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Compulsive Use of Social Networking Sites Among Secondary School Adolescents in Belgium

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Abstract Some Internet users find it difficult to control the time spent on the Internet, which can lead to a negative impact on school, work and relationships with friends and family. The main goal of the present study was to assess the prevalence of compulsive social networking using the Compulsive Social Networking Scale (CSS) and to determine the profile of compulsive versus non-compulsive users of SNSs by means of a cross-sectional survey among 1002 Belgian adolescents. The results indicate that respondents had an average score of 0.85 on the CSS (range 0–4). When applying a cut off of 2 and more, this resulted in 7.1 % compulsive users. Results showed that both personality traits (6 %) and psychosocial well-being (7.3 %) explain significant amounts of variance above gender and age. In sum, the block of age and gender together with personality and psychosocial well-being explains 15.8 % of the variance.

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1 Introduction

Social networking sites (SNSs)[1] are a very popular online activity among children in Belgium. In 2011, 39 % of 9–12-year-olds and 86 % of 13–16-year-olds had a profile on a SNS. Facebook appears to be the most popular SNS with 70 % of the 9–16-year-olds having a profile, designating the site as their only or most used SNS (Livingstone et al. 2011). 95 % of the Belgian children between 9 and 16 years old go online at least once a week and 66 % do this (almost) every day (d'Haenens and Vandoninck 2012). Boyd and Ellison (2007) define SNSs as

> web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system.

According to the authors SNSs are unique not because of the possibility to meet strangers but because they allow users to show their connections to others. This view is also supported in an extended literature review by Kuss and Griffiths (2011). The results indicate that SNSs are mostly used to maintain offline connections rather than to make new friends. Although the Internet and new online technologies such as SNSs have several advantages, the increasing amount of time spent online can lead to maladaptive use, certainly among young people (Echeburua and de Corral 2010). In some cases Internet users are not able to control the time spent online, which can have negative consequences for relationships with family and friends and can lead to problems at school (Young 1998).

1.1 Terminology and Definition

Several authors have referred to the maladaptive use of Internet by using the term "Internet addiction" (Griffiths 1998; Young 1998), whereas others prefer "problematic" (Caplan 2002), "pathological" (Davis 2001), "excessive" (Suhail and Bargees 2006) or "compulsive" (Meerkerk 2007) Internet use. In line with Meerkerk, the term compulsive Internet use will be used in the current study. The author states that the term addiction implies an addiction to the Internet itself, whereas in reality "addicts" mostly have a problem dealing with the use of a specific type of Internet application such as gaming, pornography and online communication.

Furthermore the definition of this type of behaviour varies considerably from one study to another. Kandell (1998) defines Internet addiction as:

> a psychological dependence on the Internet that is characterised by (a) an increasing investment of resources on Internet-related activities, (b) unpleasant when offline, (c) an increasing tolerance to the effects of being online, and (d) denial of the problematic behaviours.

[1] For readability reasons 'social networking sites' will be abbreviated to 'SNSs' in the rest of the chapter.

Kandell remarks further that people who suffer from these symptoms are often also dealing with underlying psychological problems (comorbidity). Beard and Wolf (2001) define the phenomenon as "use of the Internet that creates psychological, social, school, and/or work difficulties in a person's life" and put a stronger emphasis on the negative consequences for everyday life. Griffiths (1998) uses the criteria of the Diagnostic and Statistical Manual Fourth Edition (DSM-IV) to come to a definition of Internet addiction including salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse. The author states that any behaviour that meets all these criteria can be defined as an addiction. Despite the lack of a standardised terminology and definition most researchers do agree that the phenomenon exists (Chou et al. 2005) and the problem has received a lot of attention from researchers from different fields of expertise such as psychology, psychiatry and sociology (Chou and Hsiao 2000).

This chapter focuses specifically on the compulsive use of SNSs. According to Kuss and Griffiths (2011) an addiction to SNSs is part of what is described by Young et al. (1999) as a cyber-relationship addiction, which is characterised by over-involvement in online relationships. SNS addiction can be defined as a disorder that is "urge-driven" and includes a compulsive component. This type of addiction is a specific category in the spectrum of addictions related to Internet use (Karaiskos et al. 2010).

1.2 SNSs and Personality

Although literature on the topic is still scarce, some studies have linked personality traits to the use of SNSs using the Five-Factor model that divides personality into five dimensions: openness, extraversion, neuroticism, conscientiousness and agreeableness (Costa and McRae 1992). Extraversion and conscientiousness appear to be significantly related to the use of SNSs. Individuals with high scores on extraversion and low scores on conscientiousness make use of SNSs more often and report more addictive tendencies (Wilson et al. 2010). Correa et al. (2010) also found higher levels of SNS use among extraverts, especially among young adults. Results of a study conducted among university students show that people scoring high on extraversion belong to more Facebook groups, but no difference was found regarding the number of Facebook friends and use of communicative functions. Students scoring high on neuroticism had a preference for using the Facebook wall. Those with low scores on this trait preferred posting pictures on their own profile. Agreeableness and openness did not appear to be related to Facebook features (Ross et al. 2009). Amichai-Hamburger and Vinitzky (2010) found a higher number of friends among people with high scores on extraversion supporting the results of Ross et al., but found no difference regarding the membership of Facebook groups.

1.3 SNSs and Psychosocial Well-Being

The literature examining the link between SNSs and psychosocial well-being is equally scarce. Valkenburg et al. (2006) investigated whether the use of SNSs influences social self-esteem and the well-being of adolescents. Results indicated that there was no direct relationship, but the use of SNS did influence social self-esteem and well-being in an indirect way through received feedback on the SNS profile and the tone of that feedback. Negative feedback on the profile led to lower social self-esteem and well-being, while positive feedback led to an increase of the social self-esteem and well-being of the adolescents. The link between psychosocial factors and (compulsive) Internet use in general has been addressed more often by researchers. Young and Rogers (1998) found a link between high levels of depression and the chance of developing an Internet addiction. Ceyhan and Ceyhan (2008) identified loneliness and depression as important predictors of problematic Internet use with loneliness explaining 21.8 % of the variance and depression adding another 3.3 %. Caplan (2002) found significant correlations between problematic Internet use and psychosocial variables such as loneliness, depression and self-esteem. Furthermore Chak and Leung (2004) found a negative association between perceived control over one's life and Internet addiction.

1.4 SNS Use and Academic Performance

Few studies have examined the impact of SNS use, or Facebook in particular, on academic performance. A study among university students showed, for example, that Facebook users report a lower Grade Point Average (GPA) compared to non-users. Furthermore, the average study time per week is lower among users of this SNS compared to university students that do not use Facebook (Kirschner and Karpinski 2010). A comparable result is found in a study of Junco (2012) which shows that large increases in the time spent on Facebook is related to lower overall GPAs. Kolek and Saunders (2008) on the other hand found no negative correlation between grades and Facebook use. This outcome is supported by the results of a study conducted by Pasek et al. (2009) that also did not point in the direction of a negative impact of Facebook use on grades. The results of these studies show that there is as yet no consensus on the possible impact of Facebook on academic performance.

2 Focus of the Current Study

This study is the first to collect data about the compulsive use of SNS sites among youngsters in Belgium. The main goal is to assess the prevalence of compulsive SNS use among adolescents in secondary schools in Belgium and to ascertain the

profile of compulsive versus non-compulsive users of SNSs. Based on the scientific literature and emerging research gaps, the following research questions were formulated:

Research question 1: What is the prevalence of secondary school children scoring high on the Compulsive Social Networking Scale (CSS) in Belgium?
Research question 2: What is the profile of secondary school children scoring high on the CSS in Belgium (compulsive SNS users) compared to children that are non-compulsive SNS users?
Research question 3: What are important predictors of compulsive SNS use among adolescents in secondary schools?

3 Methodology

3.1 Data Collection

This study is part of a broader research project on the topic of compulsive computer and Internet use in Belgium. A paper-and-pencil survey was distributed to adolescents of the first, third and fifth year of secondary school. The principals of the schools were contacted by letter or e-mail and by telephone a few weeks after mailing. During this conversation the potential participation of the school was discussed. Seventeen secondary schools in Flanders and Wallonia agreed to participate in this research, which allowed for a total sample of 1002 respondents. Since Dutch and French are both official languages in Belgium, the surveys were drafted in the two languages. 591 respondents filled in the Dutch version of the survey and 411 completed the French version. All questionnaires were filled in in the classroom during one lesson (in this case 50 min) in the presence of one of the researchers and a teacher or supervisor of the school. The children were allowed to ask questions for clarification when items or questions were unclear.

3.2 Sample Description

The sample contains 59 % Flemish and 41 % Walloon adolescents. The average age is 15.21 years. The sample consists of 50.6 % girls and 49.4 % boys. Most of the respondents are of Belgian origin: 72.7 %. The remaining part of the respondents has at least one parent from a different origin. 39.6 % of the secondary school pupils in the sample are in general education and 26.8 % are in technical education. 24.7 % are in vocational education and 8.9 % are in art education. The education level of the respondents in the sample is comparable to that of adolescents in secondary education in Flanders where 45.3 % are in general education, 30 % in technical education, 2.1 % in art education and 22.6 % in vocational education (VONC 2012).

3.3 Variables and Measures

To measure compulsive use of SNSs, the Bergen Facebook Addiction scale (Andreassen et al. 2012) was adapted to a compulsive SNS scale (CSS) measuring not only compulsive use of Facebook, but of SNSs in general.[2] This scale consists of 18 items that are rated on a 5-point scale ranging from never (=0) to very often (=4). Items to assess CSS included: "How often during the last year have you felt an urge to use SNSs more and more?", "How often during the last year have you spent more time on SNSs than initially intended?" and "How often during the last year have you used SNSs in order to reduce restlessness?". In analogy with the Compulsive Internet Use Scale (CIUS) which has shown to be reliable (Meerkerk 2007; Meerkerk et al. 2009), an average score of at least "sometimes" (≥ 2) is considered as an indication of compulsive use of the SNSs. The CSS was used to measure the degree to which an individual shows signs of salience, tolerance, withdrawal, relapse, mood modification and conflict. The scale showed good consistency in the current sample ($\alpha = .94$).

An important focus of the current study is to assess whether CSS scores are related to personality traits and psychosocial well-being. Therefore several measures were included in the survey in order to operationalise these variables. Personality traits were measured by the Quick Big Five (Vermulst and Gerris 2005), which divides personality into five different aspects: extraversion, resourcefulness, conscientiousness, agreeableness and emotional stability. Variables included for measuring psychosocial well-being were self-esteem, depression, perceived control and loneliness. Self-esteem was assessed by using the Rosenberg Self-Esteem Scale (Rosenberg 1965) and depression was measured using the Depressive Mood List (Kandel and Davies 1982). The Mastery Scale measured perceived control (Pearlin and Schooler 1978) and loneliness was assessed by using the Rasch-Type Loneliness Scale (de Jong-Gierveld and Kamphuis 1985).

Furthermore, respondents were asked to indicate the amount of time they spent on the Internet on an average day (measured per day: Monday, Tuesday, ...). Respondents had to indicate on a 6-point scale ranging from "never" to "multiple times a day" the extent to which they engaged in several types of online activities. The following activities were included: e-mail, information seeking, chatting, online gaming, online pornography, downloading, video watching and online shopping. Another question focused on the respondents' attitude towards school by asking them to indicate on a 10-point scale ranging from "not at all" to "very much" how much they liked going to school. The respondents were also asked to give an indication of how they were doing at school on a 10-point scale ranging from "not well at all" to "very well". In addition, they were also asked whether they had an SNS profile and on which SNS in particular. Also the average time spent on SNSs on school days and non-school days was asked for. In the final socio-demographic part of the survey, respondents were asked about gender, age, nationality, position in line of siblings, education level and financial situation at home.

[2] The 18 items of the Bergen Facebook Addiction Scale (BFAS) were translated by two researchers into Dutch and French. To widen the applicability of the scale the items were reformulated by using the term 'social networking site' in general instead of the mentioning of a specific SNS brand name such as Facebook. The adapted Compulsive Social Networking Scale (CSS) was pilot tested together with other questions and scales in a paper-and-pencil survey administered in the classroom to 134 scholars of the first, third and fifth year of secondary school in Flanders and Wallonia. The internal consistency (Cronbach's alpha) was .95 for the Dutch version and .94 for the French version of the CSS. Tests for convergent validity point at high correlations between our CSS and for example, the Compulsive Internet Use Scale (CIUS).

3.4 Statistical Analyses

T-tests were calculated in order to compare compulsive users of SNSs to non-compulsive users. Correlation analyses and hierarchical multiple regression analyses were conducted with the average score on the CSS as the dependent variable. Age and gender were entered in the first block of the regression analyses, personality traits in the second block and psychosocial scales in the last block.

4 Results

4.1 General SNS Use in Belgium

Most of the secondary school children have a profile on one or more SNSs: 88.2 %. Facebook is by far the most popular SNS with 95.5 % of all SNS users having a profile. Twitter (20.4 %) and Netlog (20.3 %) are used to a lesser extent. MySpace does not seem to arouse the interest of Belgian adolescents with only 1.8 % of SNS users having a profile on that site. 33.1 % of SNS users indicated they had a profile on other SNSs that were not mentioned in the examples specified in the survey. Other examples include Google+ (1.2 %) and Tumblr (3.7 %). Skype (7.1 %) and MSN (14.7 %) were also mentioned by adolescents as examples of SNSs, even though it is arguable whether they really can be seen as SNSs since Skype is mostly used to make online phone calls and MSN as a chat tool. The average amount of SNS profiles is 1.72. On a school day SNS users spent on average 1 h and 15 min on a SNS. During the weekend or holidays this average rises to 2 h and 16 min.

4.2 Prevalence of Compulsive SNS Use

Respondents had an average score of 0.85 on the CSS with a range from 0 (= never) to 4 (= very often). A cut off score of 2 and more was used to determine the number of compulsive users of SNSs. This resulted in a prevalence of 7.1 % of compulsive users of SNSs out of the 1002 secondary school pupils. Compulsive users have a significantly higher CSS score (M=2.3, SD=0.42) compared to non-compulsive SNS users (M=0.66, SD=0.51), t(92.067)=−30.908, p<.01. This study is part of a broader research project focusing on the compulsive use of the Internet as well as games. A prevalence of 9.5 % compulsive Internet users and a prevalence of 11 % compulsive gamers were found in this study.

4.3 Profile of Compulsive SNS Users

To answer our second research question the group of compulsive users of SNSs was compared to the group of non-compulsive users in order to assess the profile of both groups. The group of compulsive users consists of 48.6 % boys and 51.4 % girls. The average age is 14.84 years. As expected, compulsive users of SNSs spent more time on this type of online activity than their non-compulsive counterparts. Compulsive users spent 2 h and 38 min on SNSs on a typical school day, which is significantly higher than the average of 1 h and 7 min found in the group of non-compulsive users (t(69.824)=−3.714, p<.01). During the weekend or the holidays the time spent on SNSs was higher for both groups. Again, compulsive users (M=4 h and 35 min) spent significantly more time on SNSs than the non-compulsive group (M=2 h and 1 min) (t(70.751)=−4.447, p<.01). Both groups do not seem to differ regarding the personality traits of resourcefulness and conscientiousness. Compulsive SNS users did show significantly lower scores on the personality dimension of agreeableness (M=22.67) compared to the non-compulsive users (M=23.65), t(100.069)=2.240, p<.05, cohen's d=0.31. Lower scores were also found in the compulsive group regarding emotional well-being (M=22.67 versus M=23.65), t(745)=2.26, p<.05, cohen's d=0.29. Also for the personality trait of extraversion non-compulsive users of SNSs reported higher scores (M=21.26) compared to compulsive SNS users (M=20.08), t(739)=−2.132, p<.05, cohen's d=0.27.

Differences were found for all variables measuring psychosocial well-being. Compulsive SNS users show significantly higher scores on loneliness (M=29.36 versus M=24.63, t(746)=−5.741, p<.01), cohen's d=−0.73 and depressive feelings (M=12.53 versus M=8.99, t(90.294)=−7.569, p<.01, cohen's d=−0.87) than their non-compulsive counterparts. Scores on perceived control (M=22.3 versus M=24.5, t(741)=4.454, p<.01, cohen's d=0.6) and self-esteem (M=32.55 versus M=36.21, t(734)=4.885, p<.01, cohen's d=0.6) are significantly lower in the compulsive group.

Respondents were also asked to indicate on a scale from 1 to 10 how much they liked going to school. Results indicate that compulsive users have a significantly lower score (M=5.31) than the non-compulsive users (M=6.04), t(80.218)=2.218, p<.05, cohen's d=0.30. No difference was found between both groups when we look at the indication respondents gave about their grades on a scale from 1 to 10 (t(79.478)=1.766, p>.05). The indication of grades did, however, appear to be negatively correlated (r=−.107, p<.01) to CSS score (see correlation Table 2).

4.4 Predictors in CSS Outcome

To provide an answer to the third and last research question, we tried to establish predictors of the CSS score by using hierarchical regression. Gender and age were entered in the first block. Their betas and significance levels are reported as Step 1 in Table 1. This first block of age and gender explains 2.5 % of the variance, F(2, 592)=8.608, p<.05. Personality traits of the Quick Big Five were entered in Step 2 and explain an extra 6 % of the variance in the average CSS score, F(7, 587)=8.902, p<.05. Another 7.3 % is explained when entering psychosocial well-being predictors in the third step (Step 3), F(11, 583)=11.136, p<.05. In sum, the block of age and gender together with personality traits and variables related to psychosocial well-being explains 15.8 % of the variance in the average CSS score. Agreeableness appears to be the only personality predictor related to the average score on the CSS,

Table 1 Predictors of an average CSS score

	Beta	*p*	ΔR^2
STEP 1			
Gender	−.121	.003	2.5 %
Age	−.084	.031	
Adjusted R^2	**2.5 %**		
STEP 2			
Extraversion	.056	.174	6 %
Agreeableness	−.124	.005	
Conscientiousness	.016	.706	
Emotional stability Resourcefulness	−.067	.149	
	.029	.487	
Adjusted R^2	**8.5 %**		
STEP 3			
Loneliness	.113	.024	7.3 %
Perceived control	−.155	.003	
Self-esteem	−.113	.046	
Depressive feelings	.219	.000	
Adjusted R^2	**15.8 %**		

Table 2 Correlation table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 CIUS score	–													
2 VAT score	.533**	–												
3 CSS score	.490**	.351**	–											
4 Attitude school	–.184**	–.216**	–.057	–										
5 Grades	–.175**	–.187**	–.107**	.317**	–									
6 Loneliness	.242**	.193**	.247**	–.188**	–.161**	–								
7 Perceived control	–.272**	–.196**	–.256**	.113**	.132**	–.559**	–							
8 Self-esteem	–.299**	–.154**	–.230**	.173**	.204**	–.492**	.591**	–						
9 Depressive feelings	.429**	.280**	.326**	–.133**	–.166**	.380**	–.500**	–.561**	–					
10 Extraversion	–.120**	–.059	–.060	.067*	.063	–.336**	.311**	.294**	–.203**	–				
11 Conscientiousness	–.173**	–.211**	–.055	.293**	.368**	–.134**	.145**	.240**	–.169**	–.029	–			
12 Agreeableness	–.139**	–.236**	–.120**	.306**	.225**	–.320**	.211**	.290**	–.078*	.187**	.379**	–		
13 Emotional Stability	–.227**	–.089*	–.186**	–.052	.131**	–.236**	.381**	.381**	–.475**	.234**	.028	–.032	–	
14 Resourcefulness	–.139**	–.171**	–.061	.184**	.167**	–.150**	.157**	.310**	–.115**	.149**	.222**	.379**	–.071*	–
N	925	604	775	996	982	941	945	933	957	942	943	964	946	959
Mean	1.02	1.1	0.80	5.98	7.01	25.2	24.19	35.7	9.34	20.95	19.2	23.59	18.3	20.72
c	0.70	0.86	0.69	2.38	1.62	6.81	4.04	6.19	4.55	4.35	4.58	2.94	3.99	3.90

**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed)

$\beta=-.124$, $p<.05$. All psychosocial well-being predictors are related to the CSS score. Loneliness and depressive feelings are positively related to the average score on the CSS: $\beta=.113$, $p<.05$ and $\beta=.219$, $p<.05$ respectively. Perceived control and self-esteem relate in a negative way to CSS score, $\beta=-.155$, $p<.05$ and $\beta=-.113$, $p<.05$ respectively.

5 Conclusion

The goals of the current study were to assess the prevalence of compulsive SNS use, to ascertain the profile of compulsive and non-compulsive users and to distinguish several important predictors of the CSS score. The results of the current study indicate that secondary school children have an average score of 0.85 on the CSS with a range from 0 to 4. When a cut-off score of 2 and more was applied, a prevalence of 7.1 % compulsive SNS users was ascertained among secondary school children in our sample. Several t-tests were calculated in order to compare compulsive users of SNSs to non-compulsive users. As could be expected compulsive SNS users spent significantly more time on SNSs compared to non-compulsive users, both on school and non-school days. Furthermore we specifically focused on differences regarding personality traits, psychosocial well-being and attitude towards school. Compulsive and non-compulsive users showed no differences when comparing the average score on the personality traits of extraversion, resourcefulness, conscientiousness and emotional stability. A difference was found for agreeableness with compulsive users having significantly lower scores on this dimension. In addition both groups differed with respect to all variables integrated in the study to measure psychosocial well-being. Higher scores were found in the compulsive group for loneliness and depressive feelings, lower scores were found for perceived control and self-esteem. Furthermore, respondents in the compulsive group gave a significantly lower indication on a scale from 1 to 10 asking how much they liked going to school and the indication of the respondents about their grades correlated negatively to the CSS score. Hierarchical multiple regression analyses identified personality traits and psychosocial well-being as important predictors of CSS scores. Gender and age were entered in the first block and explained 2.5 % of the variance in CSS scores. When entering personality traits in the second step another 6 % was explained and psychosocial well-being predictors in the third and last step explained an extra 7.8 % of the variance in the CSS score. Overall, the block of age and gender in combination with personality traits and variables indicating psychosocial well-being was able to account for 16 % of the variance in CSS scores.

This study was the first to focus on the compulsive use of SNSs among secondary school children in Belgium. Moreover, it is one of the few studies linking personality traits and psychosocial well-being to the compulsive use of SNSs. Previous research did already focus on the link between those variables and compulsive Internet use, but literature focusing on the link with compulsive SNS use is still scarce. Due to space constraints the current study was not able to test for all possible

personality traits and variables that indicated psychosocial well-being. The integration of certain other variables such as shyness, life satisfaction and narcissism might help to predict the extent to which an individual has the tendency to use SNSs in a compulsive way. Follow-up research on the topic of the different forms of compulsive computer and Internet use is of great importance. Future studies should certainly focus on the link between those variables and the use of SNSs. In the same vein, the link between attitude towards school and grades should be investigated more extensively. The use and importance of the Internet is still on the rise worldwide, particularly with the current widespread rise in tablet and smartphone use. These new mobile devices make it possible to be online anywhere and anytime. Free mobile applications such as WhatsApp are already used by many people as an alternative to texting, indicating that activities in which the Internet is used are still expanding. Therefore longitudinal research needs to be conducted to register the evolution of computer and Internet use and its repercussions for problematic use (prevalence and mean age of problematic users) in Belgium over time.

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