

Problematic Social Media Use a Predictor of Binge-drinking Behavior Among Adolescents?

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Abstract

Adolescents' risk behavior and the results of it are a global health concern. Previous research reported on potential associations between different types of risk behavior, such as between problematic social media use (PSMU) and binge-drinking. However, insights on how this link exactly manifests are limited. This study aims to increase the insights into this potential link by including a potential moderator, namely parental monitoring. Parental monitoring is known to be a protective factor for both PSMU and problematic drinking behavior. The LEF data was used to test our hypothesized model. The sample that was used, included ($N= 2103$) adolescents aged 11 till 18 ($M = 14.68$, $SD = 1.33$). Based on the results of this study it was concluded that adolescents who have symptoms of PSMU are more likely to engage in binge-drinking, which was in line with the expectations of this study. Parental monitoring did not moderate the relation between PSMU and binge-drinking, which was not in line with the expectations of this study. In addition, high parental monitoring seemed to be related to less binge-drinking. The findings of this study underline the importance of more research regarding the relation between PSMU and binge-drinking. Additionally, it gives information on how parents could deal with risk-behavior.

Keywords: Problematic Social Media Use (PSMU), online risk behavior, offline risk behavior, binge-drinking, adolescents.

Samenvatting

Risico gedrag onder adolescenten is een wereldwijd probleem. Voorgaande onderzoeken vermelden dat er een link kan zijn tussen verschillende soorten risico gedrag, zoals tussen problematisch sociale media gebruik en binge-drinken. Ondanks dit vermoeden zijn er weinig studies die dit onderzoeken. Deze studie heft als doel om het inzicht betreffende deze link te vergroten. Daarnaast voegt deze studie ook nog een moderator toe, namelijk, ouderlijk toezicht. Ouderlijk toezicht blijkt een beschermende factor te zijn voor zowel problematisch sociale media gebruik als problematisch drink gedrag, binge-drinken. Om deze vraag te beantwoorden is de LEF data gebruikt. De steekproef die is gebruikt voor deze studie bestond uit ($N = 2103$), de deelnemende jongeren waren allemaal tussen de 11 en 18 jaar oud ($M = 14.68$, $SD = 1.33$). Uit deze studie kwam naar voren dat adolescenten die problematisch sociale media gebruik vertonen meer kans hebben om te binge-drinken. Dit was in lijn met de verwachtingen van deze studie. Ouderlijk toezicht bleek geen invloed te hebben op deze relatie. Dit was niet in lijn met de verwachting van deze studie. Echter, bleek dat een hoge

mate van ouderlijk toezicht wel een direct effect had en het verkleind de kans op binge-drinken. Deze studie benadrukt dat er nog meer onderzoek nodig is. Daarnaast geeft het informatie over hoe ouders kunnen omgaan met risico gedrag.

Problematic Social Media Use a Predictor of Binge-drinking Behavior Among Adolescents?

Representative research among Dutch adolescents showed that 71% of the adolescents drank five glasses or more in the past month, also known as binge drinking (Stevens et al., 2018). Underage binge-drinking and its related problems have profound negative consequences for underage drinkers themselves and society as a whole. It contributes to a wide range of costly health and social problems (World Health Organization, 2018). Moreover, adolescence is also often the phase at which substance abuse and addiction problems begin, these problems are a major burden on society (Wellman, Sabiston & Morgenstern, 2022). Adolescence is a critical phase where risk behavior, such as alcohol and problematic social media use (PSMU), rises (Guilamo-Ramos, 2010; Wellman, Sabiston & Morgenstern, 2022). Research shows that adolescents with PSMU are more likely to show binge-drinking behavior (Guilamo-Ramos, 2010). Additionally, social media plays a highly important role in the lives of Dutch adolescents (Stevens et al., 2018), while young people's social relations and leisure time increasingly shift towards online interaction (Livingstone, 2008). With the increasing importance of social media among Dutch adolescents there is more need to investigate the consequences related to this behavior, such as the increase in binge-drinking behavior. The relationship between PSMU and binge-drinking might be influenced by parental monitoring, which research shows that it might be a protective factor for risk behavior (Guilamo-Ramos, 2010). Therefore, the current study examines whether adolescents who show PSMU engage in binge-drinking more often and if this relationship is weakened by parental monitoring.

Problematic Social Media Use (PSMU)

PSMU can be described as: 'an excessive concern about social media, with a strong motivation to use social media and the devotion of too much time and effort to social media use that it impairs with other activities jobs, studies, interpersonal relationships' (Shensa et al., 2017). Two important indicators of PSMU are spending a considerable amount of time on social media and not being able to think about anything else but social media (van den Eijnden, Lemmens & Valkenburg, 2016). Adolescents are seen as more vulnerable to developing PSMU due to their quick embracing of new technologies, reduced ability to self-regulate and fear of missing out (Buda, Lukoseciciute, Salciunaite, & Smigelskas, 2020). According to statistics from 2015, 9.1% of adolescents in the United States (US) show an

almost addiction-like use of social media (Boer et al., 2020). In research among Dutch adolescents it was shown that around 7.4% of the adolescents in high school show behavior that could be indicated as PSMU (Stevens et al., 2018).

Being such active users, adolescents come in contact with a large amount of content created by others. One type of content they regularly come across is alcohol-related content. Many adolescents post alcohol-related content on social media during parties and gatherings (Hendriks, van den Putte & Gebhardt, 2017). Content analyses on social media show that images of peers consuming alcohol or updates on drinking and behavior that is related to going to social events, like parties, are likely to be encountered when visiting social media websites. However, there is a scarcity of research that investigates the frequency of alcohol-related content online (Erevik, Torsheim, Vedaa, Andreassen & Pallesen, 2017). It has been suggested that exposure to this kind of content might increase problematic drinking behavior, which might take the form of binge-drinking (Geusens & Beullens, 2016). Similarly, Vannucci, Simpson, Gagnon and Ohannessian (2020) found a significant association between PSMU and binge-drinking.

Binge-drinking

Binge-drinking is defined as drinking four consumptions per hour for women and five consumptions per hour for men (Lee, Schick-Makaroff, & Kunyk, 2021). Research suggests that binge-drinking during adolescence is an important problem, as the quantity of alcohol consumed by adolescents drastically increases over time (Laghi, Baiocco, Lonigro, Capacchione, & Baumgartner, 2012). Around 8% of adolescents in 8th grade (aged 13-14), 16% of adolescents in 10th grade (aged 15-16) and 25% of adolescents in 12th grade (aged 17-18) reported binge-drinking (Vetreno & Crews, 2012). Binge-drinking is a phenomenon seen in many countries and the prevalence of binge-drinking has steadily increased over the years (Kowk & Yuan, 2016). Moreover, binge-drinking is a major health problem, as it is related to several negative health outcomes like violence, dangerous sexual activities, and poor academic performance (Laghi et al. 2012). Long-term consequences of binge-drinking behavior during adolescence are a higher chance of cardiometabolic risks, like heart diseases, high blood pressure and type 2 diabetes (Sampasa-Kanyinga & Chaput, 2016). Despite these risks, young people view binge-drinking as enjoyable due to the social characteristics of binge-drinking that are part of their regular routine (Wyre & Pruitt, 2017). In other words, drinking is part of partying and socializing during adolescence and young adulthood.

Given this large potential impact, it is important to gain more certainty about the relationship between binge-drinking and PSMU (Brunborg et al., 2017).

The Relationship Between PSMU and Binge-Drinking

Recent studies link PSMU with binge-drinking behavior (Sampasa-Kanyinga & Chaput, 2016; Vannucci et al., 2020). A theoretical explanation that can be given for the relationship between PSMU and binge-drinking is based on the social learning theory by Bandura (Bandura, 1977). The social learning theory is often used to describe deviant behavior. This theory states that deviant behavior, in this case, binge-drinking, is a learned behavior just like other behaviors (Vito et al., 2019). Children and teens learn by observing and imitating behavior from attractive role models or peers on social media (Sampasa-Kanyinga & Chaput, 2016). For adolescents, behavior is especially attractive to engage in when they see behavior that is realistic or rewarding (Sampasa-Kanyinga & Chaput, 2016). This could be the pleasant feeling that alcohol gives or the stress relief that alcohol provides (Wellman et al., 2022). Alcohol is seen as ‘normal’ behavior in our society, which could make it even more attractive for adolescents to engage in binge-drinking behavior (Sampasa-Kanyinga & Chaput, 2016). Adolescents who spend a great amount of time online might be exposed to a lot of this binge-drinking behavior as peers post about this online (Brunborg, Skogen, Andreas, 2022). Adolescents who have PSMU often spend a great amount of time on social media websites (Shensa, 2018) which might related to these adolescents seeing even more of this content. In addition, Akers (1998) enhanced the social learning theory with the concept of ‘differential associations’, which means that a person’s beliefs in, participating or acknowledging the use of deviant behaviors are related to the amount of exposure to this specific behavior in one’s surrounding (Vito et al., 2019).

The Moderating Role of Parental Monitoring

Parental monitoring has been considered one of the most important protective factors against adolescents’ risk behaviors (Lionetti et al., 2019). Parental monitoring is defined in this paper as: “A set of correlated parenting behaviors involving attention to and tracking of the child’s whereabouts, activities and adaptations” (Dishion & McMahon, 1998, p. 61).

In contrast with the control that is asked of parents, in most Western societies, as children go through adolescence, they spend an increasing amount of time away from home and their parents. This is also the moment that risk behavior rises (Guilamo-Ramos, 2010). Parents who are aware of the activities that their adolescents are engaging in (parental

monitoring) might be able to reduce opportunities for risk behavior, by steering their adolescent children in a different way (Guillamo-Ramos, 2010). Parental monitoring as a predictor of both PSMU as well as binge-drinking is often researched, according to Paakkari et al. (2021) and Padilla-Walker, Coyne, Kroff and Memmot-Elison (2018), higher parental monitoring was related to a lower prevalence of PSMU. In addition, Reifman, Barnes, Dintcheff, Farrell and Uhteg (1998) did a longitudinal study and stated that low parental monitoring was associated with more weekly drinking and more binge-drinking. Although, there is a big role for parental monitoring as a predictor of risk behaviors. The findings regarding parental monitoring as a moderator seem inconsistent. Studies on several risk behaviors and parental monitoring as a moderator have different outcomes. In a study by Becerra, Castillo, Ayón and Blanchard (2014) parental monitoring was used as a moderator. This study focused on the influence of peer pro-drug norms and cigarette use (risk behavior) among adolescents in Mexico. In this study parental monitoring did not seem to have a moderating role. However, in a study by Haas, Zamboanga, Bersamin and Hyke (2018) a moderating effect of parental monitoring was found. Their research focused on parental monitoring as a moderator on the relationship between impulsivity and Marijuana use (risk behavior) among adolescents.

Based on these findings, it is interesting to see if parental monitoring has a moderating role in our context. In the current study, it is expected that the relationship between PSMU and binge-drinking is moderated by parental monitoring. More specifically, we expect that parental monitoring weakens the relationship that adolescents who are not monitored by their parents and engage in PSMU have a higher chance to participate in binge-drinking.

The Current Study

Adolescence is a critical phase where risk behaviors like, PSMU and binge-drinking rise (Guillamo-Ramos, 2010). The high prevalence of binge-drinking and the negative consequences increase the need to gain more insight into the predictors of this behavior (Hendriks et al., 2018). It is important to gain insight into this relationship as both behaviors impact adolescents in a negative way (Vannucci et al, 2020).

Therefore, this study aims to provide more certainty regarding the relationship between PSMU and binge-drinking. In addition, the moderating role of parental monitoring on this relationship will be investigated. Therefore, the research questions will be: 'To what extent does PSMU influence binge -drinking'. In addition, the sub-question is: 'To what

extent does parental monitoring moderate the relationship between PSMU and binge-drinking'. First, it is hypothesized that PSMU is associated with higher levels of binge-drinking. This could be supported by the social learning theory by Bandura (1977). Secondly, it is hypothesized that parental monitoring reduces the effect of problematic social media use on adolescents' binge-drinking. These hypotheses are displayed in figure 1.

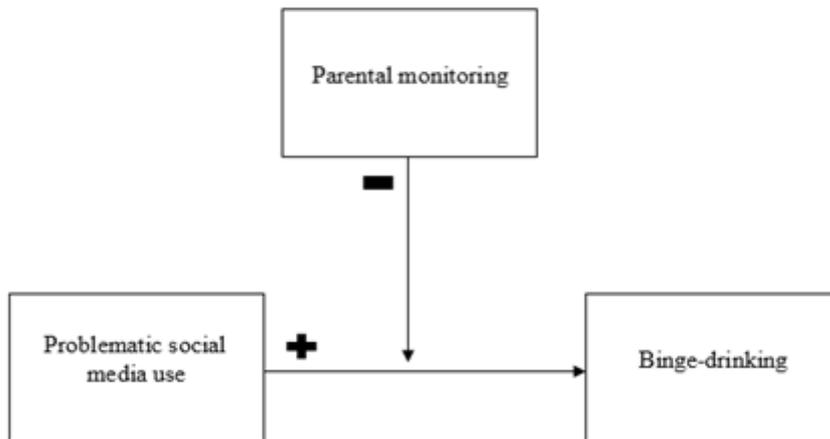


Figure 1. Hypotheses, with the controlling variables sex and age.

Method

Participants

This study was based on the data of LEF. This data set was provided by Utrecht University and the municipality of Edam-Volendam. For the data collection, a quasi-experimental design was used. The municipality of Edam-Volendam selected two schools to participate 'Don Bosco College' and 'de Triade', in the experimental condition. The municipality of Enkhuizen selected the 'Regionale Scholengemeenschap Enkhuizen' (RSG), this school was used as a control group. From the schools, all students were part of the sample. However, all classes who had to do their final exams were excluded (4th class of VMBO, 5th class of HAVO, 6th class of VWO).

The total sample consisted of $N = 2893$. After asking for the descriptive statistics of age and sex $N = 729$ were reported as missing. In addition, $N = 61$ were also reported as missing, this is explained later in the method section. This resulted in a sample of $N = 2103$ which could be used for this study. The deviation of sex was girls ($N = 1105$; 52.5%) and

boys ($N = 997$; 47.4%). The participants were between the age of 11 till 18 with a mean age of 14.67 ($SD = 1.33$).

Procedure

The LEF research was approved by the Ethics Review Board of the Faculty of Social & Behavioral Sciences (FERB) (FECT18-060). This specific master thesis was also approved by the FERB (FETC22-0797). At the beginning of the data collection, parents received a letter where they had to give consent. Parents could decline the participation of their child, this could be seen as passive consent (Pokorny, Jason, Schoeny, Townsend & Curie, 2001). After this, the data collection started in May and June of 2018, this was the first moment. Later on, the follow-up data was gathered six months later in November and December of 2018. The questionnaires were taken online in classrooms, trained research assistants were present. The data analysis in LEF was done with Mplus. ($p < .05$) (Koning et al., 2021).

Measurements

Binge-drinking

To measure binge-drinking the question: ‘How often did you have five or more (alcoholic) drinks on one occasion, for example at home or in a bar’ was used. This was questioned for two moments in the past. The first question was focused on the past twelve months and the second on the past four weeks. In this study, the focus lay on the past twelve months, as the question focusing on PSMU was also measured over the past 12 months. The answer options ranged between 0 (1) and 40 or more (14). Adolescents were considered as binge-drinkers when they consumed at least five drinks or more during one occasion, in SPSS this was coded as 1. Adolescents who answered less than 5 were not considered as binge-drinkers, this was coded as 0. This scale is often used to indicate binge-drinking (Cranford, McCabe & Boyd, 2006).

Problematic social media use

The first question that was used to indicate someone’s social media use was: “How many hours in the past month did you spend per day on one of the following apps.” Several examples are given for social media (‘WhatsApp, Facebook, Twitter). The answer options varied between ‘no time’ and ‘6 hours per day’. This scale has been used before to measure social media use (Banyai et al., 2017). When adolescents did answer ‘no time’ they were excluded from the sample ($N = 26$).

There was a second question that was used to measure PSMU, consisting of nine items. Respondents could answer with 'yes' or 'no'. Examples of these questions are: "Can you often not think about anything else, but the moment that you can use social media again?" and "Do you have severe problems with your parents or other members of the family because of your social media use?" This scale was based on the social media disorder scale, which is a legitimate tool to measure PSMU (van den Eijnden, Lemmens & Valkenburg, 2016). All items were summed up to determine the total score for PSMU. For this scale, a reliability score of $\alpha = 0.75$ was found. For each item, adolescents could score 1 point with a total score of nine. A new variable was created, where all the scores were added up. The maximum score was nine again. When adolescents had a score of two or higher on this variable they were classified as problematic social media users (van den Eijnden, Lemmens & Valkenburg, 2016).

Parental monitoring

To measure parental monitoring, respondents answered five items on a five-point Likert scale ranging from 'never' 1 to 5 'always'. An example of one of the items is: "Before you leave the house on a Saturday night, would your parents like to know where you are going and with whom?" The scale that has been used in the LEF data, has been used with adolescents before and is considered a reliable and valid scale (Lamborn, Mounts, Steinberg & Dornbusch, 1991). For this scale, a reliability score of $\alpha = 0.83$ was measured.

The score on the different items was calculated to determine the total score for parental monitoring. The total score an adolescent could score was 25. To include parental monitoring as a moderator, it was decided to divide the adolescents into three categories, otherwise, the interpretation would get too complicated. To create an equal distribution, it was not an option to choose a straight cut-off point based on the maximum score, as this resulted in a highly unequal distribution. Therefore, it was decided to divide the groups based on percentages. All three the groups contained around 30 percent of the participants based on their scores, this resulted in the following scales: low = 0, moderate = 1, high = 2.

When adolescents did not answer the questions regarding parental monitoring they were excluded from the sample ($N = 10$).

Analyses

All analyses were done using the statistic software package SPSS V27. To answer the research question, two hypotheses were tested. This was done with Logistic regression. In the

blocks, the variables were entered one by one. In block 1 only the control variables were included and the dependent variable binge-drinking. In block 2 the independent variable parental monitoring was included together with the control variables and the dependent variable binge-drinking. In block 3 the control variables, the independent variables parental monitoring, and PSMU were included and the dependent variable binge-drinking. In block 4, PSMU, parental monitoring and the interaction effect of parental monitoring and PSMU, were entered as independent variables. Binge-drinking was entered as a dependent variable

Results

In this result section, two hypotheses were tested. The first one tested whether PSMU is associated with higher levels of binge-drinking. The second hypothesis is that parental monitoring reduces the effect of problematic social media use on adolescents' binge-drinking.

In table 1 the number of respondents that engaged in binge-drinking in the past twelve months is shown. Around a quarter of the respondents engaged in binge-drinking in the past twelve months. In addition, in table 2 the time spend on social media as indicated by the respondents is displayed. More than half of the sample ($N=1327$) spend more than two hours per day on social media.

Table 1

Binge-drinking in the past 12 months

Variable	<i>N</i>	%
No	1432	68.1
Yes	671	31.9
Total	2103	100

Table 2*The mean time adolescents spend on social media per day*

Variable	Frequency	%
Less than 30 minutes	239	11.4
1 hour	546	26.0
2 – 3 hours	690	32.8
4 - 5 hours	329	15.6
6 hours or more	299	14.2
Total	2103	100

The main variables are displayed in table 3. This table also shows that parental monitoring is relatively high in this sample with a mean score of 1.48 ($SD = 0.59$). It also shows that PSMU is only shown in around a quarter of the sample with a mean of 0.32 ($SD = 0.47$).

Before the analyses were run the assumptions of multicollinearity and outliers were checked, with satisfying results. Multicollinearity was checked with the VIF values. A value higher than 10 indicated a problem, however, this was not found. In addition, the tolerance is checked, values smaller than 0.1, indicated a problem. Values smaller than 0.1 were not found. Outliers were controlled for during the data cleaning. Linearity was not able to be checked, because all the variables were of categorical level.

The logistic regression was run to investigate if PSMU and parental monitoring influence the odds ratio to engage in binge-drinking. The results of the logistic regression are shown in table 5.

Table 3*Descriptive Statistics of the Variables in the Regression*

Variable	Min	Max	Mean	SD
Sex	0	1	0.53	0.49
Age	11.75	18.86	14.68	1.33
PSMU	0	1	0.32	0.47
Parental monitoring	0	2	1.48	0.59

Variable	Min	Max	Mean	SD
Interaction	0	2	0.49	0.78
Binge-drinking	0	1	0.32	0.46

Note. * $p < .05$, ** $p < .001$ sex: male = 0, female = 1; PSMU: problematic social media use, Interaction = Problematic Social Media Use (PSMU) and parental monitoring

Correlations

To investigate possible associations between the different variables in this study, correlations based on Spearman's Rho were calculated. The correlations are shown in table 4. The highest correlation was shown between age and binge-drinking. The older an adolescent gets the more likely it is that an adolescent will engage in binge-drinking ($r = 0.53, p < .001$).

A Chi-square test of independence was performed to calculate the frequency of binge-drinking among the groups for parental monitoring. In addition, the Chi-square test of independence indicated that adolescents who did not have symptoms of PSMU $N = 1005$ less often engage in binge drinking than adolescents who have PSMU and engage in binge-drinking $N = 248, \chi^2 = 10.69 (1), p < .001$.

Table 4

Correlations Based on Spearman's rho

Variable	Age	Sex	Binge-drinking	PSMU	Parental monitoring	Interaction
Age	-					
Sex	0.05*	-				
Binge-drinking	0.55**	0.09**	-			
PSMU	-0.03*	0.09**	0.06*	-		
Parental monitoring	-0.16**	0.10**	-0.22**	0.05*	-	
Interaction	-0.05*	0.10**	0.04	-0.27**	-0.17**	-

Note. * $p < .05$, ** $p < .001$ sex: male = 0, female = 1; PSMU: problematic social media use, Interaction = Problematic social media use (PSMU) and Parental monitoring

Relation Between PSMU and Binge-drinking

To test if there was a relationship between PSMU and binge-drinking (H1) logistic regression was run. The variables are entered stepwise. The model which is used to describe the results is model 3. This model included the control variables age and sex, the independent variables PSMU and parental monitoring, and the dependent variable binge-drinking. This model had a Nagelkerke $R^2 = .39$, which means that model 3 could explain around 39% of the variance for binge-drinking. Additionally, the ΔR^2 of this model showed to be significant with $p < .001$.

Model 3 showed to be able to make a reliable prediction $\chi^2(4) = 705.37, p < .001$. Model 3 showed that PSMU is a significant predictor of binge-drinking $\beta = 0.64, p < 0.01, CI 1.50 - 2.40$. This suggested that the odds ratio to engage in binge-drinking differs for adolescents who were considered as problematic social media users (1), compared with adolescents who were not considered as problematic social media users (0). The results suggested that adolescents who do not show symptoms of PSMU are less likely to engage in binge-drinking. An important point to mention here is that we used model 3, this is not the model which contained all the predictors. Normally, it is preferred to use the model with all the predictors, in this case, model 4. However, the goodness of fit does not drastically change and model 3 explains already much of the variance. Therefore, the decision was made to use model 3 to answer the hypothesis.

Table 5

Summary of the Logistic Regression Analysis Predicting Binge-drinking

	Binge-drinking			95% CI					
	Model fit	R^2	ΔR^2	β	<i>S.E.</i>	Exp (<i>B</i>)	<i>Wald</i>	<i>Lower</i>	<i>Upper</i>
<i>Block 1:</i>	$\chi^2(2) =$.37							
<i>control</i>	648.96**								
<i>variables</i>									
Sex				0.39**	0.11	1.48	12.37	1.19	1.85
Age				1.06**	0.05	2.88	426.87	2.61	3.19

	Binge-drinking				95% CI		
<i>Block 2:</i>	$\chi^2 (3) =$.39	$p < .001$				
<i>Predictor variables</i>	676.845**						
Sex	0.46**	0.11	1.58	16.27	1.26	1.98	
Age	-1.04**	0.05	2.84	409.56	2.56	3.14	
Parental Monitoring	-0.50**	0.09	0.61	27.86	0.51	0.73	
<i>Block 3:</i>	$\chi^2 (4) =$.39	$p < .001$				
<i>predictor variables</i>	705.37**						
Sex	0.41**	0.12	1.51	12.76	1.20	1.89	
Age	1.07**	0.05	2.92	415.64	2.64	3.24	
Parental monitoring	-0.52**	0.10	0.59	29.724	0.49	0.72	
PSMU	0.64**	0.12	1.90	28.31	1.50	2.40	
<i>Block 4:</i>	$\chi^2 (5) =$.40	$p > .05$				
<i>Interaction term</i>	706.25**						
Sex	0.41**	0.12	1.51	12.79	1.20	1.89	
Age	1.07**	0.05	2.92	415.33	2.64	3.24	
Parental monitoring	-0.58**	0.12	0.55	24.38	0.44	0.70	
PSMU	0.37	0.31	1.45	0.89	0.79	2.66	
Interaction	0.19	0.19	1.21	396.78	0.82	1.78	

Note: * $p < .05$, ** $p < .001$

Parental Monitoring and the Moderating effect on Binge-drinking

Logistic regression was used to test the relationship between parental monitoring and binge-drinking (H2). To answer this hypothesis model 4 was used, this model is shown in table 5. This model had an R^2 of .40 and contained all the predictors: PSMU, parental monitoring and the interaction effect of PSMU and parental monitoring as independent

variables, sex and age as control variables and binge-drinking as the dependent variable. Model 4 showed that parental monitoring could be a significant predictor of binge drinking $\beta = 0.59, p < .001, CI 0.42 - 0.63$. The results suggested that adolescents who have a higher score on parental monitoring could be less likely to engage in binge-drinking. In model 4 the interaction effect of parental monitoring and PSMU was included. This effect did not show to be significant $p > .05$. This means that the effect of the interaction of PSMU and parental monitoring does not differ between the groups in their effect on binge-drinking. The Nagelkerke $R^2 = .39$ in model 3 and a Nagelkerke $R^2 = .40$ in model 4, suggest that the impact of the interaction effect was minor. After calculating with the 2log likelihood it was concluded that the ΔR^2 from model 3 to model 4 was not significant $p > .05$.

Discussion

The focus of this study was to investigate the relationship between PSMU and binge-drinking. In addition, the moderating role of parental monitoring was studied. Based on previous studies an adequate and comprehensive view of these variables was created before the analysis started.

The Link Between PSMU and Binge-drinking

The current study expected that adolescents who have symptoms of PSMU have a higher chance to engage in binge-drinking (H1). Based on the results of this study this hypothesis is confirmed. However, it is important to note here that this is not based on the model that contained all the predictors. The results suggest that the social learning theory by Bandura (1977) could be an explanation for the higher chance on binge-drinking. The social learning theory opposes that adolescents learn by observing and imitating behavior performed by others. Children and teens learn by observing and imitating behavior from attractive role models or peers on social media (Sampasa-Kanyinga & Chaput, 2016). For adolescents, behavior is especially attractive to engage in when they see behavior that is realistic or rewarding (Sampasa-Kanyinga & Chaput, 2016). The (binge) drinking behavior adolescents see in their peers might be inspiring which could motivate and increase their drinking behavior (Brunborg et al, 2022; Kurten et al., 2022).

It is important to mention here that social media effects are often mixed or small. In an article by Pitrowski and Valkenburg (2015) it is explained, every adolescent is different, so not all adolescents are influenced by social media in the same way. For example, people with

certain personality traits, like sensation-seeking, are more susceptible to the effects of social media and the alcohol posts that are done online (Geusens, Bigman-Galimore & Beulens, 2020). In this article, adolescents are compared with flowers. Adolescents who are seen as orchids are more susceptible to the negative influence of social media. Most adolescents are dandelions and they are common and grow everywhere. They are less easily affected by negative effects and they will thrive under worse circumstances. It is important to find the more susceptible flowers to see what the effects of social media are among them (Pitrowski & Valkenburg, 2015). This emphasizes the need to do more research, additionally, the research on PSMU is only recently coming up (van den Eijnden, Lemmens & Valkenburg, 2016).

The Moderating Role of Parental Monitoring

The second hypothesis was: that parental monitoring diminishes the relationship between PSMU and binge-drinking. So, adolescents who are not monitored by their parents and engage in PSMU have a higher chance to participate in binge-drinking. Based on the findings of this research H2 is rejected. Based on these analyses it is concluded that parental monitoring did not make a difference for the group who had symptoms of PSMU and the group who did not have symptoms of PSMU. This was not in line with the expectations of this study. Other studies also looked at the moderating role of parental monitoring in explaining risk behavior and did not find a relationship (Becerra, Castillo, Ayón & Blanchard 2014).

An explanation that there is no result found in this study could be the Alcohol Mytopia theory (Steele & Joseph, 1990). This theory enhances that the decisions and cognitive processing of people who are consuming alcohol may change to a point that they are only able to focus on the most relevant and immediate cues in their environment. For example, when adolescents are sober and considering alcohol intake at parties, peripheral inhibitory cues like internalizations of parental principles may impact decision-making. However, once adolescents are away from home and together with peers, more salient and immediate social cues may become the main point of attention. In the adolescent population, peer approval seems to be the basis of behavior (Messier, Lee & Emery, 2016). The influence of parents gets less because peers get more important during adolescence (Guillamo-ramos, 2010).

Even though in this study parental monitoring did not have a moderating role it did have a predicting role. In the results, it was shown that high parental monitoring lowered the chance to engage in binge-drinking. This is in line with earlier findings by Donaldson,

Handren and Crano (2015). They indicated that adolescent binge-drinking is associated with low levels of parental monitoring. This result underlined that there is an important role for parents to protect adolescents from engaging in risky behavior.

Strengths and limitations

Several strengths of this study need to be mentioned. The first strength of this study is the big sample size ($N = 2103$). The second strength of this study is that all the scales are based on validated scales. This enhances the reliability of this thesis.

Additionally, some limitations should be recognized. First, in the data that was used parental monitoring was measured globally. The measurement of parental monitoring was not specified on media use. Parental monitoring of children's and adolescents' whereabouts online, is also referred to as parental mediation. This consist of two components, namely, active and passive mediation (Valkenburg & Pitrowski, 2017). It could be possible that measuring parental monitoring as parental mediation would have influenced the relationship as it could influence real-life behavior (Valkenburg & Pitrowski, 2017). In addition, the measure of parental monitoring was not specified on adolescent binge-drinking behavior. One could surmise that the effects could be different if the measure of parental monitoring was more focused on binge-drinking.

Another important limitation is that the sample was not drawn randomly from the population of adolescents in the Netherlands. Only one specific school in the municipality of Edam-Volendam was targeted for collecting this data. Therefore, it is necessary to be cautious with generalizing the results of this study.

A final limitation of this study is that this particular study is cross-sectional. The relationship could also work the other way around. This means that it could also be the case that Binge-drinking predicts PSMU. With this study we could not say what effects what. To gain more certainty with regard to this relationship, a longitudinal study could be a good way to explore this. Furthermore, it could be interesting to look at the influence of different social media platforms, to see if there is a different effect.

Implications

This study adds to the existing literature on the relationship between PSMU and binge-drinking. As mentioned before, the findings on the influence of PSMU are hard to make congruent conclusions on. This study aimed to enhance the current findings on this topic. As binge-drinking and PSMU are both a threat to the health of young people it is important to

give more attention to this topic. Additionally, social media is such an important topic in the lives of adolescents it is important to gain insights in the consequences. Not only on binge-drinking, but also on other health-related topics. This study is a minor part of the research on PSMU and binge-drinking more research is needed to gain more insight into this relationship. It is important to provide this critical information. As it could inform about other addictive behaviors.

Conclusion

This study examined 'To what extent does problematic social media use influence binge-drinking'. This study provided an answer to this question based on two hypotheses. First, PSMU in relation to binge-drinking was explored (H1). Based on the results of this study it can be concluded that PSMU influences binge-drinking. PSMU enhances binge-drinking, which aligns with our hypothesis. The second hypothesis explored the moderating role of parental monitoring. It can be concluded that parental monitoring had no significant influence on the relationship between PSMU and binge-drinking. However, it did have a predicting role.

This study showed that adolescents who show symptoms of PSMU have a higher chance to engage in binge-drinking. Parental monitoring did not moderate this relationship, but it did lower binge-drinking.

References

- Bandura, A., & Walters, R. H. (1977). *Social learning theory* (Vol. 1). Prentice Hall: Englewood Cliffs.
- Bányai, F., Zsila, G., Király, O., Maraz, A., Elekes, Z., Griffiths, M. D., Andreassen, C. S., & Demetrovics, Z. (2017). Problematic Social Media Use: Results from a Large-Scale Nationally Representative Adolescent Sample. *PLOS ONE*, *12*(1), 1-13. <https://doi.org/10.1371/journal.pone.0169839>
- Becerra, D., Castillo, J. T., Ayón, C., & Blanchard, K. N. (2014). The Moderating Role of Parental Monitoring on the Influence of Peer Pro-Drug Norms on Alcohol and Cigarette Use Among Adolescents in Mexico. *Journal of Child & Adolescent Substance Abuse*, *23*(5), 297–306. <https://doi.org/10.1080/1067828x.2013.869138>
- Boer, M., van den Eijnden, R. J., Boniel-Nissim, M., Wong, S. L., Inchley, J. C., Badura, P., Craig, W. M., Gobina, I., Kleszczewska, D., Klanšček, H. J., & Stevens, G. W. (2020). Adolescents' Intense and Problematic Social Media Use and Their Well-Being in 29 Countries. *Journal of Adolescent Health*, *66*(6), S89–S99. <https://doi.org/10.1016/j.jadohealth.2020.02.014>
- Brunborg, G. S., & Burdzovic Andreas, J. (2019). Increase in time spent on social media is associated with modest increase in depression, conduct problems, and episodic heavy drinking. *Journal of Adolescence*, *74*, 201–209. <https://doi.org/10.1016/j.adolescence.2019.06.013>
- Brunborg, G. S., Skogen, J. C., & Burdzovic Andreas, J. (2022). Time spent on social media and alcohol use among adolescents: A longitudinal study. *Addictive Behaviors*, *130*, . <https://doi.org/10.1016/j.addbeh.2022.107294>
- Buda, G., Lukoševičiūtė, J., Šalčiūnaitė, L., & Šmigelskas, K. (2020). Possible Effects of Social Media Use on Adolescent Health Behaviors and Perceptions. *Psychological Reports*, *124*(3), 1031–1048. <https://doi.org/10.1177/0033294120922481>
- Cataldo, I., Lepri, B., Neoh, M. J. Y., & Esposito, G. (2021). Social Media Usage and Development of Psychiatric Disorders in Childhood and Adolescence: A Review. *Frontiers in Psychiatry*, *11*. <https://doi.org/10.3389/fpsyt.2020.508595>
- Dishion, T. J., & McMahon, R. J. (1998). Parental Monitoring and the Prevention of Child and Adolescent Problem Behavior: A Conceptual and Empirical Formulation. *Clinical*

- Child and Family Psychology Review*, 1(1), 61–75.
<https://doi.org/10.1023/a:1021800432380>
- Donaldson, C. D., Handren, L. M., & Crano, W. D. (2016b). The Enduring Impact of Parents' Monitoring, Warmth, Expectancies, and Alcohol Use on Their Children's Future Binge Drinking and Arrests: a Longitudinal Analysis. *Prevention Science*, 17(5), 606–614. <https://doi.org/10.1007/s11121-016-0656-1>
- van den Eijnden, R. J., Lemmens, J. S., & Valkenburg, P. M. (2016). The Social Media Disorder Scale. *Computers in Human Behavior*, 61, 478–487.
<https://doi.org/10.1016/j.chb.2016.03.038>
- Erevik, E. K., Torsheim, T., Vedaa, Y., Andreassen, C. S., & Pallesen, S. (2017). Sharing of Alcohol-Related Content on Social Networking Sites: Frequency, Content, and Correlates. *Journal of Studies on Alcohol and Drugs*, 78(4), 608–616.
<https://doi.org/10.15288/jsad.2017.78.608>
- Geusens, F., & Beullens, K. (2018). The Association Between Social Networking Sites and Alcohol Abuse Among Belgian Adolescents. *Journal of Media Psychology*, 30(4), 207–216. <https://doi.org/10.1027/1864-1105/a000196>
- Geusens, F., Bigman-Galimore, C. A., & Beullens, K. (2019). A cross-cultural comparison of the processes underlying the associations between sharing of and exposure to alcohol references and drinking intentions. *New Media & Society*, 22(1), 49–69.
<https://doi.org/10.1177/1461444819860057>
- Guilamo-Ramos, V., Jaccard, J., & Dittus, P. (2010). *Parental Monitoring of Adolescents: Current Perspectives for Researchers and Practitioners* (1st ed.) [E-book]. Columbia University Press.
- Haas, A. L., Zamboanga, B. L., Bersamin, M., & Hyke, T. (2018). Perceived Access and Parental Monitoring as Moderators of Impulsivity and Marijuana Use Among Adolescents. *The Journal of Primary Prevention*, 39(2), 155–169.
<https://doi.org/10.1007/s10935-018-0503-1>
- Hendriks, H., Gebhardt, W. A., & van den Putte, B. (2017). Alcohol-Related Posts from Young People on Social Networking Sites: Content and Motivations. *Cyberpsychology, Behavior, and Social Networking*, 20(7), 428–435.
<https://doi.org/10.1089/cyber.2016.0640>

- Kerr, M., & Stattin, H. (2000). What parents know, how they know it, and several forms of adolescent adjustment: Further support for a reinterpretation of monitoring. *Developmental Psychology*, 36, 366–380. doi:10.1037//0012-1649.36.3.366
- Koning, I. M., van der Rijst, V. G., de Wit, J. B. F., & de Kock, C. (2021). Pre-Intervention Effects of a Community-Based Intervention Targeting Alcohol Use (LEF); The Role of Participatory Research and Publicity. *International Journal of Environmental Research and Public Health*, 18(16), 8823. <https://doi.org/10.3390/ijerph18168823>
- Kurten, S., Vanherle, R., Beullens, K., Gebhardt, W. A., van den Putte, B., & Hendriks, H. (2022). Like to drink: Dynamics of liking alcohol posts and effects on alcohol use. *Computers in Human Behavior*, 129, 107145. <https://doi.org/10.1016/j.chb.2021.107145>
- Kwok, K. H. R., & Yuan, S. N. V. (2016). Parental socioeconomic status and binge drinking in adolescents: A systematic review. *The American Journal on Addictions*, 25(8), 610–619. <https://doi.org/10.1111/ajad.12461>
- Laghi, F., Baiocco, R., Lonigro, A., Capacchione, G., & Baumgartner, E. (2012). Family functioning and binge drinking among Italian adolescents. *Journal of Health Psychology*, 17(8), 1132–1141. <https://doi.org/10.1177/1359105311430005>
- Lamborn, S. D., Mounts, N. S., Steinberg, L., & Dornbusch, S. M. (1991). Patterns of Competence and Adjustment among Adolescents from Authoritative, Authoritarian, Indulgent, and Neglectful Families. *Child Development*, 62(5), 1049–1065. <https://doi.org/10.1111/j.1467-8624.1991.tb01588.x>
- Lee, M. J., Schick-Makaroff, K., & Kunyk, D. (2021). Frequency of Binge Drinking and Perception of Peer Alcohol Use. *Journal of Addictions Nursing*, 32(2), 132–140. <https://doi.org/10.1097/jan.0000000000000400>
- Lee, G., Akers, R. L., & Borg, M. J. (2004). Social learning and structural factors in adolescent substance use. *Western Criminology Review*, 5(1)7-34
- Lionetti, F., Palladino, B. E., Moses Passini, C., Casonato, M., Hamzallari, O., Ranta, M., Dellagiulia, A., & Keijsers, L. (2018). The development of parental monitoring during adolescence: A meta-analysis. *European Journal of Developmental Psychology*, 16(5), 552–580. <https://doi.org/10.1080/17405629.2018.1476233>

- Livingstone, S. (2008). Taking risky opportunities in youthful content creation: teenagers' use of social networking sites for intimacy, privacy and self-expression. *New Media & Society*, *10*(3), 393–411. <https://doi.org/10.1177/1461444808089415>
- McCabe, S., Cranford, J., & Boyd, C. (2006). The relationship between past-year drinking behaviors and nonmedical use of prescription drugs: Prevalence of co-occurrence in a national sample. *Drug and Alcohol Dependence*, *84*(3), 281–288. <https://doi.org/10.1016/j.drugalcdep.2006.03.006>
- Moreno, M. A., & Whitehill, J. M. (2014). Influence of social media on alcohol use in adolescents and young adults. *Alcohol research: current reviews*, *36*(1), 91.
- Messier, E. C., Lee, A. A., & Emery, N. N. (2016, December). The moderating role of parental monitoring and knowledge in the relationship between perceived parental approval of drinking and alcohol outcomes among college students. Researchgate. Retrieved March 2022, from https://www.researchgate.net/publication/316599329_The_moderating_role_of_parental_monitoring_and_knowledge_in_the_relationship_between_perceived_parental_approval_of_drinking_and_alcohol_outcomes_among_college_students
- Padilla-Walker, L. M., Coyne, S. M., Kroff, S. L., & Memmott-Elison, M. K. (2017). The Protective Role of Parental Media Monitoring Style from Early to Late Adolescence. *Journal of Youth and Adolescence*, *47*(2), 445–459. <https://doi.org/10.1007/s10964-017-0722-4>
- Paakkari, L., Tynjälä, J., Lahti, H., Ojala, K., & Lyyra, N. (2021). Problematic Social Media Use and Health among Adolescents. *International Journal of Environmental Research and Public Health*, *18*(4), 1885. <https://doi.org/10.3390/ijerph1804188>
- Piotrowski, J. T., & Valkenburg, P. M. (2015b). Finding Orchids in a Field of Dandelions. *American Behavioral Scientist*, *59*(14), 1776–1789. <https://doi.org/10.1177/0002764215596552>
- Pokorny, S. B., Jason, L. A., Schoeny, M. E., Townsend, S. M., & Curie, C. J. (2001). Do Participation Rates Change when Active Consent Procedures Replace Passive Consent. *Evaluation Review*, *25*(5), 567–580. <https://doi.org/10.1177/0193841x0102500504>
- Reifman, A., Barnes, G. M., Dintcheff, B. A., Farrell, M. P., & Uhteg, L. (1998). Parental and peer influences on the onset of heavier drinking among adolescents. *Journal of Studies on Alcohol*, *59*(3), 311–317. <https://doi.org/10.15288/jsa.1998.59.311>

- Sampasa-Kanyinga, H., & Chaput, J. P. (2016). Use of social networking sites and alcohol consumption among adolescents. *Public Health, 139*, 88–95.
<https://doi.org/10.1016/j.puhe.2016.05.005>
- Sampasa-Kanyinga, H., Goldfield, G. S., Kingsbury, M., Clayborne, Z., & Colman, I. (2020). Social media use and parent–child relationship: A cross-sectional study of adolescents. *Journal of Community Psychology, 48*(3), 793–803.
<https://doi.org/10.1002/jcop.22293>
- Savolainen, I., Oksanen, A., Kaakinen, M., Sirola, A., Miller, B. L., Paek, H. J., & Zych, I. (2019). The Association Between Social Media Use and Hazardous Alcohol Use Among Youths: A Four-Country Study. *Alcohol and Alcoholism, 55*(1), 86–95.
<https://doi.org/10.1093/alcalc/agz088>
- Shensa, A., Escobar-Viera, C. G., Sidani, J. E., Bowman, N. D., Marshal, M. P., & Primack, B. A. (2017). Problematic social media use and depressive symptoms among U.S. young adults: A nationally-representative study. *Social Science & Medicine, 182*, 150–157. <https://doi.org/10.1016/j.socscimed.2017.03.061>
- Steele, C. M., & Josephs, R. A. (1990). Alcohol myopia: Its prized and dangerous effects. *American Psychologist, 45*(8), 921–933. <https://doi.org/10.1037/0003-066x.45.8.921>
- Stevens, G., van Dorsselaer, S., Boer, M., de Roos, S., Duinhof, E., ter Bogt, T., van den Eijnden, R., Kuyper, L., Visser, D., Vollebergh & de Looze, M. (2018) *HBSC 2017. Gezondheid en welzijn van jongeren in Nederland*. Utrecht University Repository
- Valkenburg, P. M., & Piotrowski, J. T. (2017). *Plugged In*. Amsterdam University Press.
- Vannucci, A., Simpson, E. G., Gagnon, S., & Ohannessian, C. M. (2020). Social media use and risky behaviors in adolescents: A meta-analysis. *Journal of Adolescence, 79*, 258–274. <https://doi.org/10.1016/j.adolescence.2020.01.014>
- Vetreno, R., & Crews, F. (2012). Adolescent binge drinking increases expression of the danger signal receptor agonist HMGB1 and toll-like receptors in the adult prefrontal cortex. *Neuroscience, 226*, 475–488.
<https://doi.org/10.1016/j.neuroscience.2012.08.046>
- Vito, A. G., Schaefer, B., Higgins, G. E., Marcum, C., & Ricketts, M. (2019). Self-control, social learning theory, social bonds and binge drinking: Results from a national sample. *Journal of Substance Use, 24*(6), 655–659.
<https://doi.org/10.1080/14659891.2019.1642406>

Wellman, R. J., Sabiston, C. M., & Morgenstern, M. (2022). Depressive Symptoms, Alcohol Beliefs and Heavy Episodic Drinking in Adolescents. *Children*, 9(1), 103.

<https://doi.org/10.3390/children9010103>

World Health Organization. *Global Status Report on Alcohol and Health—2018*. Geneva, Switzerland: World Health Organization; 2018.

Wyre, B. A. E., & Pruitt, C. L., (2017). Perceptions of binge drinking as problematic among college students. *Journal of alcohol and drug education*, 61(1), 71-90.

<https://www.jstor.org/stable/48511423>

Appendix: A**Information about your thesis**

Please save this form, modify it and e-mail it to your supervisor together with the digital final version of your thesis. For further questions see: <http://studion.fss.uu.nl/helpdesk/student/scrol>



Student nummer:	1991426
Initials & prefixes:	A.m.m
Family name:	Flos
Master:	Youth Studies

Begeleider

Name supervisor/assessor: *	Gaëlle Ouvrein
Name 2th assessor:	

Scriptie

Title thesis: *	<p>Problematic Social Media Use a Predictor of Binge-drinking Behavior Among Adolescents?</p>
-----------------	---

Language thesis: *	English
Abstract:	
Key words: (seperated by :)	
Make public: *	Nee
Make public after date:	01-09-2022

Ingevuld op: * 9-6-2022

Door: * Anandi Flos

* = Obliged to fill in

Appendix C: Syntax

*** hercoderen PSMU

RECODE AV60_1 AV60_2 AV60_3 AV60_4 AV60_5 AV60_6 AV60_7 AV60_8 AV60_9 (1=0) (2=1) INTO PSMUnew1

PSMUnew2 PSMUnew3 PSMUnew4 PSMUnew5 PSMUnew6 PSMUnew7 PSMUnew8 PSMUnew9.

VARIABLE LABELS PSMUnew1 'Hercoderen' /PSMUnew2 'hercoderen' /PSMUnew3 'hercoderen' /PSMUnew4

'hercoderen' /PSMUnew5 'hercoderen' /PSMUnew6 'hercoderen' /PSMUnew7 'hercoderen' /PSMUnew8

'hercoderen' /PSMUnew9 'hercoderen'.

EXECUTE.

*** missing cases psmu

USE ALL.

COMPUTE

filter_\$(= (NMISS(PSMUnew1,PSMUnew2,PSMUnew3,PSMUnew4,PSMUnew5,PSMUnew6,PSMUnew7,PSMUnew8,

PSMUnew9) < 1).

VARIABLE LABELS filter_\$(

'NMISS(PSMUnew1,PSMUnew2,PSMUnew3,PSMUnew4,PSMUnew5,PSMUnew6,PSMUnew7,'+ 'PSMUnew8,PSMUnew9) < 1 (FILTER)'.)

VALUE LABELS filter_\$(0 'Not Selected' 1 'Selected'.

FORMATS filter_\$((f1.0).

FILTER BY filter_\$(.

EXECUTE.

USE ALL.

COMPUTE filter_\$(= (NMISS(V20_1,V20_2) < 2).

VARIABLE LABELS filter_\$('NMISS(V20_1,V20_2) < 2 (FILTER)'.)

VALUE LABELS filter_\$(0 'Not Selected' 1 'Selected'.

FORMATS filter_\$((f1.0).

FILTER BY filter_\$(.

EXECUTE.

RELIABILITY

/VARIABLES=V3 PSMUnew1 PSMUnew2 PSMUnew3 PSMUnew4 PSMUnew5 PSMUnew6

PSMUnew7 PSMUnew8 PSMUnew9

/SCALE('ALL VARIABLES') ALL

/MODEL=ALPHA

/STATISTICS=DESCRIPTIVE

/SUMMARY=TOTAL.

RELIABILITY

/VARIABLES=PSMUnew1 PSMUnew2 PSMUnew3 PSMUnew4 PSMUnew5 PSMUnew6 PSMUnew7

PSMUnew8 PSMUnew9

```
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE
/SUMMARY=TOTAL.
```

RELIABILITY

```
/VARIABLES=V37_1 V37_2 V37_3 V37_4 V37_5
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

```
COMPUTE totPSMU=PSMUnew1 + PSMUnew2 + PSMUnew3 + PSMUnew4 + PSMUnew5 +
PSMUnew6 + PSMUnew7 +
    PSMUnew8 + PSMUnew9.
VARIABLE LABELS totPSMU 'somscore'.
EXECUTE.
```

```
RECODE V20_1 (1=0) (2=1) (Lowest thru 2=0) (3 thru 9=1) (Lowest thru 5=0) (6 thru 14=1) INTO
BD12MD.
VARIABLE LABELS BD12MD 'Bingedrinken12maanden'.
EXECUTE.
```

```
RECODE V20_2 (Lowest thru 5=0) (ELSE=1) INTO BD4WK.
VARIABLE LABELS BD4WK 'Binge-drinken afgelopen 4 wk'.
EXECUTE.
```

```
FREQUENCIES VARIABLES=BD4WK
/ORDER=ANALYSIS.
```

USE ALL.

```
COMPUTE filter_$=(NMISS(V20_1,V20_2) = 999).
VARIABLE LABELS filter_$ 'NMISS(V20_1,V20_2) = 999 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
```

USE ALL.

```
COMPUTE filter_$=(NMISS(BD12MD,BD4WK,VerPSMU) = 999).
VARIABLE LABELS filter_$ 'NMISS(BD12MD,BD4WK,VerPSMU) = 999 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
```

DATASET ACTIVATE DataSet1.

```
RECODE V20_1 (SYSMIS=999) (MISSING=999).
EXECUTE.
```

```
RECODE V60_1 V60_2 V60_3 V60_4 V60_5 V60_6 V60_7 V60_8 V60_9 (1=0) (2=1) INTO PSMUher1
PSMUher2
```

```
PSMUher3 PSMUher4 PSMUher5 PSMUher6 PSMUher7 PSMUher8 PSMUher9.
```

```
VARIABLE LABELS PSMUher9 'Hercoderen'.
```

```
EXECUTE.
```

```
RECODE V60_1 V60_2 V60_3 V60_4 V60_5 V60_6 V60_7 V60_8 V60_9 (1=0) (2=1) INTO PSMUher1
PSMUher2
```

```
PSMUher3 PSMUher4 PSMUher5 PSMUher6 PSMUher7 PSMUher8 PSMUher9.
```

```
VARIABLE LABELS PSMUher1 'hercoderen' /PSMUher2 'hercoderen' /PSMUher3 'hercoderen'
/PSMUher4
```

```
'hercoderen' /PSMUher5 'hercoderen' /PSMUher6 'hercoderen' /PSMUher7 'hercoderen'
/PSMUher8
```

```
'hercoderen' /PSMUher9 'Hercoderen'.
```

```
EXECUTE.
```

```
DATASET ACTIVATE DataSet2.
```

```
RECODE V60_1 V60_2 V60_3 V60_4 V60_5 V60_6 V60_7 V60_8 V60_9 (1=0) (2=1) INTO PSMU1
PSMU2 PSMU3
```

```
PSMU4 PSMU5 PSMU6 PSMU7 PSMU8 PSMU9.
```

```
EXECUTE.
```

```
RECODE PSMU1 PSMU2 PSMU3 PSMU4 PSMU5 PSMU6 PSMU7 PSMU8 PSMU9 (SYSMIS=999)
(MISSING=999).
```

```
EXECUTE.
```

```
COMPUTE SOMPSMU=PSMU1 + PSMU2 + PSMU3 + PSMU4 + PSMU5 + PSMU6 + PSMU7 + PSMU8 +
PSMU9.
```

```
EXECUTE.
```

```
RECODE V20_1 V20_2 V59_1 V37_1 V37_2 V37_3 V37_4 V37_5 (SYSMIS=999) (MISSING=999).
```

```
EXECUTE.
```

```
COMPUTE SOMPA=V37_1 + V37_2 + V37_3 + V37_4 + V37_5.
```

```
EXECUTE.
```

```
RECODE SOMPA (Lowest thru 7=0) (8 thru 16=1) (17 thru Highest=2) INTO PAHER.
```

```
VARIABLE LABELS PAHER 'Groepen Parental monitoring'.
```

```
EXECUTE.
```

```
LOGISTIC REGRESSION VARIABLES BD12MD
```

```
/METHOD=ENTER SOMPSMU
```

```
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
```

```
.
```

```
RECODE SOMPA (Lowest thru 14=0) (15 thru 19=1) (20 thru Highest=2) INTO SOMpercentageMP.
```

```
EXECUTE.
```

```
COMPUTE SOMPSMU=V60_1 + V60_2 + V60_3 + V60_4 + V60_5 + V60_6 + V60_7 + V60_8 + V60_9.
```

EXECUTE.

RECODE SOMPSMU (9=0) (10=1) (11=2) (12=3) (13=4) (14=5) (15=6) (16=7) (17=8) (18=9).
EXECUTE.

RECODE SOMPSMU (2 thru Highest=1) (0 thru 1=0).
EXECUTE.

FREQUENCIES VARIABLES=SOMPSMU
/BARCHART FREQ
/ORDER=ANALYSIS.

COMPUTE PSMUXPM1=SOMPSMU * PAHER.
EXECUTE.

LOGISTIC REGRESSION VARIABLES BD12MD
/METHOD=ENTER V_age V4
/METHOD=ENTER SOMPSMU
/METHOD=ENTER PAHER
/METHOD=ENTER PSMUXPM1
/SAVE=COOK LEVER DFBETA
/PRINT=GOODFIT
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

RECODE V4 (2=1) (1=0).
EXECUTE.

DESCRIPTIVES VARIABLES=V_age V4 V20_1 SOMPSMU SOMPA PSMUXPM1
/STATISTICS=MEAN STDDEV MIN MAX.

RODE V20_1 (1=0) (ELSE=1) INTO BD12MDXX.
EXECUTE.

NONPAR CORR
/VARIABLES=V_age V4 SOMPSMU PSMUXPM1 BD12MDXX PAHER
/PRINT=SPEARMAN TWOTAIL NOSIG FULL
/MISSING=PAIRWISE.

DESCRIPTIVES VARIABLES=V_age V4 SOMPSMU PSMUXPM1 PAHER BD12MDXX
/STATISTICS=MEAN STDDEV MIN MAX.

LOGISTIC REGRESSION VARIABLES BD12MDXX
/METHOD=ENTER V_age V4
/METHOD=ENTER SOMPSMU
/METHOD=ENTER PAHER
/METHOD=ENTER PSMUXPM1
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).

REGRESSION

```
/MISSING LISTWISE  
/STATISTICS COEFF OUTS R ANOVA COLLIN TOL  
/CRITERIA=PIN(.05) POUT(.10)  
/NOORIGIN  
/DEPENDENT BD12MDXX  
/METHOD=ENTER SOMPSMU PAHER PSMUXPM1 V_age V4  
/SAVE MAHAL COOK.
```

LOGISTIC REGRESSION VARIABLES BD12MDXX

```
/METHOD=ENTER V_age V4  
/METHOD=ENTER PSMUXPM1  
/METHOD=ENTER PAHER  
/METHOD=ENTER SOMPSMU  
/PRINT=GOODFIT CI(95)  
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
```

CORRELATIONS

```
/VARIABLES=V_age V4 SOMPSMU PSMUXPM1 BD12MDXX PAHER  
/PRINT=TWOTAIL NOSIG FULL  
/MISSING=PAIRWISE.
```

CROSSTABS

```
/TABLES=BD12MDXX BY V_age V4 SOMPA SOMPSMU  
/FORMAT=AVALUE TABLES  
/STATISTICS=CHISQ CORR  
/CELLS=COUNT  
/COUNT ROUND CELL  
/BARChart.
```

CROSSTABS

```
/TABLES=BD12MDXX BY SOMPSMU  
/FORMAT=AVALUE TABLES  
/STATISTICS=CHISQ  
/CELLS=COUNT ROW COLUMN TOTAL  
/COUNT ROUND CELL  
/BARChart.
```