMU of adolescents is something personal and there are reasons why the individual uses social media extensively. Also, the behaviours of parents are considered within the discipline of psychology as they also have their reasoning as to why they perform certain parenting practices. Furthermore, using psychology, the interaction between the behaviours of parents and adolescents can be considered. Also, sociology comes into play as this discipline also includes the interaction between individuals, in this case, parents and adolescents, within the broader context. The time parents and adolescents spend together can be seen as developmental psychology, as this can be beneficial for the development of children (or harmful when this time is missing). Furthermore, pedagogical sciences come into play as parenting practices and their effects are studied which specifically belongs to pedagogical sciences with its focus on children and their families.

In addition, the model of Bronfenbrenner is important as this considers five interaction systems around the child, which can be seen as interdisciplinary. Especially the microsystem is important in this research, as this microsystem considers the home of children or adolescents. The parents, siblings, and children are in interaction with each other, which is very important for this research concerning PSMU. Also, the mesosystem might be important, which includes the home, religious setting, school, and neighbourhood. This might influence the adolescent in using social media and also the parents might be influenced in their

parenting practices by the world around them. So, the interaction between the parents and the adolescent is included in the microsystem, and the broader context influencing the parents and adolescents is the mesosystem.

Last but not least, different research methods can also be used to investigate the problem to result in greater understanding. Questionnaires are important to get data, which is done in the Digital Family Project (DiFa Project). However, interviews might be helpful to get to know the experiences of adolescents concerning the parenting practices of their parents for example. This is not done, although an app tracker will be used from wave 3 on in the DiFa Project to get more data without bias. However, in this research, only the data of questionnaires were used. Although only these questionnaires were used, it is expected to have a good understanding of the problem of PSMU among adolescents and the contribution of general and Internet-specific parenting practices.

Appendix 2: Contract data-use TED track

Utrecht, 2020

This letter constitutes formal confirmation of the fact that the data from the Utrecht University Youth Studies 2020-2021 programme have been made available to Lisa de Jong of Utrecht University.

These data will not be made available to others, and the data may be used only for analysis and reporting on topics for the thesis, about which agreement has been reached with Suzanne Geurts.

Lisa de Jong will receive access to the data from the dataset in order to answer the following research questions within the framework of the thesis:

Research question:

What is the relative contribution of general and Internet-specific parenting practices to problematic social media use among adolescents, and to what extent are these relations moderated by the time parents spend with their children?

The following variables will be used:

Dependent variable: Problematic social media use (AV16_1 – AV16_9)

Independent variables: Parenting dimensions: Responsiveness (AV39_1 - AV39_3), Demandingness (AV39_4 - AV39_7), and Autonomy-granting (AV39_8 - AV39_11), and Reactive restrictions towards social media use (AV28_1 – AV28_4), and Internet-specific rules (AV29_1 - AV29_8)

Other variables: Time parents and children spend together (AV33), Age in years (AV_Age), Gender (AV3), and Educational level (AV7)

No report based on the data from the project entitled Digital Family Project may be made public, unless permission has been obtained in advance from the Project Coordinator for the Digital Family Project.

After the expiration of this contract, dated, 02-07-2021, Lisa de Jong shall delete the Digital Family Project data.

Dates and signature:

11th of January 2021,

Lisa de Jong