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## Research report

# Relationships between bullying victimization psychological distress and breakfast skipping among boys and girls



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## ABSTRACT

The purpose of this study was to further explore the association between bullying victimization and breakfast skipping in children and adolescents. Compared to the previous study, we have used a larger and representative sample of middle and high school students, examined the *effect* of gender, different *forms* (physical, verbal, theft/vandalism and cyber) and severity of *bullying on breakfast eating behaviour*. Data from students (2286 boys and 2859 girls) aged 11 to 19 years (mean  $\pm$  SD age: 14.6  $\pm$  1.9 years) from the 2013 Ontario Student Drug Use and Health Survey (OSDUHS) were analysed using self-reports of being bullied, diet, psychological distress, demographics, socio-economic status, weight status, and substance use. Results revealed greater odds of breakfast skipping in girl victims of physical, verbal, and cyber bullying, and in boy victims of verbal and cyber bullying. There was a dose–response relationship between experience of both school and cyber bullying victimization and breakfast skipping behaviour for both genders. Mediation analysis indicated that psychological distress fully mediated the relationship between both verbal and physical bullying victimization and breakfast skipping in girls, and partially mediated the relationship between verbal bullying victimization and breakfast skipping in boys. Psychological distress also partially mediated the link between cyber bullying victimization and breakfast skipping in both boys and girls. These results corroborate previous findings on the association between bullying victimization and breakfast skipping in children and adolescents. The strong and consistent associations with different forms of bullying victimization, the dose–response relationship, and the mediating role of psychological distress suggest a causal relationship.

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## Introduction

Breakfast is considered the most important meal of the day and is associated with the nutritional well-being of children (Matthys, De, Bellemans, De, & De, 2007). Skipping breakfast or eating an inadequate breakfast may lead to dietary inadequacies that are rarely compensated for in other meals during the day (Nicklas, O'Neil, & Berenson, 1998). Youths who eat breakfast perform better academically and have higher diet quality than those who do not (Adolphus, Lawton, & Dye, 2013; Rampersaud, Pereira, Girard, Adams, & Metz, 2005). They also have an enhanced cognitive and psychosocial function than those who do not eat breakfast (Cooper, Bandelow, & Nevill,

2011; Hoyland, Dye, & Lawton, 2009; Rampersaud et al., 2005). Yet, breakfast is the most commonly skipped meal among children and adolescents (Story, Neumark-Sztainer, & French, 2002). Over the past decade, several interventions have encouraged children and adolescents to eat breakfast but very few have been successful (Kothe & Mullan, 2011). Most interventions did not include a psychosocial component (Kothe & Mullan, 2011). Identifying and tackling psychosocial determinants of breakfast skipping behaviour might be a key to improving breakfast consumption and nutritional well-being.

Research studies have started implicating the experience of being bullied (also known as bullying victimization) on the development of unhealthy eating behaviours among adolescents (Farrow & Fox, 2011; Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000; Libbey, Story, Neumark-Sztainer, & Boutelle, 2008), particularly skipping breakfast (Sampasa-Kanyinga, Roumeliotis, Farrow, & Shi, 2014). Bullying is usually defined as a specific form of aggression, which is intentional, repeated, and involves a disparity of power between the victim and perpetrators (Olweus, 1993). Bullying is a serious public health issue that has far-reaching consequences for victims, their families and peers, and their community. School bullying takes many forms and its impact on victims can vary greatly depending

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on the level of victimization. Sampasa-Kanyinga, Roumeliotis, Farrow, et al. (2014) documented an association between bullying and breakfast skipping among middle and high school students in Eastern Ontario (Canada), suggesting that the greater vulnerability of victims of cyberbullying and/or school based bullying may lead them to eat breakfast less often and that symptoms of depression appear to mediate these relationships, i.e. that being bullied may lead to psychological distress, which in turn lead the child or youth to start missing breakfast. However, it is unclear whether different forms of bullying affect breakfast eating behaviour differently and whether these effects vary with the intensity of bullying. It is also unclear whether the effect of bullying on breakfast consumption is different in boys and girls.

It has been well documented that adolescent girls skip breakfast more often than boys (Rampersaud et al., 2005). While girls are well known to be bullied more often in traditional ways than boys (Craig et al., 2009), research findings on cyberbullying are inconsistent. Some studies noted that girls were more likely than boys to be victimized on-line (Dehue, Bolman, & Vollink, 2008; Sampasa-Kanyinga, Roumeliotis, & Xu, 2014; Smith et al., 2008). This could be because cyberbullying is text-based, and girls tend to be more verbal than boys (Hinduja & Patchin, 2009). Other researchers, however, observed no significant gender differences (Smith et al., 2008).

The purpose of this study was to further understand the relationship between bullying and missing breakfast, as well as the mediating role of psychological distress on this relationship. Improvements in this extended study include using a larger (province-wide survey) and representative sample of middle and high school children, examining the effects of gender, severity and forms of bullying (physical, verbal, theft/vandalism and cyber), and using a more global measure of psychological distress (Kessler-10 Psychological Distress Screener) (Slade, Grove, & Burgess, 2011). We hypothesized that (1) the experience of being bullied leads to skipping breakfast, (2) psychological distress mediates that relationship, (3) the effect of bullying on breakfast skipping varies with the nature of the bullying, (4) there is a dose–response relationship between the severity of bullying and breakfast skipping, and (5) there is a gender difference.

## Methods

### Study design

Data were obtained from the 2013 Ontario Student Drug Use and Health Survey (OSDUHS), a biennial province-wide school-based survey of students in the 7th through 12th grades in Ontario, Canada. The OSDUHS assesses the prevalence of self-reported health-risk behaviours among youth in Ontario. Methodological details are described elsewhere (Boak, Hamilton, Adlaf, & Mann, 2013). Briefly, the survey uses a two-stage (school, class) stratified (region and school type) cluster sample design. Written informed consent was obtained from parents/guardians and consent/assent was obtained from students prior to participating in the survey. A total of 10,398 students in grades 7 through 12 from 42 school boards and 198 schools participated in the 2013 OSDUHS, a participation rate of 63%. Student non-response was due to absenteeism (11%) and unreturned consent forms or parental refusal (26%). Data editing process ended up with 10,272 minimally completed cases in the final dataset. However, the current study restricted analyses to the random half sample of the 5478 students (mean  $\pm$  SD age:  $14.6 \pm 1.9$  years) who completed Form A of the questionnaire which included a measure of bullying experience and psychological distress. Ethics approval was obtained from the Research Ethics Boards of the Centre for Addiction and Mental Health, York University, and the school boards.

## Measures

### Breakfast consumption

Breakfast eating behaviour was measured with the following question: “On how many of the last five school days did you eat breakfast (more than a glass of milk or fruit juice), either at home, on the way to school, or at school before classes?” (None, 1–2 days, 3–4 days, and all 5 days). As a conservative indicator, a dichotomous variable was created to reflect regular breakfast consumers as those students who ate breakfast on all five days (coded 0) and irregular breakfast consumers as those who ate breakfast less frequently (coded 1).

### Bullying victimization

Students were asked about bullying at school and cyberbullying in the past 12 months. The subject was introduced as follows: “The next questions are about bullying. Bullying is when one or more people tease, hurt or upset a weaker person on purpose, again and again. It is also bullying when someone is left out of things on purpose.” School bullying victimization was measured by the following questions: “Since September, in what way were you bullied the most at school?” Respondents were asked to choose only one answer among “Was not bullied at school since September” (coded 0), Physical attacks (for example, beat you up, pushed or kicked you) (coded 1), Verbal attacks (for example, teased, threatened, spread rumours about you) (coded 2), Stole from you or damaged your things (coded 3). “Since September, how often have you been bullied at school?” Responses included “Was not bullied at school since September” (coded 0), “Less than once a month” (coded 1), “About once a month” (coded 2), “About once a week” (coded 3), “Daily or almost daily” (coded 4). Values 1 to 4 were also combined (Coded 1) to create a dichotomous variable. Cyberbullying victimization was measured by the following question: “In the last 12 months, how many times did other people bully or pick on you through the Internet?” Responses included “Never” (coded 0), “Once” (coded 1), “2 to 3 times” (coded 2), “4 or more times” (coded 3). Values 1 to 4 were also combined (Coded 1) to create a dichotomous variable.

### 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 (Slade et al., 2011). 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. Each item 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 ranged from 10 to 50, with higher scores indicating greater psychological distress. A score of  $\geq 22$  was used to define high psychological distress (coded 1), while a score of  $\leq 21$  indicated low psychological distress (coded 0) (Boak et al., 2014). The internal reliability coefficient for the K-10 in this study was Cronbach alpha = 0.92.

### Covariables

#### Demographics

Demographics included age (in years), sex (coded “1” for girls and “0” for boys), and grades grouped as “middle school” (coded 0) or “high school” (coded 1). Subjective socio-economic status (SES) was measured using a drawing of a ladder with 10 rungs that was described as follows: “Imagine this ladder below shows how

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