

# Frequent Use of Social Networking Sites Is Associated with Poor Psychological Functioning Among Children and Adolescents

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## Abstract

Social networking sites (SNSs) have gained substantial popularity among youth in recent years. However, the relationship between the use of these Web-based platforms and mental health problems in children and adolescents is unclear. This study investigated the association between time spent on SNSs and unmet need for mental health support, poor self-rated mental health, and reports of psychological distress and suicidal ideation in a representative sample of middle and high school children in Ottawa, Canada. Data for this study were based on 753 students (55% female;  $M_{\text{age}} = 14.1$  years) in grades 7–12 derived from the 2013 Ontario Student Drug Use and Health Survey. Multinomial logistic regression was used to examine the associations between mental health variables and time spent using SNSs. Overall, 25.2% of students reported using SNSs for more than 2 hours every day, 54.3% reported using SNSs for 2 hours or less every day, and 20.5% reported infrequent or no use of SNSs. Students who reported unmet need for mental health support were more likely to report using SNSs for more than 2 hours every day than those with no identified unmet need for mental health support. Daily SNS use of more than 2 hours was also independently associated with poor self-rating of mental health and experiences of high levels of psychological distress and suicidal ideation. The findings suggest that students with poor mental health may be greater users of SNSs. These results indicate an opportunity to enhance the presence of health service providers on SNSs in order to provide support to youth.

## Introduction

**S**Ocial networking sites (SNSs), such as Facebook, Twitter, MySpace, and Instagram, have gained substantial popularity among youth in recent years, mainly due to the rapid advances in information and communication technology (ICT), which has made the Internet more accessible than ever. Mobile devices with access to the Internet can be used anywhere and anytime. SNSs are often defined as Web-based platforms that allow individuals to create their own personal profile and build a network of connections with other users.<sup>1</sup> In 2013, Facebook had 1.23 billion users worldwide, 757 million daily active users, and 945 million monthly active mobile users.

The pervasiveness of the Internet and popularity of SNSs today offer new avenues for people to access health-related information and for health organizations to reach people without geographical limitation. Recent reports have indicated that people are increasingly turning to SNSs for health-related information or social support.<sup>2–4</sup> SNSs have been identified as a means to handle loneliness and depression,

increase self-esteem and social support, and increase general well-being.<sup>3,5–8</sup> At the same time, health organizations have started using SNSs as a tool for delivering health programs and services, education, research, intervention, and even treatment.<sup>9–13</sup>

A few studies have investigated the detrimental effects of using SNSs on mental health among post-secondary (college and university) students.<sup>14–16</sup> Little is known about the association between SNS use and mental health in middle and high school students, or about the association between unmet need for mental health support and use of SNSs in these age groups. Pantic et al. recently documented an association between SNSs and depression in Serbian high school students.<sup>17</sup> To the best of the authors' knowledge, no research has examined the association between unmet need for mental health support and use of SNSs in children and adolescents.

Thus, the purpose of this study was to explore the relationship between the use of SNSs and mental health concerns, such as unmet need for support, self-rated mental health, and reports of psychological distress and suicidal ideation in middle and high school children in Ottawa, Canada.

## Methods

### Participants

The current study is based on a representative sample of Ottawa (Canada) students who completed the mental health portion of the Ontario Student Drug Use and Health Survey (OSDUHS) in 2013 ( $N=753$ ; student response rate=70%). The OSDUHS is a biennial school-based cross-sectional survey of students in grades 7–12 who are enrolled in both English and French public and Catholic school systems in Ontario.<sup>18</sup> The survey uses a two-stage (school, class) stratified (region and school type) cluster sample design. Students whose parents provided active consent self-administered the anonymous survey, which took approximately 30 minutes to complete during one class. Ethics approval was obtained from the Research Ethics Boards of the Centre for Addiction and Mental Health, York University, and the school boards.

### Measures

**Use of SNSs.** Students were asked how many hours a day they usually spend on social media Web sites such as Facebook, Twitter, MySpace, and Instagram, either posting or browsing. The answer options were: “less than 1 hour a day,” “about 1 hour a day,” “2 hours a day,” “3–4 hours a day,” “5–6 hours a day,” “7 or more hours a day,” “visit these Web sites, but not daily,” “use the Internet, but never visit these Web sites,” and “do not use the Internet.” The three latter response options were combined to “infrequent or no use of SNSs.” Two other categories were created based on the recommended cutoff of 2 hours or less for daily recreational screen time among youth from the current Canadian sedentary behavior guidelines<sup>19</sup> and a previous study on screen time and academic performance<sup>20</sup>: “daily use of SNSs of 2 hours or less” (regular use) and “daily use of SNSs of more than 2 hours” (frequent use).

**Self-reported mental health.** Self-rated mental health support was assessed by the following question: “How would you rate your mental or emotional health?” The answer options were: “poor,” “fair,” “good,” “very good,” and “excellent.” Due to small numbers of responses, for analysis purposes, responses of “fair” or “poor” were collapsed to indicate “poor mental health.”

**Unmet need for mental health support.** Unmet need for mental health support was assessed by the following question: “In the last 12 months, was there a time when you wanted to talk to someone about a mental health or emotional problem you had, but you did not know where to turn?” The answer options were “yes” or “no.”

**Psychological distress.** The Kessler Psychological Distress Scale (K-10) was used to measure symptoms of depression and anxiety occurring over the most recent 4 week period.<sup>21,22</sup> Each of the 10 items had five response categories, including “none of the time,” “a little of the time,” “some of the time,” “most of the time,” and “all of the time.” Responses are scored on a 5-point Likert scale and summed to generate a total score ranging from 10 to 50, with higher scores indicating greater psychological distress. High psychological distress was defined as having a score of  $\geq 22$ ,

while a score of  $<22$  indicated low psychological distress.<sup>23</sup> The internal reliability coefficient for the K-10 in this study was a Cronbach’s alpha of 0.93.

**Suicidal ideation.** Suicidal ideation was assessed by the following item: “During the last 12 months, did you ever seriously consider attempting suicide?” The answer options were “yes” or “no.”

**Covariates.** Covariates include demographics, subjective socioeconomic status (SES), and parental education level. Demographics included age (measured in years), sex, and grade. Grades were binary grouped making “grade 7–8” for middle school and “grade 9–12” for high school. SES was measured using a drawing of a ladder with 10 rungs that was described as follows: “Imagine this ladder below shows how Canadian society is set up. At the top of the ladder are people who are the “best off”—they have the most money, the most education, and the jobs that bring the most respect. At the bottom are the people who are “worst off”—they have the least money, little education, no job or jobs that no one wants. Now think about your family. Please check off the numbered box that best shows where you think your family would be on this ladder.” Educational level of father and mother were measured using the following items: “How far did your father go in school?” and “How far did your mother go in school?” Options included “did not attend high school,” “attended high school,” “graduated high school,” “attended college,” “graduated college,” “attended university,” and “graduated university.” Parental education was coded (in year) as the higher available response if the mother’s and father’s education levels differed, or if the student provided information for only one parent. The sample mean (13.8 years) was used when neither parental level of education was available ( $n=151$ ).<sup>24</sup>

### Statistical analysis

Taylor series linearization methods were used to account for the complex sample design of the survey and obtain unbiased variances and point estimates. Descriptive characteristics of children reporting “infrequent or no use,” “daily use of 2 hours or less,” and “daily use of more than 2 hours” of SNSs were compared with a chi-square test for categorical data and with an adjusted Wald test for continuous data. There were no significant interactions between sex and any of the independent variables in predicting the use of SNSs. Therefore, data for both sexes were combined in order to maximize statistical power. Crude and adjusted multinomial logistic regression analyses were performed to examine the association between mental health problems and time spent using SNSs, using those who reported infrequent or no use of SNSs as a reference category. The confounding variables included in the multivariate analyses were grade, sex, subjective SES, and parental education level. Unadjusted as well as adjusted relative risk ratio (RRR) and 95% confidence intervals (CI) were calculated. All data were analyzed with STATA v13.0 (Stata Corp., College Station, TX) at a threshold of  $\alpha=0.05$ .

## Results

Descriptive characteristics of the sample according to the time spent using SNSs are shown in Table 1. Overall, 16.9%

TABLE 1. SAMPLE CHARACTERISTICS BY TIME SPENT USING SOCIAL NETWORKING SITES, MIDDLE AND HIGH SCHOOL STUDENTS, OTTAWA, CANADA, 2013

	Sample (n=753)	Infrequent or no use (n=206)	Daily use of 2 hours or less (n=381)	Daily use of more than 2 hours (n=166)	p Value
Sample age Mean $\pm$ SD	100 15.0 $\pm$ 0.2	20.5 13.8 $\pm$ 0.3	54.2 15.1 $\pm$ 0.1*	25.2 15.8 $\pm$ 0.1**	<0.001
Sex					<0.001
Boys	51.5	60.0	58.7	28.9	
Girls	48.5	40.0	41.3	71.1	
Grade (%)					<0.001
7 to 8	31.0	59.6	27.6	15.1	
9 to 12	69.0	40.4	72.4	84.9	
SES					0.236
Low	21.9	28.9	20.1	20.3	
High	78.1	71.1	79.9	79.7	
Parental education level Mean $\pm$ SD	14.2 $\pm$ 0.2	13.8 $\pm$ 0.3	14.4 $\pm$ 0.2*	14.3 $\pm$ 0.2	0.011
Self-rated mental health					<0.001
Excellent	29.6	36.2	30.9	21.7	
Very good	33.9	36.6	36.1	27.1	
Good	19.6	17.7	19.3	22.0	
Poor	16.9	9.5	13.8	29.3	
Unmet need for mental health support					<0.001
Yes	26.4	16.0	21.3	45.6	
No	73.6	84.0	78.7	54.4	
Psychological distress					<0.001
Yes	23.4	12.9	18.6	42.2	
No	76.6	87.1	81.4	57.8	
Suicidal ideation					<0.001
Yes	12.5	5.9	9.1	24.9	
No	87.5	94.1	90.9	75.1	

Data are presented as % unless otherwise indicated.

Levels of SNSs use were compared with a chi-square test for categorical data and with an adjusted Wald test for continuous data.

\*Significantly different from infrequent or no use.

\*\*Significantly different from infrequent or no use and from daily use of 2 hours or less.

of students self-rated their mental health as poor, 26.4% reported an unmet need for mental health support, 23.4% reported high psychological distress, and 12.5% exhibited suicidal ideation. A total of 25.2% of students reported using SNSs for more than 2 hours every day; 54.3% reported using SNSs for 2 hours or less every day, and 20.5% reported infrequent or no use of SNSs. Girls and high school students reported more use of SNSs than boys and middle school students.

Figure 1 displays the prevalence of time spent using SNSs by grade. While the proportion of students who reported daily SNSs use of 2 hours or less did not vary between students' grades, that of students who reported daily SNSs use of more than 2 hours significantly increased with students' grade ( $p < 0.001$ ) from 5.1% in grade 7 to 33.8% in grade 12. In grade 10, an equal proportion of students reported SNSs of more than 2 hours as daily SNSs use of 2 hours or less; more students reported SNSs of more than 2 hours in grade 11 and 12.

Table 2 presents crude and adjusted associations between mental health problems and time spent using SNSs. After adjusting for grade, sex, subjective SES, and parental level of education, students who reported that they wanted to talk to

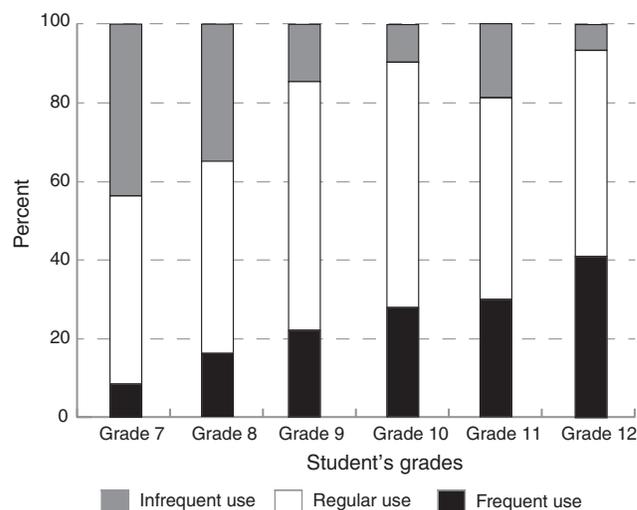


FIG. 1. Time spent using social networking sites by grades, Ottawa, Canada, 2013.

TABLE 2. ASSOCIATION BETWEEN POOR MENTAL HEALTH AND SOCIAL NETWORKING SITE USE, MIDDLE AND HIGH SCHOOL STUDENTS, OTTAWA, CANADA, 2013

	Daily use of 2 hours or less				Daily use of more than 2 hours			
	RRR	SE	95% CI	p Value	RRR	SE	95% CI	p Value
<i>Model 1</i>								
Self-rated mental health								
Excellent	1				1			
Very good	1.15	0.25	0.73–1.83	0.520	1.23	0.33	0.70–2.18	0.450
Good	1.28	0.35	0.72–2.26	0.370	2.07	0.61	1.12–3.84	0.023
Poor	1.69	0.61	0.79–3.64	0.165	5.14	1.84	2.42–10.92	<0.001
Unmet need for mental health support								
No	1				1			
Yes	1.42	0.29	0.92–2.17	0.106	4.40	1.09	2.61–7.40	<0.001
Psychological distress								
No	1				1			
Yes	1.55	0.35	0.95–2.50	.074	4.94	0.93	3.32–7.36	<0.001
Suicidal ideation								
No	1				1			
Yes	1.60	0.43	0.90–2.83	0.102	5.28	1.44	2.96–9.40	<0.001
<i>Model 2</i>								
Self-rated mental health								
Excellent	1				1			
Very good	1.20	0.25	0.77–1.85	0.398	1.06	0.29	0.59–1.90	0.843
Good	1.20	0.38	0.62–2.34	0.568	1.36	0.36	0.78–2.37	0.262
Poor	1.57	0.65	0.65–3.78	0.299	3.04	1.22	1.30–7.09	0.013
Unmet need for mental health support								
No	1				1			
Yes	1.40	0.33	0.85–2.30	0.176	3.15	1.09	1.51–6.55	0.004
Psychological distress								
No	1				1			
Yes	1.58	.35	0.99–2.54	0.056	3.87	1.24	1.97–7.61	0.001
Suicidal ideation								
No	1				1			
Yes	2.18	0.83	0.98–4.86	0.057	5.93	2.56	2.38–14.75	0.001

Model 1, unadjusted; Model 2, adjusted for grade, sex, subjective SES, and parental level of education. RRR, relative risk ratio; SE, standard error; CI, confidence interval.

someone about a mental health or emotional problem but they didn't know where to turn were more likely to report using SNSs for more than 2 hours every day than those who did not have such experience (adjusted RRR = 3.15 [95% CI 1.51–6.55]). Daily use of SNSs of more than 2 hours was also independently associated with fair or poor self-rating of mental health (3.04 [1.30–7.09]) and experiences of high level of psychological distress (3.87 [1.97–7.61]) and suicidal ideation (5.93 [2.38–14.75]).

**Discussion**

This study found that students with poor mental health are greater users of SNSs. Results clearly show that youth who report use of SNSs for more than 2 hours per day have also reported poor self-rated mental health, psychological distress, suicidal ideation, or unmet need for mental health support. These results corroborate previous findings indicating an association between time spent using SNSs and depression in high school students.<sup>17</sup> Conversely, studies conducted among university students found no such relationship.<sup>14,16</sup> The discrepant findings may be due to differences in measures of

depressive symptoms or to the possibility that older youth may handle challenges and engage differently with SNSs.<sup>25,26</sup> As SNSs are increasingly becoming an integral part of life today, especially for children and adolescents, parents need to be more aware of the pitfalls of SNSs and actively engage with young people in making it a safer and enjoyable experience for them.<sup>27</sup> Parents should consider frequent use of SNSs as a possible indicator of, or risk for, mental health problems among children.

Youth with mental health problems may be frequently using SNSs to seek interaction or support. The present results showed that more than a quarter of students reported an unmet need for mental health support. Of these, the majority reported frequent use of SNSs. Mental health issues are usually stigmatizing and embarrassing for youth,<sup>28</sup> thus leading to less intention to seek help.<sup>29</sup> Youth are often concerned about being seen as "mental" by their friends and others.<sup>30</sup> Thus, they may be turning to SNSs to seek interaction and support, as they do not know where else to turn.

These findings support SNSs as a venue for reaching youth with health needs. Goodman et al. recommended that public health actors actively use SNSs as a tool to engage youth and

hard-to-reach populations in addressing stigmatized public health issues such as mental health problems.<sup>31</sup> Youth must be able to access appropriate information and support needed from professional resources, including online.<sup>32</sup> Emerging evidence suggest heightened public health efforts to use SNSs to reach youth and help address their mental health needs. Rice et al. suggested that online interventions with a broad cognitive behavioral focus may be promising in reducing symptoms of depression in young people.<sup>13</sup>

Providing mental health training to parents and teachers may also help identify symptoms or changes in behavior related to psychological distress or suicide among children and adolescents. For example, Ottawa Public Health has recently launched an innovative public health social media marketing campaign called “have THAT talk,” an education video series designed to encourage parents to incorporate mental health and/or suicide prevention into their conversations with their children/teens. It focuses on reaching parents whose teens are transitioning from middle school to high school, but also benefits parents with children of any age.<sup>33</sup> The campaign is intended to equip parents with the knowledge and resources they need to talk about mental health with their child or teen. The “have THAT talk” videos answer common questions that parents often have about a teen’s mental health, such as: “when should I be concerned about my teen’s mental health?,” “what should I look for if I think my teen is depressed?,” and “where can I access mental health services for my teen?”<sup>33</sup>

The current Canadian sedentary behavior guidelines recommends limiting recreational screen time to 2 hours or less daily for children and youth.<sup>19</sup> In the present study, more than a quarter of students reported using SNSs for more than 2 hours a day. Students who spend more time on SNSs also likely have less time to invest in other health-promoting activities. The relationship between use of SNSs and mental health problems may be complex, as use of SNSs cannot alone explain the occurrence of mental health problems. Future studies could help elucidate factors that contribute to mental health outcomes in the context of Internet use, such as contextual factors, lack of physical activity, antecedents and/or individual factors, cyberbullying and so on.

The cross-sectional nature of the data precludes evaluation of temporality and causality of the observed relationship between use of SNSs and mental health problems. Indeed, excessive use of SNSs could contribute to poor mental health and may be bidirectional. Use of SNSs can lead to poor mental health and poor mental health may be a reason why youth use SNSs.<sup>4, 26</sup> In this study, self-reporting may result in under- or over-reporting on some questions due to recall bias or social desirability bias (e.g., questions about students’ mental health concerns). SNS use of 7 hours or more or less than 1 hour could not be analyzed separately due to the small number of responses in these categories. Future studies with more participants may explore a dose–response relationship between the use of SNSs and mental health problems.

More research is needed to disentangle the relationship between the use of SNSs and mental health among children and adolescents. It is crucial to understand better the direction of the observed association between the use of SNSs and youth mental health, along with the factors that might mediate or moderate this relationship. Future research is also necessary to identify behaviors that youth engage in re-

garding SNSs that might be problematic to the point of placing them at risk of mental health problems. On the other hand, research on youth mental health service use is also needed,<sup>34</sup> particularly to identify characteristics associated with unmet need for mental health support and how best to meet that need.

In conclusion, this study found that students with poor mental health are greater users of SNSs. With the rapid advance of information and communication technology, the number of children and adolescents using SNSs will increase as well. Frequent use of SNSs should therefore serve as an indicator to anyone in a position to support the child, including family, teachers, healthcare professionals, and friends. Given that youth with poor mental health are spending significant time on SNSs, public health and other service providers may be able to reach a key vulnerable population if they also engage youth on SNSs with health promotion approaches and supports.

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### Author Disclosure Statement

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