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Social networking sites and mental health problems in adolescents: The mediating role of cyberbullying victimization

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A B S T R A C T

Background: Previous research has suggested an association between the use of social networking sites (SNSs) and mental health problems such as psychological distress, suicidal ideation and attempts in adolescents. However, little is known about the factors that might mediate these relationships. The present study examined the link between the use of social networking sites and psychological distress, suicidal ideation and suicide attempts, and tested the mediating role of cyberbullying victimization on these associations in adolescents.
Methods: The sample consisted of a group of 11-to-20-year-old individuals ($n = 5126$, 48% females; mean ± SD age: 15.2 ± 1.9 years) who completed the mental health portion of the Ontario Student Drug Use and Health Survey (OSDUHS) in 2013. Multiple logistic regression analyses were used to test the mediation models.
Results: After adjustment for age, sex, ethnicity, subjective socioeconomic status (SES), and parental education, use of SNSs was associated with psychological distress (adjusted odds ratio, 95% confidence interval = 2.03, 1.22–3.37), suicidal ideation (3.44, 1.54–7.66) and attempts (5.10, 1.45–17.88). Cyberbullying victimization was found to fully mediate the relationships between the use of SNSs with psychological distress and attempts; whereas, it partially mediated the link between the use of SNSs and suicidal ideation.
Conclusion: Findings provide supporting evidence that addressing cyberbullying victimization and the use of SNSs among adolescents may help reduce the risk of mental health problems.

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1. Introduction

Adolescence can be a time when mental health problems and various health compromising behaviours tend to arise. Research has shown that half of all lifetime cases of mental illness begin by age 14, and three-quarter of all lifetime cases of mental illness onset before the age of 24 years [27]. Poor mental health during adolescence is associated with lower success in school, and more risk-taking behaviour related to substance abuse, violence, and sexual activity [39]. In addition, youth with poor mental health may be the perfect target for violent behaviour [12]. Suicide is a significant public health issue worldwide. According to the World Health Organization, every 40 seconds a person dies by suicide

somewhere in the world and suicide is the second leading cause of death among young people aged 15 to 24 years [53]. For each death of suicide, there are many more suicide attempts [53].

Suicide is a potentially preventable public health problem. Given that suicidal ideation and attempts are well known to be immediate precursors of suicide, it is important to identify possible factors that may lead to such behaviours in adolescents so that tailored interventions can be designed in order to break the possible chain of causality. Research has shown that the use of social networking sites (SNSs) such as Facebook, Twitter or Instagram is associated with mental health problems, including depression, psychological distress, and suicidal ideation among high school students [38,40]. Hardwood et al. [21] reported that it is the nature of the relationship a person has with their smart-device (on which people can have access to SNSs) that is predictive of depression and stress, rather than the extent of use. However, Spraggins [47] indicated that increased symptoms of problematic

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use of SNSs are associated with increased depression and loneliness. Studies have described addictive qualities of SNSs and labelled media technologies as "addiction prone technologies", as they have potential to be strongly habit forming leading to maladaptive psychological dependency [29,50,48]. Three important features have been reported as more indicative of internet addiction, including negative outcomes, compulsive use, and salience [31].

Despite the link between the use of SNSs and mental health problems, little research, if any, has focused on the underlying mechanisms that mediate such an association. The relationship between the use of SNSs and mental health problems may not be direct, as a simple use of SNSs may not fully explain by itself the occurrence of mental health problems. There are several factors that could explain the association with mental health outcomes. Mental health disorders are strong risk factors for youth suicide, as are family history of suicide and previous suicide attempts [30]. Stressful life events such as romantic difficulties, interpersonal losses, financial or employment problems, physical or sexual abuse, family or school violence, other victimization, or other events that involve humiliation, loss, defeat or threat can precipitate suicide [6,19,41,43,8]. As such, cyberbullying victimization which is theoretically related to both use of SNSs and mental health problems may be a potential mediator of the association between the use of SNSs and mental health problems among adolescents.

Cyberbullying has emerged as a new form of peer victimization over the last decade and is framed on the use of information and communication technology (ICT). Cyberbullying is often defined as the use of E-mail, cell phones, text messages, and Internet sites to threaten, harass, embarrass or socially exclude [22]. Rapid advances in ICT and the increasing popularity of SNSs put adolescents at a higher risk of victimization. An emerging body of research has shown that the use of SNSs is associated with cyberbullying victimization [16,5,13] and other forms of aggression, such as sexting [14,35] – which refers to sending sexual images and sometimes sexual texts via cell phone and other electronic devices. With regard to these aggressive behaviours, Guitton [20] urged concerted research efforts to understand the "dark side of social media". Studies have also shown that adolescents who are victims of cyberbullying report more internalizing problems such as increased psychological distress, depression, and suicidal ideation and attempts [41,22,42,34]. Given the relationship between the use of SNSs and cyberbullying victimization, and the relationship between mental health problems and cyberbullying victimization, it is plausible that cyberbullying victimization may mediate the relationship between the use of SNSs and mental health problems.

The first objective of the present study was to examine the association between the use of SNSs and mental health problems, including psychological distress, suicidal ideation and suicide attempts using a province-wide sample of middle and high school students. The second objective of this study was to test whether cyberbullying victimization mediates the relationships between the use of social networking sites and psychological distress, suicidal ideation and suicide attempts. We hypothesized that the use of SNSs would be positively associated with psychological distress, suicidal ideation and attempts, and that the experience of cyberbullying victimization would mediate these relationships. The third objective was to assess the moderating role of sex on these relationships. Given that adolescent females are at a higher risk of psychological distress, suicidal ideation and attempts, we have also hypothesized that the relationships between the use of SNSs and mental health problems would be stronger in adolescent females compared to males.

2. Methods

2.1. Data

Data were derived from the 2013 cycle of the Ontario Student Drug Use and Health Survey (OSDUHS), a representative province-wide, school-based survey of students in grades 7 to 12. Conducted every two years since 1977, the OSDUHS is a cross-sectional survey that assesses the prevalence of self-reported health-risk behaviours among youth in Ontario. Written informed consent was obtained from parents/guardians and consent/assent was obtained from students prior to participating in the survey. The survey uses a two-stage (school, class) stratified (region and school type) cluster sample design and involved students from 42 school boards, 198 schools and 671 classes. The participation rate among students was 63%, which is above average for a survey of students that requires active parental consent [10]. Student non-response was due to absenteeism (11%) and unreturned consent forms or parental refusal (26%). Data did not present evidence of appreciable nonresponse bias [3]. Analyses were restricted to the random half sample of students ($n = 5478$) who completed Form A of the questionnaire, which included a measure of mental health problems and cyberbullying victimization. The study design and methods are described in more detail elsewhere [3]. Ethics approval was obtained from the Research Ethics Boards of the Centre for Addiction and Mental Health, York University, and the school boards.

2.2. Measures

2.2.1. Psychological distress

The Kessler Psychological Distress Scale (K-10) was used to detect nonspecific psychological distress (symptoms of anxiety and depression) occurring over the most recent 4-week period [25,26]. This well-validated, 10-item questionnaire has been widely used in community and clinical settings and has been applied to a range of diagnoses and clinical presentations in adolescent and adult populations [9,23]. Each item had five response categories: "none of the time," "a little of the time," "some of the time," "most of the time," and "all of the time." Responses were scored on a 5-point Likert scale and added together to generate a total score that ranged from 10 to 50, with higher scores indicating greater psychological distress. A score of ≥ 22 was used to define high psychological distress (coded 1), while a score of ≤ 21 indicated low psychological distress (coded 0) [4]. The internal reliability coefficient (Cronbach alpha) for the K-10 in this study was 0.92.

2.2.2. Suicidal behaviour

Suicidal ideation was measured by the following item: "During the last 12 months, did you ever seriously consider attempting suicide?" and suicide attempts were measured by the following item: "In the last 12 months, did you actually attempt suicide?" Response options for both suicidal ideation and attempts were yes and no. Both questions are from the Centers for Disease Control and Prevention (CDC)'s Youth Risk Behaviour Survey and have demonstrated good reliability and validity among students [32].

2.2.3. Cyberbullying victimization

Cyberbullying victimization was measured by the following item: "In the last 12 months, how many times did other people bully or pick on you through the Internet?" Response options were:

- don't use the Internet;
- never;
- once;