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Nonsuicidal and Suicidal Intent Among Children and Youth with Histories of Trauma: The Role of Protective Factors

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Abstract

Developmental trauma remains a significant problem as several domains of impairment in children and youth exposed to trauma are affected. The momentum of research is currently focused on the consequences of developmental trauma reflected in disruptions in cognitive, neurological and psychological development which places children and youth at an elevated risk in developing maladaptive coping behaviours. Children and youth who report a history of trauma are typically more likely to engage in non-suicidal self-injury (NSSI) and suicidal self-injury (SSI). This research explores whether social support and executive functioning moderate the relationship between developmental trauma history and involvement in NSSI and NSSI+SSI in clinically-referred children and youth. Data was drawn from 10 mental health care agencies across Ontario where there was the capacity to complete an interRAI ChYMH assessment. Data includes 8349 participants between 7-18 years of age with multifaceted health histories. Results indicate that the following predictor variables as a set differentiated between children and youth who engage in NSSI and NSSI+SSI from those who do not engage: sexual or physical abuse, witnessing domestic violence, female gender, and older age. Results revealed that cumulative trauma, male gender, and older age predicted engagement in NSSI and NSSI+SSI. Higher levels of social support and executive functioning appeared to function as protective factors for some types of abuse and not others, thus moderating the direct association between developmental trauma and self-injurious behaviours. Findings from this study hold implications for clinicians in assessing child and youth protective factors, developing targeted intervention and prevention strategies for self-harming behaviour, and could improve the consistency and continuity of care of the mental health needs of children and youth.

Key words: Developmental trauma, nonsuicidal self-injury, suicidal self-injury, ChYMH

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**Nonsuicidal and Suicidal Intent Among Children and Youth with Histories of Trauma:
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Introduction

Developmental trauma: Conceptual framework. Developmental trauma is an increasing area of relevance in contributing to the understanding regarding the impact of adverse life events [ALE] that extend from childhood through adolescence and into adulthood. The literature on developmental trauma and psychological distress has been well documented in relation to symptoms of posttraumatic stress disorder (PTSD), including re-experiencing the traumatic event, hyperarousal, rumination and emotional numbing (American Psychological Association, 2000). The trauma experienced by children and youth exposed to ALE is reflected in the diagnosis of PTSD symptoms, rather than the currently proposed diagnosis of Developmental Trauma Disorder (DTD; van der Kolk et al., 2009). Although researchers have identified a multiplicity of both negative short and long-term consequences associated with developmental trauma, the current diagnostic system does not reflect the clinical presentations of children and youth exposed to developmental trauma (van der Kolk et al., 2009).

Gaps in the literature are apparent as difficulties arise when conceptualizing symptoms related to developmental trauma. Despite this difficulty, developmental trauma remains a significant problem as several domains of impairment in children and youth exposed to trauma are affected. These can include disruptions to the attachment process, dissociation, impaired cognitive capacity, biology, affect regulation, behavioural control, and self-concept (Cook et al., 2005). The momentum of research is currently focused on the consequences of developmental trauma reflected in disruptions in cognitive, neurological and psychological development which places children and youth at an elevated risk in developing maladaptive coping behaviours.

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The present study examined the relationship between clinically-referred children and youth with histories of developmental trauma (i.e., physical abuse, sexual abuse, witnessing domestic violence, or neglect), and engagement in non-suicidal self-injury (NSSI) and suicidal self-injury (SSI). Specifically, social support and executive functioning were assessed as moderators among this relationship.

Literature Review

Developmental trauma: Early development of attachment matters. Although not highlighted in the proposed DTD criterion, van der Kolk (2005) outlined a model that recognizes that traumatic experiences are strongly affected by children's attachment. More specifically, consistent, appropriate protective caregiving has been shown to play a role in developmental trauma, in relation to development of psychological representations of the self, others, and the self in relation to others (Cook et al., 2005).

Early caregiving relationships that are sensitive and child centered form the basis of a child's developmental competencies, such as "distress tolerance, curiosity, sense of agency, and communication" (Cook et al., 2005, p. 392). In fact, secure attachment relationships have been found to decrease the severity of the outcomes of traumatic experiences, whereas, insecure attachment relationships may amplify adverse outcomes (Rahim, 2014). Research reveals that 80% of children with a history of maltreatment develop insecure attachment patterns, reflected in children becoming distressed easily and being unable to collaborate with caregivers in having insufficient internal resources (Cook et al., 2005). These children learn that the external world is a dangerous place, and they are relatively unable to control their own internal world effectively (Rahim, 2014).

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Children with histories of trauma often cannot find substitute sources of security which will lead to behaviours that are perceived as helpless, blaming or rejecting (Cook et al., 2005) and often are interpreted as oppositional or antisocial (van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005). One study investigating complex attachment- and trauma-related symptomatology among 347 children in foster and kinship care found that 20% of the sample displayed complex attachment difficulties that did not fit within Diagnostic and Statistical Manual (DSM) of Mental Disorders classifications (Terren-Sweeney, 2013). The present study will view trauma and its consequences through an attachment-based perspective.

The role of developmental trauma as a determinant of NSSI among children and youth. Due to the range of different possible domains affected by developmental trauma in children and youth, it is understandable that the maladaptive behaviours that develop are unique amongst individuals. For example, there is a significant literature indicating the role of developmental trauma in children's and youth's engagement in direct self-injury, specifically NSSI. Victimization through childhood maltreatment is among the most extensively studied risk factor for NSSI. Historically, in the Diagnostic and Statistical Manual of Mental Disorders III (DSM- III), NSSI was considered one symptom (i.e., "physically self-damaging acts") of borderline personality disorder (BPD; American Psychiatric Association, 1980). However, in the most recent edition of the DSM (Version 5), NSSI is currently understood as its own autonomous diagnostic category requiring further research.

NSSI, as currently described within the DSM-V, reflects "the deliberate, self-inflicted destruction of body tissue without suicidal intent and for purposes not socially sanctioned" (International Society for the Study of Self-Injury, 2017). It is frequently referred to as non-suicidal self-injury, self-injurious behavior, or deliberate self-harm (International Society for the

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Study of Self-Injury, 2017). This includes behaviours such as cutting, burning, stabbing, hitting, excessive rubbing, and head banging, with the awareness that the behaviour may lead to mild or moderate physical harm (American Psychiatric Association, 2013). Though prevalence estimates of NSSI among children and youth who have histories of childhood maltreatment vary, it is globally recognized as a major public health issue. In clinical samples, studies suggest prevalence estimates for NSSI in childhood and adolescence can reach between 70-80% (Thomassin, Shaffer, Madden, & Londino, 2016; Preyde et al., 2014; Auerbach, 2014).

The relationship between childhood maltreatment and NSSI is subject to variation depending on the type of maltreatment. In one of numerous studies, Baiden, Stewart and Fallon (2017) examined the effects of adverse childhood experiences on non-suicidal self-injury among children and youth aged 8-18 years in inpatient treatment settings. Consistent with previous research, these researchers found that children and youth who were physically abused had a 49% higher likelihood of engaging in NSSI, while a history of childhood sexual abuse increased the odds of engaging in NSSI by 60% (Baiden et al., 2017). Moreover, another study examining prospective pathways between developmental trauma and NSSI found that a history of child physical abuse was associated with intermittent injuring (i.e., one to two events), whereas child sexual abuse was associated with recurrent injuring (i.e., three or more events; Yates, Carlson, & Egeland, 2008). Yates et al. (2008) reported that physical neglect appeared more often in the developmental histories of recurrent injurers. These findings accounted for the potential effects of child cognitive ability, socioeconomic status, maternal life stress, familial disruption, and childhood exposure to partner violence (Yates et al., 2008). Likewise, in one study among 2,637 youth aged 12-15 years, the risk of NSSI in relation to a history of sexual abuse was examined at three time-points: baseline, 12, and 24 months subsequent to the initial testing (Tatnell, Hasking,

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Newman, Taffe, & Martin, 2016). The results suggested that youth reporting recent sexual abuse were approximately seven times more likely to report NSSI engagement compared to youth without a history of sexual abuse (Tatnell et al., 2016). In an additional study examining 12-19 year old's, Weierich and Nock (2008) compared victims of sexual abuse to those who have not experienced any form of abuse, as well as to those who have experienced nonsexual abuse (i.e., emotional or physical) in relation to NSSI (Weierich & Nock, 2008). Using self-report measures and interviews, the researchers concluded a significant positive relation between childhood sexual abuse and the presence and frequency of NSSI, indicating that youth with a history of sexual abuse were more likely to engage in NSSI compared to those without a history of abuse and those with histories of nonsexual abuse (Weierich & Nock, 2008).

Researchers in another study recruited 194 youth aged 13-18 years from a short-term, acute adolescent residential unit to examine the role of child maltreatment in NSSI through completion of structured clinical interviews, as well as through questionnaires (Auerbach et al., 2014). Results revealed that self-injurers reported a higher level of total child abuse, as well as sexual abuse, but did not report higher levels of physical abuse (Auerbach et al., 2014). Briere and Gil (1998) included both clinical and nonclinical populations in their sample examining the prevalence, correlates and functions of NSSI. In both populations, Briere and Gil (1998) reported that those with a history of childhood sexual abuse were most likely to engage in NSSI. However, other studies have reported an absence of an association between sexual abuse and NSSI (e.g., Klonsky & Moyer, 2008).

Although a less frequently studied form of child maltreatment, neglect has been found to be associated with NSSI (Lang & Sharma-Patel, 2011). In one study examining the relationship between self-mutilation in relation to childhood abuse and neglect, high school students had the

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highest likelihood of engaging in NSSI if they had been victims of childhood neglect (Zoroglu, Tuzun, Sar, & Tutkun, 2003). With that being said, physical abuse, emotional abuse, and sexual abuse were all significantly related to higher odds ratios of developing NSSI (Zoroglu et al., 2003). Zoroglu and colleagues (2003) concluded that, with any form of abuse or neglect, youth were 2.7 times more likely to engage in self-mutilation behaviours. The above findings indicate that direct forms of trauma may be predictors of NSSI involvement, though indirect forms have also been shown to relate to NSSI in children and youth.

Although commonly understudied in relation to NSSI involvement, witnessing domestic violence has been shown to occur more frequently in children compared to other forms of childhood maltreatment, with some studies finding up to 34% of childhood maltreatment investigations involving witnessing domestic violence (Black, Trocme, Fallon, & MacLaurin, 2008). In one study by Armiento et al. (2016), direct (i.e. physical and sexual abuse) and indirect (i.e. witnessing domestic violence) forms of child maltreatment and nonsuicidal self-injury were examined among 747 clinically-referred children and youth between the ages of 8–18 years using the interRAI Child and Youth Mental Health Instrument (ChYMH). Armiento et al. (2016) revealed that witnessing domestic violence increased the risk for children's and youth's engagement in NSSI by 1.6 times. Overall, although it is clear that an association exists between developmental trauma and NSSI engagement, the link between the two may vary depending on the type of maltreatment. The above findings speak to the importance of factors that influence this relationship.

The role of developmental trauma in the co-occurrence of NSSI and SSI among children and youth. Though an abundance of literature suggests a relationship exists between developmental trauma and exclusively NSSI, other maladaptive behaviours can also develop as

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reflected in clinical populations that include SSI. In fact, NSSI and SSI frequently co-exist within clinical populations despite the differences in regards to intent; NSSI is among one of the many determinants of SSI.

In the most recent edition of the DSM -5, SSI is currently understood as its own autonomous diagnostic category, known as Suicidal Behaviour Disorder (SBD), and is one of the mental health conditions in which the proposed diagnostic criteria identifies a need for additional research. SBD refers to at least one suicide attempt within the last 12 months, with the awareness by the individual that their actions will lead to death (American Psychiatric Association, 2013). Though the presence or absence of suicidal intent is typically used to differentiate between behaviours that are considered NSSI or SSI, several studies have indicated that a direct pathway exists from NSSI to SSI. A plethora of literature currently suggests that clinical populations are at risk for NSSI+SSI, though this has not been frequently studied amongst children and youth with experiences of developmental trauma.

Nock, Joiner, Gordon, Lloyd-Richardson, and Prinstein (2006) explored NSSI in relation to SSI among 89 youth who were admitted to an adolescent psychiatric inpatient unit. The findings revealed that 70% of respondents with a history of NSSI reported at least one suicide attempt within their lifetime, whereas 55% of respondents reported multiple attempts within their lifetime (more than two; Nock et al., 2006). Another study examining the co-occurrence of NSSI and SSI among 185 youth (aged 13-18) from a psychiatric inpatient facility found that almost 43% of adolescents engaged in NSSI+SSI (Wolff et al., 2013). Also, Groschwitz et al. (2015) explored the association between NSSI and SBD according to the proposed DSM-5 criteria. Drawing on a sample of 111 adolescent psychiatric inpatients aged 12-19 years, Groschwitz et al. (2015) found that over 50% of youth with NSSI-disorder met the criteria for SBD, whereas,

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almost 66% of youth with SBD met the proposed diagnosis of NSSI-disorder. Additionally, youth who fit the criteria for SBD were more likely to engage in NSSI significantly more often during their lifetime than patients with SBD (Groschwitz et al., 2015). Moreover, in a sample of 205 college students, NSSI was examined as a predictor of suicide attempts in relation to the surrounding social context (Glenn & Klonsky, 2009). In cases where youth engaged in NSSI by themselves as opposed to with others, a significant positive association existed between having a history of NSSI and having multiple suicide attempts (Glenn & Klonsky, 2009). Even after controlling for automatic/intrapersonal functioning and anxiety, the relationship between engaging in NSSI alone and suicide attempts remained significant (Glenn & Klonsky, 2009).

Preyde et al. (2014) explored the prevalence of NSSI to SSI in 101 youth admitted to an in-patient psychiatric unit. Of the participating youth, over 60% reported that they engaged in both NSSI and SSI, compared to 27% who engaged in NSSI alone and 11% who had a history of only SSI (Preyde et al., 2014). Youth reporting NSSI+SSI had significantly higher scores on depression and unresolved attachment (Preyde et al., 2014). Another study, by Dougherty et al. (2009), examined clinical characteristics and impulsive behaviour in youth aged 13-17 years of age with histories of NSSI only and NSSI+SSI. Youth were recruited from an inpatient psychiatric hospital unit and were assessed during psychiatric hospitalization; findings revealed that 46% of the sample reported NSSI+SSI, and were found to have worse scores on depression, hopelessness, and impulsivity, even after follow-up (Dougherty et al., 2009). Taken together, the above findings reveal that a significant proportion of clinical populations report engaging in both NSSI and SSI. However, gaps in the literature exist in relation to how developmental trauma relates specifically to NSSI+SSI and what factors moderate this relationship.

Support for moderating effects of executive functioning. Executive functions (EFs) encompass a variety of abilities that involve mental control and self-regulation including decision making, memory ability, adaptability, and directing attention (i.e., shifting, inhibiting, and focusing attention). EFs are used in our daily lives to preserve, update, and integrate information appropriately. Because EFs are vital in normal developmental tasks of children, it is crucial to better understand how they may be affected by trauma exposure.

Deprince, Weinzierl, and Combs (2009) examined the degree to which difficulties with EFs arise due to trauma exposure in children. An array of cognitive tests was administered to a community sample of 110 children across three trauma-exposure groups; familial trauma, non-familial trauma, and no trauma. Deprince et al. (2009) discovered that familial trauma was associated with lower scores on tasks that examined working memory, inhibition, auditory attention, and processing speed tasks. Additionally, this relationship remained positive and significant after accounting for anxiety, dissociation, socio-economic status, and traumatic brain injury (Deprince et al., 2009). In an additional study, researchers sought to discover the effects of timing, chronicity, and types of maltreatment on different cognitive components, including memory, inhibitory control, attention, and motor control skills (Cowell, Cicchetti, Rogosch, & Toth, 2015). Using a number of neurocognitive testing tasks on a sample of non-maltreated children (n= 136) and maltreated children (n= 223) aged 3 to 9-years of age, Cowell et al. (2015) discovered that children exposed to trauma performed worse on inhibitory control and working-memory tasks compared to non-maltreated children. Additionally, children experiencing trauma earlier, as well as those with a chronic history of trauma, exhibited significantly worse performance on tasks related to working memory and inhibitory control (Cowell et al., 2015).

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Bücker et al. (2012) focused on the degree to which cognitive impairment exists in children with early trauma exposure. Thirty children between five and 12 years of age were recruited from foster care that had a history of severe trauma, and this group was contrasted with 30 age- and sex-matched children who were not traumatized (Bücker et al., 2012). Results indicated that children with a history of severe trauma performed lower on tasks assessing attention, immediate verbal recall, working memory, impulsivity and hyperactivity, in comparison to those without a history of trauma (Bücker et al., 2012). Moreover, a meta-analysis looked at 12 publications from 1970 to 2013 in examining cognitive impairments in individuals who have experienced childhood maltreatment (Masson, East-Richard, & Cellard, 2016). The results revealed that individuals aged 7 to 18 were most negatively affected on cognitive functions including visual episodic memory, executive functioning, and intelligence, whereas, individuals older than 18 years of age scored lowest on measures of verbal episodic memory, visuospatial/problem solving, and attention (Masson, East-Richard, & Cellard, 2016). Similarly, another meta-analysis that used the same method to determine cognitive impacts of childhood maltreatment, reported that specific cognitive processes, regardless of age, were impacted following trauma (Masson, Bussièrès, East-Richard, Mercier, & Cellard, 2015). These cognitive processes included working memory, attention, intelligence, and speed of processing (Masson et al., 2015). Thus, the above findings are indicative of differences between cognitive abilities of children exposed to trauma versus non-exposed children. However, the specific impact of cognitive distortions in relation to NSSI and SSI remains largely unstudied.

What little evidence is available suggests a positive relationship between cognitive impairment and NSSI and SSI. Wolff et al. (2013) focused on cognitive factors associated with NSSI and SSI in a group of 185 psychiatrically hospitalized adolescents (aged 13-18). The

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findings from this study indicated that youth who engaged in NSSI+SSI exhibited more cognitive distortions in relation to cognitive errors, negative self-statements, and negative views of themselves, the world, and their future as assessed by several questionnaires (Wolff et al., 2013). Similarly, Tanner, Hasking, and Martin (2015) assessed factors related to suicidality and psychosocial adjustment in a sample of 77 school-based adolescents using several questionnaires. Adolescents reporting suicidality scored lower on problem solving coping skills in comparison to adolescents without a history of suicidality (Tanner et al., 2015). Additionally, Weismore and Esposito-Smythers (2010) examined the association between childhood abuse, assault, cognitive distortions, and NSSI in 185 psychiatrically hospitalized adolescents (aged 13-18). Analyses revealed that youth who engaged in NSSI reported higher cognitive distortions in relation to catastrophizing, overgeneralization, personalizing, and selective abstraction, even when controlling for gender and internalizing disorders (Weismore and Esposito-Smythers, 2010). These findings further support the concept that cognitive impairment may moderate the relationship between developmental trauma and engaging in NSSI and SSI among clinically referred children and youth.

Support for the moderating effects of social support. With regard to situational factors during childhood, the presence of a support network appears to be an important determinant of children and youth's psychological adjustment, and may serve as a protective factor for later adjustment. In fact, social support has widely been studied as a protective factor for childhood trauma; it has been extensively shown that individuals with histories of developmental trauma typically report less perceived or actual social support from significant others in their lives. For instance, Runtz and Shallow (1997) used structural equation modelling in examining whether social support and coping strategies moderate the relationship between childhood maltreatment

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and adult psychological adjustment. Using a sample of university students, 302 individuals were administered a number of self-report measures on child sexual and physical abuse, coping and social support from family and friends, and psychological adjustment (Runtz & Shallow, 1997). The researchers found a significant negative association between child physical maltreatment and social support, with 55% of the variance in adult psychological adjustment being credited to social support (Runtz & Shallow, 1997).

Crouch, Milner and Thomsen (2001) investigated perceptions of social support and childhood physical abuse among an adult population using self-report measures; the results concluded that adults who were victims of childhood physical abuse exhibited less perceived social support. Moreover, Tremblay, Hébert, and Piché (1999) aimed to discover whether children and youth (aged 7-12 years old), following child sexual abuse, adapt differently in regards to coping strategies and social support. The findings revealed that children and youth who were more severely sexually abused reported less social support from friends, though no differences were apparent in relation to family and teacher support (Tremblay et al., 1999).

Furthermore, in another study, researchers examined sexual abuse victimization on children and youth in relation to interpersonal and psychological problems, in comparison to children without a history of sexual abuse (Feiring, Taska, & Lewis, 1998). The authors found that children were more likely to be satisfied with support received from family, whereas, adolescents were more likely to report satisfaction with support received from friends (Feiring et al., 1998). The researchers concluded that the desire to rely on parents in adolescence is diminished due to their striving for independence, and thus, relying on friendships during this developmental stage is crucial (Feiring et al., 1998). However, in a separate study investigating perceived emotional support in children and youth who experienced sexual abuse from the time

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of discovery to 1 year later, Rosenthal, Feiring, and Taska (2003) reported that children found the most support in caregivers, followed by friends, whereas, youth found the most support equally amongst friends and caregivers.

Likewise, Sullivan, Kung, and Farrell (2004) were interested in whether social support acted as a buffer for youth who witnessed violence inflicted on a stranger (e.g., seen someone killed, stabbed, or mugged). To do so, 349 youth were given self-report measures at two time points during the 6th grade (Sullivan et al., 2004). The results indicate that witnessing violence inflicted on a stranger was negatively associated with family support at the first time point, demonstrating that exposure to violence may result in less perceived family support (Sullivan et al., 2004). One explanation provided for these results was that higher levels of family support increased children's willingness to disclose information, and as a result, parents were better able to monitor their children's activities in the community (Sullivan et al., 2004).

The protective effect of social support in the relationship between exposure to violence in the family and the community (as a victim or as a witness), and psychopathology (e.g., depression, PTSD symptoms) was studied by Muller, Goebel-Fabbri, Diamond, and Dinklage (2000). The sample consisted of 65 high-risk adolescents admitted to psychiatric inpatient units, where individual interviews, self-report questionnaires, and hospital charts were used to measure indirect trauma and social support (Muller et al., 2000). The results reveal that social support emerged as a protective factor when experiencing either victimization or witnessing violence within the family, whereas, it did not protect against the effects of community violence experienced as either a victim or as a witness (Muller et al., 2000).

In another study by Min, Singer, Minnes, Kim, and Short (2012), childhood trauma in 116 mothers was assessed to examine maternal psychological distress and levels of social

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support. Min et al. (2012) discovered that all subtypes of maternal childhood trauma, including emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect, were associated with lower perceived maternal social support from family members, friends, and a special person. Moreover, Horan and Widom (2015) examined childhood maltreatment and levels of social support and concluded that despite age differences, children, young adults, and middle adults with a history of childhood maltreatment were more likely to have lower levels of social support compared to the control group, who did not have a history of maltreatment. Overall, the above research suggests that individuals with maltreatment histories are vulnerable to experiencing difficulties in regard to social support, though, research also indicates a relationship between social support and engagement in NSSI and SSI.

What evidence is available suggests that social support from significant others has been linked to children's and youth's engagement in NSSI and SSI. One study, by Wolff et al. (2013), examined perceived social support among 148 children and youth (ages 13-18) who report NSSI and SSI. After being divided into three groups, including NSSI only, NSSI+SSI and SSI only, the researchers concluded that family support was significantly lower in the NSSI+SSI group compared to the NSSI only or SSI only group (Wolff et al., 2013). Though, when examining perceived social support from friends and teachers, no significant differences were apparent (Wolff et al., 2013). Additionally, Baiden, Stewart, and Fallon (2017) examined the effect of adverse childhood experiences on NSSI, while accounting for levels of social support. More specifically, they explored predictors of NSSI and whether social support contributed to the odds of engaging in NSSI (Baiden et al., 2017). Data was obtained using the interRAI Child and Youth Mental Health (ChYMH) assessment on 2038 children and youth between the ages of 8 and 18. Baiden et al. (2017) found that the likelihood of engaging in NSSI decreased by 26%

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when children and youth had some form of social support compared to those that had no social support network.

Furthermore, Tatnell, Kelada, Hasking, and Martin (2014) examined the onset, maintenance and cessation of NSSI in relation to social support in youth (aged 13 and 18 years old). Analyses revealed that youth who first started engaging in NSSI at the beginning of the study, and youth who maintained NSSI throughout the study, scored lower on support from friends, family, and significant others, compared to those without a history of NSSI (Tatnell et al., 2014). The results also concluded that youth who stopped engaging in NSSI throughout the study continued to report less family and significant other support, in comparison to youth without a history of NSSI (Tatnell et al., 2014).

In addition, in one study, 1,243 college students completed an online survey assessing NSSI, perceived social support, and disclosure experiences (Muehlenkamp, Brausch, Quigley, & Whitlock, 2013). Participants were divided into three groups: single NSSI experience, repeat NSSI experience, and no NSSI; results suggest that students who repeatedly engaged in NSSI reported less overall perceived support, as well as, less perceived family and friend social support in comparison to those with a single NSSI experience and those without a history of NSSI (Muehlenkamp et al., 2013). Students who repeatedly engaged in NSSI also disclosed that they had fewer people to seek advice from, compared to those without a history of NSSI (Muehlenkamp et al., 2013).

In another study, by Joe, Clarke, Ivey, Kerr, and King (2007), suicidality was examined in relation to familial factors among a matched sample of 90 African American and White suicidal youth during a psychiatric hospitalization. Joe et al. (2007) found that for African American participants, but not White participants, perceptions of lower non-family adult support

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was associated with more severe suicidal ideation. However, in a similar study, a large sample of 4,922 adolescents found that having unsupportive parents was directly associated with suicidal phenomena in both African American and White participants (Perkins & Hartless, 2002).

Lastly, a later study provides support for the relationship between suicidal ideation and family social support; 3,634 primary and 2,706 secondary school students joined the study, and analyses indicated that increased family support was significantly associated with less suicide ideation (Au, Lau & Lee, 2009). Overall, implications reveal that strengthening social support may safeguard against maltreated children and youth engaging in self-injurious behaviour.

Effects of sex and age. Within the trauma literature, age and sex related differences for children and youth were explored. Existing literature predominantly suggests that children who are abused earlier have an increased likelihood for poorer future psychological functioning, as stage-specific tasks at different developmental milestones are often compromised (e.g., emotional regulation, self-esteem; Kaplow & Widom, 2007). Though, type of abuse has been found to impact this relationship as well, with children reporting sexual abuse often reporting higher levels of anxiety (Kaplow, Dodge, Amaya-Jackson, Saxe, 2005), and children reporting physical abuse often noting more adjustment problems in youth (Keiley, Howe, Dodge, Bates, & Pettit, 2001). Children abused earlier have also been found to report poorer daily living skills (English, Graham, Litrownik, Everson, & Bangdiwala, 2005) and greater PTSD symptoms (De Bellis et al., 1999). Nevertheless, age of onset has also been shown to have no relationship with future psychological functioning in some studies (Quas, Goodman, & Jones, 2003). Whether age of onset of abuse and psychological functioning are related to one another still requires more exploring.

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Previous research has indicated that the type of abuse often portrays differences among sexes. For instance, Naar-King, Silvern, Ryan and Sebring (2002) examined the type and severity of abuse as predictors among psychiatric symptoms in youth. In doing so, they found that females were more likely to report sexual abuse, whereas no sex differences were found for physical abuse (Naar-King et al., 2002). Additionally, they reported that dual abuse, in this case, sexual and physical abuse, was more prevalent among females, in comparison to their male counterparts (Naar-King et al., 2002). Other studies also report similar findings in relation to physical abuse (Esteves, Gray, Theall, & Drury, 2017), finding no relationship between gender and physical abuse. Some studies have found no effect of gender differences on witnessing domestic violence (Sullivan et al., 2004).

Within the self-harm literature, age and sex related differences for children and youth were explored. Research has consistently identified that older individuals are more likely to engage in self-injurious behaviours. Much of the literature on involvement in NSSI suggests that the average age of onset is between 12-17 (Baiden, Stewart, & Fallon, 2017). One study by Muehlenkamp and Gutierrez (2004) reported alarming numbers in terms of the average age of onset for self-harm; among 390 high school participants, 14.5% first engaged at age 13, 26.5% first engaged at age 14, and 16.9% first engaged at age 15. Similarly, Sourander et al. (2006) found an increase in self-reported self-harm, particularly among females, from age 12 (3%) to age 15 (13%). More specifically, at age 12, roughly 3% of girls and 3% of boys self-harmed, whereas at age 15, roughly 13% of girls and 5% of boys self-harmed, indicating a significant increase in self-harming behaviour from age 12 to 15 (Sourander et al., 2006). When comparing youth under the age of 12, versus youth between the ages of 12 and 15, the latter group of youth were three times more likely to be involved in NSSI throughout the study (Sourander et al.,

2006). Nevertheless, few studies report that NSSI typically begins over the age of 18 (Whitlock, Eckenrode, & Silverman, 2006).

The finding that NSSI is more commonly seen among women is fairly consistent across studies (Bresin & Schoenleber, 2015; Sornberge et al., 2012; Laye-Gindhu, & Schonert-Reichl, 2005; Rodham, Hawton, & Evans, 2004; Hawton & Harriss, 2008; Armiento et al., 2016). Sornberger et al. (2012) were interested in the prevalence of non-suicidal self-injury and gender patterns; among 7,126 youth, these researchers found that females were more likely to report involvement in NSSI, by nearly double (32.1% versus 16.6%). Sornberger et al. (2012) also reported that females, in comparison to males, engaged in NSSI more regularly. Similarly, Hawton and Harriss (2008) found that self-harm differed between genders, with the overall gender rate ratio being 1.5:1 for females versus males. Furthermore, to determine gender differences in the prevalence of NSSI, Bresin and Schoenleber (2015) completed a meta-analysis using 116 articles. The results revealed that women were significantly more likely to report a history of NSSI, in comparison to their male counterparts. Nevertheless, other studies suggest that no gender differences exist among self-injurious behaviour (Klonsky, Oltmanns, & Turkheimer, 2003; Muehlenkamp & Gutierrez, 2004; Gratz et al., 2002). It is noteworthy that self-harm is often underreported in males, and thus, the prevalence of NSSI among males and females should continue to be explored. Overall, it is apparent that within the self-harm and trauma literature, age and sex related differences for children and youth exist.

Present Study: Objectives and Implications

The present study examined the relationship between clinically-referred children and youth with histories of an aversive life event (i.e., physical abuse, sexual abuse, neglect or witnessing domestic violence) and engagement in NSSI and NSSI+SSI. Specifically, social

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support (family and friend support) and executive functioning (adaptability, and problem solving and reasoning ability) were assessed as moderators within this relationship.

Data was drawn from 10 mental health care agencies across Ontario that have used the interRAI Child and Youth Mental Health assessment (ChYMH). The interRAI ChYMH is an innovative assessment-to-intervention instrument developed by a community of over 100 clinicians and researchers who strive to create a comprehensive, accurate, and standardized assessment to evaluate the mental health needs of children and youth (Stewart & Hamza, 2017). The data includes 8349 children and youth between 7-18 years of age with multifaceted health histories for inpatient and outpatient care in Ontario, Canada.

The study holds implications for clinicians in assessing child and youth protective factors in gaining a broader understanding of the dynamics that influence their potential engagement in NSSI and NSSI+SSI. Clinicians could then develop targeted intervention and prevention strategies for NSSI and NSSI+SSI for children and youth who have experiences with trauma. Overall, clinicians could improve the consistency and continuity of care of the mental health needs of children and youth between the ages of 7 and 18.

The theoretical and empirical literature advocates that developmental trauma can be a primary contributor to engagement in NSSI and NSSI+SSI. Further, the literature supports the notion that social support and executive functioning may moderate this relationship. Thus, based on published literature, the following hypotheses have been formulated:

Hypothesis I. Children and youth who have experienced any form of developmental trauma, including physical abuse, sexual abuse, neglect, or witnessing domestic violence, will be more likely to engage in NSSI and NSSI+SSI in relation to the comparison group of no trauma.

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Hypothesis II. Children and youth who have experienced multiple forms of developmental trauma, known as cumulative trauma, will engage in NSSI and NSSI+SSI at a higher frequency than those who have experienced a single form of developmental trauma, compared to those in the comparison group who have not experienced a trauma.

Hypothesis III. Higher levels of social support will be reported among children and youth who are less likely to engage in NSSI and NSSI+SSI. This “buffering hypothesis” suggests that experiencing significantly higher levels of social support will protect children and youth from involvement in NSSI and NSSI+SSI.

Hypothesis IV. Higher levels of executive functioning will be reported among children and youth who are less likely to engage in NSSI and NSSI+SSI. This “buffering hypothesis” suggests that experiencing significantly higher levels of executive functioning will protect children and youth from involvement in NSSI and NSSI+SSI.

Hypothesis V. A higher frequency of NSSI and NSSI+SSI will be significantly correlated with age, indicating that, as children and youth grow older, the likelihood of engaging in self-harming behaviour following developmental trauma will increase.

Hypothesis VI. Lastly, a higher frequency of NSSI and NSSI+SSI will be significantly correlated with gender, indicating that, the likelihood of engaging in self-harming behaviour following developmental trauma will be higher for females.

Method

Participants. The current study was conducted through numerous community mental health facilities across Ontario, Canada (Stewart, Currie, Arbeau, Leschied, & Kerry, 2015). Each centre was chosen for their capacity to complete an interRAI assessment protocol (Stewart et al., 2015). All children and youth that presented to a community mental health facility across

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Ontario, Canada, where the InterRAI ChYMH was completed were eligible for study participation, provided that they spoke English and had signed the consent protocol for the larger interRAI study (Stewart et al., 2015).

The total sample is part of a larger ongoing descriptive field study comprised of approximately 12,000 clinically referred children and youth between the ages of 4 and 18 years old, in both in-patient and out-patient settings. According to the literature, children as young as 4 years of age are unlikely to engage in NSSI or NSSI+SSI and to fit the DSM criteria (Armiento et al., 2016). Thus, the present study was restricted to examining 8349 clinically referred children and youth between 7 and 18 years old ($M=12.55$, $SD=3.17$); recent research suggests NSSI in children begins at approximately 7 years old (Barrocas, Hankin, & Young, 2012). Of the 8349 children and youth, 3249 (38.8%) were between the ages of 7-11, 3213 (38.5%) were between 12-15 years old, and 1887 (22.7%) were between 16-18. In respect to sex, 4789 (57.4%) identified as male and 3560 (42.6%) identified as female.

Among children and youth included in the analysis, 1966 (23.5%) had a primary diagnosis of attention-deficit hyperactivity disorder, 1849 (22.1%) had a primary diagnosis of anxiety disorder, 815 (9.8%) had a preliminary diagnosis of a mood disorder, 852 (10.2%) a disruptive behaviour disorder, 541 (6.5%) a learning/communication disorder and 492 (5.9%) a preliminary diagnosis of autism. Less than 5% had preliminary diagnoses of an eating disorder, sleep or adjustment disorder, schizophrenia or other psychotic disorder, substance-related disorder, and reactive attachment disorder. At the time of referral, the majority of participants (7698; 92.2%) were outpatients, with only 651 (7.8%) living in an inpatient mental health service. Of the 8349 children and youth, problems identified that contributed to the child's or youth's present admission to a mental health facility ranged from being in danger of hurting him

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or herself (2461; 29.6%), being in danger of hurting someone else (2283; 27.3%), concern about substance use or abuse or non-substance addiction (512; 6.1%), specific psychiatric symptoms (5163; 61.8%), or involvement with the youth justice system (454; 5.4%). Additionally, the majority of children and youth (79.4%; 6625) had no prior or current contact with a mental health agency. For those who had been in an inpatient facility, 16.9% (1411) had been admitted between 1 and 3 times, and under 4% (270) had more than 3 lifetime admissions to a mental health agency. Of the 8349 participants, the vast majority (89.4%; 7462) were living with their parent(s) or primary caregiver(s); less than 10% (767) were living with either a relative(s), foster family, or with non-relatives, and less than 2% (100) were living either with their siblings or alone. In terms of moving among multiple residential settings or a lack of permanent residence over the last two years, almost 10% (824) of these children and youth faced residential instability, whereas almost 90% (7500) did not. In terms of a child's or youth's parent/caregiver marital status at the time of admission, almost 42% (3499) were married or had a significant other, 20.5% (1711) were never married, 13.3 (1108) were separated, 16.3 (1362) were divorced, 2% (169) were widowed and 5.7% (479) were unknown. Among these children and youth, 503 (6%) identified as having Indigenous origin (Inuit, Metis, or First Nations). More specific information related to these data, including study methods and participant selection, can be found in additional journal articles (see, e.g., Stewart & Baiden, 2013; Stewart, Baiden, & den Dunnen, 2013; Stewart, Baiden, & Theall-Honey, 2014). This study was approved by the Research Ethics Board of Western University.

Materials. *InterRAI.* InterRAI is a collaborative, international, not-for-profit collective of researchers and clinicians in over 30 countries, committed to developing a comprehensive, accurate, and standardized assessment for vulnerable populations (Stewart et al., 2015). The

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interRAI system of assessments was designed to meet assessment needs across a variety of service sectors (e.g., youth justice, mental health, education) and several care settings around the world, including community-based, residential, hospital, and correctional agencies (Stewart et al., 2015). Authors of the interRAI system of assessment indicated that it has the ability to reduce assessment burden, increase continuity of care, provide effective communication across the service system, and integrate care planning and treatment options (Stewart et al., 2015).

The measure used for the present study is one of the many instruments within the integrated suite of interRAI system of assessments, known as the Child and Youth Mental Health Instrument (ChYMH). The ChYMH was designed specifically for children from 4-18 years of age who are accessing outpatient or inpatient services (Stewart et al., 2015). The ChYMH is a comprehensive, multidisciplinary mental health assessment system that provides an in-depth evaluation of children's or youth's strengths, preferences and needs (Stewart et al., 2015). The ChYMH utilizes a semi-structured interview format that employs the clinician's judgement and observational skills to examine a child's and youth's mental health within the following areas: Mental State Indicators, Substance Use or Excessive Behaviour, Harm to Self and Others, Behaviour, Strengths and Resilience, Cognition and Executive Functioning, Independence in Daily Activities, Communication and Vision, Health Conditions, Family and Social Relations, Stress and Trauma, Medications, Prevention, Service Utilization, Treatments, Nutritional Status, Education, Environmental Assessment and Diagnostic and Other Health Information (Stewart et al., 2015). Clinicians are trained to complete the ChYMH using all available sources of information including the child and youth, the child's or youth's primary caregiver, educators, clinicians, and clinical records (Stewart et al., 2015). Certain items on this 99-item assessment tool trigger Clinical Assessment Protocols (CAPs), which include informed practice, goals of

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care, care planning guidelines, recommendations, and international best practice (Stewart et al., 2015).

An abundance of research has reported on the psychometric properties of the scales within the ChYMH. As a sanctioned interRAI instrument, the ChYMH has proven to have strong face validity, construct validity, criterion validity, and internal consistency across items within scales. Stewart and Hamza (2017) evaluated the psychometric properties of the interRAI ChYMH using data collected from 15 mental health agencies in Ontario, Canada. These authors reported strong internal-consistency reliability within the 10 ChYMH subscales (i.e., disruptive/aggressive behaviour, social disengagement, anxiety, caregiver distress, communication, cognitive functioning, depressive symptoms, hyperactive/distraction, peer conflict, and sleep difficulties), indicating that several items that intend to measure the same general construct produce similar scores. In addition, Stewart and Hamza (2017) reported the ChYMH subscales to be correlated with several related criterion measures, including the Social Skills Improvement System (SSIS), the Child and Adolescent Functional Assessment Scale (CAFAS), the Child Behavior Checklist (CBCL), and the Brief Child and Family Phone Interview (BCFPI). In terms of clinically referred children and youth, findings from this study indicate the clinical utility of the ChYMH. Additionally, findings suggest the ChYMH does provide a comprehensive assessment that supports the early identification of mental health concerns among children and youth (Stewart & Hamza, 2017).

Explanatory variables: Measures of developmental trauma. A history of physical abuse, sexual abuse, neglect, and witnessing domestic violence are the explanatory variables that were examined in the current study. Developmental trauma was assessed based on child and youth reports, teacher reports, parent/guardian reports, clinical charts, and clinical observations.

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According to the ChYMH assessment manual, physical abuse is defined as any form of physical abuse experienced by the child or youth regardless of his or her age when the incident(s) occurred (Stewart et al., 2015). For instance, this may include non-accidental injury, physical confinement, excessive physical discipline, or withdrawal of necessities of life such as food and shelter. Sexual abuse is defined as any form of sexual abuse or assault experienced by the child or youth, including exposure of genitals, sexual touching, coercion, or rape, regardless of his or her age when the incident(s) occurred (Stewart et al., 2015). This item reflects what the child or youth expressed him or herself, the parent(s)/primary caregiver(s), or what records indicate, not what the assessor believes may have occurred (Stewart et al., 2015). Neglect refers to severe failure to provide for the child's or youth's basic needs due to a lack of caregiver attention (Stewart et al., 2015). Neglect encompasses emotional needs (e.g., left in the crib for prolonged periods of time with no stimulation; not providing sufficient affection, warmth, or sensitivity to the child or youth), physical needs (e.g., nutritious food, appropriate attire for the weather, and hygiene were not provided), and safety needs (e.g., inadequate supervision, failure to use a car seat, being left alone in the home; Stewart et al., 2015). Lastly, witnessing domestic violence is defined as the child or youth being aware of, having knowledge of, or having witnessed physical or verbal actions or threats toward another family member (Stewart et al., 2015). Based on the codes as provided in the aggregated data set through interRAI, these stressful and traumatic life events were coded in terms of recency, with "0 = Never," "1 = More than 1 year ago," "2 = 31 days – 1 year ago," "3 = 8-30 days ago," "4 = 4-7 days ago," and "5 = in last 3 days" (Stewart et al., 2015). For the current study, the presence of physical abuse, sexual abuse, neglect, and witnessing domestic violence were coded as either "0 = No" or "1 = Yes" (See Appendix A).

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Outcome variables: Measures of NSSI and NSSI+SSI. According to the ChYMH assessment manual (Stewart et al., 2015), NSSI and NSSI+SSI were assessed using two items that identify the most recent self-injurious attempt and the intent of the child or youth's self-injurious act. NSSI was defined as deliberate behaviour that inflicts intentional self-injury *without suicidal intent*, and which, requires awareness on the part of the child or youth that his or her actions may have a harmful outcome (e.g., self-mutilation, cutting, burning, head-banging, etc.; Stewart et al., 2015). The recency of any self-injurious attempt was coded on a six-point scale, as provided in the aggregated data set through interRAI, ranging from "0 = Never," "1 = More than a 1 year ago," "2 = 31 days – 1 year ago," "3 = 8 – 30 days ago," "4 = 4 – 7 days ago," and "5 = in the last 3 days" (Stewart et al., 2015). For the current study, the presence of NSSI was coded as either "0 = No" or "1 = Yes." On this item, non-intentional, accidental, or unconscious self-destructive behaviours that may lead to injury or premature death were not considered NSSI attempts (e.g., chronic substance abuse, hyper-obesity, non-adherence with treatments for illness, risk-taking behavior; Stewart et al., 2015). The intent behind the self-injurious behaviour was used to determine whether the intent of the child's or youth's self-injurious act was to kill him- or herself (Stewart et al., 2015). Based on the codes as provided in the aggregated data set through interRAI, this item was coded on a 3-point scale ranging from "0 = No," "1 = Yes," and "8 = No attempt" (Stewart et al., 2015). For the current study, the presence of NSSI was recoded as either "0 = No history of NSSI+SSI" or "1 = History of NSSI+SSI." This method was also used in previous studies examining NSSI and NSSI+SSI (e.g., Armiento et al., 2016; Baiden, Stewart, & Fallon, 2017). Children and youth who have never engaged in NSSI or NSSI+SSI will be used as the comparison group (Coded 0 on both items; See Appendix A).

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Moderator variable: Measures of social support. Social support was assessed using two items that identified the child's or youth's strengths specific to relationships with others. Assessors were asked to inquire about strong and supportive relationships with family and friends/peers. Social support from family was defined as the child or youth having a supportive relationship with one or more family members, including extended family, where the child or youth feels they can rely on family members, maintain regular contact, and provide comfort and advice, or act as a confidant (Stewart et al., 2015). Social support from friends/peers was defined as the child or youth having at least one person on whom they can rely or to whom they can go to, and whom provides advice, help, or support on a consistent basis (Stewart et al., 2015). This may include friends of any age and includes those they may not have in-person contact with (e.g., online friends; Stewart et al., 2015). These items were coded on a 2-point scale ranging from "0 = No," "1 = Yes" (Stewart et al., 2015) and will be coded in the same way for the present study (See Appendix A).

Moderator variable: Measures of executive functioning. In the present study, executive functioning was referred to as the child's or youth's actual performance in remembering and making decisions (Stewart et al., 2015). Executive functioning was assessed using two items that examined 'problem solving and reasoning ability,' and 'adaptability.' Problem solving was defined as finding solutions to everyday problems and arriving at inferences and conclusions (e.g., getting ready for school, understanding own limitations; Stewart et al., 2015). According to the ChYMH assessment manual, this item was coded based on the adequacy of the child's or youth's demonstration of executive functioning over the last 3 days, as compared to a typical child or youth of the same age. Specifically, this item was coded based on a 3-point rating scale, from "0 = Adequate or better," "1 = Inadequate," and "3 = Minimal or no evidence thereof"

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(Stewart et al., 2015), and will be coded in the same way for the present study. Adaptability, defined as the ability to adjust to changes in routine or environment, was coded based on a 3-point rating scale, as provided in the aggregated data set through interRAI ranging from “0 = Adapts without difficulty,” “1 = Adapts with some difficulty,” and “3 = has difficulty adapting to even minor change” (Stewart et al., 2015) and will be coded this way in the present study (See Appendix A).

Procedure. Children and youth were recruited from 10 child mental health centres where there was the capacity within the centre to complete an interRAI assessment protocol (Stewart et al., 2015). Parents provided informed consent for participation and the interRAI ChYMH was completed by trained assessors (Stewart et al., 2015). The ChYMH utilizes a semi-structured interview format that employs the clinician’s judgement and observational skills to examine child and youth’s mental health in numerous areas (Stewart et al., 2015). Clinicians were trained to complete the ChYMH using all available sources of information including the child’s primary caregiver, child and youth, educators, mental health clinicians, and clinical records (Stewart et al., 2015). Typically, the assessment takes approximately one hour to complete (Stewart et al., 2015). The study was approved by the University of Western Ontario ethics board (REB #106415).

Statistical Analysis: Logistic Regression

In the present study, I proposed that children and youth exposed to sexual abuse, physical abuse, neglect and/or witnessing domestic violence would be more likely to engage in NSSI and NSSI+SSI when compared to children without such exposure. Additionally, it was hypothesized that social support and executive functioning would moderate the relationship between developmental trauma and NSSI and NSSI+SSI engagement. More specifically, rather than

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proposing solely a direct causal link between developmental trauma history and engagement in NSSI and NSSI+SSI (illustrated in Figure 1), I hypothesized that increased social support and higher executive functioning would lessen the likelihood of a child's and youth's engagement in NSSI and NSSI+SSI. In the present study, a logistic regression model examined whether significant moderators existed between developmental trauma history and NSSI and NSSI+SSI engagement. This model examined the unique variance contributed by each of these moderators. A moderated logistic regression model is illustrated in Figure 2.

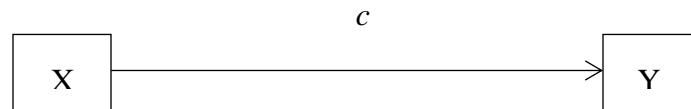


Figure 1. Illustration of a direct causal effect.
X = Independent variable, Y = Dependent variable, c = Direct effect of X on Y.

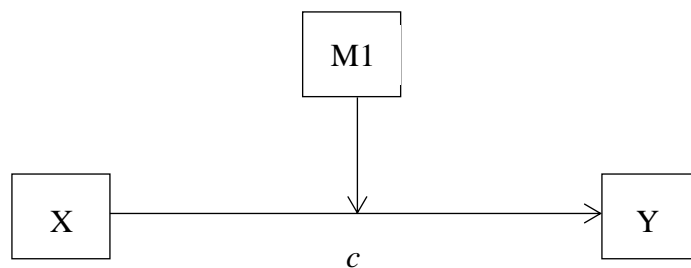


Figure 2. Illustration of a moderator model. A third variable (M_1) that affects the strength or direction of the relationship between a dependent (X) and independent variable (Y). X is hypothesized to indirectly effect Y through M_1 .

Results

The initial focus of the analyses for the present study was on the possible associations of development trauma on children and youth and its potential relation to the development of NSSI and NSSI+SSI. The aim of the study was to better understand the role of executive functioning, as well as social support, in differentiating children and youth with and without histories of NSSI and NSSI+SSI. More specifically, analyses focused on whether sex, age, problem solving and reasoning ability, adaptability, and strong and supportive relationships with family and friends differ between developmental trauma groups who do and do not report NSSI and NSSI+SSI. Additionally, the study examined whether children and youth who have experienced multiple forms of developmental trauma, known as cumulative trauma, engage in NSSI and NSSI+SSI at a higher frequency, compared to those who have no history of developmental trauma.

Descriptive statistics were calculated for each variable of interest based on three groups. Next, a number of hypotheses were tested when evaluating the potential relationship between the presence of developmental trauma and NSSI and NSSI+SSI. Additionally, amongst this relationship, hypotheses were tested to evaluate the potential mediating role of social support and executive functioning. Lastly, hypotheses were tested to determine whether age and sex affected the relationship.

Descriptive statistics for variables of interest. Descriptive information on characteristics of each group was calculated, including the presence of the following variables: childhood sexual or physical abuse, neglect, witnessing domestic violence, cumulative trauma, NSSI, NSSI+SSI, social support (family and friends) and executive functioning (problem solving and reasoning ability, as well as adaptability).

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Developmental trauma. Children and youth were classified as having a history of developmental trauma if they had a history of one incidence of abuse, including sexual or physical abuse, neglect, and/or witnessing domestic violence. Of the 8349 children and youth, 902 (10.8%) reported experiencing sexual abuse, 1611 (19.3%) reported experiencing physical abuse, 1346 (16.1%) reported experiencing neglect, and 2441 (29.2%) reported witnessing domestic violence. Few scores were missing from each subtype of developmental trauma relative to the sample size; scores from 17 participants were missing from ‘sexual abuse’ subscale, 17 participants from the ‘physical abuse’ subscale, 17 participants from the ‘witnessing domestic violence’ subscale, and 24 participants from the ‘neglect’ subscale.

Cumulative trauma. Children and youth were classified as having a history of cumulative trauma if they experienced two or more types of developmental trauma, regardless of the combination of developmental trauma subtypes (i.e., sexual and physical abuse, neglect and witnessing domestic violence). The distribution of cumulative trauma across developmental trauma subtypes suggests that the majority (4688; 56.2%) of children and youth did not experience any trauma, whereas 1904 (22.8%) reported experiencing one type of abuse, and 1757 (21%) reported experiencing two or more types of abuse included in this study. Specifically, 550 (6.6%) reported experiencing three types of abuse and 166 (2%) reported experiencing all four types of abuse. In an attempt to avoid low statistical power, inflated type II errors, and difficulty with generalizability, children and youth were placed in one of three categories: no trauma history, experiences with 1 type of trauma, or experiences with 2 or more types of trauma. Scores from 7 participants were missing from the ‘cumulative trauma’ subscale, a small number relative to the sample size.

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NSSI and NSSI+SSI. The present study examined the relationship between having a history of developmental trauma and having a history of NSSI and NSSI+SSI. With respect to harm to self, 1904 (22.8%) indicated that they had previously engaged in NSSI, whereas 734 (8.8%) engaged in NSSI+SSI. There were 5494 (65.8%) children and youth who reported no history of NSSI. Few scores were missing from each subtype of self-harm relative to the sample size; scores from 21 participants were missing from the ‘NSSI’ subscale and 52 participants from the ‘NSSI+SSI’ subscale.

Social support. The present study examined the relationship between having a history of developmental trauma and having a history of NSSI and NSSI+SSI. The mediating role of social support amongst this relationship was also examined. With reference to social support, the present study examined the presence of strong and supportive relationships with friends/peers, as well as with family (at least one person). The majority of children and youth (4911; 58.8%) did have at least one or more friend/peer that they could rely on, whereas 3423 (41%) did not have at least one friend/peer that they could rely on. Regarding strong and supportive relationships with family, 6963 (83.4%) children and youth had at least one or more supportive family members, whereas 1376 (16.5%) did not. Few scores were missing from each subtype of social support relative to the sample size; scores from 15 participants were missing from the ‘strong and supportive relationships with friends/peers’ subscale and 10 participants from the ‘strong and supportive relationships with family’ subscale.

Executive functioning. The mediating role of executive functioning was also examined among the relationship between developmental trauma and NSSI and NSSI+SSI. With regard to children’s and youth’s executive functioning abilities, majority of children and youth (3875; 46.4%) adapted to changes in their routine or environment with ‘some difficulty,’ whereas 1895

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(22.7%) had ‘difficulty adapting to even minor change’ and 2572 (30.8%) adapted ‘without difficulty.’ In terms of executive functioning abilities, 3932 children and youth (47.1%) had ‘adequate or better’ problem solving and reasoning abilities, whereas 3119 (37.4%) had ‘inadequate’ abilities and 443 (5.3%) had either ‘minimal abilities or no evidence’ was found for problem solving and reasoning abilities. Scores were missing from each subtype of executive functioning relative to the sample size; scores from 855 participants were missing from the ‘problem solving and reasoning ability’ subscale and 7 participants from ‘adaptability’ subscale.

Associations between developmental trauma, NSSI and NSSI+SSI, and sex. The present study conducted analyses to examine whether physical or sexual abuse, neglect, and/or witnessing domestic violence, and the presence of NSSI and NSSI+SSI was associated with sex.

Developmental trauma and sex. Chi-square tests were conducted to examine the relationships between the different subtypes of developmental trauma, including physical or sexual abuse, neglect, and/or witnessing domestic violence, and sex. Of the 8332 children and youth included in the analysis, 902 reported experiencing sexual abuse. Two-hundred and fifty-one identified as male and 651 identified as female. Results revealed a significant relationship, $X^2(1) = 360.95, p > .01$. Female children and youth were more likely to report a history of sexual abuse in comparison to males. Of the 1611 children and youth who reported experiencing physical abuse, 866 identified as male and 745 identified as female. There was a significant association between these variables, $X^2(1, N= 8332) = 10.66, p = .01$. Male children and youth were more likely to report a history of physical abuse in comparison to females. Of the 8325 children and youth included in the analysis, 1346 reported experiencing neglect. Seven hundred and fifty-four identified as male and 592 identified as female. Results revealed there is no association between these variables, $X^2(1) = 1.157, p = 0.282$. Thus, neither male or female

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children and youth were more likely to report a history of neglect. Of the 2441 children and youth who reported witnessing domestic violence, 1384 identified as male and 1057 identified as female. Results revealed there is no relationship between these variables, $X^2(1, N= 8332) = 0.636, p = 0.425$. Thus, neither male or female children and youth were more likely to report a history of witnessing domestic violence. Table 1 provides a summary of the presence of developmental trauma subtypes experienced by male and female children and youth.

Table 1
Presence of developmental trauma experienced by male and female children and youth.

Developmental Trauma	Male	Female	Total Sample	$X_2(1)$	p
	($N = 3255$)	($N = 2453$)	($N = 6300$)		
	N	N	N		
Sexual	251	651	902	360.95	0.000
Physical	866	745	1611	10.66	0.001
Witnessing DV	1384	1057	2441	0.636	0.425
Neglect	754	592	1346	1.157	0.282

Cumulative trauma and sex. The present study also examined the association between a history of cumulative trauma and sex. In regard to males, 2815 children and youth reported experiencing no trauma, 1079 reported experiencing 1 type of trauma, and 892 reported experiencing 2 or more types of trauma included in the study. In contrast, 1866 female children and youth reported experiencing no trauma, 825 reported experiencing 1 type of trauma, and 865 reported experiencing 2 or more types of trauma included in the study. There was a significant association between these variables, $X^2(2, N = 3661) = 12.807, p < .01$. Males were more likely to experience cumulative trauma.

NSSI, NSSI+SSI and sex. The present study examined the relationship between NSSI and sex, as well as NSSI+SSI and sex. Of the 5494 children and youth who had no history of

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NSSI, 3644 identified as male and 1850 identified as female. Of the 1904 children and youth who have a history of NSSI, 760 identified as male and 1144 identified as female. As well, of the 734 children and youth who have a history of NSSI+SSI, 282 identified as male, whereas 452 children and youth identified as female. There was a significant association between NSSI and sex, $X^2(1, N=7398) = 409.391, p < .01$, suggesting that females were more likely to engage in NSSI than males. Moreover, results revealed a significant association between SSI and sex, $X^2(1, N=8297) = 117.447, p < .01$, suggesting that females more likely to engage in NSSI+SSI.

Associations between developmental trauma, NSSI and NSSI+SSI, and age. The present study conducted analyses to examine whether physical or sexual abuse, neglect, and/or witnessing domestic violence, and the presence of NSSI and NSSI+SSI was associated with age at the time of the assessment.

Developmental trauma and age. A one-way ANOVA was conducted to evaluate the relationship between developmental trauma and age at the time of the assessment. Results revealed there is a significant association between age and sexual abuse, $F(11)=25.854, P < .01$, physical abuse, $F(11)=16.901, P < .01$, witnessing domestic violence, $F(11)=1.838, P < .05$, and neglect, $F(11)=2.929, P < .01$. Children and youth were more likely to report a history of developmental trauma as they grew older.

Cumulative trauma and age. A one-way ANOVA examined the relationship between cumulative trauma and age at the time of the assessment. A significant difference was found between these two variables, $F(11)=1.813, p < .05$, suggesting that children and youth were more likely to report cumulative trauma as they grew older.

NSSI, NSSI+SSI and age. A one-way ANOVA was conducted to evaluate the relationship between NSSI and age at the time of the assessment. Results revealed there is a

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significant association between age for children and youth without a history of NSSI ($M=11.79$, $SD = .04$) and those with a history of NSSI ($M=13.88$, $SD = .06$), $F(11)=67.386$, $P < .01$. These results suggest that children and youth were more likely to report engaging in NSSI as they grew older. Similarly, a one-way ANOVA was conducted to evaluate the relationship between NSSI+SSI and age at the time of the assessment. A significant difference was found between the age of onset at the time of the assessment for children and youth without a history of NSSI+SSI ($M=13.87$, $SD = 2.83$) and those with a history of NSSI+SSI ($M=14.51$, $SD = 2.58$), $F(11)=31.573$, $P < .01$. These results suggest that children and youth were more likely to report engaging in NSSI+SSI as they grew older.

Associations between developmental trauma history and NSSI. The present study examined whether a history of physical or sexual abuse, neglect, and/or witnessing domestic violence was directly associated with involvement in NSSI. As well, the relationship between reporting a cumulative trauma history and NSSI was also examined.

Sexual abuse and NSSI. The present study examined whether having a history of sexual abuse was associated with engaging in NSSI. A chi-square test was used to examine the relation between these two variables. These variables were significantly associated, $X^2(1, N = 7398) = 266.206$, $p > .01$. Children and youth who reported a history of sexual abuse were more likely to report engaging in NSSI in comparison to children and youth who did not report a history of sexual abuse.

Physical abuse and NSSI. The present study examined whether having a history of physical abuse was associated with engaging in NSSI. A chi-square test evaluated the relationship between the presence of a history of physical abuse and engaging in NSSI. Results revealed a significant association between these variables, $X^2(2, N = 7398) = 121.659$, $p > .01$.

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Results reflect that children and youth who reported a history of physical abuse were more likely to report engaging in NSSI in comparison to children and youth who did not report a history of physical abuse.

Neglect and NSSI. The present study examined whether having a history of neglect was associated with engaging in NSSI. A chi-square test was conducted to evaluate the relationship between these variables. Results revealed a significant relationship between these variables, $X^2(1, N = 7384) = 20.005, p > .01$, indicating that children and youth who reported a history of neglect were more likely to report engaging in NSSI in comparison to children and youth who did not report a history of neglect.

Witnessing domestic violence and NSSI. The present study examined whether having a history of witnessing domestic violence was associated with engaging in NSSI. A chi-square test was conducted to evaluate the association between these two variables. These variables were significantly related, $X^2(1, N = 7398) = 42.364, p > .01$. Children and youth who reported a history of witnessing domestic violence were more likely to report engaging in NSSI in comparison to children and youth who did not report a history of witnessing domestic violence.

Cumulative trauma and NSSI. The present study examined whether having a history of cumulative trauma was associated with engaging in NSSI. A chi-square test was used to examine the relation between these two variables. These variables were significantly associated, $X^2(1, N = 3105) = 16.879, p > .01$. Children and youth who reported a history of cumulative trauma were more likely to report engaging in NSSI in comparison to children and youth who did not report a history of cumulative trauma.

Associations between developmental trauma history and NSSI+SSI. The present study examined whether a history of physical or sexual abuse, neglect, and/or witnessing

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domestic violence was directly associated with involvement in NSSI+SSI. As well, the relationship between having a cumulative trauma history and NSSI+SSI was also examined.

Sexual abuse and NSSI+SSI. The present study examined whether having a history of sexual abuse was associated with engaging in NSSI+SSI. A chi-square test was used to examine the relation between these two variables. These variables were significantly associated, $X^2 (1, N = 8297) = 143.972, p > .01$. Children and youth who reported a history of sexual abuse were more likely to report engaging in NSSI+SSI in comparison to children and youth who did not report a history of sexual abuse.

Physical abuse and NSSI+SSI. The present study examined whether having a history of physical abuse was associated with engaging in NSSI+SSI. A chi-square test evaluated the relationship between the presence of a history of physical abuse and engaging in NSSI+SSI. Results revealed a significant association between these variables, $X^2 (1, N = 8297) = 124.019, p > .01$. Results reflect that children and youth who reported a history of physical abuse were more likely to report engaging in NSSI+SSI in comparison to children and youth who did not report a history of physical abuse.

Neglect and NSSI+SSI. The present study examined whether having a history of neglect was associated with engaging in NSSI+SSI. A chi-square test was conducted to evaluate the relationship between these variables. Results revealed a significant relationship between these variables, $X^2 (1, N = 8281) = 24.154, p > .01$, indicating that children and youth who reported a history of neglect were more likely to report engaging in NSSI+SSI in comparison to children and youth who did not report a history of neglect.

Witnessing domestic violence and NSSI+SSI. The present study examined whether having a history of witnessing domestic violence was associated with engaging in NSSI+SSI. A

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chi-square test was conducted to evaluate the association between these two variables. Results revealed a significant relationship between these variables, $X^2(1, N = 8297) = 30.518, p > .01$, indicating that children and youth who reported a history of witnessing domestic violence were more likely to report engaging in NSSI+SSI in comparison to children and youth who did not report a history of witnessing domestic violence.

Cumulative trauma and NSSI+SSI. The present study examined whether having a history of cumulative trauma was associated with engaging in NSSI+SSI. A chi-square test was used to examine the relation between these two variables. These variables were significantly associated, $X^2(1, N = 3641) = 22.644, p > .01$. Children and youth who reported a history of cumulative trauma were more likely to report engaging in NSSI+SSI in comparison to children and youth who did not report a history of cumulative trauma.

Regression analyses: Predicting involvement in NSSI following trauma. A logistic regression analysis was calculated to predict engagement in NSSI following a developmental trauma history for 8349 children and youth using the presence of the following variables as predictors: sexual abuse, physical abuse, neglect and witnessing domestic violence, as well as age at the time of the assessment and sex. A test of the full model, in block 6, against a constant only model, in block 0, revealed a significant relationship, indicating that the aforementioned predictor variables as a set differentiate between children and youth who engage in NSSI from those who do not engage, $X^2(6, N = 8349) = 427.39, p < .01$.

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 3.1% and 4.6% of the variation in engagement in NSSI can be explained by the model in block 1, with sexual abuse entered as a predictor variable. Thus, we can interpret this as 3.1-4.6% probability of engaging in NSSI to be explained by the presence of sexual abuse. The correct classification of a child or

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youth engaging in NSSI increased by the current model. The Wald test statistic revealed that sexual abuse made a significant contribution to involvement in NSSI, meaning that the presence of sexual abuse was a significant predictor ($p < .01$). $\text{Exp}(B)$ value, known as the odds ratios for the predictors, demonstrates that children and youth are 3.56 times more likely to engage in NSSI if they have a history of sexual abuse.

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 3.7% and 5.4% of the variation in engagement in NSSI can be explained by the model in block 2, with sexual abuse and physical abuse entered as predictor variables. Thus, we can interpret this as 3.7-5.4% probability of engaging in NSSI to be explained by the presence of sexual and physical abuse. The correct classification of a child or youth engaging in NSSI increased by the current model. The Wald test statistic revealed that both sexual and physical abuse made a significant contribution to involvement in NSSI, meaning that the presence of sexual and physical abuse were significant predictors ($p < .01$). $\text{Exp}(B)$ value, known as the odds ratios for the predictors, demonstrates that children and youth are 3.03 times more likely to engage in NSSI if they report a history of sexual abuse, and 1.57 times more likely to engage in NSSI if they report a history of physical abuse.

In block 3, the variation in engagement in NSSI was assessed, with sexual and physical abuse, and neglect entered as predictor variables. The correct classification of a child or youth engaging in NSSI did not increase by the current model but remained the same. The Wald test statistic revealed that both sexual and physical abuse made a significant contribution to involvement in NSSI, meaning that the presence of sexual and physical abuse were significant predictors ($p < .01$), but that neglect did not make a significant contribution and thus, were not significant predictors ($p > .05$).

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In block 4, the variation in engagement in NSSI was assessed, with sexual and physical abuse, neglect, and witnessing domestic violence entered as predictor variables. The correct classification of a child or youth engaging in NSSI did not increase by the current model but remained the same. The Wald test statistic revealed that both sexual and physical abuse made a significant contribution to involvement in NSSI, meaning that the presence of sexual and physical abuse were significant predictors ($p < .01$), but that neglect and witnessing domestic violence did not make a significant contribution and thus, was not significant predictors ($p > .05$).

In block 5, the variation in engagement in NSSI was assessed, with sexual and physical abuse, witnessing domestic violence, neglect, and sex entered as predictor variables. The correct classification of a child or youth engaging in NSSI increased by the current model. The Wald test statistic revealed that sexual and physical abuse, as well as witnessing domestic violence and sex made significant contributions to involvement in NSSI. This result indicates that the presence of sexual and physical abuse in the context of being female, as well as witnessing domestic violence in the context of being male, were significant predictors ($p < .05$); neglect did not make a significant contribution and thus, was not a significant predictor ($p > .05$). It is noteworthy that, when sex was added to this model, witnessing domestic violence became a significant predictor (in comparison to the previous model), speaking to the importance of witnessing domestic violence in the context of being male.

Lastly, block 6 reveals that the aforementioned predictor variables as a set differentiate between children and youth who engage in NSSI from those who do not engage, $X^2(6, N = 8349) = 1032.528, p < .01$. The correct classification of a child or youth engaging in NSSI increased by the current model, when all 6 predictors were entered. The full model correctly classified 76.8%

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of the cases. The Wald test statistic revealed that the following predictors made significant contributions and were significant predictors ($p < .01$), including sexual and physical abuse, witnessing domestic violence, sex, and age. With all 6 predictors entered into model 6, only neglect did not make a significant contribution and thus, was not significant predictor ($p > .05$). Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 13% and 19.2% of the variation in engagement in NSSI can be explained by the model in block 6. Thus, we can interpret this as 13-19.2% probability of engaging in NSSI to be explained by the presence of these predictors. Exp(B) value demonstrates that children and youth are 1.96 times more likely to engage in NSSI if they report a history of sexual abuse, 1.35 times more likely to engage in NSSI if they report a history of physical abuse, 1.33 times more likely to engage in NSSI if they report a history of witnessing domestic violence, 2.30 times more likely to engage in NSSI if they are female. As well, for every one year older, the odds of children and youth engaging in NSSI increases by 1.22 times. These results are demonstrated in table 2.

Table 2

Regression results: Abuse types, sex, and age predicting NSSI.

Predictor	<i>B</i>	Wald Chi-Square	Exp(<i>B</i>)	<i>P</i> value
Sexual	.673	52.789	1.960	.000**
Physical	.297	13.906	1.345	.000**
Witnessing DV	.288	17.151	1.334	.000**
Neglect	.039	.226	1.040	.635
Sex	.833	201.984	2.301	.000**
Age	.196	392.490	1.217	.000**

** indicates significant predictors.

It is noteworthy that preliminary analyses were performed to ensure there was no violation of the assumptions of normality and linearity. Given the nature of the data, we predicted that multicollinearity, defined as having two or more predictor variables in the regression model correlated, would be apparent. Thus, a logistic regression analysis was

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calculated to predict engagement in NSSI following a cumulative developmental trauma history for 8349 children and youth using the presence of the aforementioned variables as predictors.

Regression analyses: Predicting involvement in NSSI following cumulative trauma.

A logistic regression analysis was calculated to predict engagement in NSSI following experiences with two or more types of trauma for 8349 children and youth using the presence of the following variables as predictors: cumulative trauma history, as well as age at the time of the assessment and sex. A test of the full model, in block 3, against a constant only model, in block 0, revealed a significant relationship, indicating that the aforementioned predictor variables as a set differentiate between children and youth who engage in NSSI from those who do not engage, $X^2(3, N = 8349) = 389.747, p < .01$. The full model correctly classified 73.3% of the cases.

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 0.5% and 0.8% of the variation in engagement in NSSI can be explained by the model in block 1, with cumulative trauma entered as a predictor variable. Thus, we can interpret this as 0.5-0.8% probability of engaging in NSSI to be explained by the presence of cumulative trauma. The correct classification of a child or youth engaging in NSSI remained the same with the current model. The Wald test statistic revealed that cumulative trauma made a significant contribution to involvement in NSSI, meaning that the presence of cumulative trauma was a significant predictor ($p < .01$).

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 8.6% and 11.9% of the variation in engagement in NSSI can be explained by the model in block 2, with cumulative trauma and age entered as predictor variables. Thus, we can interpret this as 8.6-11.9% probability of engaging in NSSI to be explained by the presence of cumulative trauma and age. The correct classification of a child or youth engaging in NSSI increased by the current model.

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The Wald test statistic revealed that both cumulative trauma and age made a significant contribution to involvement in NSSI, meaning that the presence of cumulative trauma and age were significant predictors ($p < .01$).

Lastly, block 3 reveals that the aforementioned predictor variables as a set differentiate between children and youth who engage in NSSI from those who do not engage, $X^2(3, N = 8349) = 389.747, p < .01$. The correct classification of a child or youth engaging in NSSI increased by the current model, when all 3 predictors were entered, moving from 68% to 73.3%. The Wald test statistic revealed that the following predictors made significant contributions and were significant predictors ($p < .01$), including cumulative trauma, age, and sex. Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 11.8% and 16.4% of the variation in engagement in NSSI can be explained by the model in block 3. Thus, we can interpret this as 11.6-16.4% probability of engaging in NSSI to be explained by the presence of these predictors. Exp(B) value demonstrates that children and youth are 1.29 times more likely to engage in NSSI if they report a history of cumulative trauma, and 2.37 times more likely to engage in NSSI if they are male. As well, for every one year older, the likelihood of children and youth engaging in NSSI increases by 20%. These results are demonstrated in table 3.

Table 3

Regression results: Cumulative trauma, sex, and age predicting NSSI.

Predictor	<i>B</i>	Wald Chi-Square	Exp(B)	<i>P</i> value
Cumulative Trauma	.252	9.556	1.286	.002**
Sex	.863	110.616	2.369	.000**
Age	.183	178.759	1.200	.000**

** indicates significant predictors.

Regression analyses: Prediction of involvement in NSSI+SSI following developmental trauma. A logistic regression analysis was calculated to predict engagement in

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NSSI+SSI following a developmental trauma history for 8349 children and youth using the presence of the following variables as predictors: sexual abuse, physical abuse, witnessing domestic violence, neglect as well as sex and age at the time of the assessment. A test of the full model, in block 6, against a constant only model, in block 0, revealed a significant relationship, indicating that the aforementioned predictor variables as a set differentiate between children and youth who engage in NSSI+SSI from those who do not engage, $X^2(6, N = 8349) = 466.239, p < .01$. The full model correctly classified 91.2% of the cases.

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 1.4% and 3.0% of the variation in engagement in NSSI can be explained by the model in block 1, with sexual abuse entered as a predictor variable. Thus, we can interpret this as 1.4-3.0% probability of engaging in NSSI+SSI to be explained by the presence of sexual abuse. The correct classification of a child or youth engaging in NSSI remained unchanged at 91.2%. However, the Wald test statistic revealed that sexual abuse made a significant contribution to involvement in NSSI+SSI, meaning that the presence of sexual abuse was a significant predictor ($p < .01$). Odds ratio demonstrates that children and youth are almost 3.0 times more likely to engage in NSSI+SSI if they report a history of sexual abuse.

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 2.0% and 4.5% of the variation in engagement in NSSI+SSI can be explained by the model in block 2, with sexual abuse and physical abuse entered as predictor variables. Thus, we can interpret this as 2.0-4.5% probability of engaging in NSSI+SSI to be explained by the presence of sexual and physical abuse. The correct classification of a child or youth engaging in NSSI+SSI remained the same. The Wald test statistic revealed that both sexual and physical abuse made a significant contribution to involvement in NSSI+SSI, meaning that the presence of sexual and physical

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abuse were significant predictors ($p < .01$). $\text{Exp}(B)$ value demonstrates that children and youth are 2.29 times more likely to engage in NSSI+SSI if they report a history of sexual abuse, and 1.97 times more likely to engage in NSSI+SSI if they report a history of physical abuse.

In block 3, the variation in engagement in NSSI+SSI was assessed, with sexual and physical abuse and neglect entered as predictor variables. The correct classification of a child or youth engaging in NSSI did not increase by the current model but remained the same. The Wald test statistic revealed that both sexual and physical abuse made significant contributions to involvement in NSSI+SSI, meaning that the presence of sexual and physical abuse were significant predictors ($p < .01$). Though, neglect did not make a significant contribution and thus, was not a significant predictor ($p > .005$).

In block 4, the variation in engagement in NSSI+SSI was assessed, with sexual and physical abuse, neglect, and witnessing domestic violence entered as predictor variables. The correct classification of a child or youth engaging in NSSI did not increase by the current model but remained the same. The Wald test statistic revealed that both sexual and physical abuse made a significant contribution to involvement in NSSI+SSI, meaning that the presence of sexual and physical abuse were significant predictors ($p < .01$), but that neglect witnessing domestic violence and neglect did not make a significant contribution and thus, were not significant predictors ($p > .005$).

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 5.1% and 11.3% of the variation in engagement in NSSI+SSI can be explained by the model in block 5, with sexual and physical abuse, neglect, witnessing domestic violence and age entered as predictor variables. The correct classification of a child or youth engaging in NSSI+SSI remained the same. The Wald test statistic revealed that sexual and physical abuse, as well as witnessing domestic violence and

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sex made significant contributions to involvement in NSSI+SSI, indicating that the presence of sexual and physical abuse in the context of being a female ($p < .01$), and witnessing domestic violence in the context of being male, were significant predictors ($p < .05$), but that neglect did not make a significant contribution and thus, was not significant predictor ($p > .05$).

Lastly, block 6 reveals that the aforementioned predictor variables as a set differentiate between children and youth who engage in NSSI+SSI from those who do not engage, $X^2(6, N = 8349) = 466.239, p < .01$. The correct classification of a child or youth engaging in NSSI remained the same at 91.2%. The Wald test statistic revealed that the following predictors made significant contributions and were significant predictors at the $p < .01$ level, including sexual and physical abuse, sex and age, as well as witnessing domestic violence at the $p < .05$ level. With all 6 predictors entered into model 6, only neglect did not make a significant contribution and thus, was not significant predictor ($p > .05$). Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 5.5% and 12.2% of the variation in engagement in NSSI+SSI can be explained by the model in block 6. Thus, we can interpret this as 5.5-12.2% probability of engaging in NSSI+SSI to be explained by the presence of these predictors. $\text{Exp}(B)$ value demonstrates that children and youth are 1.50 times more likely to engage in NSSI+SSI if they report a history of sexual abuse, 1.60 times more likely to engage in NSSI if they report a history of physical abuse, 1.24 times more likely to engage in NSSI if they report a history of witnessing domestic violence, and females are 1.64 times more likely to engage in NSSI in comparison to their male counterparts. As well, for every one year older, the odds of children and youth engaging in NSSI increases by 23%. These results are demonstrated in table 4.

Table 4

Regression results: Abuse types, sex and age predicting NSSI+SSI.

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Predictor	<i>B</i>	Wald Chi-Square	Exp(B)	<i>P</i> value
Sexual	.402	13.879	1.495	.000**
Physical	.471	22.268	1601	.000**
Witnessing DV	.217	5.361	1.242	.021**
Neglect	.139	1.727	1.149	.189
Sex	.495	33.693	1.640	.000**
Age	.210	188.822	1.233	.000**

** indicates significant predictors.

As previously noted, preliminary analyses were performed to ensure there was no violation of the assumption of normality and linearity. Given the nature of the data, we predicted that multicollinearity would be apparent. Thus, a logistic regression analysis was calculated to predict engagement in NSSI+SSI following a cumulative developmental trauma history for 8349 children and youth using the presence of the aforementioned variables as predictors.

Regression analyses: Predicting involvement in NSSI+SSI following cumulative trauma. A logistic regression analysis was calculated to predict engagement in NSSI +SSI following experiences with two or more types of trauma for 8349 children and youth using the presence of the following variables as predictors: cumulative trauma history, as well as age at the time of the assessment and sex. A test of the full model, in block 3, against a constant only model, in block 0, revealed a significant relationship, indicating that the aforementioned predictor variables as a set differentiate between children and youth who engage in NSSI+SSI from those who do not engage, $X^2(3, N = 8349) = 228.096, p < .01$. The full model correctly classified 87.6% of the cases.

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 0.6% and 1.2% of the variation in engagement in NSSI can be explained by the model in block 1, with cumulative trauma entered as a predictor variable. Thus, we can interpret this as 0.6-1.2% probability of engaging in NSSI to be explained by the presence of cumulative trauma. The correct

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classification of a child or youth engaging in NSSI remained the same with the current model.

The Wald test statistic revealed that cumulative trauma made a significant contribution to involvement in NSSI, meaning that the presence of cumulative trauma was a significant predictor ($p < .01$).

Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 5.3% and 10.1% of the variation in engagement in NSSI+SSI can be explained by the model in block 2, with cumulative trauma and age entered as predictor variables. Thus, we can interpret this as 5.3-10.1% probability of engaging in NSSI+SSI to be explained by the presence of cumulative trauma and age. The correct classification of a child or youth engaging in NSSI+SSI remained unchanged by current model. The Wald test statistic revealed that both cumulative trauma and age made a significant contribution to involvement in NSSI+SSI, meaning that the presence of cumulative trauma and age were significant predictors ($p < .01$).

Lastly, block 3 reveals that the aforementioned predictor variables as a set differentiate between children and youth who engage in NSSI+SSI from those who do not engage, $X^2(3, N = 8349) = 228.096, p < .01$. The correct classification of a child or youth engaging in NSSI +SSI remained unchanged by current model, when all 3 predictors were entered. The full model correctly classified 87.6% of the cases. The Wald test statistic revealed that the following predictors made significant contributions and were significant predictors ($p < .01$), including cumulative trauma, age, and sex. Cox and Snell's R^2 and Nagelkerke's R^2 indicates that between 6.1% and 11.5% of the variation in engagement in NSSI+SSI can be explained by the model in block 3. Thus, we can interpret this as 6.1-11.5% probability of engaging in NSSI+SSI to be explained by the presence of these predictors. $\text{Exp}(B)$ value demonstrates that children and youth are 1.49 times more likely to engage in NSSI+SSI if they report a history of cumulative trauma,

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and 1.78 times more likely to engage in NSSI+SSI if they are male. As well, for every one year older, the odds of children and youth engaging in NSSI+SSI increases by 1.24 times. These results are demonstrated in table 5.

Table 5

Regression results: Cumulative trauma, sex, and age predicting NSSI+SSI.

Predictor	<i>B</i>	Wald Chi-Square	Exp(B)	<i>P</i> value
Cumulative Trauma	.401	14.523	1.493	.000**
Sex	.577	27.781	1.782	.000**
Age	.214	116.656	1.239	.000**

** indicates significant predictors.

Moderated regression analyses. Social support, including family and friend support, and executive functioning, including ‘problem solving and reasoning ability,’ and ‘adaptability’ were hypothesized to have a moderating effect on the relationship between developmental trauma and NSSI and NSSI+SSI. A moderator variable is one where the effect of a predictor variable on an outcome variable depends on a third, moderating, variable. Thus, it was believed that there was an interaction between developmental trauma and social support with respect to their effect on NSSI and NSSI+SSI, as well as an interaction between developmental trauma and executive functioning with respect to their effect on NSSI and NSSI+SSI. To avoid high levels of multicollinearity with the interaction term, all independent variables and moderating variables, excluding sex, were mean centered and an interaction term between each predictor and moderator variable were created. The interaction term between each type of developmental trauma and NSSI and NSSI+SSI was added to the regression model.

Social support as a moderator between developmental trauma history and NSSI. Friend support was examined as a moderator between each type of abuse in the present study and NSSI. Each type of abuse and friend support were entered in the first step of each regression analysis.

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In the second step, the interaction term between friend support and each type of abuse was entered. Friend support did not significantly moderate the relationship between sexual abuse and NSSI, $X^2(5, N = 8349) = 201.422, p > .05$, physical abuse and NSSI, $X^2(5, N = 8349) = 260.376, p > .05$, and neglect and NSSI, $X^2(5, N = 8349) = 253.577, p > .05$. Sex and age were included in these models, and they did not significantly add to the amount of variance in the criterion account for. However, friend support did significantly moderate the relationship between witnessing domestic violence and NSSI, $X^2(3, N = 8349) = 12.008, p < .01$. The relationship continues to be significant when accounting for sex and age, $X^2(5, N = 8349) = 254.825, p < .05$. Thus, friend support only significantly moderated the relationship between witnessing domestic violence and NSSI.

Additionally, family support was examined as a moderator between each type of abuse in the present study and NSSI. Each type of abuse and family support were entered in the first step of each regression analysis. In the second step, the interaction term between family support and each type of abuse was entered. With and without age and sex in the model, family support did not significantly moderate the relationship between sexual abuse and NSSI $X^2(5, N = 8349) = 193.190, p > .05$, physical abuse and NSSI, $X^2(5, N = 8349) = 250.338, p > .05$, neglect and NSSI, $X^2(5, N = 8349) = 243.709, p > .05$, and witnessing domestic violence and NSSI, $X^2(5, N = 8349) = 245.579, p > .05$. Thus, family support did not significantly moderate the relationship between any type of abuse included in this study and NSSI.

Executive functioning as a moderator between developmental trauma history and NSSI. Adaptability was examined as a moderator between each type of abuse in the present study and NSSI. Each type of abuse and adaptability were entered in the first step of each regression analysis. In the second step, the interaction term between adaptability and each type of

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abuse was entered. Adaptability did not significantly moderate the relationship between physical abuse and NSSI, $X^2(5, N = 8349) = 264.927, p > .05$, neglect and NSSI, $X^2(5, N = 8349) = 255.893, p > .05$, and witnessing domestic violence and NSSI, $X^2(5, N = 8349) = 259.712, p > .05$. Sex and age were included in these models, and they did not significantly add to the amount of variance in the criterion account for. However, when the interaction term between adaptability and sexual abuse was created, it accounted for a significant proportion of the variance in NSSI, $X^2(5, N = 8349) = 203.920 p < .05$. Sex and age were included in this model, and they both significantly added to the amount of variance in the criterion accounted for. Accordingly, adaptability only moderated the relationship between sexual abuse and NSSI.

Moreover, ‘problem solving and reasoning ability’ was examined as a moderator between each type of abuse in the present study and NSSI. Each type of abuse and ‘problem solving and reasoning ability’ were entered in the first step of each regression analysis. In the second step, the interaction term between ‘problem solving and reasoning ability’ and each type of abuse was entered. ‘Problem solving and reasoning ability’ did not significantly moderate the relationship between sexual abuse and NSSI, $X^2(5, N = 8349) = 191.767, p > .05$, physical abuse and NSSI, $X^2(5, N = 8349) = 247.215, p > .05$, neglect and NSSI, $X^2(5, N = 8349) = 243.563, p > .05$, and witnessing domestic violence and NSSI, $X^2(5, N = 8349) = 244.628, p > .05$. Sex and age were included in these models, and they did not account for a significant amount of variance in NSSI. Thus, ‘problem solving and reasoning ability’ did not moderate the relationship between any type of abuse included in this study and NSSI.

Social support as a moderator between developmental trauma history and NSSI+SSI. Friend support was examined as a moderator between each type of abuse in the present study and NSSI+SSI. Each type of abuse and friend support were entered in the first step

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of each regression analysis. In the second step, the interaction term between friend support and each type of abuse was entered. Friend support did not significantly moderate the relationship between sexual abuse and NSSI+SSI, $X^2(5, N = 8349) = 33.154, p > .05$, or neglect and NSSI+SSI, $X^2(5, N = 8349) = 53.420, p > .05$. Sex and age were included in these models, and they did not account for a significant amount of additional variance in NSSI+SSI. However, friend support did significantly moderate the relationship between physical abuse and NSSI+SSI, $X^2(5, N = 8349) = 51.245, p < .01$. The relationship continued to be significant when accounting for sex and age. As well, friend support significantly moderated the over all relationship between witnessing domestic violence and NSSI+SSI, $X^2(3, N = 8349) = 4.614, p < .05$, however, the relationship became non-significant when differentiated by sex and age, $X^2(5, N = 8349) = 50.187, p > .05$. Thus, friend support significantly moderated the relationship between physical abuse and NSSI+SSI (including sex and age), as well as witnessing domestic violence and NSSI+SSI (excluding sex and age).

Moreover, family support was examined as a moderator between each type of abuse in the present study and NSSI+SSI. Each type of abuse and family support were entered in the first step of each regression analysis. In the second step, the interaction term between family support and each type of abuse was entered. Family support did not significantly moderate the relationship between sexual abuse and NSSI+SSI, $X^2(5, N = 8349) = 27.778, p > .05$, physical abuse and NSSI+SSI, $X^2(5, N = 8349) = 45.438, p > .05$, neglect and NSSI+SSI, $X^2(5, N = 8349) = 46.453, p > .05$, and witnessing domestic violence and NSSI+SSI, $X^2(5, N = 8349) = 43.429, p > .05$. Sex and age were included in these models, and they did not account for a significant amount of additional variance in NSSI+SSI.

Executive functioning as a moderator between developmental trauma history and NSSI+SSI. Adaptability was examined as a moderator between each type of abuse in the present study and NSSI+SSI. Each type of abuse and adaptability were entered in the first step of each regression analysis. In the second step, the interaction term between adaptability and each type of abuse was entered. Adaptability did not significantly moderate the relationship between sexual abuse and NSSI+SSI, $X^2(5, N = 8349) = 31.079, p > .05$, physical abuse and NSSI+SSI, $X^2(5, N = 8349) = 50.207, p > .05$, neglect and NSSI+SSI, $X^2(5, N = 8349) = 50.888, p > .05$, and witnessing domestic violence and NSSI+SSI, $X^2(5, N = 8349) = 48.240, p > .05$. Sex and age were included in these models, and they did not significantly add to the amount of variance in the criterion account for. Thus, adaptability did not significantly moderate the relationship between any type of developmental trauma include in this study and NSSI+SSI.

Moreover, ‘problem solving and reasoning ability’ was examined as a moderator between each type of abuse in the present study and NSSI+SSI. Each type of abuse and ‘problem solving and reasoning ability’ were entered in the first step of each regression analysis. In the second step, the interaction term between ‘problem solving and reasoning ability’ and each type of abuse was entered. When the interaction term between ‘problem solving and reasoning ability’ and sexual abuse was entered, it explained a significant increase in variance in NSSI+SSI, $X^2(5, N = 8349) = 28.050, p > .05$. ‘Problem solving and reasoning ability’ did not significantly moderate the relationship between physical abuse and NSSI+SSI, $X^2(5, N = 8349) = 44.712, p > .05$, neglect and NSSI+SSI, $X^2(5, N = 8349) = 46.867, p > .05$, and witnessing domestic violence and NSSI+SSI, $X^2(5, N = 8349) = 43.310, p > .05$. Sex and age did not significantly add to the amount of variance in the criterion accounted for. Thus, ‘problem solving and reasoning ability’

was a significant moderator between only one type of developmental trauma, sexual abuse, and NSSI+SSI.

Discussion

The present study examined the relationship between clinically-referred children and youth with histories of developmental trauma (i.e., physical abuse, sexual abuse, witnessing domestic violence, or neglect), and engagement in NSSI and NSSI+SSI. Specifically, social support (family and friend support) and executive functioning (problem solving and reasoning ability, as well as adaptability) were assessed as moderators among this relationship. Analyses on whether sex and age at the time of the assessment influenced the relationship between clinically-referred children and youth with histories of developmental trauma and engagement in NSSI and NSSI+SSI were also conducted.

This study found that 22.8% of the children and youth engaged in NSSI (roughly 1 in 5), whereas 8.8% engaged in NSSI+SSI (roughly 1 in 12); the proportion of those involved in self-harm was fairly consistent with other studies (Armiento, Hamza, Stewart, & Leschied, 2016; Baiden, Stewart, & Fallon, 2017). Additionally, the proportion of children and youth who reported experiences of developmental trauma were consistent with previous research (Armiento, Hamza, Stewart, & Leschied, 2016; Baiden, Stewart, & Fallon, 2017).

Main findings. In line with previous research (Baiden et al., 2017; Andover, Morris, Wren, & Bruzzese, 2012; Armiento, Hamza, Stewart, & Leschied, 2016), this study found that a history of developmental trauma was associated with engagement in NSSI, with children and youth reporting a history of sexual abuse, physical abuse, neglect, and/or witnessing domestic violence to be more likely to report engaging in NSSI in comparison to children and youth who did not report a history of abuse. As well, consistent with expectations, results revealed

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associations between having a history of sexual abuse, physical abuse, neglect, and/or witnessing domestic violence and engagement in NSSI+SSI in comparison to children and youth who did not report a history of abuse. It is interesting to note, however, that in the regression models, the following predictor variables as a set differentiated between children and youth who engage in NSSI and NSSI+SSI from those who do not engage: sexual abuse, physical abuse, witnessing domestic violence, female gender, and older age. Notable, is that when predicting both NSSI and NSSI+SSI, neglect did not make significant contributions.

The finding that a history of developmental trauma is associated and often predicts NSSI engagement could be explained by research that suggests NSSI is often used as a way to regulate negative emotions that are associated with trauma (Nock & Prinstein, 2004; Klonsky & Glenn, 2009; Hamza & Willoughby, 2015). More specifically, a plethora of research has begun to focus on the functions of engaging in NSSI as a form of emotion regulation to reduce negative mood states (Nock & Prinstein, 2004; Klonsky & Glenn, 2009; Hamza & Willoughby, 2015). Additionally, Nock and Prinstein (2004) note that, rather than using NSSI to remove negative feelings, individuals may use NSSI to generate a more desirable physiological state (i.e., feeling something rather than nothing). Moreover, previous literature notes that NSSI may be used to alter or regulate an individual's interpersonal environment, such that NSSI may aid in avoiding punishment from others or may increase attention from others (Nock & Prinstein, 2004). Further, research suggests that individuals who report a history of trauma generate rigid over- or under-controlled behaviour patterns, including self-harm, which may be associated with an attempt to recreate explicit aspects of traumatic experiences to “gain a sense of mastery or control, avoid intolerable levels of emotional arousal, or attempt to achieve acceptance and intimacy” (Cook et al., 2005, pg. 395). In summary, it could be that abused children and youth turn to NSSI as a

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form of reducing negative mood states, generating a more desirable physiological state, avoiding punishment from others, attempting to gain attention from others, or attempting to recreate explicit aspects of traumatic experiences.

It is noteworthy that sexual and physical abuse, and witnessing domestic violence also predicted NSSI+SSI, which could be a reflection of the different function that NSSI+SSI serves in comparison to NSSI. Specifically, NSSI+SSI is often intended to “make others better off” and diminish the burden the individual feels they have created for their loved ones (Brown, Comtois, & Linehan, 2002, pg. 200). Thus, it could be that abused children and youth turn to NSSI+SSI because they feel that taking their own life would help, rather than hurt, their loved ones.

Alternatively, one study examined the research to date on clinical risk factors that are significantly associated with NSSI and NSSI+SSI (Andover, Morris, Wren, & Bruzzese, 2012). These researchers found that individuals who reported a history of NSSI+SSI presented with more depressive and anxious symptoms, as well as higher substance use (Andover, Morris, Wren, & Bruzzese, 2012). Therefore, it is possible that symptoms related to depression and anxiety and substance use moderate the relationship between developmental trauma and NSSI+SSI.

Reporting a history of neglect was inferred from the literature to explain some of the variation in engagement in NSSI and NSSI+SSI, and thus, was hypothesized to be significant. Contrary to expectations, when predicting both NSSI and NSSI+SSI, neglect did not make significant contributions. Several researchers draw on an important point regarding developmental trauma that may provide some insight as to why neglect did not emerge as a significant contributor. Specifically, it is postulated that the nature and severity of the trauma itself, in terms of invasiveness, frequency, and enduring acts, all contribute to the adjustment of

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the individual following maltreatment (Evans, Steel, DiLillo, 2013; Naar-King, Silvern, Ryan, & Sebring, 2002; Clemmons, Walsh, DiLillo, Messman-Moore, 2007). Therefore, one explanation as to why neglect did not emerge as a significant contributor to NSSI or NSSI+SSI may be that neglect was experienced as less invasive, frequent or long-lasting. More research is needed to determine whether neglect is typically experienced this way in comparison to other forms of developmental trauma.

As hypothesized, and consistent with evidence in the literature, a history of cumulative trauma (two or more types of trauma) was associated with NSSI and NSSI+SSI, and regression models revealed that cumulative trauma (two or more types), older age, and male gender predicted engagement in NSSI and NSSI+SSI. On the basis of previous literature (Cloitre et al., 2009), the presence of childhood cumulative trauma has been found to be related to more complex symptom profiles which include PTSD, depression, dissociation, interpersonal problems, and behavioural dysregulation. Though this study did not examine symptom profiles, these trends may be evident in the sample. Only a small number of studies examine cumulative childhood trauma; more research is needed to determine its association with symptom complexity and differences in sex and age.

Social support as a moderator. It was hypothesized that family and friend support would moderate the relationship between sexual abuse and NSSI and NSSI+SSI. Previous literature assessing the impact of sexual abuse on children and youth suggests that sexual abuse survivors differ in adjustment depending on their ability to alter the effects of the abuse; specifically, social support from family has been found to facilitate adaptive coping in sexual abuse survivors (Marivate & Madu, 2007; Remblay, Herbert, & Piche, 1999). Researchers Marivate and Madu (2007) found that 70% of childhood sexual abuse survivors reported support from family,

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whereas only 20% reported support from friends. The literature also reveals that the more severely sexually abused an individual is, the less supportive they view their friends (Remblay & Artine, 1999). Additionally, given the private-nature of childhood sexual abuse, it is likely that children and youth prefer to utilize support from their family versus their friends (Remblay, Herbet, & Piche, 1999). In fact, it is possible that children and youth refrain from disclosing their sexual abuse to their friends as they feel their friends may not be able to respond to all the stressors that come with sexual abuse disclosure (Remblay, Herbet, & Piche, 1999). However, these trends were not evident in the findings from the present study; in fact, neither family nor friend support moderated the relationship between having a history of sexual abuse and engagement in NSSI or NSSI+SSI, indicating that the presence of social support did not differentiate between those who engaged in NSSI or NSSI+SSI and those who did not.

One explanation for this finding could be that, given the private-nature of childhood sexual abuse, the abuse is never disclosed to either family or friends. For instance, one study by London, Bruck, Wright, and Ceci (2008) found that 60-70% of sexual abused children did not make a disclosure until adulthood, whereas another study found that two thirds of children disclosed their sexual abuse in adulthood rather than childhood (Jonzon & Lindblad, 2004). Several abuse characteristics have been found to predict an individual's decision to disclose sexual abuse, including whether the abuse occurs within or outside the family, negative anticipated social reactions, disbelief by others, and the presence of shame and self-blame (Lemaigre, Taylor, & Gittoes, 2017). With that being said, it could be that the child or youth never received positive emotional support and/or understanding related to their sexual abuse history, and therefore, turned to NSSI or NSSI+SSI as a form of coping. Moreover, previous literature supports the finding that sexually abused individuals are more likely to use dissociation

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as a form of coping (Gill & Tutty, 1999). It is probably that, regardless of whether social supports are present or absent, these children and youth may have difficulty engaging with family or friends on an emotionally available level, due to disconnecting from their own thoughts, feelings, or sense of identity. Alternatively, it could be assumed that, because the study utilized multiple sources of information when completing the assessment (i.e., parent(s)/primary caregiver(s), clinical reports, teacher reports, etc.), the assessors may have accounted for supports being physically present, rather than the degree in which the child or youth perceives that friends and family are available to provide support and assistance if needed.

Studies have found a significant negative association between child physical abuse and social support (Crouch, Milner, & Thomsen, 2001), with one study reporting that 55% of the variance in adult psychological adjustment was credited to social support (Runtz & Shallow, 1997). The present study supports this finding, with results revealing that higher level of friend support was related to lower levels of NSSI+SSI, but not NSSI, in children and youth with histories of physical abuse. The experience of physical abuse may expose children and youth to feelings of isolation and thwarted belongingness, and may increase their tolerance of pain, fear of death, and suicide (Brausch & Holaday, 2015). It could be that, their prior experience with physical abuse contributes to the child or youths decrease in response to a stimulus after repetitive exposure; children and youth who experience physical abuse habituate to the pain (Brausch & Holaday, 2015). As a result, their experiences with NSSI do not engage the support from family or friends. Conversely, the child or youth may not perceive the support from others at this time; it may be that only when a singular event such as a suicide attempt occurs, that friends acknowledge the potential in the lethality of the child or youth to take their own life. Alternatively, research suggests that in adolescence, youth are much more likely to confide in

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their friends rather than family (Feiring et al., 1998; Rosenthal, Feiring, & Taska, 2003), and that older youth are more likely to be physically abused. This finding is supported in this study in relation to physical abuse, in that friend support moderated the relationship between physical abuse and NSSI+SSI, and that physical abuse was positively associated with age. Another explanation for this finding, could be that it is their family member(s) who are the physical abusers (Dion et al., 2015), and thus, they are more likely to utilize friend support. One study, by Strauss and Gelles (1986) found that 21% of their sample was severely physically abused by their parents, whereas another study reported 25% of participants reported physical maltreatment (Moeller, Bachmann, & Moeller, 1993). These findings speak to the need to determine strategies to increase higher levels of friend support for children and youth with histories of physical abuse to diminish engagement in NSSI+SSI. It is noteworthy that studies have also found a significant negative association between indirect forms of child maltreatment and social support.

The protective effect of social support in the relationship between exposure to violence in the family and adjustment has been studied (Muller et al., 2000; Sullivan et al., 2004). Support from friends, rather than family, moderated the relationship between witnessing domestic violence and engaging in both NSSI and NSSI+SSI. Some studies suggest that the function of support differs between family and friends. Bal et al. (2003) suggest that friend support is utilized more often when individuals are feeling isolated and need assistance with coping mechanisms, whereas family support is utilized more frequently to provide a sense of safety. Thus, it is probable that children and youth who report a history of witnessing domestic violence utilize friend support when engaging in NSSI and NSSI+SSI, as they feel isolated and need assistant coping, rather than feeling unsafe, potentially because they are not the direct target of the abuse. For instance, in households where children or youth witness domestic violence

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between their parents, it fits that the child or youth would be less likely to utilize support from an individual directly involved in the abuse, and more likely to confide in their friends (Dion et al., 2015). Likewise, provided that violence within the home often produces a familial crisis and often disrupts familial organization (Remblay, Herbet, & Piche, 1999), friend-child relationships are likely to be placed ahead of family-child relationships. Moreover, from an attachment lens, it is probable that a poorer basis of attachment exists or even undermines whatever attachment may exist for children and youth who live in the presence of domestic violence. Hence, whether the available parental figures were available or not in providing support did not make a significant contribution to the child or youth's likelihood of engaging in self-injurious behaviours (Forke et al., 2018).

Executive functioning as a moderator. It was hypothesized that adaptability would moderate the relationship between children and youth with any history of trauma and NSSI and NSSI+SSI since prior studies have found that individuals with histories of trauma exhibit diminished executive functioning (Deprince et al., 2009; Cowell et al., 2015), and that lower executive functioning scores have been found to be related to an increased likelihood of engaging in NSSI and NSSI+SSI (Wolff et al., 2013; Tanner et al., 2015). The current study found that higher levels of adaptability were related to lower levels of NSSI in children and youth with histories of sexual abuse.

One study, by Kaye-Tzadok and Dacidson-Arad (2016), explained that throughout childhood, their assumptive world is more flexible and able to change, which allows for psychological vulnerability, as well as psychological resilience. Kaye-Tzadok and Dacidson-Arad (2016) argue that within psychological resilience, lies room for self-forgiveness, hope, agency, and ultimately a possibility to rebuild ones shattered assumptive world post sexual

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abuse. Therefore, as Kaye-Tzadok and Dacidson-Arad (2016) state, it could be that higher cognitive strategies such as hope and self-forgiveness contributed to children and youth's adaptability, which lessened their likelihood of NSSI.

However, adaptability was not related to lower levels of NSSI+SSI in children and youth who had any history of abuse. Recall, adaptability was defined as the ability to adjust to changes in routine or environment. Thus, one explanation for these results may be that being able to adjust to changes in routine or environment may not be beneficial in terms of resolving the negative psychological symptoms that come with experiencing abuse (Cohen & Mannarino, 2000). It may be that having some degree of structure and predictability may be more beneficial and therefore, decrease the likelihood of engaging in self-injurious behaviours (Cohen & Mannarino, 2000). Alternatively, studies suggest that a child or youth's level of adaptability depends on their level of social support suggesting that it is the support from others that improves the capacity to adjust to changes in the environment (Cook et al., 2005). Therefore, without having perceived available social supports, it may be more difficult to adjust to changes in one's environment.

Higher levels of 'problem solving and reasoning ability' were related to lower levels of NSSI+SSI in children and youth with histories of sexual abuse. Recall, 'problem solving and reasoning ability' was defined as finding solutions to everyday problems and arriving at inferences and conclusions (e.g., getting ready for school, understanding own limitations). This finding may speak to the diathesis-stress-hopelessness model of suicidal behaviour, in that children and youth who exhibit cognitive rigidity, or difficulty with generating alternative solutions, become progressively more hopeless, more depressed and thus, progressively more likely to engage in NSSI+SSI (Leslie & Mark, 1998). Thus, with greater cognitive flexibility,

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children and youth with histories of sexual abuse may show a tendency to exhibit less hopelessness, less depressive symptoms, and are able to generate alternative solutions, which ultimately leads to a decreased likelihood of engaging in suicidal behaviour.

However, ‘problem solving and reasoning ability’ was not related to lower levels of NSSI in children and youth with any history of abuse, suggesting that whether ‘problem solving and reasoning ability’ was present or absent did not make a significant contribution to their likelihood of engaging in NSSI. One explanation for this could be that involvement in NSSI was driven primarily by an affective response that overrode whatever form of problem solving they were able to draw on. This could reflect that a child or youth’s experience with any form of maltreatment negates their ability to draw on effective problem solving and thus increases their likelihood of engaging in NSSI. In other words, involvement in NSSI may in fact be serving as a coping mechanism to moderate an affective disorder. Alternatively, it could be that, children and youth’s beliefs or perceptions of their ability to problem solve and reason plays a uniquely critical role as an explanatory mechanism in their engagement with NSSI, rather than their actual ability to problem solve and reason (Tanner et al., 2015).

Biological sex and age. Research suggests that the link between developmental trauma and biological sex may vary depending on the type of maltreatment (Baiden, Stewart, & Fallon, 2017), whereas some research suggests that no gender differences exist between types of maltreatment (Wan, Chen, Sun, & Tao, 2015). Findings from the current study are consistent with evidence that suggests that experiences of sexual abuse are strongly associated with female gender (Lynch, 2015; Ystgaard, Hestetun, Loeb, & Mehlum, 2004; Narr-King, Silvern, Ryan, & Sebring, 2002), whereas experiences of physical abuse are more frequently reported among males (Wan, Chen, Sun, & Tao, 2015). Otherwise, no effects of sex were found in relation to

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other types of trauma. It is critical to note that males were significantly more likely to experience cumulative trauma, compared to their female counterparts.

The present study found that females were more likely to engage in NSSI and NSSI+SSI in comparison to males, which both corroborates and contradicts past research. For instance, several others have found consistencies between NSSI and female gender (Klassen, Hamza, & Stewart, 2018; Muehlenkamp & Gutierrez, 2007; Armiento, Hamza, Stewart & Leschied, 2016; Plener et al., 2009; Zetterqvist et al., 2013) and SSI and female gender (Whitlock and Knox, 2007; Prinstein et al., 2008; Nock et al., 2013). However, some studies do not report an influence of gender on NSSI or NSSI+SSI (Gratz, 2001; Baetens, Claes, Muehlenkamp, 2011; Hilt, Nock, Lloyd-Richardson, & Prinstein, 2008), possibly because males may hide their self-harm in hopes of avoiding stigmatization since self-harm has primarily been viewed as related to female gender (Harrison, 2015). Alternatively, research suggests that females are more likely to respond to stress using internally focused responses (i.e., rumination), whereas males are more likely to use externally focused responses (i.e., substance use), which may possibly explain the gender differences exhibited in relation to NSSI (Nolen-Hoeksema, 2012). Thus, within gender differentiation it is imperative that research focus on both female and male samples when exploring engagement in NSSI or NSSI+SSI.

Further, the present study found that older children and youth ($M=13.88$ vs 11.79) were more likely to engage in NSSI and NSSI+SSI in comparison to younger children and youth. This finding corroborates previous research that has found consistencies between NSSI and NSSI+SSI and older age (Harrison, 2015; Armiento, Hamza, Stewart, & Leschied, 2016; Swannell et al., 2014; Tatnell et al., 2016). As typically reported in research, the age of onset for NSSI is between 12-14 years (Rodham & Hawton, 2009; Armiento, Hamza, Stewart, & Leschied, 2016).

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Thus, coincidental with previous literature, this study reported an average age of onset for NSSI to be 13.88 years of age. Based on the understanding that NSSI poses as a risk factor for SSI (Andover, Morris, Wren, & Bruzzese, 2012), and that self-harm tends to progress in severity, it is understood that the age of onset for NSSI+SSI emerges later in adolescence (14-16 years) in comparison to those that have engaged in NSSI alone (Nock et al., 2013). This study revealed that the average age of onset for NSSI+SSI was 14.51 years old, approximately 1 year older than those with histories of NSSI alone. This finding supports the theory that NSSI and SSI increase as children get older, and that the progression of self-harm exists on a continuum of severity (Rodham & Hawton, 2009).

Limitations and future directions. These results are not without limitations. While the sample was large, it was limited to clinically-referred children and youth in 10 mental health facilities in Ontario. Moreover, although this data was collected over a five-year period, this study relied on data that was collected at one point in time in each child or youth's life. Additionally, because this study is cross-sectional in nature, the direction of the effects cannot be addressed, suggesting that there is a possibility that individuals are more likely to abuse children and youth who engage in NSSI or NSSI+SSI. Thus, only an association between these variables can be inferred. Furthermore, the children and youth included in this study were not randomly selected but were included based on a convenience sampling method. Specifically, children and youth were selected based on the capacity within 10 mental health care agencies across Ontario to complete an interRAI ChYMH assessment protocol (Stewart et al., 2015). The number of children and youth in each group (i.e., history of developmental trauma versus no history, and history of NSSI/NSSI+SSI and no history) is not evenly distributed. This could in part be accounted for by the fact that the data were collected using a consenting convenience sample. As

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a result, there is potential for an increase in Type II errors (false negatives) and thus not reporting on associations within the data that may in fact be present. For the aforementioned reasons, caution should be taken when applying these findings to other populations. Future studies are needed to establish how generalizable the present study's findings are to children and youth in non-clinical settings, such as community samples, as well as children and youth outside of the Ontario child and youth mental health system. Future studies should include random samples with evenly distributed groups, as well as longitudinal data to determine the direction of the effects and the changes in development over time, as well as NSSI and NSSI+SSI in non-clinical samples.

As a result of completing secondary data analyses, the data available did not always provide information that would complement the research questions that were being studied. Specifically, this research did not include the length of time that the children and youth experienced the different subtypes of developmental trauma (i.e., sexual, physical, witnessing domestic violence, and neglect), nor did it include the number of times the trauma(s) were experienced or the age at which the trauma(s) were experienced. Future studies are needed to examine whether the association between developmental trauma and NSSI and NSSI+SSI engagement varies depending on length of time that the children and youth experienced developmental trauma(s), the number of times the trauma(s) were experienced and the age at which the trauma(s) were experienced. Furthermore, this research did not include the frequency that the children and youth engaged in NSSI and NSSI+SSI, nor did it include the severity of either. Future studies are needed to examine whether the association between developmental trauma and NSSI and NSSI+SSI engagement varies depending on the frequency and severity of NSSI and NSSI+SSI.

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A plethora of research indicates that sexual abuse has similar or more negative effects on an individual compared to either physical abuse, witnessing domestic violence, and/or neglect (Maniglio, 2009; Weierich, & Nock, 2008; Hadland et al., 2015). Future studies should assess different subtypes of developmental trauma in a hierarchal manner to determine whether some types of developmental trauma are related to more negative effects than compared to others.

One limitation that was present as a result of using the interRAI assessment measure was the reliance on retrospective self-report responses to assess both the presence of the different types of developmental trauma (i.e., sexual, physical, neglect, and witnessing domestic violence) and NSSI and NSSI+SSI. Specifically, potential inaccuracy could result from errors in memory or inaccessibility of memories as a result of these potentially traumatic memories being related to higher levels of stress. When relying on self-report responses, researchers are relying on participants being truthful, having the introspective ability to provide an accurate response, and trusting that participants are interpreting questions in the same way. Therefore, undoubtedly, some degree of response bias is present in the results. Similarly, research suggests that when retrospective self-reports are utilized, participants are subject to recall bias, defined as the tendency to under-report events or experiences. Thus, it is possible that the presence of the different types of developmental trauma (i.e., sexual, physical, witnessing domestic violence, and neglect) and self-injurious behaviour were under-reported and/or reported incorrectly. Notable is that self-injurious behaviours are most commonly assessed using self-report measures (Swannell et al., 2014), and this study made efforts to reduce the likelihood of false or under reporting by utilizing multiple sources of information when completing the assessment (i.e., parent(s)/primary caregiver(s), clinical reports, teacher reports, etc.). In instances where conflicting sources of information are generated, it was the assessor's responsibility to use his or her clinical judgement

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to determine the most appropriate response. With that being said, research has revealed that clinician-rated measures often outperform self-reported measures (Stewart, Ceranoglu, O'Hanley, & Geller, 2005). Therefore, it is crucial that further studies continue to identify the best method to assess exposure to developmental trauma and self-injurious behaviours.

Also, regarding the engagement in self-injurious behaviour, the interRAI assessment measure used in this research only measured: 1) deliberate self-injury (NSSI) and 2) whether the intent of the child's or youth's self-injurious act was to kill him- or herself (SSI). Thus, a comparison group of children and youth who only experienced SSI (without a history of NSSI) was not possible to include in the study, eliminating the possibility of uncovering existing differences for these children and youth compared to those who did not experience NSSI, those who only experienced NSSI, and those who experienced NSSI+SSI. However, as mentioned previously, NSSI and SSI frequently co-exist within clinical populations despite the differences in regard to intent, and NSSI is among one of the many determinants of SSI (Nock et al., 2006; Wolff et al., 2013; Groschwitz et al., 2015). Therefore, even with a comparison group of children and youth who only experienced SSI (without a history of NSSI), it is likely that the group would be too small, and thus, drawing inferences about the population would be too difficult. For the aforementioned reasons, future studies should compare groups of children and youth with no history of self-harm, NSSI, NSSI+SSI, and SSI only, to determine whether any differences exist.

Study variables were assessed to determine the shape of the distribution and the presence of outliers. As expected, all study variables were not normally distributed due to the nature of the data. With that being said, using a more flexible statistical technique, such as logistic regression, was important in this instance since the explanatory variables do not need to be normally distributed. Other studies that used a similar method can be found in additional journal articles

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(Hosmer & Lemeshow, 1989; Tabachnick & Fidell, 2007). As well, most study variables had some missing variables, although these were relatively small in comparison to the sample size. Despite the limitations, this study's findings revealed meaningful implications for children's and youth's mental health.

It is notable that the results from the present study provide a basis for future work to further explore moderating mechanisms that may explain possible pathways by which developmental trauma can lead to self-injurious behaviour. The model presented in this study demonstrates that social support and executive functioning moderates the relationship between some types of abuse and self-injurious behaviour. This model demonstrates that family and friend support may be important targets for intervention for certain types of abuse to diminish self-injurious behaviours. For instance, the guidelines for directing children and youth toward positive social supports, provided by the interRAI ChYMH, include diminishing behaviours or symptoms that separate children and youth from their peers (e.g., aggression or depression), lessening factors that contribute to difficult peer situations, promoting effective social skills and strengthening relationship building abilities, as well as learning how to maintain healthy relationships (Stewart et al., 2015). More specifically, an abundance of therapeutic interventions have been researched for promoting positive social relationships, such as Social Skills Training (SST), Cognitive Behavioural Therapy (CBT), and bullying and intervention programs (Stewart et al., 2015). It is noteworthy that therapeutic interventions have been shown to be more beneficial when the parents are integrated in therapy, in comparison to interventions that focus only on the child or youth (Domhardt, Munzer, Fegert, & Goldbeck, 2015). In the future, studies should determine when and how to best increase children's and youth's social support and

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determine why some types of abuse are more often associated with certain types of social support than others (i.e., friends versus family).

As well, the present results demonstrate that executive functioning moderates the relationship between some types of abuse and self-injurious behaviour. This model demonstrates that ‘adaptability’ and ‘problem solving and reasoning ability’ may be important targets for intervention for certain types of abuse to lessen the chances of engaging in self-injurious behaviours. For instance, the guidelines for directing children and youth toward enhancing adaptability to change, provided by the interRAI ChYMH, include creating awareness and identifying feelings associated with changes in routine, increasing awareness of physiological reactions to feelings (e.g., heart racing, clammy hands), teaching relaxation techniques (e.g., deep breathing), engaging in relaxing activities (e.g., yoga, journaling), or engaging in transition planning (Stewart et al., 2015). The guidelines for directing children and youth toward developing problem-solving skills, provided by the interRAI ChYMH, include guided practice (e.g., role play), real-world practice using different forums (e.g., books, movies), positive reinforcements (e.g., high five, smile), and brainstorming the positives and negatives for each solution (Stewart et al., 2015). Further, several therapeutic interventions have been found to be helpful in promoting executive functioning, such as Tools of the Mind, Promoting Alternative Thinking Strategies (PATH), the Chicago School Readiness Project (CSR), Montessori curriculum, mindfulness, tae kwon do and yoga (Diamond, 2012). With the above in mind, plenty of other protective factors have been recognized aside from social support and executive functioning that require more research to determine their impact on childhood trauma and self-injurious behaviours.

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Regarding factors that have been shown to be protective during childhood, Cook et al. (2005) outlined seven important factors that appear to be important determinants of children and youth's psychological adjustment. Other than social support and executive functioning, positive attachment has also widely been studied as a protective factor for childhood trauma; it has been extensively shown that individuals with histories of developmental trauma typically report insecure attachment patterns, particular disorganized attachment (Cook et al., 2005; Rahim, 2014). Individuals with a disorganized attachment portray behaviour that is often clingy, dismissive, aggressive, helpless, coercive, susceptible to stress, emotionally dysregulated, and help-seeking (Cook et al., 2005). Research reveals that 80% of children with a history of maltreatment develop insecure attachment patterns, reflected in children becoming distressed easily and being unable to collaborate with caregivers in having insufficient internal resources (Cook et al., 2005). These children learn that the external world is a dangerous place, and they are relatively unable to control their own internal world effectively (Rahim, 2014). However, secure attachment relationships have been found to decrease the severity of the outcomes of traumatic experiences, whereas, insecure attachment relationships may amplify adverse outcomes (Rahim, 2014), which may speak to the protective nature that secure attachment relationships hold. It is possible that intervening early at the attachment level would be protective for children with histories of abuse to lessen the possibility of engagement in self-harm.

Further, another protective factor that has been shown to be linked to children's resilience is positive self-concept. Often, one of the long-term consequences of children's exposure to developmental trauma are their perceptions of themselves as powerless, defective, helpless, incompetent, and unlovable (Cook et al., 2005). Though, with that being said, having a positive view of oneself, others, and the world has been shown to be protective, in that they experience

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less long-term consequences associated with later psychological adjustment. Also, behavioural control has widely been studied as a protective factor for childhood trauma, in that children and youth are able to act effectively in their environment (Cook et al., 2005). Several other protective factors that have been found to be associated with childhood trauma include “easy-going disposition, positive temperament, and sociable demeanor; internal locus of control and external attributions for blame; effective coping strategies; degree of mastery and autonomy; special talents; and creativity and spirituality” (Cook et al., 2005, pg. 396). All in all, the literature suggests that there is value in focusing on individual’s strengths to buffer against the negative consequences that are related to developmental trauma exposure, and that factors that are amenable to change should be heavily studied. How these protective factors relate to maladaptive coping strategies, such as NSSI or NSSI+SSI, should be explored further.

With the above in mind, few studies have examined how resilience or protective factors develop over time; longitudinal studies, preferably spanning from childhood into adulthood, that monitor the interaction of protective mechanisms at different developmental periods would be highly beneficial, as little information is known about the stability of adaptive functioning throughout the lifespan (Domhardt et al., 2015). Despite the importance of researching protective factors in relation to trauma exposure and self-harm, examining the risk factors for self-injurious behaviours are also worthy of studying.

A plethora of research suggests that victimization through developmental trauma is among the most extensively studied risk factor for engaging in self-injurious behaviours and has been shown consistently to be associated and often predict such behaviour (Baiden et al., 2017; Yates et al., 2008; Tatnell et al., 2016; Weierich & Nock, 2008; Auerbach et al., 2014; Briere & Gil, 1998). Importantly, Andover et al. (2012) examined the co-occurrence of NSSI and SSI in

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adolescents and reviewed current research on clinical risk factors and psychosocial characteristics associated with engaging in each type of self-harming behaviour individually, and factors associated with involvement in NSSI+SSI. The most prominent clinical factors significantly associated with NSSI alone included interpersonal chaos and any type of maltreatment, whereas factors related to attempting suicide include physical abuse, depressive and anxious symptoms, stressful life events, exposure to a suicide attempt, suicidal ideation, substance use, PTSD, confusion about oneself, fewer family relationships, death of a friend, and worries about sexual identity (Andover et al., 2012). Regarding unique risk factors related to NSSI+SSI, Andover et al. (2012) reported the following to be most prominent: any type of maltreatment, fewer reasons for living, anhedonia, negative self-evaluation, impulsivity, hopelessness, loneliness, anger, confusion about oneself, less self-esteem, risk taking/ reckless behaviour, oppositional defiant disorder, dysthymia, alcohol use, and less parental support. Importantly, these findings suggest that clinicians should identify individuals at-risk for self-harm and direct them to appropriate interventions and treatment options.

As previously noted, research on developmental trauma and psychological distress has been well recognized in relation to symptoms of PTSD, including re-experiencing the traumatic event, hyperarousal, rumination and emotional numbing (American Psychological Association, 2000). The trauma experienced by children and youth exposed to adverse life events (ALEs) is reflected in the diagnosis of PTSD symptoms, rather than the currently proposed diagnosis of Developmental Trauma Disorder (DTD; van der Kolk et al., 2009). Although researchers have identified a multiplicity of both negative short and long-term consequences associated with developmental trauma, the current diagnostic system does not reflect the clinical presentations of children and youth exposed to developmental trauma (van der Kolk et al., 2009). As a result,

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children and youth often receive no diagnosis or several unrelated diagnoses; they may receive interventions that focus on behavioural control, rather than interventions that concentrate on interpersonal trauma, feelings of safety, and developmental disruptions that lie beneath the symptoms (van der Kolk et al., 2009). With the above in mind, DTD criteria still requires further examination, in terms of conceptualization, proposed length of exposure, contact with indirect forms of trauma (e.g., community violence), specifics of the symptoms themselves, developmental course of DTD (i.e., childhood versus adolescence versus adulthood), and how DTD is experienced biologically and interacts with genetics (van der Kolk et al., 2009). Exploring whether this alternative proposition better suits the mental health needs of children and youth, and possibly adults, could improve the consistency and continuity of care of the mental health needs of children and youth.

Nevertheless, research points to key domains of suicide prevention interventions that should be implemented, and their application and effectiveness should be routinely evaluated. For instance, public awareness and education aims at fostering recognition of self-harm and suicide risk factors (e.g., mental illness, trauma exposure), and diminishes stigmatization and improves attitudes toward help-seeking (Man et al., 2005). Additionally, another component of suicide prevention aims at increasing primary care physician's familiarity about contributors to suicide and self-injurious behaviour (Man et al., 2005). This is especially important, as studies have shown that individuals who have completed suicide had contact with their physician within one month of death (Luoma, Martin, & Pearson, 2002; Andersen, Andersen, Rosholm, & Gram, 2000). Further, one study examined how implementing the Depressive Symptom Inventory-Suicidality Subscale affected identification of patients with suicidal ideation; with increased recognition and intervention from primary care physicians, they were able to increase

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identification of suicidal individuals by 130% (Pfaff, Acres, & McKelvey, 2001), speaking to the importance of targeting physician's recognition of risk factors for suicide. Besides, suicide prevention plans should include front line supports, such as first responders, pharmacists, caregivers, and personnel staff who can make changes at a systemic level by identifying at-risk individuals and guiding them to suitable treatment options (Man et al., 2005). Ensuring front line supports are up to date in terms of suicidal risk factors, availability of resources, policy changes, stigma-reducing behaviours, and screening instruments are important targets for suicide prevention (Man et al., 2005). In conclusion, despite the aforementioned limitations, findings from this study hold implications for clinicians in assessing child and youth protective factors, developing targeted intervention and prevention strategies for self-harming behaviour, and could improve the consistency and continuity of care of the mental health needs of children and youth.

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APPENDIX A.

Variable Coding from the interRAI ChYMH

SECTION B: INTAKE AND INITIAL HISTORY

1. History of care includes severe failure to provide for basic needs: Emotional neglect, Physical needs, Safety needs [0= None, 1 = Yes]

SECTION E: HARM TO SELF AND OTHERS

1. Self-injurious ideation or attempt [0 = Never, 1= Yes]
2. Intent of any self-injurious attempt was to kill self [0= No, 1 = Yes]

SECTION G: STRENGTHS AND RESILIENCE

1. Strong and supportive relationship with family [0= No, 1 = Yes]
2. Strong and supportive relationship with friends/peers [0= No, 1 = Yes]

SECTION H: EXECUTIVE FUNCTIONING

1. Adaptability to change in routine or environment [0= adapts without difficulty, 1= adapts with some difficulty, 2= has difficulty adapting to even minor change]
2. Problem-solving and reasoning ability [0= adequate of better, 1 = inadequate, 8= minimal or no evidence thereof]

SECTION N: STRESS AND TRAUMA

1. Life Events: Victim of sexual assault or abuse [0= Never, 1= Yes]
2. Life Events: Victim of physical assault or abuse [0= Never, 1=Yes]
3. Life Events: Witnessing domestic violence [0= Never, 1=Yes]

APPENDIX B.



Tuesday May 1, 2018

RE: Rebecca West

Ethics Approval to Use InterRAI CHYM

Working Thesis Title: The Effects of Developmental Trauma on Nonsuicidal Self Injury and Suicide Attempts

Rebecca is involved in the interRAI line of research that draws on the data base established through Dr. Shannon Stewart of Western. This research has been approved through Western's REB. Rebecca does not have to access the REB as the broad ethics approval covers the work that Rebecca will be completing for her thesis in analyzing the secondary data set.

Respectfully,

Alan Leschied, PhD., C. Psych

APPENDIX C.

CURRICULUM VITAE

Name: Rebecca West

Place of Birth and Year: Ajax, Ontario, 1994

Post-secondary Education and Degrees: The University of Western Ontario
London, Ontario, Canada
2017-2019, M.A., Counselling Psychology

Ryerson University
Toronto, Ontario, Canada
2012-2016, Honours B.A., Psychology

Honours and Awards: SSHRC Scholarship
2017-2019

Western University Entrance Scholarship
2017

Elite Academic Status award & Canadian
Psychological Association's Commendation
of Excellence award
2016

Related Work Experience: Individual and Group Counselling Intern
Psychological Services, Western University
2018-2019

Group Therapy Co-facilitator
Merrymount Family Support/Crisis Service
2018-2019

Research Experience: Research Assistant
London Family Court Clinic
2018

Psychometrist/ Research Assistant
Language and Cognition Lab, Trent
University
2016-2017

Lab Manager/Research Assistant
E.C.C. Lab, Ryerson University
2015-2017