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**Substance Use and Sexual Risk Taking in Emerging Adults with a History of
Bullying Victimization**

By

Daniel A. Provenzano

A Thesis
Submitted to the Faculty of Graduate Studies
through the Department of Psychology
in Partial Fulfillment of the Requirements for
the Degree of **Master of Arts**
at the University of Windsor

Windsor, Ontario, Canada

2018

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**Substance Use and Sexual Risk Taking in Emerging Adults with a History of
Bullying Victimization**

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September 13, 2018

DECLARATION OF ORIGINALITY

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ABSTRACT

Bullying victimization has been commonly linked with a range of psychosocial problems. To deal with distress, victims engage in coping behaviours that may be adaptive, maladaptive, or both. However, it may be difficult for youth to cope in ways that are adaptive. Instead, youth may engage in a variety of coping behaviours that are maladaptive. Considering that emerging adulthood often coincides with engaging in substance use and sexual risk taking, some youth may engage in these health risk behaviours as ways to cope with the psychosocial problems associated with bullying victimization. Therefore, the purpose of the current study was to examine which psychosocial problems may function as developmental pathways linking bullying victimization with both substance use and sexual risk taking in a sample of emerging adults ($N = 515$; 305 women, 210 men; $M_{\text{age}} = 20.20$, $SD = 1.67$). Path analysis provided some support for hypotheses. Bullying victimization had significant direct effects on substance use and sexual risk taking. In addition, bullying victimization had significant indirect effects on substance use through lower self-esteem and depressive symptoms and significant indirect effects on sexual risk taking through lower self-esteem and anxiety symptoms. Secondary analyses suggest that youth with a history of polyvictimization (i.e., bullying and childhood maltreatment) are at even greater risk for engaging in substance use and sexual risk taking. Youth with a history of bullying victimization and polyvictimization may use maladaptive coping strategies such as substance use and sexual risk taking to manage or reduce negative affective experiences.

Keywords: bullying; self-esteem; depression; anxiety; substance use; sexual risk taking

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CHAPTER 1

INTRODUCTION

Bullying perpetration and victimization are a public health crisis affecting millions of children, adolescents, and young adults worldwide each year with prevalence rates reaching as high as 60% depending on how bullying is defined and measured (Craig et al., 2009; Chester et al., 2015; Due et al., 2005; Lund & Ross, 2016; Nansel et al., 2001; Volk, Craig, Boyce, & King, 2006). Bullying is defined as one or more powerful individuals intentionally and repeatedly using a broad range of negative behaviours of a physical, psychological, and/or social nature (or combination thereof) that are directed toward less powerful individuals that (a) cause significant harm, (b) cause damage to their property, (c) create a hostile environment where the victim fears significant harm and/or damage to property, (d) interfere with educational and/or occupational processes, and (e) include cyberbullying (Olweus, 2010; Solberg, Olweus, & Endresen, 2007). Bullying is a subcategory of peer victimization (hereafter referred to as bullying victimization to include those who are bullied and bully-victims [i.e., those who bully others and are bullied by others], but to distinguish from bullying perpetration [i.e., pure bullies]) that also includes other peer to peer harmful behaviours such as physical and sexual assault, dating violence, and gang violence (Finkelhor, Turner, & Hamby, 2012). The ubiquity of bullying victimization is concerning, considering that past studies have found negative physical and mental health outcomes linked with a history of being bullied (e.g., Arseneault, Bowes, & Shakoor, 2010; Copeland et al., 2014; Wolke & Lereya, 2015). To deal with the negative health outcomes generated by victimization, bullied individuals may engage in coping behaviours that are adaptive (e.g., confronting

the stressor), maladaptive (e.g., avoiding the stressor), or both. Bullying is often characterized as a repeated act of aggression against a less powerful individual, which makes it more difficult for youth to cope in ways that are considered adaptive (Donoghue, Almeida, Brandwein, Rocha, & Callahan, 2014) and increases the likelihood that youth turn to coping behaviours that are considered maladaptive (Hunter, Mora-Merchan, & Ortega, 2004).

Emerging adulthood often coincides with engaging in substance use and sexual risk taking (e.g., using substances prior to or during sexual behaviour, unprotected sexual intercourse, and/or having multiple sexual partners; Epstein, Bailey, Manhart, Hill, & Hawkins, 2014; Martino, Ellickson, & McCaffery, 2008; White et al., 2006). These health risk behaviours may serve as two ways for youth to cope with the negative emotional and psychological effects of bullying victimization (Topper, Castellanos-Ryan, Mackie, & Conrod, 2011). Although a growing body of research is investigating coping strategies within the context of bullying, much of the research to date has focused on the consequences of bullying among children with less emphasis on the consequences of bullying among adolescents and emerging adults (Holt, Green, Tsay-Vogel, Davidson, & Brown, 2016; Kritsotakis, Papanikolaou, Androulakis, & Philalithis, 2017). Therefore, in order to address this gap in the literature, one goal of the current study was to examine whether or not bullying victimization is associated with substance use and sexual risk taking in emerging adults. In addition, few studies have examined the underlying mechanisms by which bullying victimization may be linked with greater substance use and sexual risk taking (Earnshaw et al., 2017). Youth may experience a range of mental health consequences as a result of being victimized, which in turn may contribute to the

development and maintenance of health risk behaviours as ways to cope with these consequences (Hawker & Boulton, 2000; Kelly et al., 2015; Hong et al., 2014). Thus, a second goal of the current study was to explore which psychosocial problems may function as developmental pathways (i.e., mediators) linking bullying victimization with both substance use and sexual risk taking.

CHAPTER 2

LITERATURE REVIEW

Bullying Victimization and Mental Health Problems

Emerging adulthood is a transitional period of development characterized by important psychosocial changes marked in part by increased independence from parents; further identity development; frequent residence changes; the salience of peer and romantic relationships; and fundamental shifts in attitudes, values, and beliefs (Arnett, 2000, 2004). Interpersonal relationships become increasingly important as youth seek autonomy from parents, their social networks expand as they enter new social environments (e.g., high school, university, the workplace), and they place greater emphasis on social status, peer acceptance, and conformity (La Greca & Harrison, 2005; Steinberg & Monohan, 2007; Swenson, Nordstrom, & Hiester, 2008). Furthermore, as emerging adults spend more time with their peers, they are likely to experience conflict or negative peer interactions (Telzer, Fuligni, Lieberman, Miernicki, & Galván, 2015). Peer to peer relational problems such as bullying victimization is a significant interpersonal stressor that has damaging effects on psychological adjustment and may be a causal risk factor (among others) associated with multiple problematic outcomes (La Greca & Landoll, 2011; Olweus, 1993a). For instance, bullying victimization has been

commonly linked with a range of adjustment difficulties such as low self-esteem, depression, and anxiety (Hawker & Boulton, 2000; Kelly et al., 2015). Social-cognitive models suggest that negative social experiences, and the way these experiences are perceived and interpreted, can contribute to psychological distress (e.g., Fennell, 1997; Hammen, 1999; Wells & Carter, 2002). I will review the links established in the literature between internalizing problems such as low self-esteem, depression, and anxiety with a history of being bullied.

Self-esteem. During emerging adulthood, there is an increased focus on the self as youth are in the process of forming and exploring their identity largely based on cues from their social environment (Arnett, 2004; Patchin & Hinduja, 2010; Valkenburg, Peter, & Schouten, 2006). That is, individuals may derive how they feel about themselves based on the feedback they receive from others (Leary, 1999). Youth tend to seek behaviours and environments that create a positive view of the self and avoid those that create a negative view of the self (Patchin & Hinduja, 2010). Social support (or lack thereof) from peers is essential to increasing (or decreasing) one's level of self-esteem (Sentse, Kretschmer, & Salmivalli, 2015). Rosenberg (1965) defined self-esteem as a "favourable or unfavourable attitude toward the self" (p. 3) related to a global evaluation of one's own personal worth or value that is influenced by the social world (Patchin & Hinduja, 2010; Tsaousis, 2016). Thus, self-esteem appears to develop through an individual's social interactions with others where interpersonal conflicts likely signal less peer acceptance and more peer rejection, which may have a negative effect on self-esteem (Leary, 2005; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). Not surprisingly, previous studies have reported that youth who are bullied by peers report

lower self-esteem than those not involved in bullying (e.g., Brighi, Guarini, Melotti, Galli, & Genta, 2012; Brighi et al., 2012; Egan & Perry, 1998; Hawker & Boulton, 2000; Jones, Bilge-Johnson, Rabinovitch, & Fishel, 2014; Kowalski & Limber, 2013; Olweus, 1993a; Overbeek, Zeevalkink, Vermulst, & Scholte, 2010; Russell, Ryan, Toomey, Diaz, & Sanchez, 2011; Tsaousis, 2016).

The adverse effect of bullying victimization on self-esteem may be explained, in part, by positive or negative self appraisals of being accepted or rejected by peers and a sense of high or low social competence that influence one's attitudes about the self (Harter, 1999). Bullying victimization may result in feelings of low self-esteem because it reinforces negative appraisals of how a victim is perceived by their peers (i.e., they are not well-liked; Lopez & DuBois, 2005). Victims may also incorporate hurtful comments or disparaging remarks into their self-concept, diminishing their self-esteem and contributing to social withdrawal from peers (Casey-Cannon, Hayward, & Gowen, 2001; Salmivalli, Kaukiainen, Kaistaniemi, & Lagerspetz, 1999). Furthermore, bullying victimization may reduce self-esteem as victims feel a poor sense of belongingness and connectedness when rejected by others, particularly peers at this developmental stage (Smart-Richman & Leary, 2009). Finally, being victimized may result in lower self-esteem as youth feel that they lack the social skills necessary to communicate and interact with peers and engage in positive interactions (Lopez & DuBois, 2005). Taken together, individuals who are bullied may be an increased risk for developing lower self-esteem.

One mental health outcome often associated with self-esteem is depression. Although self-esteem and depression are related, they are theoretically and empirically distinct (Sowislo & Orth, 2013). Proneness to depression may be rooted in stressful life

events that involve social relational experiences (Dohrenwend et al., 1992). Therefore, similar to self-esteem, individuals with a history of being bullied may often experience depression.

Depression. The incidence and prevalence of depression increases substantially from childhood to early adulthood, which may be influenced by recurring abuse, ongoing conflicts or frustrations, and traumatic events related to peer relationships (Birmaher & Brent, 2007; Laugharne, Lillie, & Janca, 2010; Zisook et al., 2007). Being bullied is likely to represent a traumatic experience that may be a potential risk factor for depression. Both cross-sectional and longitudinal research designs find bullying victimization to be associated with depression (e.g., Bowes, Joinson, Wolke, & Lewis, 2016; Holt et al., 2014; Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Lereya, Copeland, Costello, & Wolke, 2015; Menesini, Modena, & Tani, 2009; Russell et al., 2011; Schwartz, Lansford, Dodge, Pettit, & Bates, 2015; Ttofi, Farrington, Lösel, & Loeber, 2011; Reid, Holt, Bowman, Espelage, & Green, 2016; Turner, Exum, Brame, & Holt, 2013). Research further suggests that in addition to traditional victimization, cybervictimization may also be related to depression (Luk, Wang, & Simons-Morton, 2010). Specifically, bullying victimization through the Internet (e.g., emails, social networking websites) and phone (e.g., text messages) was also related to elevated depression symptoms (e.g., Schenk & Fremouw, 2012). Furthermore, being an infrequent target of bullying predicted risk for some symptoms of depression, whereas being a constant target of bullying predicted risk for a diagnosis of clinical depression (Klomek et al., 2007). Thus, bullying victimization appears to demonstrate a dose-response relationship whereby experiencing higher levels of bullying produced more severe mental

health problems (Evans, Smokowski, & Cotter, 2014). In fact, compared to other mental health problems, bullying victimization is most strongly related (i.e., the largest effect size) to depression (Hawker & Boulton, 2000). However, the reasons for the association between bullying victimization and depression remain unclear (Sinclair et al., 2012). There is some evidence that experiences of bullying victimization reduce positive cognitions and promoted negative cognitions (e.g., learned helplessness; see Abramson, Metalsky, & Alloy, 1989; Gibb & Alloy, 2006), which may contribute to the onset of depression (Sinclair et al., 2012). Bullying victimization constitutes painful and negative self-relevant feedback to victims about their low social status in the peer group or undesirable personal characteristics, often engendering feelings of depression (Sowislo & Orth, 2013; Sinclair et al., 2012). Overall, the data suggests that feelings of depression are a consequence of bullying victimization.

Often comorbid with depression is anxiety, which may be a precursor to psychological disorders such as depression (Costello, Egger, & Angold, 2005; Grant, Beck, Farrow, & Davila, 2007). Thus, interpersonal stressors such as bullying victimization may also play a causal role in the experience of anxiety symptoms and disorders.

Anxiety. Youths' peer relationships may influence the development and maintenance of anxiety symptoms and disorders (Le Greca & Landoll, 2011). Although the importance of peer relationships peaks during adolescence (Brown, 2004), involvement with and dependence on peers may decrease only slightly in emerging adulthood (Arnett, 2000). Nevertheless, problematic peer relationships such as bullying victimization may represent a traumatic event and potential risk factor that contributes to

feelings of anxiety that persist over time and interfere with functioning in young people (La Greca & Landoll, 2011). Cross-sectional and longitudinal studies suggest that youth who are victimized by their peers (through traditional and cyber forms) are at an increased risk for various anxiety symptoms and disorders, with generalized anxiety and social anxiety disorders being most prevalent (e.g., Copeland, Wolke, Angold, & Costello, 2013; Espelage, Hong, & Mebane, 2016; Holt et al., 2014; Jones, Robinson, Oginni, Rahman, & Rimes, 2017; Kowalski & Limber, 2013; Lereya et al., 2015; Reid et al., 2016; Schenk & Fremouw, 2012; Sourander et al., 2007; Stapinski et al., 2014). In addition, youth who were bullied were two to three times more likely to develop an anxiety disorder than nonvictims (Kumpulainen, Rasanen, & Puura, 2001; Salmon, James, Cassidy, & Javaloyes, 2000; Stapinski et al., 2014). Victims of homophobic bullying (e.g., being called gay) experienced higher levels of psychological distress, particularly anxiety and depression, compared to youth who were bullied for other reasons (Swearer, Turner, Givens, & Pollack, 2008). Unlike depression, the reasons for the association between bullying victimization and anxiety are less ambiguous. Worrying about potentially harmful future events is one of the most notable features of anxiety (Hallam, 1992). Youth who are victimized may come to perceive or expect the school environment or world to be an unsafe or dangerous place resulting in hypervigilance, negative expectations in future social situations, and fear of future victimization, which may elevate anxiety in general over time (Boulton, Trueman, & Murray, 2008; Roth, Coles, & Heimberg, 2002; Tillfors, Persson, Willen, & Burk, 2012). Furthermore, victims of bullying make negative evaluations about their own perceived social incompetence and ability to have positive social experiences, which may exacerbate social anxiety and

avoidance of social interactions (Storch, Masia-Warner, Crisp, & Klein, 2005). Taken together, anxiety appears to be a negative mental health outcome of bullying victimization.

In sum, self-esteem, depression, and anxiety in general are all associated with a history of being bullied. Although the data suggests that exposure to bullying victimization precedes the development of these psychosocial problems, it may also be that these psychosocial problems predispose some young people to bullying victimization (Boulton, Smith, & Cowie, 2010; Kaltiala-Heino & Fröjd, 2011; Siegel, La Greca, & Harrison, 2009). The bidirectional nature between bullying victimization and harmful mental health outcomes is beyond the scope of this study, which will focus on the prospective impact of bullying victimization on young people's mental health. Problems with one or more of these mental health concerns may occur concurrently among some emerging adults at a time when they are developmentally more likely to engage in risk behaviours (Arnett, 2000). Thus, when experiencing an interpersonal stressor such as bullying victimization, individuals may engage in various coping strategies (Newman, Holden, & Delville, 2011). Next, I will review coping in response to bullying victimization.

Bullying Victimization and Health Risk Behaviours

Coping refers to a range of diverse cognitions, emotions, and behaviors used to manage, minimize, or reduce the demands of stressful or threatening experiences and situations (Lazarus & Folkman, 1984). Although coping strategies have been conceptualized along a variety of different dimensions, one common framework is the approach-avoidance model (Roth & Cohen, 1986; Skinner, Edge, Altman, & Sherwood,

2003). Approach coping involves strategies that confront the source of the stressor as direct attempts are made to change stressful experiences (Kochenderfer-Ladd & Skinner, 2002). In contrast, avoidance coping involves strategies that divert efforts away from a stressor, as direct attempts are not made to stop the stressor, but instead involve managing cognitive or emotional reactions (Kochenderfer-Ladd & Skinner, 2002). These two modes of coping can vary in saliency over time and may be activated at any particular time depending on the context (Roth & Cohen, 1986). Individuals may then develop a preference for approach or avoidance coping even when the situation demands the opposite of the preferred response (Roth & Cohen, 1986).

Roth and Cohen (1986) suggest that approach and avoidance coping each have their own costs and benefits. Approach coping can lead to quicker resolution of the trauma, but distress is heightened in the short-term, whereas avoidance coping can lead to long-term intrusive thoughts about the trauma, but distress is reduced in the short-term (Roth & Cohen, 1986). Selecting a coping strategy to utilize, though often accomplished implicitly, may largely depend on the level of perceived control (Spirito, Stark, Grace, & Stamoulis, 1991). Approach strategies may be used if the problem or conflict is considered or perceived to be within an individual's coping capabilities, whereas avoidance strategies may be used if the problem or conflict is considered or perceived to be beyond an individual's control (Hampel, Manhal, & Hayer, 2009). Youth may use approach and/or avoidance strategies to deal with various problems, one of which may be bullying victimization. Frequent bullying victimization may represent a situation or experience that is out of the control of the affected person, and thus, avoidance strategies may be used to minimize the distress associated with being victimized. Consistent with

this expectation, previous studies have found that victims of bullying often use avoidance coping (Lodge & Feldman, 2007; Newman et al., 2011). Although avoidance coping may help to remove, distance, or distract oneself from distress, it may serve as a maladaptive means for regulating emotional experiences (Fuendeling, 1998). The use of this strategy over time does not promote the practice of healthy coping strategies to distress, and instead encourages alternative pathways to restore affective balance. An effort to return to this balance may increase the likelihood of engaging in high risk behaviours such as substance use or risky sexual activity (Wills & Hirky, 1996). Problematic alcohol and drug use can often co-occur with sexual risk taking with emerging adults typically engaging in substance use prior to and/or during sexual behaviour outside of the context of experiencing bullying victimization (e.g., Eaton et al., 2015; King, Nguyen, Kosterman, Bailey, & Hawkins, 2012; Ritchwood, Ford, DeCoster, Sutton, & Lochman, 2015). However, substance use and risky sexual behaviour may function as a reaction to psychosocial problems associated with bullying victimization. That is to say, the use of these maladaptive coping strategies provides an immediate reduction in distress via the avoidance of distressing emotions and thoughts linked with a history of being bullied. Moreover, engaging in high risk behaviours is especially prevalent during emerging adulthood (Arnett, 2000), and may function to help alleviate or regulate aversive emotional and psychological experiences associated with bullying victimization (Cerutti, Manca, Presaghi, & Gratz, 2011; Kianpoor & Bakhshani, 2012). Therefore, substance use and sexual risk taking may represent two maladaptive pathways for coping with the experiences of a stressor such as being bullied.

Substance use. Drug and alcohol use function as a maladaptive coping mechanism for stressful life events such as bullying (Ttofi, Farrington, Lösel, Crago, & Theodorakis, 2016). Stressors that are perceived to be uncontrollable together with the feeling that one is unable to resolve a problem with adaptive coping, which often involves a more timely set of processes (e.g., reaching out for social support, psychological treatment, engaging in many health and wellness behaviours), may lead individuals to use alternative means to manage emotions (Wills & Cleary, 1995). Given that bullying, by definition, involves a more powerful individual repeatedly harming a less powerful individual, victims may feel that their situation is uncontrollable and may engage in substance use as a maladaptive coping strategy to reduce distress associated with their bullying experiences (Ttofi et al., 2016). Previous research has found that victims of different subtypes of bullying (e.g., physical, relational, and cyber) were more likely to engage in substance use (e.g., alcohol and cannabis consumption; Copeland et al., 2013; Goebert, Else, Matsu, Chung-Do, & Chang, 2011; Kim, Catalano, Haggerty, & Abbott, 2011; Kritsotakis et al., 2017; Luk et al., 2010; Mitchell, Ybarra, & Finkelhor, 2007; Radliff, Wheaton, Robinson, & Morris, 2012; Rospenda, Richman, Wolff, & Burke, 2013; Sánchez, Zaragoza Ruiz-Cabello, Romero, & Maldonado, 2017). However, these studies often use only a few items to gauge whether or not participants have used a particular substance in the past or the frequency of past substance use instead of a comprehensive scale to measure consumption, frequency, and substance-related problems. The current study used comprehensive, psychometrically sound self-report measures of alcohol and cannabis use. Bullying experiences coinciding with substance use may reflect an adolescent's attempt to cope with being victimized (Rusby, Forrester,

Biglan, & Metzler, 2005). More specifically, a stress-coping model suggests that stressful experiences are characterized as risk factors for substance use (Wills, Vaccaro, & Benson, 1995). Substance use is part of an avoidance coping strategy that is commonly used to cope with stressors by promoting positive affect and/or minimizing negative mood states (Wills & Cleary, 1995).

The desire to manage one's emotional experiences may be important motives underlying alcohol (Simantov, Schoen, & Klein, 2000) and cannabis use (Comeau, Stewart, & Loba, 2001). From this perspective, substance use and its psychotropic effects may function as a form of self-medication (Khantzian, 1997). The self-medication hypothesis suggests that individuals may engage in substance use to cope with aversive thoughts and feelings (Khantzian, 1997). The evidence is strong that psychosocial problems such as low self-esteem, depression, and anxiety promote the use of alcohol and cannabis (Bartsch, King, Vidourek, & Merianos, 2017; Buckner et al., 2008; Hussong, Ennett, Cox, & Haroon, 2017; Maslowsky, Schulenberg, O'Malley, & Kloska, 2014; McKay, Sumnall, Cole, & Percy, 2012; Marmorstein, White, Loeber, & Stouthamer-Loeber, 2010). Substance use may be an adaptive, but short-term coping response that is generally considered to be maladaptive and less effective in the long-term (Kassel, Bornovalova, & Mehta, 2006; Wagner, Myers, & McIninch, 1999). In sum, substance use represents one pathway for coping during periods of heightened psychosocial stress, but another health risk behaviour often co-occurring with substance use is sexual risk taking. Sexual risk taking may represent a distinct second pathway that also functions as a strategy for dealing with unpleasant thoughts and feelings.

Sexual risk taking. Engaging in sexual activity also operates as a coping mechanism among those that experience a stressful life event (Sikkema, Hansen, Meade, Kochman, & Fox, 2009) such as bullying victimization. Although sexual behaviour is associated with a range of psychological benefits that promote a healthy relationship between people (e.g., intimacy, trust, closeness, and pleasure), risky sexual behaviour can often be distressing and problematic as it can increase the chance of contracting a sexually transmitted infection (STI) and/or the occurrence of unplanned pregnancy (Brody, 2010; Diamond & Huebner, 2012; Malhotra, 2008). As mentioned previously, the repetitive nature of bullying may lead victimized youth to perceive these negative peer interactions as beyond their control, which in turn may lead them to not only engage in substance use, but also unsafe sexual practices as a maladaptive coping strategy. Previous studies have found links between a history of being bullied and sexual risk taking in both heterosexual and LGBTQ youth. In particular, bullying victimization was associated with an increased likelihood of transactional sex, greater risk for STI's and HIV, unprotected vaginal and anal intercourse, and anal intercourse under the influence of drugs and alcohol (Bouffard & Koeppel, 2017; Kritsotakis et al., 2017; Li, DiStefano, Mouttapa, & Gill, 2014; Robinson & Espelage, 2013; Russell, Ryan, Toomey, Diaz, & Sanchez, 2011). However, these studies often use only a few items instead of a comprehensive scale to capture a complex health risk outcome such as sexual risk taking. Most measures of sexual risk behaviours have little supporting psychometric data (George, Zawacki, Simoni, Stephens, & Lindgren, 2005) or focus on a specific behavior or at-risk group (e.g., intravenous drug users, sexual minority men; Bancroft et al., 2003;

Darke, Hall, Heather, Ward, & Wodak, 1991). The current study used a comprehensive, psychometrically sound self-report measure of sexual risk taking in a general population.

Although there is a growing body of research exploring sexual risk taking within the context of bullying, there is a lack of a theoretical underpinning for sexual risk taking as a maladaptive coping strategy in response to bullying victimization. Given the potential for theoretical overlap between the experience of being bullied and other developmental traumas, such as childhood maltreatment (i.e., both are aggressive in nature and involve a power imbalance) and similarities in long-term outcomes, the well-established childhood maltreatment (i.e., childhood physical and sexual abuse) literature may provide some insight into sexual risk taking as a maladaptive coping strategy for dealing with developmental trauma (Lereya et al., 2015). Previous studies have found that individuals with a history of childhood maltreatment are more likely to engage in sexual risk taking behaviours such as unprotected sexual intercourse; multiple sexual partners, earlier sexual debut, and exchange of sex for money and drugs (Abajobir, Kisely, Maravilla, Williams, & Najman, 2017; Fergusson, McLeod, & Horwood, 2013; Senn, Carey, & Venable, 2008). Feelings of powerlessness and low self-worth as a result of the abuse experience may affect one's ability to discuss using contraceptives, such as condoms, with their sexual partner(s) (Saewyc, Magee, & Pettingell, 2004). Negotiation over the use of contraceptives may be viewed as being confrontational with another person, and victims of bullying may refrain from promoting this adaptive sexual health practice in order to avoid conflict (Kritsotakis et al., 2017). Individuals with heightened feelings of isolation stemming from peer rejection may desire sexual fulfilment and sexual activity may become a way of attaining affection and intimacy, potentially leading

to earlier sexual initiation or multiple sexual partners (Torres & Gore-Felton, 2007; Wilson & Widom, 2008). Furthermore, distorted cognitions after an abuse experience may lead victims to give more positive appraisals to risky behaviours that involve sexual activity (Smith, Davis, & Fricker-Elhai, 2004). Finally, victims may have trouble forming relationships with others, which manifest as involvement in multiple low-quality sexual relationships (Senn, Carey, Vanable, Coury-Doniger, & Urban, 2007). Taken together, these risky sexual behaviours may help temporarily relieve negative affective experiences that may not otherwise be resolved (Sikkema et al., 2009)

Polusny and Follette (1995) proposed a theoretical model based on emotional avoidance theory. From this perspective, many of the long-term outcomes of childhood maltreatment reflect attempts made by victims to curtail negative emotional experiences through emotional avoidance behaviours that are negatively reinforced by minimizing or reducing intense affective experiences as a result of abuse. In this context, sexual risk taking may serve to regulate emotional distress by providing short-term, pleasurable experiences (Briere & Runtz, 1993; Messman-Moore, Walsh, & DiLillo, 2010). Similar to the self-medication hypothesis involving substance use, youth may engage in sexual risk taking as a short-term, maladaptive coping response to internalizing problems such as diminished self-esteem, depression, and anxiety (e.g., Bersamin et al., 2014; Khan et al., 2009; Lehrer, Shrier, Gortmaker, & Buka, 2006; Nelson, Zhao, Corrado, Mastrogiannis, & Lepore, 2017; Paul, McManus, & Hayes, 2000; Wong, Choi, Chan, & Fong, 2017). Taken together, multiple problematic outcomes such as low self-esteem and feelings of depression and anxiety may represent missing links between bullying victimization and health risk behaviours (e.g., substance use and sexual risk taking).

However, bullying victimization alone may not be the only independent risk factor for substance use and sexual risk taking.

Polyvictimization and Health Risk Behaviours

Youth who experience one form of victimization are at an increased risk for experiencing at least one other form of victimization over time (Finkelhor, Ormrod, Turner, & Hamby, 2005a). In addition to the bullying victimization that youth may experience at school, violence and abuse can also occur in the home in the form of childhood maltreatment (Finkelhor, Turner, Hamby, & Ormrod, 2011). Research on the impact of family violence, particularly childhood maltreatment, is compelling with victims experiencing a range of negative physical and psychological health outcomes not only at the time of being victimized, but also later in life (e.g., Irish, Kobayashi, & Delahanty, 2009; Newbury et al., 2018; Norman et al., 2012; Springer, Sheridan, Kuo, & Carnes, 2007). Furthermore, victims of bullying and victims of childhood maltreatment tend to experience many of the same health problems (e.g., Lereya et al., 2015). Interestingly, Duncan (2004) emphasized the importance of family relationships as being related to bullying behaviours. Parent-child relationships at home can influence peer relationships at school (Mohr, 2006; Shields & Cicchetti, 2001). Parents provide children with the first opportunity to observe and experience interpersonal relationships where children develop attitudes and expectations that carries over to future social interactions (Olsen, Parra, & Bennett, 2010). Due to early experiences of child maltreatment, children may develop negative expectations regarding the self and others as they come to structure and expect interpersonal relationships to consist of abuse and coercion that would match their earlier familial relationship patterns (Cicchetti, 2016). As a result, there is continuity

in relational functioning whereby social difficulties in the home environment are in line with social difficulties in the peer environment (Cicchetti, 2016). Indeed, there is evidence to suggest that child physical and sexual abuse may increase the risk for bullying victimization in school (e.g., Bowes et al., 2009; Duncan 1999, 2004; Dussich & Maekoya, 2007). Children who are maltreated are likely to be submissive in an effort to prevent violence from escalating at home (Hong, Espelage, Grogan-Kaylor, & Allen-Meares, 2012). As a result, these children become easy targets for bullies at school (Schwartz, Dodge, & Coie, 1993), as they are unlikely to defend themselves when victimized by peers (Shields & Cicchetti, 2001). Moreover, victims of physical and sexual abuse may develop a sense of powerlessness and lower self-confidence, lack of assertiveness, and inability to establish trust with others (Browne & Finkelhor, 1986). Because of these traits, children may come to expect to be harmed and consequently fail to protect themselves, which may lead to bullying victimization (Hong et al., 2012).

Most studies that have examined youths' exposure to victimization often focus on separate or single forms of victimization that take place at home (e.g., child maltreatment) or at school (e.g., bullying) instead of exploring the possibility that the same individual may experience more than one kind of victimization (Turner, Finkelhor, & Omrod, 2010). Polyvictimization can be defined as the exposure to multiple forms of victimization, rather than just multiple episodes of the same kind of victimization, across various life domains (e.g., peers, family, community; Finkelhor, Ormrod, & Turner, 2007). Not surprisingly, polyvictimization may lead to more severe harmful outcomes for victims (Finkelhor et al., 2007, 2011). However, the majority of research on polyvictimization and the cumulative effects of exposure to victimization in different

domains focuses on mental health outcomes among youth (e.g., Finkelhor et al., 2007; Finkelhor, Turner, Ormond, Hamby, & Kracke, 2009; Lereya et al., 2015; Margolin, Vickerman, Oliver, & Gordis, 2010), and little research on these aspects of polyvictimization has been directed toward substance use and sexual risk taking outcomes specifically. For example, Alexander and colleagues (2018) found that polyvictimization was a better predictor of risky sexual behaviour than individual categories of victimization (e.g., childhood maltreatment, property crime, physical assault, peer/sibling victimization, sexual victimization, and witnessing and indirect victimization) among a sample of college women. In addition, the cumulative exposure to violence across life domains (e.g., school, community, child abuse, and exposure to intimate partner violence) was significantly related to more frequent alcohol and marijuana use and was a better predictor of substance use compared to separate exposures to violence (Wright, Fagan, & Pinchevsky, 2013). Although these studies provide a foundation for the link between polyvictimization and health risk behaviours, more research is needed that focuses on exposure to bullying victimization together with other categories of victimization.

Current Study

The main purpose of the current study was to investigate the link between a history of being bullied and two common health risk behaviours in emerging adulthood. Additionally, it aimed to identify potential mental health mediators that may serve as developmental pathways linking bullying victimization with both substance use and sexual risk taking. The secondary purpose of the current study was to investigate the link between polyvictimization and health risk behaviours such as substance use and sexual

risk taking. The approach-avoidance model of coping (Roth & Cohen, 1986) was applied to bullying victimization to help understand how and why emerging adults cope with a history of being bullied. The following hypotheses were tested through the current study.

Hypothesis 1. Emerging adulthood is a particularly important developmental period in which to study health risk behaviours considering that youth are especially vulnerable to stressors during the transitional period from adolescence to adulthood and at an elevated risk for engaging in substance use and sexual risk taking (Epstein et al., 2014; White et al., 2006). This heightened period of stress may be one reason why health risk behaviours peak during emerging adulthood (Arnett, 2007). Substance and sexual risk taking may serve as maladaptive coping responses to a variety of different stressors (e.g., loss of family member, low parental support, loss of home to natural disaster; Huebner & Howell, 2003; Sinha, 2009), one of which may be bullying victimization. Given the perceived uncontrollable nature of bullying victimization, victims may use more avoidance, rather than approach, coping processes to reduce the distress associated with being victimized. Despite the short-term benefits of avoidance coping, it may serve as a maladaptive means for managing emotional experiences (Fuendeling, 1998). Attempts made to manage a stressful situation or experience may increase the likelihood of engaging in high-risk behaviours such as substance use or sexual risk taking (Wills & Hirky, 1996). Based on this, the first hypothesis was that bullying victimization would have significant direct effects on substance use and sexual risk taking.

Hypotheses 2 and 3. One goal of any coping strategy is to decrease negative affective experiences caused by a stressor (Folkman & Moskowitz, 2004). To this extent, possible mechanisms through which bullying victimization elevates risk for substance use

and sexual risk taking is by generating feelings of lower self-esteem, depression, and anxiety, which may activate maladaptive coping behaviours such as substance use and sexual risk taking to manage psychological distress (Newman et al., 2011). Although depression has been reported as a mediator between bullying victimization and substance use, other health risk behaviours such as sexual risk taking and common psychosocial problems related to bullying such as low self-esteem and anxiety have not been examined (Earnshaw et al., 2017; Luk et al., 2010; Zapolski, Rowe, Fisher, Hensel, & Barnes-Najor, 2018). Based on this, the current study tested two more hypotheses. The second hypothesis was that bullying victimization would have significant indirect effects on substance use through lower self-esteem, depressive symptoms, and anxiety symptoms. The third hypothesis was that bullying victimization would have significant indirect effects on sexual risk taking through lower self-esteem, depressive symptoms, and anxiety symptoms.

Exploratory research question. Are youth with a history of polyvictimization at greater risk for engaging in substance and sexual risk taking than youth with only a history of bullying victimization? Although extensive research has focused on the negative outcomes associated with particular types of victimization in specific environments (e.g., peer, family, community; Turner, Shattuck, Finkelhor, & Hamby, 2016), it is becoming clear that there is a sub-group of children and youth who are exposed to several types of victimization across different contexts and experience severe and persistent psychosocial impairment (Finkelhor, Ormrod, & Turner, 2009; Turner et al., 2016). In fact, experiencing polyvictimization may have a more adverse impact on health than experiencing a single (serious and repeated) type of victimization

(Finkelhor et al., 2007; Turner et al., 2010). However, studies examining polyvictimization often include a broad measure of peer victimization, which may or may not include incidents of bullying, instead of a specific measure of bullying victimization (e.g., Revised Olweus Bully/Victim Questionnaire; Olweus, 1996). When using a measure of bullying victimization (e.g., Bullying and Friendship Interview Schedule; Zwierynska, Wolke, & Lereya, 2013), Lereya and colleagues (2015) found being bullied by peers in childhood and being maltreated by parents (i.e., polyvictimization) generally led to worse long-term negative mental health outcomes in emerging adulthood (e.g., depression, anxiety, and overall mental health problems) than being bullied or maltreated separately. Therefore, when measuring polyvictimization, the current study also included a specific measure of bullying victimization. However, given the exploratory nature of examining bullying victimization and childhood maltreatment concurrently in relation to substance use and sexual risk taking, there are no specific a priori hypotheses for these analyses.

CHAPTER 3

METHOD

Participants

A sample of 515 emerging adults between the ages of 18 to 25 (305 women, 210 men; $M_{\text{age}} = 20.20$, $SD = 1.67$) years was recruited through a psychology participant pool (a resource for recruiting undergraduate students to participate in research) and campus flyers from a university in the Southern Ontario region. The ethnicity of the participants included White (70.70%), Middle-Eastern (14.70%), Asian (5.4%), Black (5.20%), and Latin American (2.50%). Participants also reported “Other” for ethnicity (3.30%). The

majority of participants reported their sexual orientation to be heterosexual or straight (88.90%). The majority of participants reported their family's socioeconomic status (SES) to be "about the same" (54.60%) in wealth as the average Canadian, whereas fewer reported "more wealthy" (31.20%), and "less wealthy" (13.80%). Two participants did not report their family's SES (0.40%).

Measures

Demographics. All participants completed a demographics questionnaire asking about age, gender, sexual orientation, ethnicity, socioeconomic status, year of study, and program of study (Appendix A).

Bullying. Participants completed the 18-item Victimization subscale from the Revised Olweus Bully/Victim Questionnaire (OBVQ), which is a self-report measure of an individual's involvement in bullying as a victim or bully-victim in the past couple of months (Olweus, 1996). However, the Victimization subscale was slightly modified. For example, instead of asking participants if they had been victimized in the past couple of months, participants were asked to consider the worst school year when they experienced bullying when responding to the questionnaire (Boroughs, Safren, & O'Cleirigh, 2016). This modification was made to accommodate the sample of university students given that bullying tends to decline during this developmental period (Juvonen & Graham, 2014). Sample items asked about the frequency of specific forms of victimization (e.g., physical, verbal, relational, and cyber) and included: "I was hit, kicked, pushed, shoved around, or locked indoors," "I was called mean names, was made fun of, or teased in a hurtful way," and "Other students told lies or spread false rumours about me and tried to make others dislike me." Items were rated on a 5-point frequency scale (1 = *Hasn't happened* to 5 =

Several times a week; Appendix B). Participants who reported being bullied “only once or twice” was used as the cut-off point to differentiate involvement from noninvolvement in bullying victimization. Although this cut-off point is not entirely in line with traditional theoretical definitions (i.e., bullying is repetitive in nature) and assessment measures (Olweus, 1993a; Smith, del Barrio, & Tokunaga, 2012), the repetitiveness is not an absolutely necessary feature of bullying (Olweus, 1993b, 1999). A single incident of bullying may still be characterized as bullying victimization, particularly with the advent of cyberbullying (Olweus, 2013). Only participants with a history of bullying victimization were included in the analyses. Items were averaged to create a composite victimization variable with higher scores reflecting more victimization. The Cronbach’s alpha for the Victimization subscale was $\alpha = .81$ and previous studies suggest the OBVQ demonstrates good reliability and validity (e.g., Hartung, Little, Allen, & Page, 2011; Solberg & Olweus, 2003)

Childhood physical and sexual abuse. To assess childhood and adolescent physical abuse (CPA), participants were asked the following questions: “Has a parent or caregiver ever shoved, slapped, punched, and/or hit you with a closed fist during childhood or adolescence (before the age of 17),” “Were you ever left with marks or bruises on your body,” (as a follow up question) and “Has a parent or caregiver ever kicked you, choked you; beaten you up; burned or scalded you; and/or attacked or threatened you with an object or weapon during childhood or adolescence (before the age of 17)”. Participants who responded “yes” to either the first or third question were considered as having a history of CPA, whereas participants who responded “no” to both questions indicated no history of CPA (adapted from McKinney, Harris, & Caetano,

2009; Appendix C). To assess childhood sexual abuse (CSA), participants were asked: “before you turned 13 years old, did you have any sexual contact with someone who was at least 5 years older than you?” and/or “between the ages of 13 and 16, did you have any sexual contact with someone who was at least 10 years older than you?”. Participants who responded “yes” to either question were considered as having a history of CSA, whereas participants who responded “no” to both questions indicated no history of CSA. In the younger age range (before age 13 years), CSA is characterized by any unwanted sexual contact with someone who is at least 5 years older. In the older age range (13 to 16 years), CSA is characterized by any sexual contact by someone who is at least 10 years older or any age with the threat of force or harm (adapted from Kilpatrick, 1992; Leserman, 2005; Appendix C). Sexual contact included genital touching, oral sex, and/or penetrative vaginal or anal intercourse.

Substance use. Participants completed the 10-item Alcohol Use Disorders Identification Test (AUDIT), which assesses alcohol consumption, drinking behaviours, and alcohol-related problems (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993; Appendix D). The AUDIT is comprised of three subscales: Consumption, Dependence, and Alcohol-Related Problems. Subscales were summed to create a total alcohol use score with higher scores indicating more hazardous and harmful alcohol use. Sample items included: “How often do you have a drink containing alcohol?”, “During the last year have you found that you were not able to stop drinking once you started?” and “How often during the last year have you had a feeling of guilt or remorse after drinking?”. Items were rated on various 5-point scales. The Cronbach’s alpha for the scale was $\alpha = .83$ with good reliability and validity found in previous studies (e.g., Hays, Merz, &

Nicholas, 1995; Meneses-Gaya, Zuardi, Loureiro, & Crippa, 2009). Participants also completed the 8-item Cannabis Use Disorder Identification Test-Revised (CUDIT-R), which assesses cannabis misuse (Adamson et al., 2010; Appendix E). Items were summed to create a total CUDIT-R score with higher scores indicating more hazardous and harmful cannabis use. Sample items included: “How often do you use cannabis?” and “How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?”. Items were rated on various 5-point scales. The Cronbach’s alpha for the scale was $\alpha = .86$ with good reliability and validity found in previous studies (e.g., Annaheim, 2013; López-Pelayo, Batalla, Balcells, Colom, & Gual, 2015). Scores on the AUDIT and CUDIT-R were significantly correlated ($p < .001$), therefore both scales were combined to create a composite substance use variable. Substance use only consisted of alcohol and cannabis given that these are two of the most commonly used substances during emerging adulthood (Canadian Alcohol and Other Drug Use Monitoring Survey, 2012) and largely the focus when examined in relation to bullying.

Sexual risk taking. Participants completed the 23-item Sexual Risk Survey (SRS), which assesses the number of sexual risk behaviours in the past six months (Turchik & Garske, 2009; Appendix F). The SRS is comprised of five subscales: Sexual Risk Taking with Uncommitted Partners, Risky Sex Acts, Impulsive Sexual Behaviours, Intent to Engage in Risky Sexual Behaviours, and Risky Anal Sex Acts. Subscales were combined to create a total sexual risk taking score with higher scores indicating more sexual risk taking behaviours. Sample items from each of the five subscales included: “How many people have you had sex with that you know but are not involved in any sort

of relationship with (i.e., “friends with benefits”), “How many times have you had vaginal intercourse without a latex or polyurethane condom?”, “How many times have you had an unexpected and unanticipated sexual experience?”, “How many times have you gone out to bars/parties/ social events with the intent of “hooking up” and having sex with someone?”, and “How many times have you had anal sex without a condom?”. The Cronbach’s alphas for the scale was $\alpha = .70$. Given that the SRS is a relatively newer measure of sexual risk taking, there is preliminary evidence of reliability and validity (e.g., Turchik & Garske, 2009).

Self-esteem. Participants completed the 10-item Rosenberg Self-Esteem Scale, which assesses an individual’s level of global self-esteem (Rosenberg, 1979; Appendix G). Items were summed to create a total self-esteem score with higher scores indicating higher levels of self-esteem. Sample items included: “On the whole, I am satisfied with myself” and “I feel that I have a number of good qualities.” Items were rated on a 4-point scale (0 = *Strongly Agree* to 3 = *Strongly Disagree*). The Cronbach’s alpha for the scale was $\alpha = .91$ and has been found to be a reliable and valid measure of self-esteem even across cultures (e.g., Gray-Little, Williams, & Hancock, 1997; Schmitt & Allik, 2005).

Depression. Participants completed the 20-item Center for Epidemiological Studies Depression Scale-Revised (CESD-R; Eaton, Muntaner, Smith, Tien & Ybarra, 2004; Appendix H), which measures symptoms of depression as defined by the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5; American Psychiatric Association, 2013)*. Items were summed to create a total CESD-R score with higher scores indicating higher levels of depressive symptoms. Sample items included: “I felt sad” and “I lost interest in my usual activities.” Items were rated on a 5-point scale of

how often individuals experience depressive symptoms (0 = *Not at all or less than one day* to 4 = *Nearly everyday for 2 weeks*). The Cronbach's alpha for the scale was $\alpha = .82$ and previous studies suggest good reliability and validity (e.g., Van Dam & Earleywine, 2011)

Anxiety. Participants completed the 40-item State-Trait Anxiety Inventory, which contains two subscales. The 20-item State Anxiety subscale (S-Anxiety) assesses an individual's current state of anxiety at a particular moment and the 20-item Trait Anxiety Scale (T-Anxiety) assesses a general propensity to be anxious (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983; Appendix I). Items from the T-Anxiety subscale were summed to create a total anxiety score with higher scores indicating higher levels of anxiety symptoms. Sample items included: "I am a steady person" and "I worry too much over something that really doesn't matter." Items were rated on a 4-point scale (1 = *almost never* to 4 = *almost always*). The Cronbach's alpha for the T-anxiety subscale was $\alpha = .88$ and possesses good reliability and validity for assessing trait anxiety in clinical and research settings (e.g., Spielberger, 1989; Spielberger et al., 1983).

Social desirability. Participants completed the 40-item Balanced Inventory of Desirable Responding (BIDR), which identify individuals who distort their responses in an effort to portray themselves positively (Paulhus, 1991). The BIDR is composed of two scales: Self-Deceptive Enhancement (i.e., unconscious tendency to present oneself favourably) and Impression Management (i.e., deliberate tendency to present oneself favourably). It is recommended that the effects of impression management should generally be controlled on self-reports, whereas the effects of self-deception should not be controlled when measuring constructs related to adjustment (e.g., self-esteem, anxiety,

depression) because it undermines predictive power (Paulhus, 1986). Moreover, impression management tends to be a more serious threat to the validity of self-report results than self-deception (Vispoel & Tao, 2013). Therefore, only the Impression Management scale was used. Sample items included: “I don't gossip about other people's business” and “I never take things that don't belong to me.” Items were rated on a 7-point scale (1 = *not true* to 7 = *very true*). The scale was dichotomized (0 = item scores of 1 to 5 and 1 = item scores of 6 or 7) according to the guidelines recommended by Paulhus (1991). Dichotomized scores were then summed across all items to form the Impression Management scale. The Cronbach's alpha for the scale was $\alpha = .75$ and previous studies suggest it demonstrates acceptable reliability and validity (e.g., Lanyon & Carle, 2007; Li & Bagger, 2007; Paulhus, 1991)

Procedure

Undergraduate students recruited through the University of Windsor participant pool received a web link to access the study online from their own personal computer. Undergraduate students interested in the current study from outside the participant pool were recruited through an electronic or paper flyer containing information about the study and a web link to access with a unique identification number to access the study online. Following informed consenting procedures, all participants, regardless of pool or outside recruitment, completed a series of questionnaires. Given that some of the questions ask about sensitive information, completing the study online and in the privacy of their own home may encourage participants to respond more honestly and help reduce social desirability bias (Kays, Gathercoal, & Buhrow, 2012). Directions in the consenting procedure requested that participants choose to complete the measures in a private place

undistracted and in one sitting. To avoid the possibility of one questionnaire systematically influencing participants' responses on subsequent forms, questionnaires were administered in random order. After completing the questionnaires, participants were debriefed about the nature of the study as well as provided with resources to additional support services through the university and community should the content of the questionnaires cause any distress. Participants were offered 0.5 credit as part of the participant pool. Students outside of the participant pool were entered into a draw to win one of three \$50 gift cards as compensation.

CHAPTER 4

RESULTS

Preliminary Analyses

Power. An a priori power analysis was conducted using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) to determine the required sample size for a logistic regression. An alpha value of .05, desired power of .80, and odds ratio of 3.47 were specified (Chen, Cohen, & Chen, 2010) and the analysis estimated that a total of 127 participants were recommended.

Missing data. Preliminary analyses were conducted using SPSS 24. All variables had less than 2% missing data. However, variables with missing data did not change the overall pattern of results as indicated by Little's MCAR test ($\chi^2(9) = 5.34, p = .804$). Path analysis was conducted using Full Information Maximum Likelihood, which utilizes all available data points, reduces the bias in parameter estimates that missing data can introduce (Schafer & Graham, 2002), and performs well when data are missing completely at random (Enders & Bandalos, 2001). Logistic regressions were conducted

using the default listwise deletion, which excludes cases with any missing values, can be effective if there is little missing data (Schafer & Graham, 2002) and gives unbiased estimates when data are missing completely at random (Allison, 2001).

Univariate assumptions. Data were screened for univariate assumptions of univariate normality, skewness, kurtosis, and outliers. Shapiro-Wilk tests were significant for all variables ($ps < .05$) indicating that univariate normality was violated. However, in larger samples the Shapiro-Wilk test tends to be sensitive to small deviations from univariate normality (Field, 2013). Therefore, histograms and Q-Q plots, skew and kurtosis values, and outliers were also examined. A visual inspection of the histograms and Q-Q plots for all the variables indicated that bullying victimization, substance use, and sexual risk taking were not normally distributed. Substance use and sexual risk taking, but not bullying victimization, had skewness values that exceeded +2 and -2, kurtosis values that exceeded +3 and -3, and all three variables had outliers based on raw values with z scores greater than $|3.29|$ (Tabachnick & Fidell, 2013). However, considering that all of these variables tend to be lower in frequency within the emerging adult population (e.g., people are more likely to not experience bullying), positive skew and outliers were expected. Potential outliers were included in the analysis for these variables except sexual risk taking because it reflected responses toward the higher end of bullying victimization and substance use, which were of interest and because responses for these variables were within acceptable limits (i.e., each of them did not exceed their respective point scales). Furthermore, considering that self-report data on sexual behaviour may be underreported or exaggerated (Morrison-Beedy, Carey, & Tu, 2006), positive skew and outliers were expected for the sexual risk taking variable. To reduce

the impact of the outliers, extreme values were winsorized by replacing them with the next highest (raw) value that was not an outlier (i.e., a raw value with a z score below the cut-off of $|3.29|$ (Field, 2013). As a result, this reduced the skew and kurtosis of the sexual risk taking variable, which improved the distribution. Transformations were not applied to the variables because transformed variables can make the data difficult to interpret (Field 2013; Tabachnick & Fidell, 2013).

Multivariate assumptions.

Path analysis. I screened the data for multivariate assumptions of multicollinearity, multivariate normality (together with outliers, linearity, and homoscedasticity), independence of observations, and an adequate sample size. First, I screened the data for multicollinearity. Initially, a correlational matrix was examined for multicollinearity. No variables had correlations greater than .80 suggesting there was no multicollinearity (Field, 2013). Furthermore, the variance inflation factor (VIF) for all variables was less than 10 indicating no multicollinearity between variables (Bowerman & O'Connell, 2000). In addition, tolerance values for all variables were greater than 0.2 suggesting the absence of multicollinearity (Menard, 1995).

Next, I assessed multivariate normality. Visual inspection of the histograms and P-P plots indicated that multivariate normality was violated for both substance use and sexual risk taking. To identify multivariate outliers, I examined Mahalanobis distances, Cook's distances, and leverage values. Values for Cook's distance were less than 1 and no values were three times greater than the average leverage value, indicating there were no influential cases for both variables (Field, 2013). However, six Mahalanobis distances were greater than the chi square critical value (set at an alpha of .001), indicating

potential outliers. Analyses conducted with and without these six Mahalanobis distances did not improve the pattern of results so they were not removed from the study. To assess linearity and homoscedasticity, a visual inspection of bivariate scatterplots indicated that the assumption of linearity was met, and a visual inspection of the residual scatterplots indicated that the assumption of homoscedasticity was not met for both substance use and sexual risk taking. Despite the fact that the data failed to meet the assumptions of multivariate normality and homoscedasticity, bootstrapping with bias-corrected confidence intervals using 5,000 samples was conducted for subsequent analyses, as this robust procedure does not rely on assumptions of multivariate normality and homoscedasticity and is often preferred over transforming variables if assumptions are violated (Field, 2013; Shrout & Bolger, 2002).

For the assumption of independence of observations, random sampling was part of the design and the data set was inspected to ensure the same participant did not complete the study more than once (e.g., checking names and IP addresses for duplicates). As such, independence of observations can be assumed. Finally, the sample size consisted of 515 participants. Kline (2016) recommends a minimum sample size of 200 participants. Thus, the sample size appeared to be adequate.

Logistic regression. I screened the data for multivariate assumptions including the dependent variables measured on a dichotomous scale, independence of observations, and linearity between any continuous predictors and the logit of the dependent variables. First, both dependent variables were dichotomized. Substance use was dichotomized into yes (i.e., has used cannabis and/or alcohol at least one or more times) and no (i.e., has not used cannabis and/or alcohol). Sexual risk taking was dichotomized into yes (i.e., has

engaged in sexual risk taking at least one or more times) and no (i.e., has not engaged in sexual risk taking). Independence of observations was met as discussed above. Finally, I assessed the linear relationships between the independent variables and the logit of the dependent variables using the Box-Tidwell procedure. None of the interactions were significant, indicating that the linearity of the logit for all variables was met.

Correlations

Effect sizes of correlations were small to large (see Table 1 for descriptive statistics and Table 2 for correlations). Identifying as a man was significantly correlated with substance use ($r_s = -.12, p = .008$) and lower self-esteem ($r = -.19, p < .001$). Identifying as a woman was significantly correlated with depressive symptoms ($r = .13, p = .003$) and anxiety symptoms ($r = .18, p < .001$). Childhood physical abuse was significantly positively correlated with childhood sexual abuse ($r = .11, p = .02$), bullying victimization ($r = .14, p = .003$), substance use ($r_s = .14, p = .009$), depressive symptoms ($r = .17, p < .001$), and anxiety symptoms ($r = .13, p = .002$). Childhood sexual abuse was significantly positively correlated with bullying victimization ($r = .20, p < .001$), substance use ($r_s = .11, p = .03$), and sexual risk taking ($r_s = .16, p < .001$). Bullying victimization was significantly positively correlated with substance use ($r_s = .20, p < .001$), sexual risk taking ($r_s = .20, p < .001$), depressive symptoms ($r = .36, p < .001$), and anxiety symptoms ($r = .30, p < .001$). Bullying victimization was significantly negatively correlated with self-esteem ($r = -.28, p < .001$). Substance use was significantly positively correlated with sexual risk taking ($r_s = .47, p < .001$), depressive symptoms ($r_s = .18, p < .001$), and anxiety symptoms ($r_s = .10, p = .03$). Sexual risk taking was significantly positively correlated with depressive symptoms ($r_s = .12, p = .008$). Self-esteem was

significantly negatively correlated with depressive symptoms ($r = -.57, p < .001$) and anxiety symptoms ($r = -.73, p < .001$) and significantly positively correlated with impression management ($r = .13, p = .003$). Depressive symptoms were significantly positively correlated with anxiety symptoms ($r = .71, p < .001$). Finally, anxiety symptoms were significantly negatively correlated with impression management ($r = -.12, p = .007$).

Table 1

Descriptive Statistics for Key Variables

Variable	Bullying victimization (<i>n</i> = 456)				None (<i>n</i> = 59)			
	<i>n</i>	%	<i>M</i>	<i>SD</i>	<i>n</i>	%	<i>M</i>	<i>SD</i>
CPA	130	28.51	-	-	12	20.34	-	-
CSA	30	6.58	-	-	1	1.69	-	-
Substance use	379	83.11	8.00	6.78	50	84.75	5.58	5.29
Sexual risk taking	272	59.65	5.59	7.96	35	59.32	2.48	3.45
Self-esteem	278	60.96	27.25	5.01	20	33.89	31.53	5.15
Depressive symptoms	342	75.00	23.51	8.74	32	54.24	17.28	4.33
Anxiety symptoms	306	67.11	45.41	10.76	22	37.29	38.64	8.65

Note. CPA = Childhood Physical Abuse; CSA = Childhood Sexual Abuse.

Table 2

Correlations for All Study Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Gender	-	-.06	.04	.05	-.12**	-.05	-.19***	.13**	.18***	-.02
2. CPA		-	.11***	.14**	.12**	-.01	-.07	.17***	.13***	-.05
3. CSA			-	.20***	.11*	.16***	-.05	.07	.06	-.07
4. Bullying				-	.20***	.20***	-.28***	.36***	.30***	.09
5. SU ^a					-	.47***	-.03	.18***	.10*	-.05
6. SR ^a						-	-.02	.12**	.03	-.04
7. SE							-	-.57***	-.73***	.13**
8. Depression								-	-.71***	-.05
9. Anxiety									-	-.12**
10. IM										-

Note. CPA = Childhood Physical Abuse; CSA = Childhood Sexual Abuse; Bullying = Bullying Victimization; SU = Substance Use; SR = Sexual Risk Taking; SE = Self-esteem; Depression = Depressive Symptoms; Anxiety = Anxiety Symptoms; IM = Impression Management.

Gender coded as 0 = Man, 1 = Woman.

^aSpearman correlations.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Primary Analyses

A path analysis was conducted using MPlus version 7.4 (Muthén & Muthén, 1998-2017) to test for significant direct effects of bullying victimization on substance use and sexual risk taking, and the indirect effects of bullying victimization through lower self-esteem, depressive symptoms, and anxiety symptoms simultaneously. Although sex differences in coping strategies may be decreasing over time (Matud, 2004), men are still more likely to engage in the externalizing behaviours that were analyzed in the current study (e.g., Chen & Jacobson, 2012; Puente et al., 2013). Therefore, I controlled for gender. Furthermore, additional forms of victimization such as childhood physical and sexual abuse were also controlled for given its association with substance use and sexual risk taking (e.g., Abajobir et al., 2017; Lo & Cheng, 2007). All paths were estimated and error terms were correlated resulting in a just-identified (saturated) model with fit indices that were not informative (Kline, 2016; Pearl, 2012). Most mediation models tend to be just-identified (Hayes, 2013; Hayes, Montoya, & Rockwood, 2017) and previous theory and empirical research on bullying victimization, negative mental health outcomes, and substance use and sexual risk taking suggest that all paths should be included in the model. Furthermore, although a good fitting model is important, what is just as (or even more) important are the estimates of the effects of one variable on another variable and the conclusions made about relationships between variables included in the model that support or do not support hypotheses of interest (Hayes et al., 2017). Parameters for direct effects were estimated using Maximum Likelihood Robust to correct for non-normal distributions of variables. To test for indirect effects, 95% bias-corrected confidence intervals with 5,000 bootstrapped samples were estimated using Maximum

Likelihood, and any confidence interval that did not cross zero was considered a significant indirect effect (Shrout & Bolger, 2002).

Consistent with hypothesis 1, bullying victimization had significant direct effects on substance use ($\beta = .14, SE = .05, p = .008$) and sexual risk taking ($\beta = .11, SE = .05, p = .030$; see Table 3 and Figure 1 for direct path coefficients). In support of hypothesis 2, there were significant indirect effects of bullying victimization on substance use through lower self-esteem ($B = -0.20, SE = .10, \beta = -.03, 95\% \text{ BCa CI } [-0.50, -0.001]$) and depressive symptoms ($B = 0.52, SE = .21, \beta = .10, 95\% \text{ BCa CI } [0.03, 0.12]$). Furthermore, consistent with hypothesis 3, there were also significant indirect effects of bullying victimization on sexual risk taking through lower self-esteem ($B = -0.40, SE = .19, \beta = -.05, 95\% \text{ BCa CI } [-0.10, -0.02]$) and anxiety symptoms ($B = 0.36, SE = .18, \beta = .04, 95\% \text{ BCa CI } [0.01, 0.10]$).

Table 3

Direct Paths among Bullying Victimization, Mental Health Outcomes, and Health Risk Behaviours

Variable	Self-esteem		Depressive symptoms		Anxiety symptoms		Substance use		Sexual risk taking	
	<i>B</i> (<i>SE</i>)	β (<i>SE</i>)	<i>B</i> (<i>SE</i>)	β (<i>SE</i>)	<i>B</i> (<i>SE</i>)	β (<i>SE</i>)	<i>B</i> (<i>SE</i>)	β (<i>SE</i>)	<i>B</i> (<i>SE</i>)	β (<i>SE</i>)
Gender ^a	-1.92 (.53)***	-.16 (.04)***	1.86 (.73)*	.11 (.04)**	1.42 (.88)**	.14 (.04)***	-1.22 (.48)*	-.12 (.05)*	-0.55 (.61)	-.05 (.05)
CPA	-0.88 (.64)	-.07 (.05)	1.89 (.82)*	.10 (.04)*	-0.46 (1.13)	-.01 (.05)	0.92 (.65)	.08 (.05)	-0.88 (.64)	-.05 (.04)
CSA	0.86 (1.01)	.04 (.04)	-0.22 (1.76)	-.01 (.05)	-0.60 (2.19)	-.01 (.05)	0.27 (1.14)	.01 (.06)	2.69 (1.59)	.11 (.07)
BV	-1.80 (.40)***	-.22 (.05)***	3.92 (.56)***	.32 (.05)***	4.12 (.72)***	.24 (.05)***	1.00 (.39)*	.14 (.05)**	1.00 (.48)*	.11 (.05)*
SE	-	-	-	-	-	-	0.10 (.05)	.11 (.05)*	0.22 (.09)*	.21 (.07)**
DEP	-	-	-	-	-	-	0.13 (.04)**	.23 (.08)**	0.01 (.04)	.02 (.05)
ANX	-	-	-	-	-	-	0.01 (.02)	.04 (.07)	0.05 (.02)	.17 (.07)*
<i>R</i> ²	.08		.13		.10		.10		.04	

Note. CPA = Childhood Physical Abuse; CSA = Childhood Sexual Abuse; BV = Bullying Victimization; SE = Self-esteem; DEP = Depressive Symptoms; ANX = Anxiety Symptoms.

Gender coded as 0 = Man, 1 = Woman.

B = unstandardized path coefficients; β = standardized path coefficients.

p* < .05. *p* < .01. ****p* < .001.

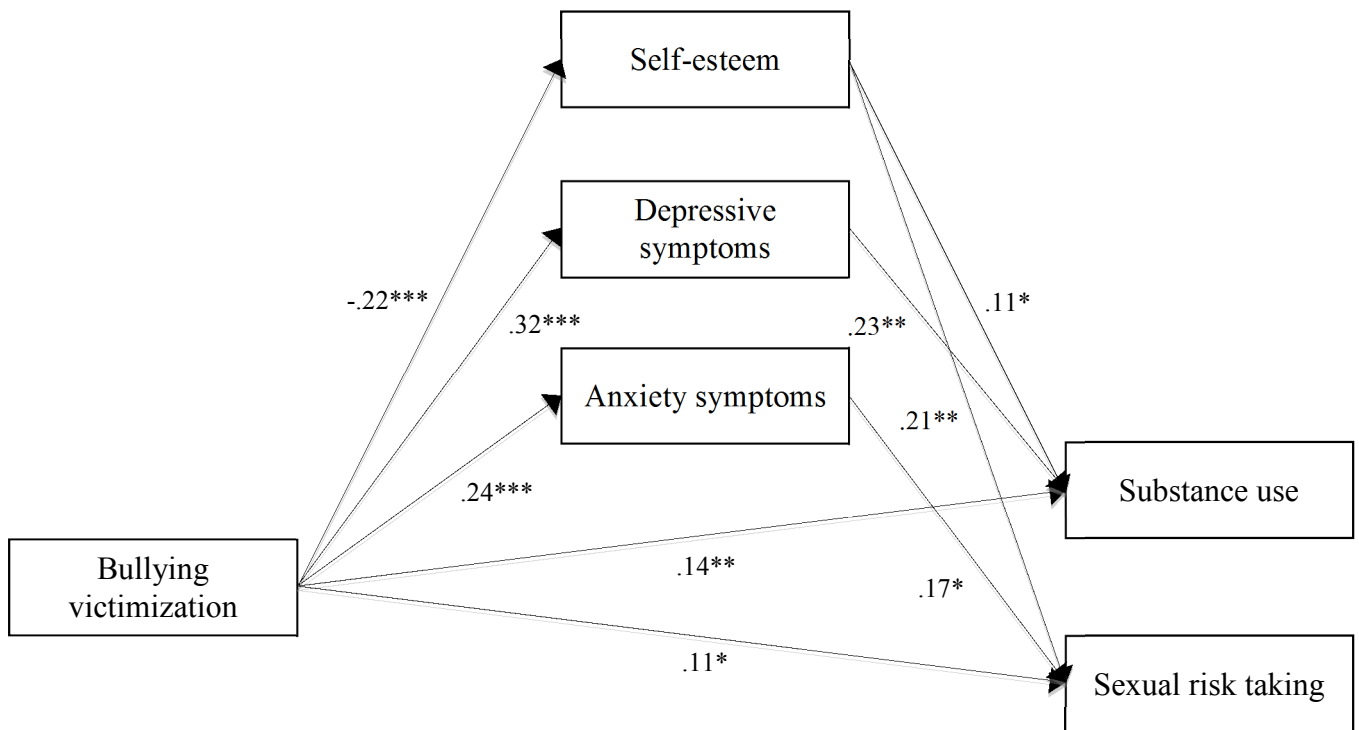


Figure 1. Significant direct paths for the overall model. All paths, covariances, and disturbances were estimated, but only significant paths are displayed for ease of presentation; No line indicates no significant path. Standardized path coefficients are presented for direct paths; see in text for indirect path coefficients and confidence intervals.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Secondary Analyses

Two logistic regression analyses were conducted using SPSS 24 to determine whether or not youth with a history of both bullying victimization and childhood maltreatment (i.e., polyvictimization) were more likely to engage in health risk behaviours such as substance use and sexual risk taking. Two dummy variables were created. The first variable included participants who were only bullied (0 = no history of bullying victimization and 1 = a least one or more incidents of bullying victimization). The second variable included participants who were both bullied and maltreated (0 = no history of polyvictimization and 1 = a least one or more incidents of polyvictimization). Variables were entered hierarchically into logistic regression models with gender in step one and bullying victimization and polyvictimization in step two for both substance use and sexual risk taking dependent variables.

Substance use. The addition of gender in the first step revealed a good model fit for substance use as indicated through Hosmer and Lemeshow's test, $\chi^2 (1) = 1.06, p = .303$, Cox and Snell $R^2 = .014$, and Nagelkerke $R^2 = .018$. However, comparison of log-likelihood ratios for models with and without gender showed no significant improvement with the addition of this variable, $\chi^2 (1) = 1.35, p = .246$. The model correctly classified 56.3% of cases. The addition of bullying victimization and polyvictimization in the second step revealed a good model fit for substance use as indicated through Hosmer and Lemeshow's test, $\chi^2 (3) = 2.58, p = .461$, Cox and Snell $R^2 = .024$, and Nagelkerke $R^2 = .032$. Comparison of log-likelihood ratios for models with and without bullying victimization and polyvictimization showed significant improvement with the addition of these variables, $\chi^2 (3) = 8.04, p = .041$. The model correctly classified 57.7% of cases

with the addition of bullying victimization and polyvictimization. Results of the logistic regression revealed that bullying victimization was a significant predictor of substance use, $B = 0.82$, $SE = .40$, Wald $\chi^2(1) = 4.11$, $p = .043$. Odds ratio suggested that youth with a history of bullying victimization were 2.26 (95% CI [1.02, 4.97]) times more likely to engage in substance use. Furthermore, polyvictimization was also a significant predictor of substance use, $B = 1.00$, $SE = .42$, Wald $\chi^2(1) = 5.14$, $p = .023$. Odds ratio suggested that youth with a history of polyvictimization were 2.61 (95% CI [1.13, 6.00]) times more likely to engage in substance use.

Sexual risk taking. The addition of gender in the first step revealed a good model fit for sexual risk taking as indicated through Hosmer and Lemeshow's test, $\chi^2(1) = 0.02$, $p = .899$, Cox and Snell $R^2 = .016$, and Nagelkerke $R^2 = .024$. However, comparison of log-likelihood ratios for models with and without gender showed no significant improvement with the addition of this variable, $\chi^2(1) = 0.10$, $p = .814$. The model correctly classified 79.0% of cases. The addition of bullying victimization and polyvictimization in the second step revealed a good model fit for sexual risk taking as indicated through Hosmer and Lemeshow's test, $\chi^2(3) = 0.83$, $p = .842$, Cox and Snell $R^2 = .032$, and Nagelkerke $R^2 = .051$. Comparison of log-likelihood ratios for models with and without bullying victimization and polyvictimization showed significant improvement with the addition of these variables, $\chi^2(3) = 9.40$, $p = .024$. The model correctly classified 79.4% of cases with the addition of bullying victimization and polyvictimization. Results of the logistic regression revealed that bullying victimization was a significant predictor of sexual risk taking, $B = 1.21$, $SE = .40$, Wald $\chi^2(1) = 9.04$, $p = .003$. Odds ratio suggested that youth with a history of bullying victimization were 3.35

(95% CI [1.52, 7.38]) times more likely to engage in sexual risk taking. Furthermore, polyvictimization was also a significant predictor of sexual risk taking, $B = 1.32$, $SE = .49$, Wald $\chi^2(1) = 9.06$, $p = .003$. Odds ratio suggested that youth with a history of polyvictimization were 3.74 (95% CI [1.58, 8.81]) times more likely to engage in sexual risk taking. A summary of the study's hypotheses, data analyses, and results are presented in Table 4.

Table 4

Summary of Hypotheses, Data Analyses, and Results

Hypothesis	Exogenous/ Independent variable(s)	Mediators	Endogenous/ Dependent variable(s)	Prediction	Analysis	Results
1	Bullying victimization	-	Substance use and sexual risk taking	Bullying victimization will have significant direct effects on substance use and sexual risk taking	Path analysis	Direct effects of bullying victimization on substance use and sexual risk taking
2	Bullying victimization	Self-esteem, depressive symptoms, and anxiety symptoms	Substance use and sexual risk taking	Bullying victimization will have significant indirect effects on substance use through lower self- esteem, depressive symptoms, and anxiety symptoms	Path analysis	Indirect effects of bullying victimization on substance use through lower self- esteem and depressive symptoms, but not anxiety symptoms
3	Bullying victimization	Self-esteem, depressive symptoms, and anxiety symptoms	Substance use and sexual risk taking	Bullying victimization will have significant indirect effects on sexual risk taking through lower self-esteem, depressive symptoms, and anxiety symptoms	Path analysis	Indirect effects of bullying victimization on sexual risk taking through lower self- esteem and anxiety symptoms, but not depressive symptoms
No a priori hypothesis	Bullying victimization and polyvictimization	-	Substance use and sexual risk taking	-	Logistic regression	Bullying victimization and polyvictimization predicted substance use and sexual risk taking

CHAPTER 5

DISCUSSION

The main purpose of the current study was to explore the association between bullying victimization and two common health risk behaviours (e.g., substance use and sexual risk taking) among emerging adults. Bullying victimization can be conceptualized as a chronic stressor (La Greca & Landoll, 2011) that youth may attempt to cope with in unhealthy ways. Although previous research has examined the relationship between bullying and coping (e.g., Newman et al., 2011; Topper et al., 2011), the current study addressed a gap in the literature by focusing on mental health mediators that may serve as developmental pathways linking bullying victimization and two health risk behaviours as potential maladaptive coping strategies. Results offered mixed support for hypotheses. Bullying victimization had significant direct effects on substance use and sexual risk taking. In addition, bullying victimization had significant indirect effects on substance use through lower self-esteem and depressive symptoms and significant indirect effects on sexual risk taking through lower self-esteem and anxiety symptoms. These findings are consistent with previous research (e.g., Luk et al., 2010; Zapolski et al., 2018), but also extend the literature by highlighting additional psychosocial problems (e.g., self-esteem, anxiety) that may function as developmental pathways linking bullying victimization with both substance use and sexual risk taking. Direct and indirect effects among bullying victimization, negative mental health outcomes, and health risk behaviours are discussed in further detail below.

The secondary purpose of the current study was to investigate the relationship between polyvictimization and health risk behaviours such as substance use and sexual

risk taking. Previous research has often focused on the effects of polyvictimization and the cumulative effects of multiple forms of victimization on mental health outcomes among youth (e.g., Finkelhor et al., 2007; Finkelhor et al., 2009; Lereya et al., 2015; Margolin et al., 2010). However, research is sparse on the links between polyvictimization and substance use and sexual risk taking outcomes (e.g., Alexander, Amerigo, & Harrelson, 2018; Wright, Fagan, & Pinchevsky, 2013), particularly when one type of the victimization includes bullying (e.g., Lereya et al., 2015). Despite no a priori hypotheses, youth with a history of polyvictimization were more likely to engage in substance use and sexual risk taking than those with only a history of bullying victimization. These findings provide support for the idea that polyvictimization may lead to more adverse outcomes for victims (Finkelhor et al., 2007, 2011) and contribute to the literature by focusing on behavioural health outcomes such as substance and sexual risk taking that are often neglected in favour of psychological adjustment problems (Wright et al., 2013). The associations between polyvictimization and health risk behaviours are discussed in further detail below.

Direct Effects

Substance use. In the current study, bullying victimization had a significant direct effect on substance use. This finding is consistent with previous research as victims of both traditional bullying (e.g., physical, relational) and cyberbullying were more likely to use substances such as alcohol and cannabis compared to uninvolved youth (Copeland et al., 2013; Goebert et al., 2011; Kim et al., 2011; Kritsotakis et al., 2017; Luk et al., 2010; Mitchell et al., 2007; Radliff et al., 2012; Rospenda et al., 2013; Sánchez et al., 2017). Although experimenting with alcohol and cannabis is normative during emerging

adulthood (Arnett, 2000), victims of bullying may be more likely to engage in substance use in riskier ways (i.e., earlier or heavier use) that influence the development of substance use problems (Sullivan, Farrell, & Kliewer, 2006). Bullying victimization may initiate frequent substance use if youth lack alternative coping skills and support for effectively managing the experience of victimization (Goebert et al., 2011). The link between bullying victimization and substance use provides support for self-medication models of substance use in which occasional or heavy substance use and their psychotropic effects act as a coping mechanism for specific stressors (Khantzian, 1997).

In addition, Houbre and colleagues (2006) suggest that engaging in substance use may improve one's social image within a peer group. Considering that bullies tend to target out-group peers such as those who are perceived to be submissive (Schwartz et al., 1998) and physically weak (Hodges & Perry, 1999), have no friends (Veenstra, Lindenberg, Munniksma, & Dijkstra, 2010), and/or have lower status in the peer group (Hodges & Perry, 1999), substances may be used in an attempt to alter peer perceptions and reduce bullying (Houbre, Tarquinio, Thuillier, & Hergott, 2006). Consistent with this expectation, the Partnership Attitude Tracking Study (2008) reported that 65% of adolescents say they use drugs to "look cool." Self-worth depends on gaining (or not gaining) the approval of others, and the desire to be socially accepted by peers can lead youth to engage in health risk behaviours (e.g., substance use) despite the harmful consequences (Houbre et al., 2006). Therefore, the reasons for engaging in substance use may be twofold. First, substances are used as a maladaptive coping strategy to self-medicate due to the stressors associated with being bullied. Second, substance use may function as an alternative, but still maladaptive, coping strategy to reduce bullying

victimization directly by attempting to increase peer acceptance and signal to others one's in-group membership. Overall, bullying victimization serves as an independent risk factor for substance use.

Sexual risk taking. Bullying victimization also had a significant direct effect on sexual risk taking. This finding is consistent with a growing body of literature showing that youth who report being bullied are at an elevated risk for engaging in sexual risk taking behaviours (e.g., Bouffard & Koeppel, 2017; Kritsotakis et al., 2017; Li, DiStefano et al., 2014; Robinson & Espelage, 2013; Russell et al., 2011). Similar to substance use, sexual behaviour is normative during emerging adulthood (Arnett, 2000), but individuals with a history of bullying victimization may be prone to engaging in sexual behaviour in riskier ways (e.g., not using contraceptives) that harm one's health (contracting a STI, unplanned pregnancy; Brody, 2010; Diamond & Huebner, 2012; Malhotra, 2008). For instance, bullying victimization may lead to risky decisions when it comes to negotiating contraceptive use during sexual interactions. Negotiating contraceptive use can sometimes be confrontational especially if a partner is adamant about not using contraceptives (Kritsotakis et al., 2017). Victims of bullying often feel powerless, perceive the harm against them to be beyond their control, and look to avoid creating further conflict. This perceived lack of control and conflict avoidance in their peer interactions may translate to their romantic interactions whereby the inability of victims to take control of decisions that involve them, and others, jeopardize safe sexual practices (Kritsotakis et al., 2017).

Furthermore, victims of bullying are less likely to be in dating relationships (Arnocky & Vaillancourt, 2012), and a lack of sexual experience in university is not

consistent with current societal ideals (Kritsotakis et al., 2017). As mentioned previously, victims are often targeted because they are perceived to be submissive, physically weak, and/or unpopular (Hodges & Perry, 1999; Schwartz et al., 1998), which are traits that are less likely to lead to sexual opportunities (de Bruyn, Cillessen, & Weisfeld, 2012; Mayeux, Sandstrom, & Cillessen, 2008; Prinstein, Meade & Cohen, 2003). However, risky sexual activity may provide easier access to engaging in sexual behaviour (e.g., activity with uncommitted partners). Individuals who feel isolated or lonely as a result of being bullied may engage in risky sexual activity as a means to achieve affection and intimacy, despite the health risks (Torres & Gore-Felton, 2007; Wilson & Widom, 2008). Thus, similar to the self-medication models of substance use, sexual risk taking also appears to serve as a maladaptive coping mechanism when exposed to distress with bullying victimization as an independent risk factor for sexual risk taking. Taken together, youth may engage in health risk behaviours such as substance use and sexual risk taking as maladaptive ways of coping with past histories of bullying victimization.

Despite the fact that approach coping strategies (e.g., social support, problem solving) allow for appropriate responses to distress (Roth & Cohen, 1986), an approach orientation is typically used when the distress is perceived to be within an individual's control (Hampel et al., 2009). However, bullying victimization involves harm directed toward another person of which the affected person has no control over. Thus, avoidance rather than approach strategies may be used to minimize the distress associated with being victimized. Although avoidance coping can alleviate distress to some degree through distancing or distraction, it ultimately serves as a maladaptive means for regulating emotional experiences (Fuendeling, 1998) and may increase the likelihood of

engaging in high risk behaviours such as substance use or risky sexual activity (Wills & Hirky, 1996). Coping theory (Lazarus & Folkman, 1984) proposes that youth may engage in high risk behaviours in response to increased psychological distress resulting from exposure to bullying victimization, but it is unclear what types of distress in particular may influence the likelihood of some individuals to engage in substance use and sexual risk taking. Results of the path analysis lend some insight into which negative mental health outcomes explain the links between bullying victimization and substance use and sexual risk taking.

Indirect Effects

Substance use. In the current study, bullying victimization had a significant indirect effect on substance use through depressive symptoms. This finding is in line with previous research exploring depression as a mediator between bullying victimization and substance use in adolescent samples (e.g., Luk et al., 2010; Zapolski et al., 2018). The evidence is strong that bullying victimization is positively associated with depression in both cross-sectional and longitudinal samples (e.g., Bowes et al., 2016; Holt et al., 2014; Klomek et al., 2007; Lereya et al., 2015; Menesini et al., 2009; Russell et al., 2011; Schwartz et al., 2015; Ttofi et al., 2011; Reid et al., 2016; Turner et al., 2013). Victims involved in both traditional bullying and cyberbullying are at an elevated risk for depression (Luk et al., 2010; Schenk & Fremouw, 2012). Similarly, Menesini and colleagues (2009) reported that compared to bullies and uninvolved individuals, victims were more likely to experience depressive symptoms. Taken together, research thus far suggests victimization is related to depression across various forms of bullying among both male and female youth.

Studies have also shown that depression is a consistently unique predictor of substance use (Hussong et al., 2017; Maslowsky et al., 2014; Pesola et al., 2015; Mason, Hitch, & Spoth, 2009; Mason, Hitchings, & Spoth, 2007; Needham, 2007; Sung, Erkanli, Angold, & Costello 2004). Sihvola and colleagues (2008) found that depressive disorders were associated with multiple substance use outcomes including frequent alcohol and cannabis use three years later. Similarly, Fleming and colleagues (2008) found that elevated levels of depressive symptoms were predictive of alcohol and cannabis use for girls and cannabis use for boys. Consistent with previous studies, depressive symptoms were significantly related to substance use in the current study. Given the link between bullying victimization and depression and the link between depression and substance use, the significant indirect effect was not surprising. Victims of bullying may experience depressive symptoms, which in turn predict substance use. Turning to substance use may be an attempt to lift one's mood or escape from feelings of hopelessness. This is consistent with Khantzian's (1997) self-medication hypothesis whereby people often consume substances as a short-term regulation strategy to reduce or manage or negative emotional states that are particularly problematic or painful. In other words, some substances can effectively, but temporarily, regulate emotions by promoting positive affect and reducing negative affect (Kober, 2014). The pleasure-inducing effects of some substances may be appealing to youth with depressive symptoms seeking a means to cope (Prosek, Giordano, Woehler, Price, & McCullough, 2018). Therefore, depressive symptoms appear to be one pathway through which individuals with a history of bullying victimization engage in substance use.

Similarly, bullying victimization had a significant indirect effect on substance use through lower self-esteem. The literature regarding bullying and self-esteem consistently finds that victims of bullying tend to have lower self-esteem than those not involved in bullying (e.g., Brighi et al., 2012; Brighi et al., 2012; Egan & Perry, 1998; Hawker & Boulton, 2000; Jones et al., 2014; Kowalski & Limber, 2013; Olweus, 1993; Overbeek et al., 2010; Russell et al., 2011). A recent meta-analysis (Tsaousis, 2016) found that self-esteem was negatively associated with both peer victimization and bullying perpetration. Moreover, Patchin and Hinduja (2010) explored the relationship between cyberbullying and self-esteem, and found that victims of cyberbullying, when compared to youth uninvolved in bullying, showed lower levels of self-esteem. Taken together, research thus far suggests different forms of bullying victimization is related to lower self-esteem among both male and female youth.

In recent years, researchers have found lower self-esteem to be antecedent of substance use. Cross-sectional studies have provided evidence for the association between lower self-esteem and substance use (e.g., Bartsch et al., 2017; Bitancourt, Tissot, Fidalgo, Galduróz, & da Silveira Filho, 2016; Fisher, Zapolski, Sheehan, & Barnes-Najor, 2017; McKay et al., 2012). Building on the cross-sectional data, one longitudinal study examined the relation between self-esteem and substance use over six years and found that although there was a strong relationship between self-esteem and alcohol and cannabis use during adolescence, these relationships became weaker once participants reached young adulthood (Lee, Seo, Torabi, Lohrmann, & Song, 2017). Moreover, Oshri and colleagues (2017) examined links between self-esteem growth during adolescence and substance use in young adulthood. They found that declining

self-esteem was associated with greater alcohol and cannabis abuse. In line with empirical findings suggesting relations between bullying victimization, self-esteem, and substance use, a significant indirect effect was expected. In other words, individuals who had been bullied had lower self-esteem, which in turn predicted substance use.

Substance use appears to escalate when youth with lower levels of self-esteem cannot find a more positive way to cope with distress (McCormack, Laybold, Dickerman-Nelson, & Budd, 1993). As a result, lower self-esteem may influence behaviour because individuals are likely to modify how they act and behave to either maintain or increase their self-esteem (Longmore, Manning, Giordano, & Rudolph, 2004) such as using substances to cope with negative feeling related to lower self-esteem (e.g., low self-worth and assertiveness, helplessness, and powerlessness) and increase positive affective states (Park & Yang, 2017). Moreover, some substances can produce feelings of relaxation and tension reduction, which may be appealing to individuals with lower self-esteem (Pullen, 1994). Much like depression, the link among bullying victimization, lower self-esteem, and substance use seems to adhere to the self-mediation hypothesis (Khantzian, 1997).

In addition to the self-medication model, lower self-esteem as a mental health mediator may be comparable to depressive symptoms as a mental health mediator given the clinical relationship between them. For instance, lower self-esteem is an associated feature of various clinical disorders, particularly depression (Erol & Orth, 2011), and it plays an important etiological role in several classic and contemporary theories/models of depression (Abramson, Seligman, & Teasdale, 1978; Blatt, D'Afflitti, & Quinlan, 1976; Evraire & Dozois, 2011; Morley & Moran, 2011). Considering that bullying victimization had a significant indirect effect on substance through depressive symptoms,

as discussed above, it may be expected that examining a construct strongly related to depression would produce a similar result. As such, lower self-esteem served as a pathway linking bullying victimization to substance use as a maladaptive coping mechanism.

Conversely, bullying victimization did not have a significant indirect effect on substance use through anxiety symptoms. An extensive body of research has established exposure to bullying victimization as a significant predictor of anxiety (Copeland et al., 2013; Espelage et al., 2016; Holt et al., 2014; Jones et al., 2017; Kowalski & Limber, 2013; Lereya et al., 2015; Reid et al., 2016; Schenk & Fremouw, 2012; Sourander et al., 2007; Stapinski et al., 2014). Longitudinal studies highlight the long-term impact of bullying on mental health. For example, previous research has demonstrated that victims of bullying in childhood and adolescence still suffer adverse mental health outcomes (e.g., anxiety, depression) several years later in young adulthood (Östberg, Modin, & Låftman, 2018; Wolke & Lereya, 2015). Furthermore, a recent systematic review and meta-analysis identifying health and psychosocial concerns linked with bullying victimization (all direct and indirect forms of bullying including cyberbullying) found the evidence was strongest for causal relationships between bullying victimization and mental health problems such as anxiety and depression (Moore et al., 2017). Taken together, men and women may experience anxiety as a consequence of bullying victimization.

In addition to the link between bullying victimization and anxiety, a link between anxiety and substance use has been found in both cross-sectional and longitudinal studies (Buckner et al., 2008; Buckner, Bonn-Miller, Zvolensky, & Schmidt, 2007; Marmorstein

et al., 2010; Sung et al., 2004; Wolitzky-Taylor, Bobova, Zinbarg, Mineka, & Craske, 2012). However, compared to depression, the support is weaker for a positive association between anxiety and substance use, with as many results suggesting that anxiety may be a protective factor as well as a risk factor for future substance use (Hussong et al., 2017). Despite mixed findings, the current study found a weak correlation between anxiety symptoms and substance use (but a null finding in the path analysis), which is in line with the self-medication model of substance use (Khantzian, 1997), to help cope with anxious thoughts and feelings and reinforce the use of substances by increasing their frequency and quantity (Marmorstein et al., 2010). However, the lack of a significant indirect effect suggests that substance use may not function as a coping mechanism for anxiety symptoms generated by a history of bullying victimization. One reason may be because of the complex relationship between anxiety and substance use, particularly cannabis. On the one hand, cannabis is often used to relax the body and mind and promote feelings of calmness. On the other hand, studies have linked cannabis to heightened levels of anxiety symptoms and panic attacks (Bonn-Miller, Zvolensky, Leen-Feldner, Feldner, & Yartz, 2005; Zvolensky et al., 2008). Using cannabis can produce acute changes in physical (e.g., increased heart rate; Hall & Degenhardt, 2009) and cognitive (e.g., limited or impaired attention; Crean, Crane, & Mason, 2011) states that may feel beyond the control of the individual and promote anxiety (Chorpita & Balow, 1998). Thus, some individuals may be deterred from engaging in substance as a coping mechanism if it increases anxiety and instead engage in other adaptive or maladaptive coping strategies.

Another reason for the lack of a significant indirect effect may be because of the general elevation in anxiety among emerging adults during the university years, which is

the most common mental health problem experienced by students (Center for Collegiate Mental Health, 2018). Given the prevalence of anxiety among university students, the level of distress may be too overwhelming (e.g., history of bullying victimization, worrying about academics) for substance use as a coping strategy that youth may engage in other maladaptive coping strategies to manage or reduce anxiety symptoms. In sum, substance use represents one mechanism for coping with depressive symptoms and lower self-esteem, but another health risk behaviour often co-occurring with substance use is sexual risk taking. Sexual risk taking may represent an alternative mechanism for coping with psychosocial distress.

Sexual risk taking. Bullying victimization had a significant indirect effect on sexual risk taking through lower self-esteem. As mentioned previously, the evidence is strong for the link between bullying victimization and lower self-esteem. However, there has been considerably less research exploring the link between self-esteem and sexual risk taking. Paul and Colleagues (2000) found that university students with lower levels of self-esteem were more likely to engage in a sexual experience (either coital or noncoital) with a stranger or brief acquaintance. Similarly, Bersamin and colleagues (2014) found that self-esteem was negatively related to casual sex (i.e., having sex with someone they knew for less than a week) in a sample of university students. Men and women often report feelings of sexual regret after casual sex encounters (Fisher et al., 2012), and these feelings have been linked to lower self-esteem (Grello, Welsh, & Harper, 2006). However, diminished self-esteem may also precede casual sex encounters or sexual risk taking more broadly. Engaging in risky sexual behaviour may function as a coping mechanism for those experiencing poor psychological outcomes (Sikkema et al.,

2009). Individuals with lower self-esteem often lack confidence in themselves and doubt their own worth (Enejoh et al., 2016). These qualities may increase the likelihood of being pressured into engaging in risky sexual activity (Enejoh et al., 2016). Initiating sexual behaviour may allow individuals to feel better about themselves and provide a feeling of intimacy (Enejoh et al., 2016). Additionally, youth with low self-esteem, as well as those who are bullied, generally have less friends and social support and may have the propensity to respond to stress through unhealthy behaviours (Dumont & Provost, 1999; Veenstra et al., 2010) such as sexual risk taking. Sexual risk taking appears to be a maladaptive coping strategy for individuals dealing with negative feelings about the self. Thus, bullying victimization may be one stressor that generates lower self-esteem, which in turn makes it more likely that youth will engage in sexual risk taking as a way to cope.

Similar to self-esteem, bullying victimization also had a significant indirect effect on sexual risk taking through anxiety symptoms. As mentioned previously, the positive association between bullying victimization and anxiety is well established. However, the association between anxiety and sexual risk taking has received little research attention. In cross-sectional studies, higher levels of anxiety symptoms predicted increased risky sexual behaviours (e.g., earlier sexual debut, having multiple sexual partners, using alcohol or drugs during sex, and having unprotected sex; Mustanski, 2007; Wagner, 2001; Wong et al., 2017). Furthermore, compared to individuals without psychiatric disorders, individuals with anxiety disorders were more likely to report sexually transmitted infections (Ramrakha, Caspi, Dickson, Moffitt, & Paul, 2000). These previous findings are consistent with the significant positive association between anxiety

symptoms and sexual risk taking found in the current study. The arousal component associated with anxiety may share features related to sexual arousal (Mustanski, 2007). Excitation transfer theory hypothesizes the influence of residual arousal from a previous emotional experience on subsequent emotional responses (Zillmann, 1983). The residual arousal evoked from preceding, but unrelated, emotional reactions can be misattributed or “transferred” to feelings of sexual arousal (Cantor, Zillmann, & Bryant, 1975; Zillmann, 1983), which could increase the willingness to engage in sexual risk taking (Mustanski, 2007). Despite the fear aspects of anxiety that may lead to the avoidance of sexual behaviour, feeling “jittery” and “keyed up” may be linked to feelings of excitement that increase the willingness to engage in risky sexual activity (Zillmann, 1983). Although sexual risk taking may be maladaptive, it appears to be a coping strategy for youth who are feeling anxious. Therefore, youth with a history of bullying victimization may engage in sexual risk taking to alleviate symptoms of anxiety.

In contrast to self-esteem and anxiety symptoms, bullying victimization had no significant indirect effect on sexual risk taking through depressive symptoms. As mentioned previously, past data clearly highlight the link between bullying victimization and depression. Furthermore, research has begun to suggest links between depressive symptoms and sexual risk taking (e.g., Khan et al., 2009; Kosunen, Kaltiala-Heino, Rimpelä, & Laippala, 2003; Langille, Asbridge, Kisely, & Wilson, 2012; Lehrer et al., 2006; Paxton & Robinson, 2008; Wilson, Asbridge, Kisely, & Langille, 2010). Although sexual risk taking is a risk factor for depression (Hallfors, Waller, Bauer, Ford & Halpern, 2005; Shrier, Harris, Sternberg, & Beardslee, 2002; Waller et al., 2006), individuals who are depressed may be vulnerable to sexual risk taking. For example, in a

nationally representative longitudinal sample, youth with recent or chronic depression during adolescence were more likely to have multiple sexual partners than those without depression six years later even after controlling for demographic, socioeconomic, and adolescent STI risk and substance use variables (Khan et al., 2009). Furthermore, higher depressive symptoms were associated with not using condoms and birth control and using substances during the last sexual episode for boys, whereas moderate depressive symptoms were associated with substance use during the last sexual episode for girls (Lehrer et al., 2006). Depression may impair cognitive function and memory (Rock, Roiser, Riedel & Blackwell, 2014), decrease impulse control and motivation (Lejoyeux, Arbaretaz, McLoughlin, & Ades, 2002; Rao, 2006), and increase feelings of hopelessness, worthlessness, and disregard for self (Abramson et al., 1989; American Psychiatric Association, 2013; Testa & Steinberg, 2010). These depression-related effects may make it less likely that individuals tend to their physical health by inhibiting the ability to avoid sexual risk taking behaviour in attempt to treat their depression (Alvy et al., 2011; Khan et al., 2009; Ramrakha et al., 2000).

However, the current study found no significant relationship between depressive symptoms and sexual risk taking. In addition, the lack of a significant indirect effect suggests that sexual risk taking may not be a coping strategy for reducing depressive symptoms generated by a history of bullying victimization. In retrospect, this finding is not surprising. Depression is often characterized by diminished interest or pleasure and loss of energy (American Psychiatric Association, 2013). Furthermore, social withdrawal and irritability may decrease an individual's desire or impair the ability to form relationships (Baldwin, 2001). Depressed youth are less likely to engage in the

exploration and experimentation associated with sexual behaviour (Sandberg-Thoma & Dush, 2014), and their behaviour and affect increase the probability of rejection (Coyne, 1976). This collection of symptoms may be expected to produce difficulties in sexual behaviour and may explain why depression is sometimes not a significant predictor of sexual risk taking (e.g., Bachanas et al., 2002a, 2002b; Lavan & Johnson, 2002).

Therefore, youth who have experienced bullying in the past may use other maladaptive coping strategies to minimize depressive symptoms.

Polyvictimization and Health Risk Behaviours

Youth with only a history of bullying showed an increased risk of engaging in substance use and sexual risk taking. However, youth with a history of polyvictimization (i.e., bullying and childhood maltreatment) were at an even greater risk of engaging in substance use and sexual risk taking. These results are in line with a few studies suggesting links between polyvictimization and health risk behaviours. However, these studies have either not included bullying as part of polyvictimization or used a specific sample with limited generalizability (e.g., college-aged women; Alexander et al., 2018; Wright et al., 2013). The current study addressed these concerns by including a specific measure of bullying victimization when taking into account polyvictimization and using a sample with greater generalizability. When victimization occurs across multiple domains of an individual's life, the number of "safe havens" to which they can turn to for help, relief, or coping are restricted (Holt, Buckley, & Whelan, 2008; Margolin et al., 2009; Mrug, Loosier, & Windle, 2008). Thus, youth who do not have very many places to go to escape or avoid exposure from victimization may be at even higher risk for negative outcomes (Wright et al., 2013). For instance, youth who are bullied at school by their peers may be

able to seek help or support at home from their parents (Wright et al., 2013). Parental support has often been found to be a protective factor against bullying victimization (Baldry & Farrington, 2005; Reid, Holt, Bowman, Espelage, & Green, 2016). However, youth who have been maltreated by their parents are not likely to turn to them for help or support for the bullying at school (Wright et al., 2013). Furthermore, Finkelhor and colleagues (2007) have also suggested that youth may have a certain “threshold” for being resilient to victimization over time or across multiple domains, but the accumulation of different victimizations may exceed this threshold, become too burdensome to overcome, and ultimately lead to outcomes such as substance use and sexual risk taking.

Similar to the direct effects of bullying victimization on substance use and sexual risk taking discussed above, these health risk behaviours may also function as maladaptive coping mechanisms for youth with a history of polyvictimization. Exposure to victimization across multiple contexts may be perceived as more intense or severe, which in turn may increase the likelihood of some youth engaging in maladaptive coping behaviours above and beyond those who experience only one form of victimization (Agnew, 2006). The theoretical and practical implications for individuals with a history of bullying victimization and polyvictimization are discussed below.

Implications

Theory. The findings from the current study have several important theoretical implications for the consequences of bullying victimization and polyvictimization among emerging adults. Previous research on bullying has used theoretical frameworks such as social information processing (e.g., Crick & Dodge, 1994), social-ecological models

(e.g., Swearer & Espelage, 2004), and evolutionary perspectives (e.g., Volk, Camilleri, Dane, & Marini, 2012) to identify individual and environmental factors that contribute and are related to bullying. However, when investigating the ways victims deal with the psychosocial problems associated with bullying victimization, using a coping theoretical framework may be the most appropriate (e.g., Lazarus & Folkman, 1984; Roth & Cohen, 1986). Coping theories emphasize different strategies (each with their own trade-offs) for dealing with the source of a stressor. Findings from the coping literature suggest that approach strategies (e.g., confronting the source of the stressor) tend to predict more positive outcomes than avoidance strategies (e.g., managing cognitive or emotional reactions; Roth & Cohen, 1986). In the case of bullying victimization, an extremely stressful event, youth may use less mature forms of coping (e.g., avoidance; Wadsworth, 2015). The repeated use of less mature forms of coping, limited availability of healthy alternatives, or constant exposure to a stressor may establish a maladaptive coping pattern (Wadsworth, 2015). Furthermore, when stressors are perceived to be outside of one's control and not modifiable, avoidance coping patterns are likely to be used (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986).

Considering that bullying is defined as a repeated act of aggression against another individual with less power, it can often be difficult for some youth to cope adaptively because the bullying experience is beyond their control (Donoghue et al., 2014; Ttofi et al., 2016). Due to the uncontrollable nature of being bullied, youth may engage in avoidance coping to reduce distress associated with their bullying experiences (Hunter et al., 2004; Ttofi et al., 2016). Results from the current study provide support for substance use and sexual risk taking as maladaptive means for regulating the emotional

experiences of those who have been bullied. For youth exposed to both bullying victimization and childhood maltreatment, they may be at an even greater risk for engaging in substance use and sexual risk taking. This is not surprising when considering that polyvictims are dealing with stressors across multiple domains compared to youth who are only bullied or only maltreated. Similar to bullying victimization, substance use and sexual risk taking may also be used as coping mechanisms, especially if youth are experiencing polyvictimization. Although previous research has examined these health risk behaviours within the context of bullying, only a small number of studies have used the approach-avoidance coping model (Roth & Cohen, 1986) to conceptualize how youth may cope with being bullied.

Current results also suggest that negative mental health outcomes such as lower self-esteem, depressive symptoms, and anxiety symptoms may serve as a developmental pathway linking bullying victimization to both substance use and sexual risk taking. In other words, bullying victimization among emerging adults may generate lower self-esteem and elevated depressive and anxiety symptoms, which in turn results in substance use and sexual risk taking. In addition to providing knowledge about how youth cope with the bullying victimization, the current study also highlights why youth may be engaging in certain maladaptive coping behaviours. However, not all indirect effects were significant. Bullying victimization did not have significant indirect effects on substance use through anxiety symptoms and sexual risk taking through depressive symptoms. This suggests that some youth may engage in other maladaptive coping strategies to deal with these specific mental health problems or that different mental health problems may serve as developmental pathways linking bullying victimization

with these specific health risk behaviours.

Practice. To go along with the theoretical implications, the findings from this study may also help to inform the development of psychosocial interventions for youth with a history of bullying victimization and polyvictimization. Although the first step may be to prevent or reduce bullying from occurring in schools, meta-analyses suggest that the effectiveness of school-based anti-bullying programs vary considerably across programs (Langford et al., 2015; Merrell, Gueldner, Ross, & Isava, 2008; Ttofi & Farrington, 2011). For instance, Farrington and Ttofi's (2009) meta-analysis concluded that anti-bullying programs are often effective, reducing the prevalence of bullying and being bullied by an average of 20 to 23% in experimental schools compared to control schools. However, these programs are less effective when they are evaluated with more sophisticated study designs such as randomized controlled trials (Langford et al., 2015; Ttofi & Farrington, 2011). As a result, some programs do not produce positive effects, some have never been evaluated, and some are so poorly evaluated that it is difficult to draw valid conclusions regarding their effects (Evans, Fraser, & Cotter, 2014; Menesini & Salmivalli, 2017). These anti-bullying programs may produce little positive effects because many implement zero-tolerance policies or empathy training, which focuses on punishment, improving cognitive/social skills, or using a "one-size-fits-all" approach that treats bullying as homogeneous behaviour (Anderson & Kincaid, 2005; Ellis et al., 2012; Merrell et al., 2008; Volk et al., 2012).

Despite mixed evidence for the effects of anti-bullying programs, the majority of youth are still being bullied. As mentioned previously, bullying victimization is a risk factor for psychological maladjustment (and physical health problems; Copeland et al.,

2014) even later in life after the bullying has stopped. Therefore, if reducing bullying in schools is still a complex issue needing to be resolved, then bullying psychosocial interventions that involve helping youth who may be experiencing a variety of mental health problems as a result of being bullied are worth considering. Unfortunately, only one study has been conducted that involves manualized psychosocial treatment for victims of school bullying. Berry and Hunt (2009) implemented a cognitive behavioural group intervention program with adolescent boys that included cognitive behavioural-based anxiety management strategies, improving social skills and self-esteem, and teaching adaptive coping strategies in bullying situations. The intervention was effective in significantly reducing victims' experiences of bullying, anxiety, depression, and distress with gains maintained three months later (Berry & Hunt, 2009). However, the intervention was not effective in improving self-esteem or modifying aggressive or avoidant responses to bullying situations (Berry & Hunt, 2009). Building on Berry and Hunt's (2009) manualized treatment program, results of the current study emphasize the importance of continuing to develop and refine psychosocial interventions using evidence-based psychotherapies (e.g., cognitive behavioural therapy) to address psychological maladjustment among emerging adults who are victims of bullying to prevent the risk for subsequent substance use and sexual risk taking in both men and women. In addition, psychosocial interventions should help victims develop positive coping skills and limit the use of negative coping skills when dealing with bullying victimization or the negative emotions associated with bullying victimization (Wadsworth, 2015). Previous research has suggested that more active, problem-solving coping approaches reduce the likelihood of substance use and sexual risk behaviours

(Brady, Tschann, Pasch, Flores, & Ozer, 2009; Teva, Bermúdez, & Buela-Casal, 2010).

Besides the direct and indirect effects of bullying victimization on health risk behaviours, the results of the current study also suggest that youth with a history of polyvictimization (i.e., bullying and child maltreatment) may be at even greater risk for engaging in substance use and sexual risk taking. Current prevention and intervention programs to help victimized youth are fragmented because they are often tailored toward single forms of victimization (Turner et al., 2010). Researchers need to acknowledge that failing to consider exposure to multiple forms of victimization is likely to underestimate the severity of adverse outcomes (Turner et al., 2010). Instead, adequate prevention and intervention programs may require a multidisciplinary and transdiagnostic approach that involves incorporating and integrating expertise from various research fields to target polyvictimization early in life (Cyr et al., 2013) in order increase positive coping skills and reduce the risk for engaging in substance use and sexual risk taking.

Limitations and Future Directions for Research

In line with my findings and implications, there are some limitations to the current study. First, self-report measures were used to collect the data, which may be susceptible to social desirability bias. Self-report data on bullying victimization, child maltreatment, and health risk behaviours may be inconsistent or underreported (Rigby & Johnson, 2006; Hardt & Rutter, 2004; Harris, Griffin, McCaffrey, & Morra, 2008; Morrison-Beedy et al., 2006). However, the inclusion of the BIDR to identify participants who may have been inclined to respond in socially desirable ways and assuring participants that their responses would be kept confidential appeared to reduce respondents' concerns and to improve response quality to sensitive questions (Krumpal, 2013). Furthermore,

participants filled out the questionnaires online, which can create a social situation where participants feel a sense of disinhibition and reduce social desirability effects (Booth-Kewley, Larson, & Miyoshi 2007). Another concern with self-report measures is that participants were asked to recall experiences (e.g., bullying victimization, childhood maltreatment) that may have occurred several years ago. Retrospective self-report may be subject to recall error and memory instability, which compromises internal validity (Cammack & Hogue, 2017; Hardt & Rutter, 2004). However, recent research has established that retrospective reports are reliable and valid even for traumatic events such as experiences of victimization (Brewin, Andrews, & Gotlib, 1993; Hardt & Rutter, 2004). Taken together, previous studies have found using self-report measures for bullying (e.g., Olweus, 2013), childhood maltreatment (Hardt & Rutter, 2004), substance use (e.g., Buchan, Dennis, Tims, & Diamon, 2002; Del Boca & Darkes, 2003), and sexual behaviour (e.g., Brener, Billy, & Grady, 2003) tend to demonstrate modest to good validity for capturing these behaviours. Future studies using multiple informants or sources to gather data would offer more reliability and validity.

Another limitation was that the study was cross-sectional making it difficult to derive causal relationships among the variables. For example, given that all variables were measured concurrently, the results do not indicate whether negative mental health outcomes are a cause or outcome of bullying victimization or if avoidance coping behaviours are a cause or outcome of poor mental health. For instance, although some research suggests bullying victimization is a consequence of psychosocial problems (e.g., Boulton et al., 2010; Kaltiala-Heino & Fröjd, 2011; Siegel et al., 2009), the majority of studies on bullying and mental health indicate that bullying is a predictor of psychosocial

problems. Therefore, despite the cross-sectional nature of the results, the temporal order of the variables was consistent with previous research and theory. Future longitudinal studies may be able to establish causal relations among the variables (MacKinnon, 2008).

Third, the sample consisted of primarily heterosexual emerging adults collected from a psychology participant pool, lending some caution to the generalizability of the results to younger samples (e.g., children and adolescents), community samples, and LGBTQ samples. Although emerging adults may use maladaptive coping behaviours such as substance use and sexual risk taking to deal with the psychosocial distress from being bullied, children may use different maladaptive coping behaviours that are more developmentally appropriate. For instance, children may deal with the stress of peer conflict by engaging in aggressive behaviour (e.g., yelling, hitting; Kochenderfer-Ladd, 2004; Marsh et al., 2011), blaming themselves for being bullied (Tenenbaum, Varjas, Meyers, & Parris, 2012), or distancing (e.g., ignoring or pretending nothing happened; Andreou, 2001; Mahady Wilton, Craig, & Pepler, 2000). Furthermore, despite the value of conducting social science research with student samples, these samples tend to be more homogenous than community samples, which raise concerns regarding the representativeness and generalizability of the findings to nonstudents (Murray, Rugeley, Mitchell, & Mondak, 2013). Finally, the scope of the current study was not geared toward sexual minority youth despite these individuals being at a higher risk for bullying victimization and poor mental health outcomes compared to heterosexual youth (Coulter, Herrick, Friedman, & Stall, 2016; King et al., 2008; McLaughlin, Hatzenbuehler, Xuan, & Conron, 2012; Schuster et al., 2015). The sample in the current study was mostly heterosexual making it difficult to conduct analyses with the small LGBTQ sample so the

theoretical and practical implications of the findings should be limited to heterosexual youth. Future research should conduct studies with younger and more diverse samples to determine the nature of the relationships among bullying victimization, mental health, and coping and increase external validity.

The current study examined the most common negative mental health outcomes associated with bullying victimization. However, previous research has found that bullying victimization is an antecedent to a variety of adverse, but less common, mental health outcomes such as posttraumatic stress disorder, eating disorders, and suicidality (e.g., Copeland et al., 2015, Idsoe, Dyregrov, & Idsoe, 2012; Klomek et al., 2009). These, among other psychosocial problems, should be explored in future research as potential developmental pathways linking bullying victimization to health risk behaviours. Moreover, the current study examined substance use and sexual risk taking as two maladaptive coping behaviours that youth may employ to manage psychosocial distress. However, it was beyond the scope of the current study to examine under which internal (e.g., individual differences) and external (e.g., environmental contexts) factors youth are more likely to turn to substance use than sexual risk taking or vice versa. In addition, there are other maladaptive coping behaviours (e.g., self-blame, denial), as well as adaptive coping behaviours (e.g., using emotional support, positive reframing), that were not examined but are behaviours that some youth may be willing to employ (Carver, 1997). Future research should explore how internal and external factors may influence youth to engage in one health risk behaviour over the other and explore other maladaptive and adaptive coping behaviours to gain a more comprehensive understanding of the strategies youth may use to manage psychosocial distress from a history of bullying

victimization.

Finally, polyvictimization consisted of bullying and child maltreatment. However, youth may be exposed to a broad range of victimizations that were not analyzed in the current study. For instance, in addition to peer victimization and childhood maltreatment, youth may also be exposed to indirect victimization (e.g., witnessing domestic violence), sexual victimization (e.g., rape), or conventional crime (e.g., robbing, kidnapping; Finkelhor, Omrod, Turner, & Hamby, 2005b). Future studies may benefit from taking into account these different forms of victimization to create a more comprehensive polyvictimization variable to determine its influence on substance use and sexual risk taking.

Conclusion

Despite the limitations, the results of the current study suggest that bullying victimization can have important direct and indirect effects on both mental health and health risk behaviours. Some youth may use maladaptive coping strategies such as substance use and sexual risk taking as a result of being bullied. Furthermore, certain psychosocial problems such as lower self-esteem, depressive symptoms, and anxiety symptoms may serve as developmental pathways linking bullying victimization with both substance use and sexual risk taking. In other words, bullying victimization predicts adverse mental health outcomes, which in turn may contribute to the onset of health risk behaviours as ways to cope with these negative outcomes. However, bullying victimization as a risk factor for adverse physical and mental health outcomes is not the only concern. Youth with a history of bullying victimization may have also experienced additional victimizations, particularly childhood maltreatment. Polyvictimization may

place youth at even greater risk for engaging in substance use and sexual risk taking.

Therefore, interventions that focus on bullying may also need to take into account other forms of victimization in order to adequately address substance use and sexual risk taking associated with a history of polyvictimization.

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APPENDICES

Appendix A: Demographics Questionnaire

1. How old are you?

I am _____ years old.

2. With which gender do you most identify?

- Male
- Female
- Transgender
- Intersex
- Other (please specify): _____

3. Which of the following best describes your sexual orientation/identity:

- Heterosexual or straight
- Mostly heterosexual or straight
- Bisexual
- Gay
- Lesbian
- Pansexual
- Asexual
- Other (please specify): _____

4. Ethnicity (Check all that apply):

- Aboriginal (e.g., Inuit, Metis, North American Indian)
- Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)
- East Asian (e.g., Chinese, Filipino, Korean, Japanese)
- Black (e.g., African, Haitian, Jamaican, Somali)
- Latin American
- South Asian (e.g., Indian, Afghan, Punjabi, Bengali)
- White (Caucasian)
- Other (please specify) _____

5. Compared to the average Canadian, do you think your family is (circle one):

- A lot less wealthy
- Less wealthy
- About the same
- More wealthy
- A lot more wealthy

6. Year of study:

- 1st year
- 2nd year
- 3rd year

- 4th year
- 5th year or more

7. Program of study: _____

Appendix B: Revised Olweus Bully/Victim Questionnaire

Here are some questions about being bullied by others. First we explain what bullying is. We say a person is being bullied when another person or several persons:

- Say mean or hurtful things, or make fun of them, or call them mean and hurtful names
- Completely ignore or exclude them from his group of friends or leave them out of things on purpose
- Hit, kick, push, shove around, spit on, throw objects at, or lock them inside a room
- Tell lies or spread false rumors about them or send mean notes, texts, or other communications and try to make other people dislike them
- and do other hurtful things like that
- This may occur at school, going to and from school (on the school bus or while walking), and online.

When we talk about bullying, these things happen **more than just once**, and **it is difficult for the person being bullied to defend himself**. We also call it bullying when a person is teased more than just once in a mean and hurtful way. But we **do not call it bullying** when the teasing is done in a friendly and playful way. Also, it is not bullying when two people of equal strength or power argue or fight.

- 1) Thinking back from kindergarten until grade 12, identify the worst grade (e.g., grade 7) when you were affected the most by bullying _____.
- 2) How often were you bullied during the worst grade that you answered above in Question #1?
 - I was not bullied
 - It only happened once
 - It happened two to three times
 - Two or three times a month
 - About once a week
 - Several times a week

2A) Was the worst bullying incident that you experienced during that grade: Yes No

Thinking about the worst grade you noted in Question #1, please answer the following questions about the nature of the bullying you experienced.

- 3) I was called mean names, was made fun of, or teased in a hurtful way.
 - It did not happen to me during that grade
 - Only once or twice
 - Two or three times a month
 - About once a week

Several times a week

4) Other students left me out of things on purpose, excluded me from their group of friends, or completely ignored me.

It did not happen to me during that grade

Only once or twice

Two or three times a month

About once a week

Several times a week

5) I was hit, kicked, pushed, shoved around, spit on, locked indoors, or had objects thrown at me.

It did not happen to me during that grade

Only once or twice

Two or three times a month

About once a week

Several times a week

6) Other students told lies or spread false rumors about me and tried to make others dislike me.

It did not happen to me during that grade

Only once or twice

Two or three times a month

About once a week

Several times a week

7) I had money or other things taken away from me or damaged.

It did not happen to me during that grade

Only once or twice

Two or three times a month

About once a week

Several times a week

8) I was threatened or forced to do things I did not want to do.

It did not happen to me during that grade

Only once or twice

Two or three times a month

About once a week

Several times a week

9) I was bullied with mean names, comments, or gestures with a sexual meaning.

It did not happen to me during that grade

Only once or twice

- Two or three times a month
- About once a week
- Several times a week

10) I was bullied with mean names or comments about my actual or perceived sexuality.

- It did not happen to me during that grade
- Only once or twice
- Two or three times a month
- About once a week
- Several times a week

11) I was bullied with mean names or comments related to my perceived gender conformity.

- It did not happen to me during that grade
- Only once or twice
- Two or three times a month
- About once a week
- Several times a week

12) I was bullied with mean or hurtful messages, calls or pictures, text messages or IM's, or in other ways on my cell phone or over the Internet (computer). (Please remember that it is not bullying when it is done in a friendly and playful way).

- It did not happen to me during that grade
- Only once or twice
- Two or three times a month
- About once a week
- Several times a week

12A) If you were bullied on your cell phone or over the Internet, how was it done?

- Only on the cell phone
- Only on the Internet
- In both ways

13) I was bullied in another way during that grade.

- It did not happen to me during that grade
- Only once or twice
- Two or three times a month
- About once a week
- Several times a week

14) **In which class(es)** was the student or students who bullied you?

- In my class

- In a different class but the same grade (year)
- In a higher grade(s)
- In a lower grade(s)
- In both higher and lower grades

15) Were you bullied by **males or females**?

- Mainly by one female
- By several females
- Mainly by one male
- By several males
- By both males and females

16) **By how many people** were you usually bullied?

- Mainly by 1 person
- By a group of 2-3 people
- By a group of 4-9 people
- By a group of 10 or more people
- By several different people or groups of people

17) How long did the bullying last?

- It lasted 1 or 2 weeks
- It lasted about a month
- It lasted about 6 months
- It lasted about a year
- It lasted several years

18) Where have you been bullied?

Please select all of the places where you have been bullied (check all that apply):

Elementary School until High School	College, University, or Technical School
<input type="checkbox"/> On the playground/athletic field <input type="checkbox"/> In the hallways/stairwells <input type="checkbox"/> In class (when the teacher was in the room) <input type="checkbox"/> In class (when the teach was not in the room) <input type="checkbox"/> In the bathroom <input type="checkbox"/> In gym class or the gym locker room/shower <input type="checkbox"/> In the lunchroom/cafeteria <input type="checkbox"/> On the way to and from school <input type="checkbox"/> At the school bus stop <input type="checkbox"/> On the school bus	<input type="checkbox"/> In my dorm room <input type="checkbox"/> In my dorm building or another residence hall <input type="checkbox"/> In a bathroom dorm <input type="checkbox"/> In a classroom building <input type="checkbox"/> In the student union or other non-academic building <input type="checkbox"/> On the campus but outside of a building <input type="checkbox"/> In an off campus residence <input type="checkbox"/> At work <input type="checkbox"/> At an off campus restaurant or store <input type="checkbox"/> At an off campus bar or nightclub <input type="checkbox"/> At a fraternity or sorority house

<input type="checkbox"/> Somewhere else at school	<input type="checkbox"/> On a bus or other public transportation
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Appendix C: Childhood Maltreatment

These questions ask about some of your experiences growing up as a child and teenager. Although these questions are of a personal nature, please try to answer them as honestly as you can. Your responses will be kept completely confidential.

For the following questions, please answer “Yes” or “No”.

1. During childhood or adolescence (before the age of 17), has a parent or caregiver ever shoved, slapped, punched, and/or hit you with a closed fist?

a) If yes, were you ever left with marks or bruises on your body?

2. During childhood or adolescence (before the age of 17), has a parent or caregiver ever kicked you; choked you; beaten you up; burned or scalded you; and/or attacked or threatened you with an object or weapon?

3. Before you turned 13 years old, did you have any sexual contact (e.g., hand-to-breast stimulation, hand-to-genital stimulation, oral sex, and/or penetrative vaginal or anal intercourse) with someone who was at least 5 years older than you?

4. Between the ages of 13 and 16, did you have any sexual contact (e.g., hand-to-breast stimulation, hand-to-genital stimulation, oral sex, and/or penetrative vaginal or anal intercourse) with someone who was at least 10 years older than you?

Appendix D: Alcohol-Use Disorders Identification Test

<p>PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest. Place an X in one box that best describes your answer to each question.</p>					
Questions	0	1	2	3	4
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year
					Total

Appendix E: Cannabis Use Disorder Identification Test-Revised

Have you used any cannabis over the past six months? YES / NO

If YES, please answer the following questions about your cannabis use. Circle the response that is most correct for you in relation to your cannabis use *over the past six months*

1. How often do you use cannabis?

Never week	Monthly or less	2-4 times a month	2-3 times a week	4 or more a week
0	1	2	3	4

2. How many hours were you “stoned” on a typical day when you had been using cannabis?

Less than 1	1 or 2	3 or 4	5 or 6	7 or more
0	1	2	3	4

3. How often during the past 6 months did you find that you were not able to stop using cannabis once you had started?

Never daily	Less than Monthly	Monthly	Weekly	Daily or almost
0	1	2	3	4

4. How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?

Never daily	Less than Monthly	Monthly	Weekly	Daily or almost
0	1	2	3	4

5. How often in the past 6 months have you devoted a great deal of your time to getting, using, or recovering from cannabis?

Never daily	Less than Monthly	Monthly	Weekly	Daily or almost
0	1	2	3	4

6. How often in the past 6 months have you had a problem with your memory or concentration after using cannabis?

Never daily 0	Less than Monthly 1	Monthly 2	Weekly 3	Daily or almost 4
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7. How often do you use cannabis in situations that could be physically hazardous, such as driving, operating machinery, or caring for children:

Never daily 0	Less than Monthly 1	Monthly 2	Weekly 3	Daily or almost 4
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8. Have you ever thought about cutting down, or stopping, your use of cannabis?

Never 0	Yes, but not in the past 6 months 2	Yes, during the past 6 months 4
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Appendix F: Sexual Risk Survey

Please read the following statements and record the number that is true for you over the past 6 months for each question on the blank. If you do not know for sure how many times a behavior took place, try to estimate the number as close as you can. Thinking about the average number of times the behavior happened per week or per month might make it easier to estimate an accurate number, especially if the behavior happened fairly regularly. If you've had multiple partners, try to think about how long you were with each partner, the number of sexual encounters you had with each, and try to get an accurate estimate of the total number of each behavior. If the question does not apply to you or you have never engaged in the behavior in the question, put a "0" on the blank. Please do not leave items blank. **Remember that in the following questions "sex" includes oral, anal, and vaginal sex and that "sexual behavior" includes passionate kissing, making out, fondling, petting, oral-to-anal stimulation, and hand-to-genital stimulation.** Refer to the Glossary for any words you are not sure about. Please consider only the last 6 months when answering and please be honest. Your responses will be kept completely confidential.

In the past six months:

1. How many partners have you engaged in sexual behavior with but not had sex with?
2. How many times have you left a social event with someone you just met?
3. How many times have you "hooked up" but not had sex with someone you didn't know or didn't know very well?
4. How many times have you gone out to bars/parties/social events with the intent of "hooking up" and engaging in sexual behavior but not having sex with someone?
5. How many times have you gone out to bars/parties/social events with the intent of "hooking up" and having sex with someone?
6. How many times have you had an unexpected and unanticipated sexual experience?
7. How many times have you had a sexual encounter you engaged in willingly but later regretted?

For the next set of questions, follow the same direction as before. However, for questions 8–23, if you have never had sex (oral, anal or vaginal), please put a "0" on each blank.

8. How many partners have you had sex with?
9. How many times have you had vaginal intercourse without a latex or polyurethane condom? Note: Include times when you have used a lambskin or membrane condom.

10. How many times have you had vaginal intercourse without protection against pregnancy?
11. How many times have you given or received fellatio (oral sex on a man) without a condom?
12. How many times have you given or received cunnilingus (oral sex on a woman) without a dental dam or “adequate protection”?
13. How many times have you had anal sex without a condom?
14. How many times have you or your partner engaged in anal penetration by a hand (“fisting”) or other object without a latex glove or condom followed by unprotected anal sex?
15. How many times have you given or received analingus (oral stimulation of the anal region, “rimming”) without a dental dam or “adequate protection”?
16. How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e., “friends with benefits”, “fuck buddies”)?
17. How many times have you had sex with someone you don’t know well or just met?
18. How many times have you or your partner used alcohol or drugs before or during sex?
19. How many times have you had sex with a new partner before discussing sexual history, IV drug use, disease status and other current sexual partners?
20. How many times (that you know of) have you had sex with someone who has had many sexual partners?
21. How many partners (that you know of) have you had sex with who had been sexually active before you were with them but had not been tested for STIs/HIV?
22. How many partners have you had sex with that you didn’t trust?
23. How many times (that you know of) have you had sex with someone who was also engaging in sex with others during the same time period?

Glossary

The following is a list of definitions for terms as they are used in the following survey (please read before starting—especially the definitions of “sex” and “sexual behaviour”). The terms in this survey may be used differently than the way you typically use them. If

you find slang terminology offensive and understand the more formal terms and definitions, you may skip the a.k.a terms in parentheses.

Analingus: Oral to anal stimulation, where a person stimulates another person's anal region with one's mouth/tongue (a.k.a. "rimming", "butt/ass licking").

Anal Sex: Penis to anus stimulation, where a man's penis penetrates another person's anus (a.k.a. "butt/ass sex").

Birth Control/Protection against pregnancy: Methods used to prevent pregnancy, such as taking birth control pills, Norplant implants, birth control patches, condoms, diaphragms, contraceptive sponges, withdraw method, etc. Note: Only latex and polyurethane condoms will also effectively protect against STIs.

Condom: A male condom is a sheath (usually made of latex) that is placed on the outside of the penis and covers the entire shaft of the penis during sexual relations to help protect against pregnancy and STIs. A female condom is a soft flexible tube (usually made of polyurethane) that is inserted into the vagina before sex to protect against pregnancy and STIs. Note: Only latex & polyurethane condoms offer adequate protection against STIs.

Cunnilingus: Oral sex on a woman, using one's mouth to stimulate a woman's genitals (a.k.a. "eating a woman out", "going down on a woman").

Dental dam (or "adequate protection"): A thin piece of latex that can be placed between the mouth and the vagina during oral sex on a woman to help prevent STIs, or placed between the mouth and anal region during oral to anal sex (analingus) to prevent STIs and bacterial infections. Although purchased dental dams are the most reliable, they can also be self-made by cutting a large square from a latex condom (people often use flavoured condoms for this) or by using a square of plastic wrap as long as there are no holes in the material and the covering adequately covers the genital region. These self-made dental dams are considered "adequate protection" in this study.

Fellatio: Oral sex on a man, using one's mouth to stimulate a man's penis (a.k.a. "blow job", "giving head").

Hooking up: Engaged in sexual behaviour (such as making out/fondling) or sex with someone, usually outside of a relationship.

IV drugs: Intravenous drugs that are injected into the body using a needle and a syringe, drugs that you can "shoot up" such as heroin.

Oral Sex: Mouth to genital stimulation, using one's mouth to stimulate or touch the genitals of a man or a woman (a.k.a. fellatio, cunnilingus, "blow jobs", "going down on someone").

Sex: Includes oral, anal, and vaginal sex.

Sexual behavior: Includes passionate kissing, fondling, petting, oral-to-anal stimulation and hand-to genital stimulation (includes "making out", "dry sex/humping", "fingering", anilingus, "rimming" "handjobs").

Sexual partner: A person with whom you have had sex (oral, anal or vaginal) or engaged in sexual behaviour with.

STI: Stands for a sexually transmitted infection, a disease that can be given to someone through oral, genital and/or anal sex. Some STIs may also be gotten through oral to anal contact and hand to genital contact. STIs include herpes, trichomonas, chlamydia, syphilis, gonorrhoea, vaginitis, genital warts, pubic lice, hepatitis B and HIV infection which leads to AIDS.

Vaginal sex: Sexual intercourse where a man's penis penetrates a woman's vagina, this is the only type of sex that can directly result in pregnancy. (Please note that rear- entry intercourse, such as "doggy-style" sex, is considered vaginal sex as long as the penis is penetrating the vagina and not the anal region).

Appendix G: Rosenberg Self-Esteem Scale

Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle SA. If you agree with the statement, circle A. If you disagree, circle D. If you strongly disagree, circle SD.

- | | | | | |
|---|----|---|---|----|
| 1. On the whole, I am satisfied with myself. | SA | A | D | SD |
| 2. At times, I think I am no good at all. | SA | A | D | SD |
| 3. I feel that I have a number of good qualities. | SA | A | D | SD |
| 4. I am able to do things as well as most other people. | SA | A | D | SD |
| 5. I feel I do not have much to be proud of. | SA | A | D | SD |
| 6. I certainly feel useless at times. | SA | A | D | SD |
| 7. I feel that I'm a person of worth, at least on an equal plane with others. | SA | A | D | SD |
| 8. I wish I could have more respect for myself. | SA | A | D | SD |
| 9. All in all, I am inclined to feel that I am a failure. | SA | A | D | SD |
| 10. I take a positive attitude toward myself. | SA | A | D | SD |

Appendix H: Center for Epidemiological Studies Depression Scale-Revised

Below is a list of the ways you might have felt or behaved. Please check the boxes to tell me how often you have felt this way in the past week or so.

	Last week				Nearly everyday for 2 weeks
	Not at all or Less than 1 day	1-2 days	3-4 days	5-7 days	
My appetite was poor.	0	1	2	3	4
I could not shake off the blues.	0	1	2	3	4
I had trouble keeping my mind on what I was doing.	0	1	2	3	4
I felt depressed.	0	1	2	3	4
My sleep was restless.	0	1	2	3	4
I felt sad.	0	1	2	3	4
I could not get going.	0	1	2	3	4
Nothing made me happy.	0	1	2	3	4
I felt like a bad person.	0	1	2	3	4
I lost interest in my usual activities.	0	1	2	3	4
I slept much more than usual.	0	1	2	3	4
I felt like I was moving too slowly.	0	1	2	3	4
I felt fidgety.	0	1	2	3	4
I wished I were dead.	0	1	2	3	4
I wanted to hurt myself.	0	1	2	3	4
I was tired all the time.	0	1	2	3	4
I did not like myself.	0	1	2	3	4
I lost a lot of weight without trying to.	0	1	2	3	4

I had a lot of trouble getting to sleep.	0	1	2	3	4
I could not focus on the important things	0	1	2	3	4

Appendix I: State-Trait Anxiety Inventory

DIRECTIONS

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your presents feelings best.

- 1. I feel calm1 2 3 4
- 2. I feel secure1 2 3 4
- 3. I am tense1 2 3 4
- 4. I feel strained.....1 2 3 4
- 5. I feel at ease1 2 3 4
- 6. I feel upset.....1 2 3 4
- 7. I am presently worrying over possible misfortunes1 2 3 4
- 8. I feel satisfied1 2 3 4
- 9. I feel frightened.....1 2 3 4
- 10. I feel comfortable1 2 3 4
- 11. I feel self-confident.....1 2 3 4
- 12. I feel nervous.....1 2 3 4
- 13. I am jittery.....1 2 3 4
- 14. I feel indecisive1 2 3 4
- 15. I am relaxed.....1 2 3 4
- 16. I feel content1 2 3 4
- 17. I am worried.....1 2 3 4
- 18. I feel confused.....1 2 3 4

19. I feel steady1 2 3 4
20. I feel pleasant1 2 3 4

DIRECTIONS

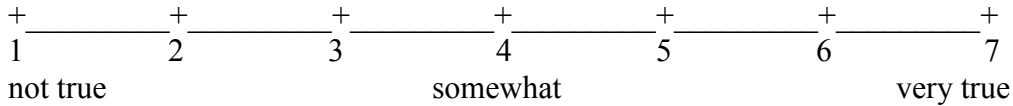
A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

21. I feel pleasant1 2 3 4
22. I feel nervous and restless1 2 3 4
23. I feel satisfied with myself1 2 3 4
24. I wish I could be as happy as others seem to be1 2 3 4
25. I feel like a failure1 2 3 4
26. I feel rested1 2 3 4
27. I am "calm, cool, and collected"1 2 3 4
28. I feel that difficulties are piling up so that I cannot overcome them1 2 3 4
29. I worry too much over something that really doesn't matter1 2 3 4
30. I am happy1 2 3 4
31. I have disturbing thoughts1 2 3 4
32. I lack self-confidence1 2 3 4
33. I feel secure1 2 3 4
34. I make decisions easily1 2 3 4
35. I feel inadequate1 2 3 4
36. I am content1 2 3 4

37. Some unimportant thought runs through my mind and bothers me.....1 2 3 4
38. I take disappointments so keenly that I can't put them out of my mind...1 2 3 4
39. I am a steady person.....1 2 3 4
40. I get in a state of tension or turmoil as I think over my recent concerns
and interests1 2 3 4

Appendix J: Balanced Inventory of Desirable Responding

Using the scale below as a guide, write a number beside each statement to indicate how true it is.



- ___ 1. My first impressions of people usually turn out to be right.
- ___ 2. It would be hard for me to break any of my bad habits.
- ___ 3. I don't care to know what other people really think of me.
- ___ 4. I have not always been honest with myself.
- ___ 5. I always know why I like things.
- ___ 6. When my emotions are aroused, it biases my thinking.
- ___ 7. Once I've made up my mind, other people can seldom change my opinion.
- ___ 8. I am not a safe driver when I exceed the speed limit.
- ___ 9. I am fully in control of my own fate.
- ___ 10. It's hard for me to shut off a disturbing thought.
- ___ 11. I never regret my decisions.
- ___ 12. I sometimes lose out on things because I can't make up my mind soon enough.
- ___ 13. The reason I vote is because my vote can make a difference.
- ___ 14. My parents were not always fair when they punished me.
- ___ 15. I am a completely rational person.
- ___ 16. I rarely appreciate criticism.
- ___ 17. I am very confident of my judgments.
- ___ 18. I have sometimes doubted my ability as a lover.
- ___ 19. It's all right with me if some people happen to dislike me.
- ___ 20. I don't always know the reasons why I do the things I do.
- ___ 21. I sometimes tell lies if I have to.
- ___ 22. I never cover up my mistakes.
- ___ 23. There have been occasions when I have taken advantage of someone.
- ___ 24. I never swear.
- ___ 25. I sometimes try to get even rather than forgive and forget.
- ___ 26. I always obey laws, even if I'm unlikely to get caught.
- ___ 27. I have said something bad about a friend behind his/her back.
- ___ 28. When I hear people talking privately, I avoid listening.
- ___ 29. I have received too much change from a salesperson without telling him or her.
- ___ 30. I always declare everything at customs.
- ___ 31. When I was young I sometimes stole things.
- ___ 32. I have never dropped litter on the street.
- ___ 33. I sometimes drive faster than the speed limit.
- ___ 34. I never read sexy books or magazines.
- ___ 35. I have done things that I don't tell other people about.
- ___ 36. I never take things that don't belong to me.
- ___ 37. I have taken sick-leave from work or school even though I wasn't really sick.
- ___ 38. I have never damaged a library book or store merchandise without reporting it.
- ___ 39. I have some pretty awful habits.
- ___ 40. I don't gossip about other people's business.



CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: The Influence of Problematic Peer Relationships and Childhood Adversity on Development

You are asked to participate in a research study conducted by graduate student and principal investigator (PI) Daniel Provenzano and faculty supervisor Dr. Michael Boroughs from the Department of Psychology at the University of Windsor. Results of the study will be contributing to a Master's thesis project.

If you have any questions or concerns about the research, please feel free to contact Daniel Provenzano by phone at (519) 253-3000 ext. 4085 or email at provenz1@uwindsor.ca.

PURPOSE OF THE STUDY

The purpose of the current study is to better understand how problematic peer relationships and incidents of childhood abuse may influence mental health and engagement in health risk behaviours (involving substance use and sexual behaviour) in emerging adults.

PROCEDURES

If you volunteer to participate in this study, you will be asked to fill out questionnaires about yourself, your peer relationships, and your basic demographics (e.g., things like age, gender, etc.) online using the link provided for Qualtrics, a questionnaire website. It should take you about 30 minutes to complete the online questionnaires. You will need to complete these questionnaires in one sitting and in a private place undistracted. After completing the questionnaires, you will be asked whether or not you would like to withdraw your data from the study. If you choose to not withdraw your data, you will not be able to withdraw your data at a later date. If you choose to withdraw your data, your responses to the questionnaires will be deleted immediately. After completing the study, please clear the cache and browser history and close your web browser.

POTENTIAL RISKS AND DISCOMFORTS

Some relationships may be difficult to think about, particularly for those with a history of bullying. It may also be distressing to recall experiences of childhood maltreatment. If you find any part of this study to be too stressful, you may contact Daniel Provenzano (contact information provided above), the University of Windsor Ethics board (contact

information provided below), or simply stop your participation. You may also freely discuss the study with parents or friends if you need to, although we would ask that you try not to talk to someone before they complete the study on their own. Sharing answers before the study ends can distort and/or change your own natural answers.

We do not ask for any specific incidents or events, so there is no personal or legal liability associated with any of your answers, nor are we legally obligated to disclose any of your answers to the questions (including abuse and harm). If you have any concerns about specific behaviours or incidents, we strongly suggest that you discuss them with trusted individuals (e.g., close friends or parents). You may also contact any of the resources that are provided at the end of the study. It is important to know that you do not need to tolerate any form of abuse.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Possible benefits of participation involve gaining useful knowledge about the self such that some participants may learn about the link between their own current mental health and history of bullying victimization. Furthermore, participants may learn about some of the negative health outcomes associated with bullying that hopefully encourages them to denounce the behaviour, intervene in known incidents of bullying, or seek treatment if they are experiencing negative health outcomes associated with being bullied. Finally, participants may learn about mental health resources that are available to them through the university and in the community if they are experiencing distress either from the study or prior to participating. Potential benefits to the scientific/scholarly community or society that justify the involvement of participants in this study are to help to inform the development and refinement of bullying prevention interventions to address health risk behaviours and/or negative mental health outcomes associated with being bullied.

COMPENSATION FOR PARTICIPATION

Participants will receive 0.5 bonus points for 30 minutes of participation towards the psychology participant pool, if registered in the pool and enrolled in one or more eligible courses. If you did not sign up for this study through the participant pool, then you can enter a draw to win one of three \$50 gift cards for Amazon.

CONFIDENTIALITY

Any information that is obtained in connection with this study will remain confidential and will be disclosed only with your permission. Unique, identifiable data (such as exact date of birth, names of friends and family, IP address) will not be collected other than demographic information and your name for the purposes of ensuring that you receive your compensation for participating. You do not have to reveal your answers to any of your friends, family, or anyone else other than the researchers in this study. Data collected during this study will be stored on a secure password protected computer, and your responses will be confidential. In order to best protect your confidentiality, we suggest completing the online questionnaires in private and on your own. This will limit the possibility of others (e.g., parents, siblings, friends) from seeing your responses. The

researchers will own all data collected through Qualtrics and therefore all information will be confidential. Qualtrics data will be stored on servers in Canada. All communications to/from the Qualtrics servers are encrypted. The Qualtrics servers are protected by firewalls and Qualtrics monitors system access for unauthorized uses. However, data will be downloaded onto a password protected lab computer once data collection is completed. Once data is downloaded in the lab, the data will be immediately deleted off from Qualtrics.

PARTICIPATION AND WITHDRAWAL

Participation in this study is purely voluntary. Whether you participate, or what questions you answer, is completely up to you. If you want to withdraw from this study at any time, you may do so by clicking on “Exit Survey” without any penalty other than not receiving 0.5 course credit or not being able to enter the draw to win a \$50 gift card, and your data will be confidentially destroyed in the event of withdrawal. After completing the questionnaires, you will be asked whether or not you would like to withdraw your data from the study. If you choose to not withdraw your data, you will not be able to withdraw your data at a later date. If you choose to withdraw your data from the study at that point, your responses to the questionnaires will be deleted.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Results of the study will be available to you upon request by contacting Daniel Provenzano or you may check the University of Windsor’s Research Ethics Board Website to find a summary of the results of the study in Fall 2018.

SUBSEQUENT USE OF DATA

These data may be used in subsequent studies, in publications in professional journals and in conference presentations.

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH PARTICIPANT/LEGAL REPRESENTATIVE

I understand the information provided for the study The Influence of Problematic Peer Relationships and Childhood Adversity on Development as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. Please print a copy of this form for your records.

Yes

No

Date: _____

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

Date: _____

Appendix L: Debriefing Form and Community Resources

DEBRIEFING LETTER

Thank you for your participation in our study! As you may have deduced from the nature of the questions, we are interested in problematic peer relationships, childhood adversity, mental health, and health risk behaviours. For instance, we are interested in how history of bullying victimization and child maltreatment may be linked with mental health problems and engagement in substance use and sexual activity in young people. It is our belief that an understanding of all these variables together will help us learn about how they affect young people. A growing body of research is being done on these variables, which we feel are very important, and hope to present and/or publish some of the results of this study in the future. Some of the questions in this study may have been uncomfortable and/or difficult to respond. Bullying victimization and experiences of other types of child maltreatment are common and many young people find thinking about them to be upsetting and unpleasant. If you have any concerns being a victim of bullying or child maltreatment, or are experiencing any mental health problems, please feel free to contact any of the resources that are provided below. In general, you can help prevent bullying by not participating as a bully, intervening when others are being bullied (e.g., report that behaviour to an adult), and by actively disapproving of the bully's behaviour (e.g., telling them it's not cool). You may be able to reduce victimization by talking to your parents, teachers, and/or friends and by trying to make supportive friendships. Bullying is a public health crisis affecting millions of children, adolescents, and young adults worldwide each year. Previous studies have found negative physical and mental health outcomes linked with a history of being bullied. In particular, bullying victimization is associated with low self-esteem, loneliness, anxiety, post-traumatic stress disorder, depression, suicide, eating disorders, substance use, sexual risk taking, and sickness (i.e., more colds, sore throats, and inflammation). What is especially concerning is that these negative health outcomes can persist into adulthood even though individuals may have experienced bullying in childhood or adolescence. In general, you can help prevent bullying by not participating as a bully, intervening when others are being bullied (e.g., report that behaviour to an adult), and by actively disapproving of the bully's behaviour (e.g., telling them it's not cool). You may be able to reduce victimization by talking to your parents, teachers, and/or friends and by trying to make supportive friendships.

If you have any further questions or concerns, please feel free to contact Daniel Provenzano at provenz1@uwindsor.ca or (519) 253-3000 ext. 4085, or if regarding the study's ethics, the University of Windsor Research Ethics Office at (519) 253-3000 Ext. 3948, ethics@uwindsor.ca. Results of the study will be available to you upon request in Fall 2018 by contacting Daniel Provenzano. Thank you very much for participating in this study!



COMMUNITY RESOURCE LIST

Brentwood Recovery Home
2335 Dougall Avenue
Windsor, Ontario N8X1S9
Phone: 519-253-2441

Canadian Mental Health Association Windsor-Essex County Branch
1400 Windsor Avenue
Windsor, Ontario N8X 3L9
Phone: 519-255-7440

Community Crisis Centre (Walk-in Service; 1st Floor Jeanne Mance Building)
1030 Ouellette Ave.
24 hour Crisis Telephone Line: 519-973-4435

ConnexOntario
Drug and Alcohol Helpline: 1-800-565-8603
Mental Health Helpline: 1-866-531-2600

Distress Center
Phone: 519-256-5000

Family Services Windsor-Essex
1770 Langlois Ave. □
Windsor, Ontario N8X4M5
Phone: 519-966-5010

Good2Talk
24-hour Student Helpline 1-866-925-5454

Maryvale Adolescent and Family Services
940 Prince Rd
Windsor, ON N9C 2Z5
(519) 258-0484

Psychological Services and Research Center
2629 Riverside Drive West
Windsor, Ontario N9B 1B4
Phone: 519-253-3000 ext. 7012 or 519-973-7012

Sandwich Community Health
3320 College Avenue
Windsor, Ontario N9C 0E1
Phone: 519-258-6002 ext. 222

Sexual Assault Crisis Centre
1770 Langlois Ave
Windsor, Ontario N8X 4M5
Phone: 519-253-3100
24-hour crisis hotline: 519-253-9667

Teen Health Centre
1361 Ouellette Avenue
Windsor, Ontario N8X 1J6
Phone: 519-253-8481

Appendix M: Recruitment Advertisements

Participant Pool Advertisement

Study Name: The Influence of Problematic Peer Relationships and Childhood Adversity on Development

Brief Abstract: The purpose of the current study is to better understand how problematic peer relationships and incidents of childhood abuse may influence mental health and engagement in health risk behaviours (involving substance use and sexual behaviour) in emerging adults.

Detailed Description: None

Eligibility Criteria: Students between the ages of 17 and 25 years old.

Duration: 30 minutes

Points: 0.5 course credit

Preparation: Before beginning the study, please set aside 30 minutes as the study must be completed in one sitting. Also, make sure you complete the study in private and on your own.



University
of Windsor

SURVEY PARTICIPANTS NEEDED!

My name is Daniel Provenzano and I am a graduate student in the department of psychology. I am looking for participants to fill out my 30-minute research survey online.

If you are a student between the ages of 17 and 25, you are eligible to participate!

You can enter a draw to win one of three \$50 gift certificates for your time and efforts!

If you would like to participate in the this study, please contact me at provenz1@uwindsor.ca

Thank you for your interest.

*A few questions will ask about incidents of childhood abuse, whereas other questions will ask about sexual health. This study has received ethics clearance through the University of Windsor Research Ethics Board.

VITA AUCTORIS

NAME: Daniel A. Provenzano

PLACE OF BIRTH: Toronto, ON

YEAR OF BIRTH: 1990

EDUCATION: Queen's University, B.A. (Honours), Kingston, ON, 2013
Brock University, M.A., St. Catharines, ON, 2016