Parental bonding and problematic internet or social media use among adolescents

Beatrix Koronczai, Róbert Urbán, Zsolt Demetrovics

Eötvös Loránd University, Institute of Psychology, Budapest

Summary: Background and aims: Parental bonding is regarded as one of the risk factors of problematic internet use among adolescents and young adults; however, only few studies have examined the association between problematic social media use and parental bonding among adolescents. The aim of this study is to investigate the difference between problematic internet use and problematic social media use in terms of their associations with parental bonding among secondary school students.

Method: With a cross-sectional design and convenience sampling, 2035 self-reported questionnaires were collected in a paper-pencil survey (54.2% females, mean age=16.97, SD=1.61). Problematic internet use, problematic social media use and parental bonding with both mother and father were measured. The predictors of problematic internet use and social media use were tested simultaneously with structural equation modeling.

Results: Problematic internet use and social media use correlate significantly (r=0.57). Girls reported more symptoms in problematic use of internet and social media. Maternal and paternal overprotection were significantly associated with problematic social media use. Paternal care decreased and maternal overprotection significantly increased the problematic internet use. However, the model only explains a small part of the variance of both types of problematic use (10% and 7%, respectively).

Conclusion: Parental overprotection may be a small but significant risk factor for developing problematic internet uses. Problematic internet use and problematic social media use are not the same; they are slightly different in their associations with parental bonding dimensions.

Keywords: problematic internet use; problematic social media use; parental bonding

Összefoglalás: *Háttér és célok: A szülői bánásmódot a problémás internethasználat egyik rizikófaktoraként határozzák meg serdülők és fiatal felnőttek esetében, habár csak kevés kutatás vizsgálta a szülői bánásmód és problémás közösségimédia-használat kapcsolatát serdülőknél. Jelen tanulmány célja annak a vizsgálata, hogy a probémás internet-, illetve közösségimédia-használat különböznek-e a szülői bánásmóddal való kapcsolatukban középiskolás diákoknál.*

Módszer: A keresztmetszeti vizsgálat hozzáférhetőségi mintavétellel 2035 fő (54,2% lány, átlagéletkor=16,97, SD=1,61) adatait gyűjtötte össze önbeszámolós, papír-ceruza tesztek felvételével. A kérdőívcsomag a problémás internet- és közösségimédia-használat, valamint az apai és anyai szülői bánásmódot mérő teszteket tartalmazta. A problémás internet- és közösségimédia-használat prediktorait a szimultán történő strukturális egyenletekkel való modellezéssel vizsgáltuk.

Eredmények: A problémás internet- és közösségimédia-használat szignifikánsan korreláltak egymással (r=0,57). A lányok mindkét esetben több tünetről számoltak be. Az anyai és apai túlvédés szignifikánsan együttjárt a problémás közösségimédia-használattal. A csökkent apai törődés és az anyai túlvédés szignifikánsan növelte a problémás internethasználatot. Ugyanakkor a modellek csak kis részét magyarázták a problémás használatok varianciájának (10% és 7%).

Következtetés: A szülői túlvédés kismértékű, de szignifikáns rizikófaktora a problémás internet- és közösségimédiahasználatnak. A két típusú problémás használat nem ugyanaz, valamelyest különböznek abban, hogy a szülői bánásmód mely faktoraival mutatnak kapcsolatot.

Kulcsszavak: *problémás internethasználat; problémás közösségimédia-használat; szülői bánásmód*

Introduction

Problematic internet use (PIU) or internet addiction became a focus topic of international research in the middle of the 1990s, and then not much later of Hungarian research as well (see 1–6). *Davis* (7) already distinguished between generalized pathological internet use and specific ones. Generalized PIU does not have one defined purpose, while in the case of specific PIU, the person typically spends time on the internet with the purpose of carrying out a specific activity (e.g. gaming, using social media). Although studies differ in their method of measuring problematic internet use, namely, investigating the participants' internet use either in general or only related to one specific type of internet use, this is a choice of methodology rather than of concept, and it is not known to date how these two problems (generalized and specific PIU) relate to each other (e.g. 8).

Over the past 25 years, several psychological and environmental variables have been found as risk factors of internet addiction. In the current study, parental bonding is examined, since it is an important environmental factor for adolescents in their lives, which can influence the relationship between teenager and parent, as well as the adolescent's emotional state and behavior. Adolescents are the most vulnerable age group for PIU (e.g. 9); consequently, it is our primary goal to reveal the association between adolescents' internet use and their subjective perceptions of parenting behavior. Previous international studies agreed that both maternal and paternal perceived care negatively associates with the level of symptoms of internet addiction, while overprotection positively associates with the same (10–13). However, the outcomes differ in their level of predicting the strength of these factors. *Kalaitzaki* (14) found that parental bonding did not affect PIU directly: its impact is mediated by sadness and negative relation to others. Not many studies have investigated adolescents (10, 11), most of those that have, surveyed university or college students (where parental bonding was measured

based on past experiences, which are exposed to memory bias).

Two Hungarian studies have explored the impact of parental bonding on PIU (4, 15). One of them (4) was conducted on an adult sample, and according to its findings, only paternal care was lower in the group of problematic users compared to normal users; the other dimensions did not show any differences between the normal and the problematic groups. The other study (15) investigated secondary school students and measured their problematic gaming. All the dimensions (rejection, emotional warmth, overprotection) of parent behavior demonstrated significant associations with problematic gaming, in the case of both parents; however, only paternal overprotection proved to be a predictor of problematic gaming.

Besides problematic gaming, problematic social media use (PSMU) is the most common problematic behavior among specific internet addictions in adolescence that is being associated with many adverse consequences (16–18). Nevertheless, scientific literature cannot provide enough information on the role of parental bonding in PSMU. The question is whether the effects of parental bonding on PIU and PSMU are different or not, and whether perceived parental behavior towards adolescents, namely care, restrictive control, and encouragement of autonomy and independence could influence PIU/PSMU in different ways.

Based on these considerations, the aim of this study is to reveal which aspects of parental bonding relate to PIU/PSMU, and whether these aspects are the same or different in the case of different types of problematic internet use.

Method

Sample

The participants were secondary school students in Budapest and in other towns in Hungary (altogether in 81 classes of 26 schools). The sampling method used was convenience sampling. We excluded: (1) participants who did not

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report age or gender; (2) participants under 14 were also removed; (3) respondents with over 50 percent of missing data related to the variables used in the current statistical analysis; (4) extreme outliers were investigated, and if they occurred in several variables, the questionnaires involved were excluded (3.5% of the original sample).

The final sample consists of 2035 participants: 54.2% females, aged between 14 and 22 (mean age=16.97, SD=1.61).

Measures

Information on sociodemographic data and internet use. Information on the participants' gender, age, family environment (how many people live in the household, the highest level of education of mother/father, subjective evaluation of living conditions), internet using habits (hours of internet use per day for different purposes, frequency of different activities on the internet/social media per week).

Problematic Internet Use Questionnaire (PIUQ-9). The short version (19) of the original, 18-item PIUQ (20, 21) was included in the questionnaire package. It is designed to measure the symptoms of problematic internet use and consists of three subscales: obsession, neglect and control disorder. Participants are asked to indicate how frequently the statements occur in their lives on a 5-point Likert scale. The highest total score is 45, the lowest is 9 on PIUQ-9. Higher scores demonstrate more symptoms of internet addiction. The cut-off point is determined at 22 by latent profile analysis (19). In the current sample, the scale showed good reliability (Cronbach alpha=0.79).

Bergen Social Media Addiction Scale (BSMAS). The original scale was created by Andreassen et al. (22) for measuring Facebook addiction; however, later it was used for measuring social media addiction in general (23) by replacing the word „Facebook" with „social media". The scale includes 6 items, which measure the six core components of behavioral addiction (salience, mood modification, tolerance, withdrawal symptoms, conflicts, relapse). The items are evaluated on a 5-point Likert scale based on the subject's relation to them in the past 12 months. The highest total score is 30, the lowest is 6 on BSMAS. Higher scores demonstrate more problematic social media use. The cut-off point is determined at 19 by latent profile analysis (17). The reliability of the scale was adequate in the current sample (Cronbach alpha=0.75).

Hungarian version of Parental Bonding Instrument (H-PBI). The translation and validation of the original instrument (24) was performed by *Tóth and Gervai* (25). The scale measures the perceived parental bonding based on the experience of the first 16 years. In this survey, the adolescents read the items in present tense and fill out the questionnaire for both (foster) parents (living with the adolescent). The Hungarian version of questionnaire has three subscales: (1) care (12 items), which measures the warmth of parenting ranging from warm, cold, indifferent to neglecting parenting; (2) *overprotection* (7 items), which indicates parental dominance over the adolescent and treating the adolescent as a younger child; (3) *restrictive control* (6 items), which is a range from encouraging autonomy and independence to restricting them. The participants indicate the degree to which the statements describe their parents' parental behavior on a 4-point Likert-scale (0 – very unlike, 3 – very like). Higher scores on the care subscale indicate more empathic parenting, while higher scores on the overprotection subscale show that the adolescent is treated as a child. Higher scores on the restrictive control show a lower level of encouraging independence in parenting. The score range is between 0 and 36 on the care subscale, between 0 and 21 on the overprotection subscale, and between 0 and 18 on the restrictive control subscale. The Cronbach alphas of the subscales were good: 0.89; 0.74; 0.78 respectively for maternal parenting, and 0.90; 0.71; 0.81 respectively for paternal parenting in the order of the subscales described above.

Procedure

The research project was approved by the Research Ethics Committee of ELTE PPK. The whole questionnaire package (which includes the instruments presented as well as several other scales) was administered in a class, in groups. Informed consent was obtained from all participants, and the parents provided passive agreement (refusal had to be indicated in writing, which none of the parents did). The participation was anonymous and voluntary.

Statistical analysis

IBM SPSS Statistics Version 25 was used (26). The variables were non normally distributed according to the Shapiro-Wilk test; therefore, the correlation analysis applied was the Spearman rank correlation, and Mann-Whitney U test was performed to compare gender groups. Structural equation modeling was performed for the multivariate analysis with MPlus version 8.0 (27). All variables were entered as observed variables and MLR estimator, which robust to deviation from normal distribution, was used.

Results

Descriptive statistics

The majority of students (70%) live in a nuclear family with two parents. 7% of them live in a stepfamily, while 19% of them live in a single-parent family. Slightly more than half of the fathers (55%) have a higher education level qualification; for mothers this rate is 62%. 36% of the fathers and 32% of the mothers have secondary level qualifications. Nearly half of the adolescents (43%) assessed their life conditions as somewhat better than the average, while 33% of them thought that their life conditions are average.

Most students (68%) use the internet 1–4 hours a day for entertainment purposes, and only 3% of them stated that they use the internet

for more than 8 hours a day. 3.5% of them do not use social media at all; these subjects were not included in the statistical analysis with the Bergen Social Media Addiction Scale. The majority of the rest of the subjects (69%) reported using social media sites for maximum 2 hours a day. Barely 1% of the students spend time on social media sites for more than 8 hours per day.

According to the self-report of the students, the most common purposes of using the internet are browsing and chatting. 43% (browsing) and 75% (chatting) of the respondents use the internet several times a day, or continuously for a longer period. Most of them (45%) play less than once a week; however, 20% of the respondents use the internet for gaming several times a day. The most popular activity on social media is chatting, again: 75% of students reported using social media for this purpose several times a day. In addition, communicating within a group is also an activity that is performed on more than one occasion a day for 35% of them. As for posting on social media as a separate activity, 11% of the respondents post once or more than once a day. Passive use, namely following news feed, is a very frequent activity (several times a day or continuously for a longer period) for one third (33%) of the students, and additional one third perform this activity once a day.

Table 1 demonstrates the most important descriptives and the correlations between the variables. The strength of the association between PIU and PSMU is moderate. Among the dimensions of parenting bond, overprotection shows a stronger (but weak) correlation with PIU/PSMU compared to the other two dimensions, both for maternal and paternal bonding.

Table 2 shows gender differences in PIUQ and BSMAS.

Structural equation modelling

The statistical analysis of multivariate associations was carried out with a/the structural equation modeling (SEM) technique. The bene-

Table 1

Descriptives of variables and their correlations

	PIUQ	BSMAS	H-PBI care mother	H-PBI over-protection mother	H-PBI restrictive control mother	H-PBI care father	H-PBI over-protection father	H-PBI restrictive control father
gender	0.11**	0.23**	0.07**	0.05*	0.02	0.02	0.16**	0.05*
age	-0.04	-0.04	-0.10**	-0.04	-0.17**	-0.11**	-0.08**	-0.18**
PIUQ		0.57**	-0.14**	0.20**	0.12**	-0.15**	0.19**	0.09**
BSMAS			-0.06**	0.22***	0.08**	-0.08**	0.25***	0.11**
H-PBI care mother				-0.24**	-0.28**	0.56**	-0.11**	-0.12**
H-PBI overprotection mother					0.45**	-0.19**	0.64**	0.22**
H-PBI restrictive control mother						-0.12**	0.25**	0.59**
H-PBI care father							-0.16**	-0.22**
H-PBI overprotection father								0.44**
H-PBI restrictive control father								
Mean score	18.54	9.49	29.49	7.05	5.66	26.04	5.34	5.16
Standard deviation	5.67	3.48	6.27	4.35	3.44	7.53	3.89	3.51

Note: N=1914-1982. Spearman rank correlation.in italic. PIUQ: Problematic Internet Use Questionnaire; BSMAS: Bergen Social Media Addiction Scale; H-PBI: Parental Bonding Instrument. *: $p<0.05$; **: $p<0.01$; ***: $p<0.001$; Gender is coded: 1 – male, 2 – female

Table 2

Means, standard deviations of PIUQ and BSMAS in gender groups, results of Mann-Whitney U test comparing gender groups

	Females N=1086, 1055	Males N=917, 868	Mann-Whitney U	p	Cohen d
Problematic Internet Use (PIUQ)	19.13 (5.92)	17.79 (5.27)	433741.50	<0.001	0.27
Social Media Addiction (BSMAS)	10.22 (3.67)	8.79 (3.09)	338898.00	p<0.001	0.43

fit of this method compared to multivariate linear regression is that several output variables are possible. As a result, it is possible to investigate two kinds of problematic internet use (PIU and PSMU) in one model. The outcome of SEM is demonstrated in Figure 1, where only significant paths are indicated. The model is saturated; thus, the fit indices show a perfectly fitting model.

According to the results, gender has significant, weak explanatory power on PIU and BSMU. Females reported more symptoms in both cases of problematic use (regression coefficients do not differ from each other: Wald test=0.78 p=0.376). Age did predict significantly neither problematic internet nor social media use. Maternal and paternal perceived overprotection are significant explanatory variables of problematic social media use. At the same time, paternal care and maternal overprotection linked significantly with problematic internet use. Restrictive control is not a significant predictor of neither problematic internet nor social media use. The model explains only a small proportion of the variance of both problematic uses.

Discussion

According to the descriptive statistics of the study, youngsters use social media with very few exceptions. At the same time, the majority of them spend relatively little time with it a day. They primarily use social media and the internet for communication purposes. Passive social

Figure 1

Multivariate analysis on PIU and PSMU with their independent variables
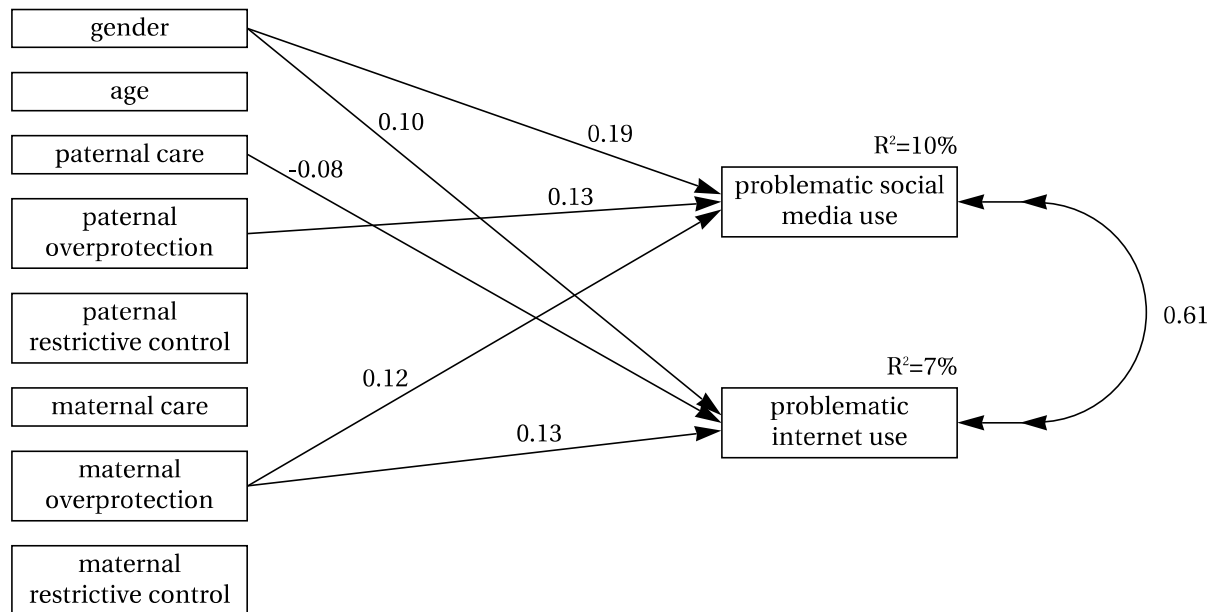
Note: Only the significant paths (at least at p<0.05) are presented. The model was fully saturated.

media use takes up a smaller part of adolescents' time, although two thirds use social media this way on a daily basis.

Gender differences were found in both problematic uses, but not at an equal degree. In the case of PSMU, females have a greater chance to become problematic users than males; at the same time, in the case of PIU, this gender difference is lower. Our result on girls showing higher scores on PSMU is in line with several previous studies (e.g. 17, 28, 29). However, only a few studies have reported gender differences with more symptoms of PIU for females (e.g. 30).

Similarly to the findings of a number of other studies (12, 13, 15), parental overprotection plays a bigger role in predicting problematic internet use: on the part of both parents, overprotection is a significant predictor of PSMU, while treating the adolescent as a child predicts PIU only on the mother's part. Overprotection can be defined as a dimension of emotional but not physical control. Physical control is measured by the restrictive control subscale.

These findings are supported by a Hungarian representative survey (ESPAD-2015) on 16-year-old students (31). Performing cluster analysis, they found that in the cluster that contained most of the problematic internet and social media users, the students were likely to be females, secondary school students, and had lower self-esteem and more depressive symptoms, and engaged in more structured leisure activities (e.g. sports as opposed to going out) besides using the internet. All in all, these are the adolescents who use the internet at home or spend their free time with activities that are more controlled and accepted by their parents. They do not engage in the typical adolescent social activities that encourage detachment from the family and the development of stronger peer relationships.

Although the two kinds of problematic use are related to each other, according to our results, these two problems are not the same (moderate correlation). Since for adolescents, social media is a means of communicating with peers. parental overprotection might have a bigger effect on developing problematic internet use at this specific age than in other times. For parents, this communication platform is less visible; and it gives them the perception of more control over the child: the teenager is physically at home while chatting with peers. It might be a good compromise for both parents

and child: the parent feel their child is less in danger of being influenced by peers, and the adolescent seemingly remains under the parent's control, avoiding conflicts with the parents, while maintaining their peer relationships on the internet.

All in all, parental overprotection is a parenting form which may occur simultaneously with a caring, warm parental attitude as well. It becomes a risk factor in adolescence since it hinders the development of emotional independence from the parents, which is a required developmental step at this age. However, this effect seems to be marginal in developing problematic internet use. It would be worth revealing additional (environmental or individual) factors which may interact with parental attitude, and this combined model could explain more variance of PIU/PSMU.

In the case of PIU, paternal emotional coldness appears to be a risk factor (with very weak but significant explanatory power). The absence of emotional warmth may lead to negative self-esteem, and another possible outcome could be depressive feelings. To compensate for these negative feelings, problematic internet use can serve as emotional regulation: escaping from the bad mood and negative thoughts through the positive emotions evoked by using the internet. *Throuval et al.* (32) found a relationship between parental emotional rejection and negative self-evaluation, although they investigated internet gaming disorder. In this study parental rejection is indirectly associated with the occurrence of internet gaming disorder through the mediating effect of core self-evaluation.

Besides less paternal care, maternal overprotection is also a risk factor for PIU. It would be worth investigating in a longitudinal design how these two factors influence each other in creating a dysfunctional family (maternal over-

protection as a type of compensation from the mother's part to balance paternal coldness).

Although the findings on parental factors can be interpreted in the way described above, the impact of parenting is not as strong as it was expected. It could be an age-specific feature, since adolescents need more autonomy and independence from their parents (emotionally and physically as well). Additionally, other social impacts (mainly from peers) may have further impacts on their internet/social media use.

Limitations

The large sample of the current study allows complex statistical analyses and results in well-grounded findings. However, the method of convenience sampling does not allow any generalization of the results. Due to the nature of the research design, it is not possible to draw causal conclusions. Overprotective parenting and problematic internet use might be affected by a third factor as well, which might be in fact responsible for the association. In addition, problematic internet use may evoke parental overprotection; consequently, further investigation is necessary to understand the complex interaction of these variables. The strength of the associations is weak; thus, it is necessary to make an effort to find more factors to enhance the explanatory power. Since all the questionnaires were self-administered, the answers are exposed to conscious or unconscious distortions on the participants' part. In addition, as parenting behaviors were assessed by the adolescents, who, due to the developmental characteristics of this age, may feel more critical towards their parents. The results therefore mirror a subjective perception of parental bonding.

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KORONCZAI BEATRIX   e-mail: koronczai.beatrix@ppk.elte.hu