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# Childhood Sexual Abuse, Adolescent Substance Use and the Moderating Role of Emotion Regulation

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Graduate Program in Education

A thesis submitted in partial fulfillment of the requirements for the degree in Master of Arts

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CHILDHOOD SEXUAL ABUSE, ADOLESCENT SUBSTANCE USE AND  
THE MODERATING ROLE OF EMOTION REGULATION

by

Kaitlyn Yarlasky

A Thesis □

Submitted to the Faculty of Graduate Studies  
through the Department of Faculty of Education  
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## **Abstract**

Childhood sexual abuse is a significant predictor of both problematic substance use and emotion regulation difficulties. In individuals who have experienced previous sexual abuse, later substance use has proven to be problematic in regards to having an increased risk of developing a substance use disorder and, additionally, increased the risk of revictimization. The present study examined a clinical sample of adolescents focusing on the associations between childhood abuse, adolescent substance use, and comparing group means on scales of emotion regulation (anxiety, depression, and disruptive behaviours). Abuse type was also examined for relational strength to substance use, specifically sexual abuse which may include other forms of abuse and other types and without sexual abuse present again control groups. Participants who had experienced any form of abuse were more likely to engage in substance use as well as score higher in emotion dysregulation compared to non-abused counterparts. Participants, who experienced at least one form of abuse excluding sexual abuse, received elevated scores on emotion regulation difficulties but were less likely to engage in substance use; whereas participants reporting sexual abuse were significantly more likely to engage in substance use but received lower scores of emotion dysregulation. Substance use occurred significantly more in females than males; substance use indicated lower scores of emotion dysregulation except in depression; and more than half of participants reporting substance use also reported experiencing at least one form of abuse. Future research should continue to further explore risk factors and mediators for substance use engagement in order to help minimize risk to youth.

*Key words:* Substance use, sexual abuse, maltreatment, emotion dysregulation, self-medication hypothesis, depression, anxiety, disruptive behaviours, ChYMH

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## Childhood Sexual Abuse, Adolescent Substance Use and the Moderating Role of Emotion Regulation

The purpose of this study was to evaluate the potential relationship between substance use in adolescents in relation to incidence of childhood trauma, including any of the following forms of maltreatment: sexual, physical, emotional abuse and/or neglect, in a clinical sample of participants. It was hypothesized that emotion regulation can moderate this relationship based on the self-medication hypothesis introduced by Khantzian (1997).

The primary goals of this study was to identify whether participants reporting experiences of childhood abuse were more likely to engage in substance use in adolescence and whether emotion regulation played a role in this relationship. The study focused specifically on sexual abuse as there has been considerable conflicting research suggesting that substance use is more prevalent among those who have experienced sexual abuse when other forms of abuse are also present (Arata et al., 2005), whereas other research suggests higher incidence of substance use where other types of abuse occur in isolation from sexual abuse (Hodson et al., 2006; Huang et al., 2011; Kingston & Raghaven, 2009). In attempts to contribute to the research on sexual abuse, the current study also examined the relationship between sexual abuse within the context of other types of abuse, and other types of abuse without sexual abuse present.

### **Literature Review**

Although there has been a steady decline in substance use during recent years, nearly a quarter of Canadians meet the criteria for a substance use disorder (SUD) at some point across their lifespan (Statistics Canada, 2012). In addition, three-quarters of



all women in drug and alcohol abuse treatment programs report being sexually abused (Najavits, Weiss & Shaw, 1997), and about one-quarter of the men (Ouimette, Kimerling, Shaw & Moos, 2000). Childhood abuse has been shown to be a significant risk factor in adolescent and adult substance use, and this relationship tends to be more substantial in women as opposed to men (Simpson & Miller, 2002; White & Widom, 2008). Research indicates that throughout the lifespan, adolescence is the period of highest risk for developing problematic substance use. Furthermore, traumatic events such as abuse have been associated with problematic substance use in attempts to self medicate and self regulate emotions (Thatcher & Clark, 2008).

### **Childhood Maltreatment**

The present study evaluated participants who had experienced any type of childhood abuse or neglect, specifically focusing on the degree of relationship between childhood sexual abuse and substance use while also examining the relationship with varying levels of emotion regulation difficulties.

Although the focus of the study is not on childhood abuse in general, having a working definition of what constitutes as child abuse can be helpful when making reference to the research provided in the review of literature. The Federal Child Abuse Prevention and Treatment Act (CAPTA) released a Reauthorization Act (2010) which states that the minimum set of behaviours that define child abuse or neglect (National Child Abuse and Neglect Training and Publications Project, 2014) as:

“Any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act which presents an imminent risk of serious harm.”

In addition to the above description of child abuse or neglect, the DSM-IV-R provides the criteria for trauma. According to the DSM-IV-R, the criteria of trauma includes a real or perceived threat of physical harm to oneself or others, resulting in emotional reactions of extreme fear, horror or helplessness (DSM-IV-TR, 2000).

### **Sexual Abuse**

According to Statistics Canada (2012), reported that more than half of all victims of sexual abuse or assault were under the age of 18, and over 80 percent of these cases were perpetrated by someone close to the victim such as a family member or acquaintance.

The working definition of childhood sexual abuse has been re-worded

*The DSM – IV consideration of childhood sexual abuse is summarized in the APSAC Handbook of Child Maltreatment (Myers et al., 2002) as:*

“Child sexual abuse involves any sexual activity with a child where consent is not or cannot be given. This includes sexual contact that is accomplished by force or threat of force, regardless of the age of the participants, and all sexual contact between an adult and a child, regardless of whether there is deception or the child understands the sexual nature of the activity. Sexual contact between an older and a younger child also can be abusive if there is a significant disparity in age, development, or size, rendering the younger child incapable of giving informed consent. The sexually abusive acts may include sexual penetration, sexual touching, or non-contact sexual acts such as exposure or voyeurism (pp. 55)”.

A systematic review of the literature on the prevalence of CSA conducted by Pereda, Guilera, Forns, and Gómez-Benito (2009) revealed that, within the international literature, prevalence rates in children who have experienced CSA ranges between 10 and 20 percent of females with an estimated 10 percent of males being victimized. These

numbers are reflective of the general population. In clinical samples, the prevalence of CSA tends to be much higher (Goodman, 1999).

In an early review of the literature, Browne and Finkelhor (1986) found that the impact of CSA has long-term consequences that include self-destructive behaviour, substance use, sexual maladjustment, depression, anxiety, and post-traumatic stress disorder, as well as tendency towards revictimization.

A review by Maniglio, (2009) reviewed CSA impact on health outcomes, identifying that CSA significantly impacted the following areas: depression, anxiety, dissociation, eating disorders, somatization, personality disorders, self-concept and self esteem issues, sexual risk behaviours, interpersonal issues, social impairment, hostility, anger, revictimization, and substance use, among many other sequelae.

Individuals who experience CSA tend to engage in maladaptive consummatory behaviours such as in the use of prescription and recreational drugs, alcohol, caffeine, and nicotine, in what would appear to be an attempt to help manage psychological effects of rumination and distress (Sarin & Nolen-Hoeksema, 2010). In a sample of university women who reported being previously sexually abused, those who identified as being moderate to heavy alcohol consumers were four to six times more likely to be revictimized. In addition, alcohol may increase risk and decrease safety (Gidycz et al., 2007).

### **Adolescent Substance Use**

Age plays an important factor when examining the prevalence of substance use disorders across the life span. Younger individuals are at an elevated risk to have substance abuse or dependence, and the incidence of these problems is greatest in later

adolescence (Shoptaw, 2011). The most frequently used drugs used by adolescents are tobacco, alcohol and marijuana (Health Canada, 2001).

Childhood sexual abuse has been shown to be associated with an earlier age of substance use initiation (Kilpatrick et al., 2000). A longitudinal study examined the impact of CSA on marijuana use in young adults in a sample of 3258 children who were followed until 21 years of age, noting that there was a significantly higher frequency in the use of marijuana (at least every few days) in early adulthood, with women more likely than men to disclose a history of CSA and display an increased risk of marijuana use (Mohammad et al., 2009). A review of research on childhood abuse and substance use problems found females with substance use problems almost twice as likely to have experienced CSA compared to the general population, with males who had experienced previous CSA more likely to develop substance use problems than the general population (Simpson & Miller, 2002).

There are numerous reasons individuals engage in substance use including: to feel good (because of the pleasurable effects that are present with using a substance); to feel better (using substances as a means to cope); to fit in (usually peer related pressure within social groups); and to do better (such as using drugs to concentrate) (National Institute on Drug Abuse, 2014).

Lifetime prevalence rates for all substance use disorders is 21.6 percent; alcohol abuse or dependence is 18.1 percent; cannabis abuse or dependence is 6.8 percent; and all other drugs of abuse or dependence is 4 percent (Statistics Canada, 2012).

The Substance Abuse and Mental Health Services Administration (SAMHA) (2012) conducted a study, *Comparing and evaluating youth substance use estimates from*

*the national survey of drug use and health and other surveys.* SAMHA reported estimates of substance use based on the 2008 National Survey of Drug Use and Health (NSDUH), along with two additional school-based surveys. Of note, the statistics used from NSDUH reported in this document were substantially lower than the two other school based surveys. NSDUH was the source selected, as it's the "primary source for statistical information on the use of illegal drugs by the U.S. population" (SAMHA).

The NSDUH found that 46.3 percent of 12<sup>th</sup> graders were currently (1 day in the past 30 days) using alcohol; 60.1 percent of 12<sup>th</sup> graders reported using alcohol during the past year; and lifetime prevalence rates of 69.5 percent of 12<sup>th</sup> graders have used alcohol. It was also indicated that that 72.7 percent of males and 71.8 percent of females have used alcohol by 12<sup>th</sup> grade. Estimated rates for 8<sup>th</sup> graders include: 8.9 percent used alcohol in the last month, 21.8 percent alcohol use in the past year, and females more likely than males to be currently using alcohol (10.3 vs. 7.6). Annual averages indicated that approximately 25 percent of youths in the 12<sup>th</sup> grade were defined as current binge alcohol users (NSDUH, 2008).

NSDUH reported 15.7 percent of 12<sup>th</sup> graders were currently using marijuana, 27.8 percent had used marijuana within the last year; with a lifetime prevalence rate of 43.4 percent for 12<sup>th</sup> graders with respect to using marijuana.

Health Canada (2011) contributes to the collection of alcohol and drug statistics with their Canadian Alcohol and Drug Use Monitoring Survey (CADUMS), which is an on-going survey of the general population concerning alcohol and illicit drug use among Canadians aged 15 and older. Reported statistics similar to those published by SAMHA; approximately 70.8 percent of youth (15-24) reported using alcohol, 21.6% using

marijuana and 4.8 percent used illicit drugs (cocaine/crack, speed, hallucinogens, ecstasy, and heroin) during the past year. Also, drug use among youths was much higher than rates reported by adults. Youths were three times as likely to use marijuana, and five times more likely to engage in illicit drug use (Health Canada 2011). Alcohol use in adolescence increases in until early adulthood, which will then result in a continuum in use in moderation, or use will be discontinued at this point (Kaminer, 2012).

Afifi et al. (2012) conducted a study to examine the relationship between five types of childhood abuse (physical, sexual, emotional, and physical and emotional neglect) and substance use disorders (alcohol and other illicit drugs). They found that all five types of abuse increased the likelihood of all types of substance use for women. For males, three relationships were noted with a relationship between emotional abuse and cocaine and amphetamines, and physical neglect and heroin abuse after adjusting for socioeconomic variables. They concluded that substance abuse or dependency may be used as a coping mechanism to negate, if even temporarily, the impact of previous life stressors and may be used to improve affect.

An earlier study, Ballon, Courbasson, & Smith (2000), explored whether a group of youth who were seeking treatment for substance use problems and who reported physical and sexual abuse, used substances as a means to cope with the abuse. Fifty percent of females reported having a history of sexual abuse, and 50.4 percent reported physical abuse. Ten percent of males had a history of sexual abuse, and 26 percent physical abuse. Of those who reported abuse, 64.7 percent of females and 37.9 percent of males reported using substances as a means to cope. This may be explained by the coping theory of substance use, as increased negative affect in response to a stressor likely

elevates the use and frequency of substances (Kilpatrick et al., 2000). A similar study by Bonn-Miller, Vujanovic, Boden, and Gross (2011) examined the mediating role of emotion regulation on the relationship between posttraumatic stress and coping-oriented marijuana use in participants who had experienced a traumatic event. They found that emotion regulation fully mediated the relationship between posttraumatic symptoms and using marijuana as a means to cope.

### **Substance Use and Sexual Abuse**

Miranda, Meyerson, Long, Marx, and Simpson (2002) tested the self-medication hypothesis of alcohol with a group of women who had experienced sexual assault in examining the presence of psychological distress. Results indicated that a history of sexual assault significantly predicted psychological distress, which may in turn account for the expected higher rates of alcohol use. A significant relationship was also found between sexual assault and negative reinforcement, which also predicted alcohol use. They concluded that negative affects are linked to alcohol use in women with histories of sexual assault.

An adult twin study completed by Kendler et al. (2000) found that childhood sexual abuse was positively correlated with multiple mental health disorders and among them the strongest relationship was between childhood sexual abuse and corresponding alcohol and drug use. Conversely, Hodson et al. (2006) examined the associations between childhood maltreatment and substance use later in life and found that the co-occurrence of emotion and physical abuse predicted poly-substance use, whereas they found that sexual abuse in childhood was not strongly associated with any negative outcome.

## **Emotion Regulation Difficulties**

Hilt, Hanson, and Pollak (2011) contend that emotion regulation during adolescence may be more challenging than at any other time during an individual's development. Forms of emotion dysregulation during adolescence include: depression and anxiety, eating disorders, poor decision-making and judgment, and non-suicidal self-injury. At this time, cognitive abilities increase and allow for new forms of emotion regulation, whether they be adaptive (cognitive reframing) or maladaptive (use of substances) (Gross, 1995).

Previous to the 1990's, there was little empirical research regarding the processes of emotion regulation (Gross, 2013). Thompson (1994) attempted to derive a working definition for emotion regulation based on previous literature, suggesting that "emotion regulation consists of the extrinsic and intrinsic processes responsible for administering, evaluating, and modifying emotional reactions, especially their intensive and temporal feature, to accomplish one's goals" (pp. 27).

Similar to Thompson's perspective, Gross (2013) recently outlined the core features of emotion regulation in the *Handbook of Emotion Regulation*. First, emotion regulation represents the activation of a goal (Gross, Shepes, & Urry, 2011) that includes both intrinsic and extrinsic emotion regulation. Second, the connection of emotion regulatory processes are responsible for controlling or altering emotion, which may be explicit (conscious) or implicit (unconscious) (Masters, 1991). Third, the impact on emotion dynamics including duration, latency, or magnitude in emotional responses across multiple domains is highlighted (experiential, physiological, behavioural) (Gross, 2013).



Hilt, Hansen, and Pollock (2011) stated that, rather than having one specific domain of emotion regulation, it may actually be comprised of two components. The first component represents a *set of processes* (cognitive, behavioural, attentional, biological, and social). The second component plays a role in attempting to *manage affect and organize emotions* appropriately in an individual's environment, and these emotions will vary from positive to negative in intensity (Hilt et al., 2011). In contrast, emotion dysregulation occurs when regulation strategies are not learned, applied with a high degree of rigidity, or are over used (Hilt et al., 2011). While the attempt to regulate emotions remains present, the outcome results in a maladaptive response. Cole, Michel, and Teti (1994) state that, even the greatest dysregulated emotion serves an adaptive purpose as an immediate functional need, even while interrupting emotional adjustment and development.

Gratz and Roemer (2004) conceptualized emotion regulation on multiple levels. This included: 1) The ability to understand and be aware of emotions; 2) Accepting emotions; 3) Controlling impulsive behaviours and acting in a goal-directed manner when negative emotions are present; and 4) The ability to apply appropriate emotion regulation strategies in warranted situations flexibly in order to control emotional responses.

Aldao and Dixon-Gordon (2014) identified that most of the research literature to date has focused on covert emotion regulation strategies. These interpersonal strategies represent attempts to regulate affect from within the self, largely being a product of cognition. Covert strategies may include: cognitive reappraisal, suppression, and acceptance (Aldao & Dixon-Gordon, 2014). Overt emotion regulation strategies include

behaviours that take place outside the self in an attempt at regulation such as in the use of substances, eating, or exercise. Interestingly, overt behaviours are rarely specifically linked to emotion regulation (Aldao & Dixon-Gordon, 2014), therefore the use of overt regulation strategies may not be identified. In their current study examining overt regulation strategies, Aldao & Dixon-Gordon identified alcohol use as a significant predictor of psychopathology.

It is important to acknowledge the role of gender differences in emotion regulation. Garnefski, Teerds, Kraaif, Legerstee, & van en Kommer (2004) examined cognitive based emotion regulation strategies and depressive symptoms and differences between males and females. They identified that women tend to use more rumination, catastrophizing, and positive refocusing and use less adaptive emotion regulation strategies compared to men (Garnefski, Teerds, Kraaif, Legerstee, & van en Kommer, 2004). Nolen-Hoeksema (2012) found that women tend to ruminate more than men, and suggest this accounts for increased rates of depression and anxiety in women. Conversely, men were more likely than women to use alcohol as a means to cope. Kwon, Yoon, Joormann, and Kwon (2013) evaluated emotion regulation and gender differences within the context of culture. They found that American compared to Korean college students reported more anger suppression, and Koreans tended to negatively ruminate to a greater extent. Women tended to ruminate and suppress anger more than men within both countries, however once adjusting for depression, the gender differences disappeared. Their study also found that the relationship between anger suppression and depression was stronger in the American sample. Important implications of these studies

imply there should be special consideration to both gender and cultural differences when reporting on emotion regulation.

### **Substance Use and Emotion Regulation**

The self-medication hypothesis (Khantzian, 1997) proposes that individuals who develop, and continue to engage in problematic substance use, do so as a result of self-regulation problems. This view provides psychological meaning to substance use in consuming substances such as alcohol, prescription, or other illicit drugs, in an attempt to suppress the re-experiencing of past trauma. Khantzian explained that it might come from the inability to regulate or tolerate the range of affect that abuse of substances tends to relieve these unbearable states.

The choice of substance may be used specifically to combat these issues. Khantzian states that opiates may be used in an attempt to calm intense violent affect; depressants such as alcohol battle feelings of emptiness, isolation and temporarily soften defenses; and stimulants which may be used to calm hyperactivity and moderate hypomanic symptoms or energize those who are depressed. By extension, the use of such substance represents an attempt to regulate certain affect states.

Research also indicated that individuals with higher reward sensitivity would be more likely to engage in substance use at an earlier age, are likely to exhibit higher levels of emotional distress and may use substance in attempts to regulate negative emotions (Aldao et al., 2010).

More recent evaluation of the self-medication hypothesis has been examined, focusing on internalizing symptoms such as those characterized in depression and anxiety. Saraceno et al. (2009) found that depressive problems decrease self-esteem,

which makes people more vulnerable to having inflated positive expectancies for substance use in hopes to help them feel better. Similarly, Buckner et al. (2008) completed a longitudinal study of youth and young adults and discovered that social anxiety disorder is significantly related to later onset of cannabis and alcohol dependence.

Pihl et. al (2014) identified two developmental pathways that may lead to increased risk for substance use disorders; these are 1) The externalizing pathway and 2) the internalizing pathway. The externalizing pathway can be characterized by externalizing behaviours such as aggression, impulsivity, and emotional reactivity; similar to the *Disruptive Behaviour Scale* used in the current study. The internalizing pathway, on the other hand, is characterized by problems in mood and anxiety, similar to the *Anxiety and Depression Scales*. They suggest that these problems in most cases precede substance use, but once substance use begins it can lead to negative impact on mood, which may reinforce the relationship and may further impair mood functioning. Regarding substance use, they propose that the function of use in internalizing individuals is to attempt to control or regulate their hyper arousal in response to fear and anxiety; whereas externalizing individuals tend to be more responsive to the substance activation in the reward system of the brain.

### **Sexual Abuse and Emotion Regulation**

It has been hypothesized by Cicchetti, Ganiban, & Barnett (1991) that individuals with a history of childhood sexual abuse may have underdeveloped emotion regulation skills due to the impact of the trauma. Messman-Moore, Walsh, and Delillo (2010) proposed that emotion dysregulation as a result of early victimization was the underlining component that leads to maladaptive coping strategies, which may also result in

revictimization. Johnson and Lynch (2013) found that increased emotion dysregulation predicted greater engagement in maladaptive coping strategies in a sample of women with childhood sexual abuse histories. A study done by Arata et al. (2005) looked at different forms of childhood abuse and found that the incidence of sexual abuse on its own was associated with suicidal thoughts and attempts, promiscuity and internalizing symptoms. While sexual abuse was significantly associated with internalizing behaviours, there was a larger impact identified when physical abuse was also present.

### **Importance of Further Assessment**

Understanding that childhood trauma may have a negative impact on the ability to regulate emotions as well as increase the likelihood of engaging in substances in adolescence can help improve assessment and treatment approaches, targeting early intervention strategies. Research indicates that any form of childhood maltreatment may increase the incidence of substance use in adolescence and also that those individuals are more likely to experience emotion regulation difficulties. Existing literature has identified that CSA is a significant predictor of emotion dysregulation (Messman-Moore et al., 2010; Johnson & Lynch, 2012) and substance use (Simpson & Miller, 2002; Hayatbakhsh et al., 2009; Afifi, Henriksen, Asmundson, & Sareen, 2012) and is also significantly correlated with emotion regulation and subsequent substance (Ballon, Courbasson, & Smith, 2000; Bonn-Miller, Vujanovic, Boden, and Gross).

Seguin and colleagues (2011) completed a study of individuals who completed suicide and found that three-quarters had been exposed to child maltreatment and further, that 50 percent had experienced physical or sexual abuse. Saewyc (2007) also found that there are specific groups of youth who are more at risk for substance abuse. These

include adolescents who were sexually abused in childhood, sexually exploited youth, adolescents struggling with sexual orientation, youth involved with the justice system, Aboriginal youth, and adolescents with co-occurring disorders.

### **The Present Research**

As indicated in previous research, there appears to be good evidence that there is a relationship between childhood abuse and substance use and emotion regulation difficulties, which are also related to substance use. Research had yet to explore the interactional strength each relationship within one clinical sample. The current research examined the role of substance use in youth who had experienced some form of abuse, with emphasis being placed on childhood sexual abuse. The nature and strength of emotional regulation was investigated for its link to the relationship between sexual abuse and adolescent substance use. Emotion regulation was measured in participants by analyzing psychometric scales measuring anxiety, depression, and disruptive behaviour.

### **Hypotheses**

The following hypotheses formed the basis for this study.

1. Individuals who have experienced childhood abuse would be more likely than individuals who have not experienced abuse, to engage in substance use in adolescence.
2. Individuals who have experienced sexual abuse/assault will be more likely to engage in substance use than other forms of abuse (physical, emotion and neglect) without sexual abuse present.

3. Participants who have experienced childhood abuse will show higher rates of emotion dysregulation measured by higher scores on anxiety, depression and disruptive behaviour than individuals without a history of childhood abuse.

4. Participants engaging in substance use will be more likely to experience higher levels of emotion dysregulation than individuals not engaging in substance use

## **Method**

### **Participants**

Participant information was generated from the interRAI Child and Youth Mental Health (ChYMH) Instrument (4-18 years) and Adolescent Supplement to the ChYMH (12-18 years) for children and youth who had received community based services from any one of 28 sites across Southern Ontario and from one residential treatment resource.

**Descriptives.** Participant demographic and clinical characteristics are displayed in Table 1. Participants were comprised of 268 children and youth between the ages of 12 and 19 years ( $M = 14.47$ ,  $SD = 1.73$ ). Fifty-nine percent of participants identified as male and 41% as female. Eighty-seven percent of participants were under the legal guardianship of a parent and 84% were living with a parent or guardian prior to their being seen for counselling or admitted to the residential treatment program. Twenty-three percent had indicated at least one stay in a foster care placement, and half of those experienced more than one placement stay. Participants seeking outpatient mental health services in community-based settings made up two thirds of the total sample, with the remainder (33%) indicating their current admission was within a residential treatment program.

**Types of Abuse.** Participant abuse characteristics are summarized in Table 2. Almost half of all participants (n=125) indicated experiencing at minimum one type of abuse at some point during their childhood. Forty participants (15%) indicated being sexually victimized at least once in their lives; 55 participants (21%) experienced physical abuse; 99 (37%) had experienced emotional abuse; and 56 (21%) of the participants had been abandoned/ neglected by a parent.

**Substance Use.** Fifty-four participants indicated using a substance at some point in their life that included alcohol, marijuana, inhalants, hallucinogens, crack or cocaine, stimulants, opiates, or prescription medication used inappropriately whereas the majority of the sample (79.9%) claimed no history of substance use. Sixteen participants (6%) indicated a problem with addiction or dependency on substances as reason for seeking services. Marijuana accounted for 85% (n=46) of participant substance use; 59% indicating use within the last 30 days of the assessment date. Participant substance use characteristics are summarized in Table 3.

## **Measures**

**InterRAI Child and Youth Mental Health.** The InterRAI ChYMH (Stewart, Hirdes et al., 2015) is an extensive and multidisciplinary mental health assessment measure reflecting psychiatric, social, environmental, medical histories that uses a modular format comprised of a core assessment for children ages 4-18 who are accessing services in community (outpatient) or residential (inpatient) settings (Stewart, Currie, Arbeau, Leschied, & Kerry, in press). The InterRAI approach to assessment uses a methodical and comprehensive approach to complete the assessment in effectively integrating all information including: observations of client, obtaining information from



multiple sources and using clinical judgment to synthesize the information accordingly (Stewart et al., 2015). The InterRAI ChYMH contains domains evaluating intake and initial history, mental state indicators, behaviours and stress/trauma. The current study only used the data collected from the initial assessments. Information was generated from both the inpatient and outpatient versions of the ChYMH.

*Demographic variables* were evaluated through the ChYMH include:

*Identification Information* reflecting age at assessment, gender, legal guardianship, and assessment method and *Intake and Initial History* including history of foster placement and living arrangement.

*Abuse variables* were found within the *Stress and Trauma* section of the ChYMH, which included adverse life events: sexual, physical, emotional abuse and abandonment/neglect were selected for the current study.

*Clinical sub-scales* were also used in addition to the inclusive data listed above, measurement of *anxiety, depression, and disruptive behaviours* was utilized to measure symptoms of emotion dysregulation through previously validated sub-scales (Stewart, Currie, Arbeau, Leschied, & Kerry, In Press). These continuous scales were considered as a measurement of emotion regulation. The following are the names of the scales and range of scores provided. Higher scores were indicative of more elevated symptoms: Anxiety Scale (0 to 36); Depressive Severity index (0 to 36); and Disruptive Behaviour Scale (0-16).

The *Anxiety Scale* is comprised of eight items from the Mental State Indicator Section of the ChYMH and includes the following: repetitive anxious complaints/concerns (non health related); unrealistic fears; obsessive thoughts; compulsive

behaviour; intrusive thoughts or flashbacks; episodes of panic; nightmares; and hypervigilance.

The *Depressive Severity Index* is comprised of nine items from the Mental State Indicator Section of the ChYMH including: sad, pained, or worried facial expressions; crying, tearfulness; made negative statements; self deprecation; expressions of guilt or shame; expressions of hopelessness; irritability; lack of motivation; and withdrawal from activities of interest.

The *Disruptive Behaviour Scale* is comprised of four items from the Mental State Indicator Section and Behaviour Section of the ChYMH and includes: socially inappropriate or disruptive behaviour; destructive behaviour towards property; outburst of anger; and child/youth removed due to disruptive behaviour (For further information regarding the described scales see Appendix 1).

**InterRAI Adolescent Supplement - Child and Youth Mental Health.** The InterRAI Adolescent Supplement to the ChYMH (Stewart, Hirdes et al., 2015) is an additional assessment supplement made available for clients who are 12 years of age or older and who exhibit mental health, intellectual and developmental needs and who are receiving community-based or inpatient/residential services. Children and youth younger than 12 years and who are engaged in activities more common in adolescence, such as substance use and sexualized behaviours are also required to complete the additional supplement (Stewart, Hirdes et al., 2015).

*Substance use variable* was assessed within the Substance Abuse or Excessive Behaviour section. This included: Alcohol use in last 30 days; inhalants; hallucinogens; cocaine or crack; stimulants; opiates; cannabis; and over the counter medication.

## Procedures

Data was obtained for this study through a database generated by the lead interRAI fellow for the Child and Youth Suite of Instruments, which also included 28 Child and Youth Mental Health sites. Participants were either assessed as an inpatient (n=90) or outpatient client (n=178) and assessment took place either in person or over the phone by a trained assessor at one of the CYMH sites. The present study utilized data obtained through the interRAI ChYMH Instrument and the Adolescent Supplement. Participant data was included in the study based on two criteria: (1) A specific age demographic population (12-19 years); and (2) completing the Adolescent Supplement to the ChYMH.

Data directly related to the current study extracted from the ChYMH included items from: Section A – *Identification Information* (age at assessment, gender, legal guardianship); Section B – *Intake and Initial History* (history of foster placement, living arrangement); Section C – *Mental State Indicators* (mood disturbance, anxiety); Section F – Behaviour; Section N – *Stress and Trauma* (life events: sexual, physical, emotional abuse, and abandonment/neglect). Information extracted from the Adolescent Supplement included Section B – Substance Abuse or Excessive Behaviour (Alcohol, cannabis, other illegal substances, over the counter medication).

In addition to the inclusive data listed above, measures of *anxiety*, *depression*, and *disruptive behaviours* through previously validated scales were considered as the measurement of emotion regulation. The following are the names of the scales and range of scores provided where higher the score indicates more symptoms: Anxiety Scale (0 to 36); Depressive Severity index (0 to 36); and Disruptive Behaviour Scale (0-16).

## **Statistical Analyses**

Correlational analyses were conducted to determine the strength of relationship between the following grouping variables: 1) Gender and Substance Use; 2) Any Abuse Type Present and Substance Use; 3) Sexual Abuse Present and Substance Use and 4) Any Abuse Type Present but not Sexual Abuse and substance use. To evaluate the significance of emotion regulation on this relationship, a series of t-tests were used to evaluate scores on the three scales used (anxiety, depression and disruptive behaviour) to infer levels emotion dysregulation. Differences between all Present and Not Present Groups within the study were analyzed on each scale. Due to unequal sample sizes, a random deletion of cases through data analysis software was required for each test, therefore reducing the sample size.

## **Results**

The purpose of these analyses was to determine the strength of the relationship between the various identified variables of abuse and engagement in substance use in adolescence. Emotion regulation was evaluated as a possible risk factor for increasing the likelihood of substance use and was hypothesized based on past literature that individuals who have experienced abuse are more likely to have increased emotion regulation difficulties. Results are reported for 268 participants who completed both the ChYMH and Adolescent Supplement to the ChYMH. The hypotheses were tested using correlational and inferential analyses. The alpha was set at .05 for all analyses.

Prior to conducting analyses, the database was examined for missing data. To create a desired dataset, cases were selected based on inclusive age, 12-19 years, with the Adolescent Supplement assessment triggered variable, 1 = Yes/ 0 = No, which indicated

that the Adolescent Supplement had been completed. Although the dataset that was generated with these inclusive variables suggested a sample of 270, upon closer examination there were two cases in which the Adolescent Supplement had been triggered as being completed but was not available. These two cases were removed and 268 participants remained. All other assessment information was collected with the exception of missing variables in the Assessment Method variable, where almost 20% were unrecorded within the database. It is unknown at this time if there are any other missing variables within the dataset as suggested by the two cases. In both cases, variables within the Adolescent Supplement that were unanswered were included as “0” and not left blank which would have been indicative of a missing variable.

### **Hypothesis 1**

**Substance Use and Any Abuse.** To measure whether there was a significant relationship between the presence of childhood abuse and use of substances in adolescence, a subgroup of *Any Type of Abuse* was created which was inclusive of any occurrence of sexual, physical, emotional abuse and neglect/abandonment. An additional subgroup of substance use was created which was inclusive of alcohol use in the past 30 days, over the counter drugs in last 90 days and lifetime use of inhalants, hallucinogens, cocaine or crack, stimulants, opiates, and cannabis. (See Table 4 for correlations and values).

A correlational analysis was performed to determine the strength of relationship between Any Abuse Present Group (n=125) and Substance Use Group (n=54) and found that participants who experienced at least one form of abuse during their lifetime (n= 32;

26%), were more likely to engage in substance use than participants who indicated no occurrence of childhood abuse (n=22; 15%), ( $\Phi = 0.127, p < .05$ ).

## **Hypothesis 2**

**Substance Use and Sexual Abuse.** To assess whether there was a significant relationship between the presence of sexual abuse and the use of substances, the variable *Substance Use Present* was compared between the *Sexual Abuse Present* sample and the non-sexually abused sample.

A correlational analysis was performed to determine strength of relationship between *Sexual Abuse Present* (n=40) group and *Substance Use Present* group and found that participants who had experienced sexual abuse which included 45% of the sample were more likely to engage in substance use ( $\Phi = 0.259, p < .001$ ) than participants where sexual abuse was not present which reflected 16% of the sample. To evaluate the relationship of sexual abuse and substance use further, a subgroup of *Any Type of Abuse Not Sexual* was created which was inclusive of any occurrence of physical abuse, emotional abuse and neglect/abandonment but excluded participants who had experienced sexual abuse. The relationship between *Any Type of Abuse Not Sexual* and *Substance Use Present* was also evaluated.

A correlational analysis was performed to determine strength of relationship between *Any Type of Abuse Not Sexual* (n=85) group and *Substance Use Present* group and found that the relationship between participant group who had experienced at least one form of abuse but not sexual abuse and substance use engagement was not statistically significant compared to rest of the sample ( $\Phi = -0.063, p > .05$ ), so is not generalizable to the population.

### Hypothesis 3

**Any Abuse and Emotion Regulation.** To evaluate whether individuals reporting past childhood abuse report higher rates of emotion dysregulation than individuals without a history of childhood abuse, an independent samples t-test was used to compare group mean scores on anxiety, depression and disruptive behaviour scales.

Due to the assumptions of equal variances when using independent-samples *t* tests, a group entitled *No Type of Abuse Present* was established from 125 of randomly selected from the sample of participants reporting no history of childhood abuse. The previously established group *Any Type of Abuse Present* was compared to the *No Type Abuse Present* to evaluate for significant differences in reported emotion regulation.

Using an alpha level of .05, an independent-samples *t* test was conducted to evaluate whether the groups *No Type of Abuse Present* and *Any Type Abuse Present* differed significantly on scores of the anxiety scale. The test was significant,  $t(248) = -3.166, p < .01$ . The 95% confidence interval for the Anxiety Scale mean ranged from -3.32 to -.774. An examination of the group means indicate that *Any Type of Abuse Present* ( $M = 8.13, SD = 5.187$ ) received significantly higher scores on anxiety symptoms than did *No Type Abuse Present* ( $M = 6.08, SD = 5.041$ ). Further, Cohen's effect size value ( $d = .40$ ) suggested a small to moderate practical significance.

Next, the *No Type of Abuse Present* group was compared to the *Any Type Abuse Present* group to evaluate if the two groups differed significantly on scores of depression. The test was significant,  $t(248) = -2.408, p < .05$ . The 95% confidence interval for the Depression Severity Index mean ranged from -4.101 to -.411. An examination of the group means indicate that *Any Type of Abuse Present* ( $M = 14.43, SD = 7.433$ ) received

significantly higher scores on depressive symptoms than did *No Type Abuse Present* ( $M = 12.18$ ,  $SD = 7.381$ ). Further, Cohen's effect size value ( $d = .30$ ) suggested a small to moderate practical significance.

Disruptive behaviours were then evaluated for differences between the *No Type Abuse Present* and *Any Type of Abuse Present* groups to evaluate if the two groups significantly differed. The test was significant,  $t(248) = -3.208$ ,  $p < .01$ . The 95% confidence interval for the Disruptive Behaviour Scale mean ranged from -1.43 to -.343. An examination of the group means indicate that *Any Type of Abuse Present* ( $M = 3.26$ ,  $SD = 2.276$ ) received significantly higher scores on disruptive behaviours than did *No Type Abuse Present* ( $M = 2.38$ ,  $SD = 2.097$ ). Further, Cohen's effect size value ( $d = .40$ ) suggested a small to moderate practical significance (See Table 5 for summary of statistics).

#### **Hypothesis 4**

**Substance Use and Emotion Regulation.** To evaluate whether individuals engaging in substance use will be more likely to experience higher levels of emotion dysregulation than individuals not engaging in substance use, independent samples t-test analyses were conducted, comparing group mean scores on anxiety, depression and disruptive behaviour scales.

Just as the previous analysis, assumptions of equal variances required a comparison group of 54 randomly selected participants with no reported substance use from the sample and was labeled *No Substance Use Present*. *No Substance Use Present* group was compared to the previously established group *Any Substance Use Present* to evaluate for significant differences in reported emotion regulation.



Using an alpha level of .05, an independent-samples  $t$  test was conducted to evaluate whether the *No Substance Use Present* group of participants differed significantly on scores of anxiety compared to the *Any Substance Use Present* group. The test was significant,  $t(106) = -2.296, p < .05$ . The 95% confidence interval for the Anxiety Scale mean ranged from .301 to 4.106. An examination of the group means indicate that *Any Substance Use Present* ( $M = 6.13, SD = 3.929$ ) received significantly lower scores on anxiety symptoms than did the *No Substance Use Present* group ( $M = 8.33, SD = 5.857$ ). Further, Cohen's effect size value ( $d = .44$ ) suggested a small to moderate practical significance.

Next, the *No Substance Use Present* group was compared to *Any Substance Use Present* group to evaluate if they differed significantly on scores of depression. The test was not significant,  $t(106) = -1.579, p > .05$ . The 95% confidence interval for the Depression Severity Index mean ranged from -4.804 to .544. An examination of the group means indicate that although no significant difference was found, *Any Substance Use Present* ( $M = 15.11, SD = 6.546$ ) received lower scores on depressive symptoms than did *No Substance Use Present* ( $M = 12.98, SD = 7.520$ ). Further, Cohen's effect size value ( $d = .30$ ) suggested low practical significance.

Disruptive behaviours were then evaluated for differences between the *No Substance Use Present* and *Any Substance Use Present* groups to evaluate if the two groups significantly differed. The test was not significant,  $t(106) = .615, p > .05$ . The 95% confidence interval for the Disruptive Behaviour Scale mean ranged from -.557 to 1.096. An examination of the group means indicate that although there was no significant difference between groups, *Any Substance Use Present* ( $M = 2.70, SD = 1.880$ ) received

lower scores on disruptive behaviours than did *No Substance Use Present* ( $M = 2.96$ ,  $SD = 2.465$ ). Further, Cohen's effect size value ( $d = .12$ ) suggested low practical significance (See Table 6 for summarization of statistics).

**Other Types of Abuse Not Sexual and Emotion Regulation.** A comparison group of 85 randomly selected participants with no reported history of neglect, or emotional and physical abuse were selected from the sample and was labeled *No Emotional/Physical/Neglect Present*. *No Emotional/Physical/Neglect Present* group was compared to the previously established group *Other Types of Abuse Not Sexual* to evaluate for any significant differences in reported emotion regulation.

Using an alpha level of .05, an independent-samples  $t$  test was conducted to evaluate whether the *No Emotional/Physical/Neglect Present* group of participants differed significantly on scores of anxiety compared to the *Other Types of Abuse Not Sexual* group. The test was significant,  $t(168) = -3.611$ ,  $p < .001$ . The 95% confidence interval for the Anxiety Scale mean ranged from -4.185 to -1.226. An examination of the group means suggested that *Other Types of Abuse Not Sexual* ( $M = 8.19$ ,  $SD = 5.472$ ) received significantly higher scores on anxiety symptoms than did the *No Emotional/Physical/Neglect Present* group ( $M = 5.48$ ,  $SD = 4.219$ ). Further, Cohen's effect size value ( $d = .55$ ) suggested a moderate practical significance.

Next, the *No Emotional/Physical/Neglect Present* group was compared *Other Types of Abuse Not Sexual* group to evaluate if scores of depression differed significantly. The test was significant,  $t(78) = -2.400$ ,  $p < .05$ . The 95% confidence interval for the Depression Severity Index mean ranged from -5.082 to -.494. An examination of the group means indicated that *Other Types of Abuse Not Sexual* ( $M = 14.80$ ,  $SD = 7.767$ )

received significantly higher scores on depressive symptoms than did the *No Emotional/Physical/Neglect Present* group ( $M = 12.01$ ,  $SD = 7.377$ ). Further, Cohen's effect size value ( $d = .37$ ) suggested a small to moderate practical significance.

Disruptive behaviours were then evaluated for differences between the *No Emotional/Physical/Neglect Present* and *Other Types of Abuse Not Sexual* groups to evaluate if the two groups significantly differed. The test was significant,  $t(168) = -3.268$ ,  $p < .001$ . The 95% confidence interval for the Disruptive Behaviour Scale mean ranged from  $-1.793$  to  $-.443$ . An examination of the group means indicated that the *Other Types of Abuse Not Sexual* ( $M = 3.48$ ,  $SD = 2.433$ ) received significantly higher scores on disruptive behaviours than did *No Emotional/Physical/Neglect Present* ( $M = 2.36$ ,  $SD = 2.005$ ). Further, Cohen's effect size value ( $d = .44$ ) suggested a small to moderate practical significance (See Table 8 for summary of statistics).

### **Discussion**

The current study evaluated the relationship between child abuse and substance use engagement in a sample of adolescent participants who were involved in the mental health system. The primary purpose of this research was to evaluate the likelihood of substance use in adolescent participants who reported a history of abuse, specifically sexual abuse. Additionally, this study also examined the interactional role of emotion regulation and childhood abuse and substance use to determine the extent to which emotion regulation difficulties play a significant role in predicting later substance use in adolescence. The primary stated hypotheses were tested; the results are discussed below by hypotheses.

**Childhood Abuse and Adolescent Substance Use.** A significant correlation was found between individuals who reported a history of childhood abuse and engagement in substance use. In support of prior research, results showed that adolescents reporting substance use were also more likely (60%) to report experiencing at least one form of abuse.

**Sexual Abuse and Substance Use.** There was a significant correlation between individuals who have experienced sexual abuse/assault and engagement in substance use. Supporting the proposed hypothesis, 45% of individuals reporting sexual abuse were engaging in some form of substance use, whereas only 15.8% of participants reporting no sexual abuse indicated engagement in substance use. Additionally, this result also supports the findings from the *National Center on Addiction and Substance Abuse* (CASA) indicating sexual abuse and physical abuse are more likely to be experienced by females and are strongly related to problems with substance use, where 28.2% of females engaged in substance use compared to 14.9% of males.

There was no significant correlation found between individuals reporting other forms of abuse (physical, emotion and neglect) without sexual abuse present compared to the rest of the sample inclusive of sexual abuse. Although this finding was not significant, participants reporting other forms of abuse exclusive of sexual abuse were actually less likely to engage in substance use than the rest of population.

This is a noteworthy finding since participants where sexual abuse is present (N=40) made up 60% of the group reporting substance use, individuals reported at least one form of abuse exclusive of sexual abuse (N=85) only comprised 25% of the substance use group. Also, in the Sexual Abuse Present group, almost half of the

participants (45%) were engaged in substance use, while only (16.5%) of participants in the Other Types of Abuse Not Sexual group reported substance use.

**Abuse and Emotion Regulation.** Results revealed significant mean differences in the emotion regulation scales among individuals who have experienced childhood abuse relative to individuals without a history of abuse. Participants reporting a history of abuse had significantly higher rates of anxiety, depression and disruptive behaviour than individuals reporting no history of abuse, suggesting that, as hypothesized, individuals who experienced abuse reported higher rates of emotion dysregulation than individuals without the presence of abuse.

**Substance Use and Emotion Regulation.** Results indicated there was a significant mean difference in substance use related to anxiety. This finding was non significant in regards to depression and disruptive behaviour. Contrary to the hypothesis, participants engaging in substance use had significantly lower levels of anxiety ( $M=6.13$ ) than individuals not engaging in substance use ( $M=8.33$ ), and also reported lower levels of disruptive behaviour. Although significant mean differences were not identified, depression scores were higher in the group engaging in substances ( $M=15.11$ ) compared to the group reporting no substance use ( $M=12.98$ ).

**Sexual Abuse and Emotion Regulation.** Results showed there were no significant mean differences between groups reporting a history of sexual abuse and groups reporting no occurrence of sexual abuse on any of the emotion regulation scales. Contrary to the hypothesis, participants reporting a history of sexual abuse had lower mean scores on the anxiety, depression, and disruptive behaviour scales.

Additionally, mean differences of participants reporting an occurrence of other forms of abuse that included physical, emotional and neglect without sexual abuse were compared to the comparison group inclusive of sexual abuse, identifying significant differences across all of the emotion regulation scales. Contrary to the proposed hypothesis, the *Other Types of Abuse Non Sexual* reported significantly higher mean scores than *No Emotional/Physical/Neglect Present* group, which was inclusive of sexual abuse.

It was predicted that individuals reporting an occurrence of sexual abuse would report higher scores on emotion dysregulation scales when compared to participants reporting other forms of abuse without sexual abuse present. An examination of the means reflected that, not only did *Sexual Abuse Present* receive lower scores compared to the comparison group; they also reported lower mean scores than the *Other Types of Abuse Not Sexual* group on all emotion regulation scales.

### **Relevance of Findings**

In evaluating the self-medication hypothesis in the context of the sample of youth in this study, it appears that youth who had experienced any form of abuse exhibit both more internalizing (anxiety and depression) and externalizing (disruptive behaviours) behaviours, both of which are related to emotion dysregulation, when compared to children without a history of abuse. These participants were also more likely to engage substance use later in adolescence. Participants in this group were also reported significantly elevated emotion regulation difficulties as well as increased occurrence of substance use.

Almost half of all individuals who reported experiencing sexual abuse engaged in some form of substance use and were almost 30% more likely to engage in substance use than individuals who did not report sexual abuse. Although the findings regarding emotion regulation were non significant, they did reported lower scores on all scales related to emotion dysregulation.

Similar to sexual abuse, participants engaging in substance use also reported lower scores on the emotion regulation scales with the exception of depression. Noteworthy, levels of anxiety were significantly lower than individuals who had not engaged in substance use. This finding conflicts with previous co-morbidity studies that indicated that substance use is two to three times more likely to occur in individuals with anxiety disorders (Kendler et al., 1996).

The occurrence of substance use within this sample was low compared to the general adolescent population. Twenty percent of participants in the current study reported using any substance at least once, whereas Health Canada (2011) has reported that 70.8 percent of youth reported using alcohol, 21.6 percent marijuana and 4.8 percent illicit drugs. Marijuana use was the most common substance used identified by participants in the current study. This may be due to the context in which alcohol use was measured: the item asking if alcohol use occurred within the last 30 days, whereas the marijuana use item was related to lifetime occurrence. In addition, it is relevant in regards to the alcohol use item that a third of the participants were in a residential care facility when the ChYMHS was administered, and hence there would be less opportunity to engage in any type of substance use.

The current research aligns with finding reported by Messman-Moore, Walsh, and Delillo (2010) who suggested that individuals who had experienced abuse in childhood had reported increased rates of emotion regulation difficulties. Contrary to the findings reported by Johnson and Lynch (2013) in regards to participants who reported having been sexually abused, this current study identified that the participants who reported at least one incident of sexual abuse did not report higher rates of emotion dysregulation, but did engage in more maladaptive coping behaviours such as in substance use. Also, where Arata et al. (2005) found that sexual abuse was significantly associated with internalizing behaviours, this current study found that the sexual abuse group actually reported lower scores on internalizing behaviours.

Research has indicated that anxiety is significantly related to the later onset of substance use (Buckner et al., 2008), while current study indicated the opposite relationship, suggesting substance use engagement is significantly associated with lower levels of anxiety symptoms.

The most significant finding from the current study corresponded with research reported by Kendler et al. (2000) who suggested that the association between substance use and sexual abuse are much stronger than the association with all other forms of abuse

### **Implications for Assessment and Treatment**

First, emphasizing the importance of privacy measures for children and youth responding to assessment questionnaires could help minimize inaccuracies in the collection of information in allowing for the freedom to answer honestly without a caregiver present. Lower numbers in substance use within the sample compared to the general population may indicate a caregiver perception bias. Encouraging privacy during



assessment is also important in exploring incidents of abuse. With respect to the incidence of sexual abuse, data suggests that over 95% of childhood sexual abuse cases are never reported (Martin & Silverstone, 2013). Increased opportunities for discussion concerning any form of abuse are important for early identification, which would likely lead to trauma-informed early intervention.

Identifying the pathways of substance use is another important implication for treatment. Aldao et al. (2010) found that individuals with higher reward sensitivity are: more likely to engage in substance use at an earlier age; more likely to exhibit higher levels of emotional distress; and may use substances in an attempt to regulate negative emotions. Pihl et al. (2014) identified two developmental pathways that may lead to increased risk for substance use disorders, the externalizing and internalizing pathways. The externalizing pathway is characterized by externalizing behaviours such as in displays of aggression, impulsivity, and emotional reactivity, while the internalizing pathway is characterized by problems in mood and anxiety. Aldao et al. suggest that these problems in most cases precede substance use, but once substance use begins, it can lead to a negative impact on moods, which may reinforce the relationship and further impair mood functioning. The use of substances by individuals who experience higher rates of internalizing disorders may in fact be an attempt to control or regulate hyper arousal in response to fear and anxiety, whereas externalizing individuals may be more responsive to the substance activation in the reward system at a neurological level as suggested by Aldao et al. (2010).

Reducing further harm in children and adolescents is the most important directive for treatment intervention. Seventy percent of all mental health disorders have an age of

onset during adolescence (Government of Canada, 2006) and individuals with substance use problems may be up to three times more likely to have a co-occurring mental health disorder (Rush et al., 2008). Adolescents who do not receive treatment for mental health issues have a greater chance of experiencing negative outcomes in adulthood (Keller, Salazar, & Courtney, 2010). These rates of concurrent disorders and early age of onset is a reminder that it is exceedingly important that youth at risk be identified, supported and provided with appropriate services to meet their needs.

### **Limitations**

It should be noted that all data used in this study was primarily obtained through a tertiary care facility, with additional data supplemented from other child and youth mental health facilities, which may limit the generalizability of the current findings. Further, relevance of these results is limited to adolescents with more complex mental health concerns. For example, 10% of youth in the general population are identified as meeting the criteria for complex needs (Burnside, 2012), whereas a third of the participants in the current study were already enrolled in a residential program. This may be indicative of more complex mental health concerns in the current sample, as residential care facilities are typically the most intensive type of intervention.

Consistent with the previous limitation, the sample for the current study was drawn from a limited geographic location in southwestern Ontario, which may further limit the generalizability to that sample area. Assessment methods, treatment interventions and service delivery may be different in other parts of the province.

Although the assessment method of the ChYMH is expected to be an integrated assessment measure, the dataset did not specify who provided the information. If primary

caregivers were the primary contributors of assessment information, there may be inaccuracies based on caregiver bias. Caregivers may not be fully aware of participant experiences such as reflected in the extent and nature of prior abuse, substance use, and internalizing disorders related to emotion dysregulation. This may be a possible explanation regarding the lower than expected reporting rates of substance use compared to the general population.

Another limitation of this study was the inability to explore frequency and type of substance use as originally planned due to small sample sizes. Further exploration of substance use would provide important comparisons in emotion regulation with the additional information related to the intensity and type of substance use. Additionally, evaluating the frequency of substance use would provide important information regarding the type of abuse experienced to see whether some forms of abuse are linked to higher frequency of substance use than others.

### **Relevance for Future Research**

The current study confirmed the relationship between childhood sexual abuse and substance use engagement. Although the current study provided support for and clarification regarding the strength of association between substance use and the presence of some form of abuse, additional relevant studies are necessary that would allow for further assessment within a more generalizable sample population.

Further studies utilizing the ChYMHS would also benefit from investigating different symptoms within the mental state indicator domain as well as behavioural symptoms in the behaviour indicator section. Further evaluation of these may lead to

identifying which symptoms are more common in internalizing and externalizing behaviours which may help guide the development of treatment protocols.

### **Summary**

Substance use engagement in adolescence can lead to a variety of adverse effects. Substance use is associated with a number of different factors such as childhood maltreatment, emotion dysregulation, anxiety, depression, and disruptive behaviours. The purpose of the current study was to examine the nature and degree of association between substance use and the presence of child abuse/sexual abuse/other abuse not sexual. Each group was assessed for their level of emotion regulation difficulties. It was expected that individuals reporting abuse would be more likely to experience higher levels of emotion regulation and more likely to engage in substance use compared to individuals who had not reported any abuse. These expectations were partially supported by the results in the current study. This study provided support for negative effects of childhood maltreatment reflected in an increased likelihood of engaging in substance use as a possible coping strategy. Future research should continue to explore substance use risk factors such as abuse, and mediating factors such as internalizing and externalizing symptoms of emotion dysregulation to increase understanding of the utilization of substances as a way to cope.

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Table 1

*Overview of Sample Descriptives.*

Variable	<i>M</i>	<i>SD</i>
Age	14.47	1.73
	<i>N</i>	<i>%</i>
Gender Distribution		
Male	158	59
Female	110	41
Patient Type		
Inpatient	90	33.6
Outpatient	178	66.4
Legal Guardianship		
Both parents	134	50.0
Mother only	85	31.7
Living Arrangement Prior to Admission		
With parent or guardian	226	84.3
Assessment Method		
In Person	85	31.7
Phone	130	48.5
Unknown	53	19.8

Note: *N*=268; ChYMH=Child and Youth Mental Health Instrument

Table 2

*Overview of Abuse Type.*

	N	%
<b>Victim of Sexual Abuse or Assault</b>		
Yes	40	14.9
No	228	85.1
<b>Victim of Physical Abuse or Assault</b>		
Yes	55	20.5
No	213	79.5
<b>Victim of Emotional Abuse</b>		
Yes	99	36.9
No	169	63.1
<b>Neglect/Abandonment by Parent</b>		
Yes	56	20.9
No	212	79.1
<b>History of Severe Failure to Provide Basic Needs</b>		
Emotional Neglect	60	22.4
Physical Needs	47	17.5
Safety Needs	47	17.5
<b>Any Abuse Present</b>		
Yes	125	46.6
No	143	53.4
<b>Other Abuse Present But Not Sexual Abuse</b>		
Yes	85	31.7
No	183	68.3

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Note: N=268; ChYMH=Child and Youth Mental Health Instrument



Table 3

*Overview of Substance Use.*

	N	%
Any Substance Use Present		
Yes	54	20.1
No	214	79.9

Note:  $N=268$ ; Adolescent Supplement of ChYMH=Child and Youth Mental Health Instrument: Alcohol; Over the counter medication; Inhalants—e.g., glue, gasoline, paint thinners, solvents; Hallucinogens—e.g., “angel dust”, LSD, “ecstasy”; Cocaine or crack; Stimulants (amphetamines, “uppers”, “speed”); Opiates (synthetics, heroin, methadone); Cannabis; Over the Counter Medication (medication such as methylphenidate, oxycodone, cold remedies, or laxatives for purpose other than intended)

Table 4

*Independent t-tests analysis: Emotion Dysregulation Scales and Means for Any Abuse**Type*

Emotion Regulation Scale	Childhood Abuse		<i>t</i>	<i>df</i>	<i>d</i>
	Any Abuse Present	No Abuse Present			
Anxiety	8.13 (5.187)	6.08 (5.041)	-3.166**	248	.40
Depression	14.43 (7.433)	12.18 (7.381)	-2.408*	248	.30
Disruptive Behaviours	3.26, (2.276)	2.38 (2.097)	-3.208**	248	.40

Note. \* =  $p < .05$ , \*\* =  $p < .01$ ., \*\*\* =  $p < .001$ . Standard Deviations appear in parentheses below means.

Table 5

*Independent t-tests analysis: Emotion Dysregulation Scales and Means for Substance Use.*

Emotion Regulation Scale	Substance Use		<i>t</i>	<i>df</i>	<i>d</i>
	Present	Not Present			
Anxiety	6.13 (3.929)	8.33 (5.857)	2.296*	106	.44
Depression	15.11 (6.546)	12.98 (7.520)	-1.579	106	.30
Disruptive Behaviours	2.70 (1.880)	2.96 (2.465)	-.615	106	.12

*Note.* \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ . Standard Deviations appear in parentheses below means.

Table 6

*Independent t-tests analysis: Emotion Dysregulation Scales and Means for Sexual Abuse.*

Emotion Regulation Scale	Sexual Abuse		<i>t</i>	<i>df</i>	<i>d</i>
	Present	Not Present			
Anxiety	8.00 (4.585)	8.08 (4.989)	.070	78	.02
Depression	13.65 (6.693)	14.45 (7.038)	.521	78	.12
Disruptive Behaviours	2.80, (1.843)	3.18 (2.074)	.855	78	.19

*Note.* \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ . Standard Deviations appear in parentheses below means.

Table 7

*Independent t-tests analysis: Emotion Dysregulation Scales and Means for Other Types of Abuse Not Sexual.*

Emotion Regulation Scale	Other Abuse Not Sexual		<i>t</i>	<i>df</i>	<i>d</i>
	Present	Not Present			
Anxiety	8.19, (5.472)	5.48 (4.219)	-3.611***	168	.55
Depression	14.80 (7.767)	12.01 (7.377)	-2.400*	168	.37
Disruptive Behaviours	3.48 (2.433)	2.36 (2.005)	-3.268***	168	.44

*Note.* \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ . Standard Deviations appear in parentheses below means.

## APPENDIX A

### **Scales Utilized to Measure Emotional Regulation Difficulties**

#### **Anxiety Scale**

The Anxiety Scale measures the frequency of symptoms of anxiety.

Scores on the Anxiety Scale range from 0 to 36. Higher scores indicate more anxiety symptoms.

1. Repetitive anxious complaints/concerns (non health related)
2. Unrealistic fears
3. Obsessive thoughts
4. Compulsive behaviour
5. Intrusive thoughts or flashbacks
6. Episodes of panic
7. Nightmares
8. Hypervigilance

#### **Depressive Severity Index**

The Depressive Severity Index measures the frequency of the indicators of depression.

Scores on the Depression Scale range from 0 to 36. Higher scores indicate more severe depressive symptoms.

1. Sad, pained, or worried facial expressions
2. Tearfulness
3. Made negative statements
4. Self deprecation
5. Expressions of guilt or shame
6. Expressions of hopelessness
7. Irritability
8. Lack of motivation
9. Withdrawal from activities of interest

#### **Disruptive Behavior Scale**

The Disruptive Behavior Scale measures the frequency and diversity of disruptive behaviors.

Scores on the Disruptive Behavior Scale range from 0 to 16. Higher scores indicate greater frequency and diversity of disruptive behaviors.

1. Socially inappropriate or disruptive behaviour
2. Destructive behaviour towards property
3. Outburst of anger
4. Child/youth removed due to disruptive behaviour

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