A Literature Review of Trauma Informed practices as adjunctive treatment options to drug treatment programs for youth at risk and justice-involved youth

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Executive Summary

Data from national and provincial surveys relating to adolescent health and substance use patterns indicate that substance use is prevalent among Canadian youth. While experimenting with substances such as alcohol and marijuana is often considered part of adolescent risk taking, early onset of substance use (e.g., younger than 12 years of age) and frequent use of substances (including substances such as cocaine, methamphetamines, or heroin) put youth at a greater risk of developing early onset substance use disorders and/or mental health disorders, becoming street-involved or homeless, and engaging in high-risk health and/or anti-social behaviours that increase the likelihood of such youth becoming justice involved.

While many youth do not report experiencing negative consequences as a result of their substance use, vulnerable and at-risk youth (e.g., street-involved or homeless youth who may be struggling with mental health challenges) are more likely to come into conflict with the law, and are more likely to experience negative consequences such as being injured, doing things they do not remember, overdosing or needing to seek help for their substance use. Unlike their mainstream peers, at-risk youth have typically faced multiple adverse childhood events and trauma exposures.

Adverse events include experiencing physical or sexual abuse, living in families where one or both parents struggle(d) with substance abuse and/or mental health difficulties; being placed in government care on several occasions; and living in precarious housing or on the street. Research suggests that at-risk youth frequently circulate between the streets, foster or group homes and the youth justice system where they might receive treatment for their substance use—only to relapse when they are released from custody back into the same stressful social conditions.

Justice-involved and at-risk youth also report struggling with concurrent substance use and mental health challenges, including traumatic stress responses, PTSD, and diagnoses that typically exist concurrently with PTSD. However, traumatized youth in custodial and residential treatment facilities are not always screened for trauma or correctly diagnosed when they are assessed. This can have significant implications both for developing appropriate treatment plans and for traumatized youths' ability to successfully complete treatment programs, given the extent of dysregulation they have experienced as a result of their trauma histories. Numerous trauma researchers advocate for adopting a trauma-informed organizational culture and treatment philosophies/practices that emphasize building strengths and resilience while also working to develop and master self-regulation skills.

Trauma also has a somatic component and research has shown that trauma-sensitive (or trauma-informed) complementary treatment approaches such as trauma-informed yoga or variations on Mindfulness-based stress reduction practices are effective in reducing traumatic stress symptoms and increasing wellness in adults. Less research has been done to empirically establish the efficacy of trauma-sensitive yoga for helping at-risk youth, and specifically in contributing to successful outcomes for youth undergoing substance use treatment.

Yoga Outreach has been providing trauma-sensitive yoga classes to justice-involved and at-risk youth for over a decade. Based on the empirical studies that have established trauma-sensitive yoga as an evidence-based treatment intervention and the observations of Yoga Outreach teachers, the organization has submitted a proposal to the Department of Justice to examine the efficacy of trauma-based yoga and similar mindfulness-based stress reduction programs as

a promising adjunctive treatment intervention for justice involved youth receiving treatment for substance use disorders.

This study examines published studies and “grey literature” on both the standard substance use treatment models as well as a small, but growing body of empirical studies investigating the efficacy of trauma-based complementary programs. This literature review also considers the need for gender-responsive and culturally-responsive treatment models that more specifically address the unique needs of female young offenders and Aboriginal young offenders.

Introduction and definitions

Surveys such as the *Canadian Alcohol and Drug Use Monitoring Survey* (Controlled Substance and Tobacco Directorate, 2014), the *Youth Smoking Survey* (Health Canada, 2014) that track youth and adult substance use patterns (e.g., age at which participants first tried a substance, type of substances used) consistently report that substance use among youth is prevalent. While not all experimentation automatically leads to problematic substance use, certain patterns of use and early onset of substance use are markers for a youth who may be at risk of developing more serious consequences. The initiation of substance use starting at an early age is of particular concern because of the far-reaching consequences—including engaging in high-risk health behaviours, developing or exacerbating mental health disorders, becoming homeless or street-involved, and/or involvement in the criminal justice system—for these youth (Ford & Blaustein, 2013; Layne, Greeson, Ostrowski, Kim, Reading, Vivrette, Briggs, Fairbank & Pynoos, 2014; McCay, 2011; White & Dennis, 2003).

For the most part, substance use treatment programs that are offered to youth are often an adaption of treatment models (e.g., therapeutic communities in residential treatment settings, group or individual counselling in community-based settings, twelve-step groups, motivational enhancement counselling) and outcome measures designed for adults (Brown, 2004), and often produce mixed results, at best, when used to treat adolescents with substance use disorders (Deas & Thomas, 2001; Williams & Chang, 2000). Furthermore, a large proportion of justice-involved youth with substance use disorders also tend to report histories of abuse and adverse childhood events and struggle with concurrent mental health challenges—including PTSD and the effects of complex trauma—that may reduce the effectiveness of standard treatment for substance use disorders (Ford, Hawke, Alessi, Ledgerwood & Petry, 2007; Shane, Diamond, Mensinger, Shera & Wintersteen, 2006).

A growing body of research has established that youth who have experienced chronic trauma exposure such as abuse, neglect, intergenerational trauma or traumatic loss often experience significant emotional dysregulation and attachment difficulties, impaired executive functions (e.g., problem solving), impulse control and cognitive processes, and that such youth respond best to trauma-focused treatment

Yoga Outreach is a non-profit organization that has been bringing a trauma-informed (also known as trauma-sensitive) yoga program to justice-involved and at-risk youth for the past 18 years. Based on its years of work with at-risk youth, and supported by empirical research, Yoga Outreach believes that combining a trauma-informed intervention with other substance treatment programs will potentially support and enhance the efficacy of other treatments and contribute to the long-term stability of these clients.

This literature review will scan the existing literature to determine whether trauma-informed yoga (or other trauma-informed interventions such as Mindfulness-Based Stress Reduction) enhances drug treatment outcomes for youth. It will also outline the prevalence of substance use and criminal justice involvement among youth; briefly outline how traumatic stress and related symptoms create additional obstacles for many at-risk youth and why a trauma-informed approach is critical to enhancing traumatized youths' treatment outcomes; and consider the question of cultural relevancy vis-a-vis providing culturally appropriate treatment programs for Aboriginal youth.

Surveys such as the *Canadian Alcohol and Drug Use Monitoring Survey* (CADUMS), *Youth Smoking Survey* (now called the *Canadian Student Tobacco, Alcohol and Drugs Survey, or CSTADS),* and the BC *Adolescent Health Survey* consistently indicate that the three substances

most often ever tried or used by youth are tobacco, alcohol, and marijuana (cannabis). A recent CSTAD survey indicates that some students in grades 7 -12 have also used dextromethorphan, the active ingredient in over-the-counter cough medicine to get high (Health Canada, 2014). For the purposes of this literature review, "substances" include prescription medications used without a doctor's consent, controlled substances identified by federal legislation (e.g., marijuana/cannabis, heroin, cocaine, hallucinogens, methamphetamines, ecstasy, ketamine, mushrooms, etc), alcohol, solvents or other substances not intended for use as a psychoactive substance.

The broad definition of a youth is a person between 12and 24 years old and includes both adolescents (12 - 17 years of age) and young adults (18-24 years of age). Within Canada, the legal age at which a youth is considered an adult varies by province and ranges from 18 to 19 years of age. From a criminal justice perspective, Canada's youth justice system applies to youth 12 – 17 years of age, although 18- and 19-year-old youth may be sentenced under the *Youth Criminal Justice Act* if they were younger than 18 years of age when they committed the offence.

Prevalence of Substance Use by Youth, At-Risk Youth, and Justice-involved Youth

According to several Canadian reports and studies published over the past 10 to 15 years, high rates of substance use—tobacco, alcohol, marijuana and other substances (both illicit drugs and the misuse of prescription medicines)—are prevalent among young Canadians between 12 and 24 years of age (Hammond, Ahmed, Yang, Brukhalter & Leatherdale, 2011; Pihl, Shakra, Cox, O'Leary-Barrett, Brotnow, Sinha, Stewart & Leyton in Leyton & Stewart, 2014, Health Canada, 2014 & 2015). For example, results from a 2004 Canadian national survey on substance use revealed that almost half the respondents over 15 years of age (45%) had used marijuana at least once (Adlaf, Begin & Sawka, 2005, cited in Hammond et al, 2011) and approximately 17% of respondents had used illicit drugs such as hallucinogens, cocaine, amphetamines, and ecstasy (Hammond et al, 2011, p. 7). Citing data from the 2011 *Canadian Alcohol and Drug Use Monitoring Survey* (CADUMS), Pihl et al note that "approximately 85 percent of teenagers have used alcohol and 50 percent have tried illicit drugs" (2014, p.7). More recently, data from the 2013 *Canadian Tobacco, Alcohol and Drugs Survey* (p. 4) indicate that 11% of respondents age 15 years or older reported using at least one of six illicit drugs (cannabis, cocaine or crack, speed, ecstasy, hallucinogens or heroin) within the 12 months prior to the survey; more specifically, the rates of use among 15-19 year olds (23%) and young adults 20-24 years of age (27%) were triple that of adults 25 years and older (8%). Among 15-19 year olds, 22% reported using cannabis in the previous year and 60% reported using alcohol in the previous year; 26% of young adults (20-24 years of age), reported using cannabis and 83% indicated they had used alcohol in the previous year (Health Canada, 2016, p.5).

While the CADUMS—and its 2013 replacement the *Canadian Tobacco, Alcohol and Drugs Survey* (CTADS)—tracks alcohol and illicit drug use among older teenagers (15 - 19 years of age) and young adults (18 – 24 year olds), it does not capture substance use among youth under the age of 15. In order to capture data on substance use patterns among 11 to 14 year olds, a national *Youth Smoking Survey*[1] has been administered since 2002, on a biennual basis, to Canadian school-age youth in grades 6 to 12 (Hammond et al, 2011). In addition to asking all students about tobacco use, students in grades 7-12 are also asked about alcohol and drug use

[1]Renamed the *Canadian Student Tobacco, Alcohol and Drugs Survey*, or CSTADS, in the 2012-2013 survey cycle (Propel Centre for Population Health Impact, University of Waterloo. More recent versions of the survey have also incorporated questions about exercise and eating habits, connectedness to school and bullying. https://uwaterloo.ca/canadian-student-tobacco-alcohol-drugs-survey/ retrieved August 19, 2016.

(Hammond et al, 2011). The results of the 2008 survey showed that almost 21% of youth in grades 7 to 9 (i.e., between 12 and 14 years of age) reported drinking alcohol at least once per month in the previous year, 17% of respondents in this age group had tried cannabis, and 13% reported they had tried another substance such as hallucinogens (4.8%), amphetamines (3.5%), MDMA—ecstasy—(4.2%), glue (4.7%), or the non-medical use of prescription drugs (6.7%).

Rates of adolescent substance use and patterns of use vary by province. The ability to consistently track patterns and rates of use also varies by province and is either constrained or supported by the availability of and access to research funding and resources. In British Columbia, a comprehensive adolescent health survey has been administered every five years, since 1992 [2]. The *BC Adolescent Health Survey (BC AHS)* not only collects detailed information about substance use patterns, but also collects information on a variety of health and social determinants (e.g., sleep patterns, nutrition, experiences with being in government care, bullying, school connectedness, experiencing extreme distress or hopelessness, abuse histories) that act either as protective or risk factors for developing mental health difficulties and/or substance use disorders. Furthermore, data from Aboriginal youth who responded to the *BC AHS* are analyzed and reported in a separate report—the most recent being *Raven's Children IV: Aboriginal youth health in BC* (Tourand, Smith, Poon, Saewyc & McCreary Centre Society, 2016).

One limitation of national or provincial surveys that only collect their data from mainstream public schools (i.e., the general population of adolescents) is that these studies are often missing data on marginalized, at-risk youth because these adolescents are more likely either not in school at all or they are attending an alternative school. In addition to administering a province-wide survey on adolescent health to students in mainstream schools every five years, The McCreary Centre Society in BC also periodically surveys marginalized, at-risk youth who are justice-involved and/or homeless/street-involved. The data from three such studies—*Time Out III: A profile of BC youth in custody* (Smith, Cox, Poon, Stewart & McCreary Centre Society, 2013), *Our Communities, Our Youth: The health of homeless and street-involved youth in BC* (Smith, Stewart, Poon, Peled, Saewyc & McCreary Centre Society, 2015) and *Becoming whole: youth voices informing substance use system planning* (Cox, Smith, Peled & McCreary Centre Society, 2013)[3]—are also discussed in the first part of this literature review.

Within BC, both the prevalence and patterns of substance use and the prevalence of risk factors that are known to contribute to substance use disorders and justice involvement are noticeably different for the at-risk youth versus youth who participated in the 2013 *BC Adolescent Health Survey* (Smith, Stewart, Poon, Peled, Saewyc & McCreary Centre, 2014). For example, whereas 3% of non-Aboriginal youth and 12% of Aboriginal youth reported ever having been placed in government care (Smith, Stewart, et al, 2014; Tourand, Smith, et al, 2016), just over half (51%) of homeless/street-involved youth and nearly two-thirds (65%) of youth in custody reported ever having been placed in government care (Smith, Stewart, et al, 2015; Smith, Cox, et al, 2013). Furthermore, whereas only 1% of non-Aboriginal youth and 4% of Aboriginal youth reported being in care at the time of the *BC AHS,* 14% of homeless/street-involved youth reported they were in some type of care arrangement at the time of their survey, and 32% of

[2] This survey is administered to students in grades 7 -12 who are enrolled in mainstream schools, including schools on First Nations reserves Approximately 30,000 youth 12 – 19 years of age were surveyed in 2013. Aboriginal youth comprise approximately 10% of the survey respondents (or approximately 3,000 students).

[3] This particular study surveyed youth who were struggling with mental health challenges and/or substance use disorders. These youths also provided their input and feedback on the accessibility and effectiveness of the mental health and drug treatment services they had accessed or tried to access (Cox, Smith, Peled & McCreary Centre Society, 2013).

youth who were in custody reported they were in care at the time they were taken into custody (Smith, Cox, et al 2013; Smith, Stewart, et al, 2015. The differences in the prevalence of other risk factors such as the rate of physical and/or sexual abuse reported by at-risk youth compared to rates of abuse among the *BC AHS* participants are summarized in Table 1, below:

Table 1: Prevalence of Trauma Histories and Adverse Events Among Various Groups of BC Youth

	2013 BC AHS Participants (N≅30,000)[1]			2013 BC AHS Aboriginal Participants (N≅3,000)[2]			2012 Youth in custody survey participants (N=114)[3]			2014 Homeless & Street-involved Youth Survey Participants (N=681)[4]		
	M	F	T	M	F	T	M	F	T	M	F	T
Physical abuse	10%	15%	13%	13%	24%	–	26%	67%	–	53%	67%	–
Sexual Abuse	4%	13%	–	17%	23%	–	32%	75%	–	13%	56%	–
Both physical & sexual abuse	1%	6%	4%	3%	7%	–	–	–	–	–	–	–
Have ever been in Gov't Care	–	–	3%	–	–	12%	–	–	65%	–	–	51%
In care at time of survey*^	–	–	1%			4%			32%	–	–	14%
Suicide or Attempted Suicide by someone close to them	–	–	13%	–	–	45%	–	–	32%	–	–	45%
Bullied--assaulted by peers	10%	5%	–	14%	11%	–	–	–	45%	–	–	43%
Bullied--teased by peers	31%	43%	–	30%	49%	–	–	–	29%	–	–	–
Bullied--excluded by peers	26%	43%	–	27%	46%	–	–	–	18%	48%	69%	–
Bullied--online	10%	19%	–	12%	28%	–	–	–	–	–	–	–

1. From Smith, Stewart, et al's (2014) report *From Hastings Street to Haida Gwaii: Provincial results of the 2013 BC Adolescent Health Survey.*
2. From Tourand, Smith et al's (2016) report *Raven's Children IV: Aboriginal youth health in BC.*
3. From Smith, Cox, et al's (2013) report *Time Out III: A profile of BC youth in custody.*
4. From Smith, Stewart, et al's (2015) report Our communities, Our Youth: The health of homeless and street-involved youth.

*Refers to percentage of youth who were in care prior to serving time in custody

^Not all of the homeless/street-involved youth survey participants were homeless; some street-involved youth were in government care (either in a foster home, a group home, or on a Youth Agreement) at the time of the survey.

– Data not reported (Note: Data points for males, females and total percent are reported inconsistently across survey samples.)

Smith, Cox, et al note that unlike youth in mainstream schools (i.e., youth who participated in the 2013 *BC* AHS), youth in custody "were less likely to live with their parents, and more likely to have been in government care" (2013, p. 4). The majority of the justice-involved youth in Smith, Cox, et al's (2013) study are what is known as "cross-over youth": traumatized youth in the child protection welfare system who, as a result of post-traumatic stress and poor coping skills "act out" in ways that bring them into contact with the criminal justice system (Scully & Finlay, 2005; Corrado, Freedman & Blathier, 2011). Furthermore the majority of youth in custody "experienced very challenging circumstances in their formative years, including high rates of housing instability, family problems, bereavement, abuse, victimization, and challenges at school" (Smith, Cox, et al, 2013, p. 4). Seventy percent of youth in custody were also more likely to have at least one relative involved in criminal behaviour, which increased the likelihood that a youth would get into conflict with the legal system at an earlier age (Smith, Cox, et al, 2013, p. 4).

Smith, Cox, et al (2013) note that youth in custody are also more likely to experience one or more health challenges than youth who attend school. Forty-eight percent of incarcerated youth reported struggling with behavioural problems, 26% reported a mental/emotional health condition[4], 9% of the youth in custody reported they suffered from PTSD, 21% reported they

[4] According to Smith, Cox, et al, the prevalence of mental/emotional health conditions is approximately 2.5 times higher than that reported by youth in school (2013, p. 20).

had been diagnosed with Fetal Alcohol Spectrum Disorder (FASD),[5] and 26% of youth in custody reported addiction problems (2013, p. 22). Given that a 2011 study designed to assess the prevalence of mental health issues among youth in British Columbia's youth custody centres found almost all youth (91.9% of males and 100% of females) met the criteria for a psychiatric diagnosis, it is possible that just relying on the self-reports of youth results in an underestimation of the true prevalence of mental health issues among detained youth (Gretton & Clift, 2011).

Similar to youth in custody, homeless/street-involved youth and youth who are struggling with mental health and/or substance use disorders[6] also experienced challenging life circumstances, both in the past and the present (Smith, Stewart, et al, 2015; Cox, Smith, et al, 2013). Both the homeless/street-involved youth and the youth struggling with concurrent mental health and substance use disorders cited traumatic and adverse experiences that included being physically or sexually abused; dealing with family difficulties such as parental mental health or substance use disorders, multi-generational foster care cycles and intergenerational historical traumas from residential schools; being kicked out of home or running away from home; losing a family member through death or divorce, being detained in a youth custody center, being homeless, and coping with mental health issues and substance use problems (Smith, Stewart, et al, 2015; Cox, Smith, et al, 2013).

Mental health issues and substance use problems were highly prevalent among both the homeless/street involved youth study cohort and the study cohort of youth struggling with concurrent mental health issues and substance use disorders: 68% of the homeless/street-involved youth (Smith, Stewart, et al, 2015, p. 32) and 85% of youth with concurrent mental health and substance use issues (Cox, Smith, et al, 2013, p.18) reported having at least one specific mental health diagnosis. According to Smith, Stewart, et al (2015, p 32), the most common diagnoses among homeless and street-involved female youth include depression (60%), chronic anxiety/panic attacks (38%), and PTSD (24%), whereas homeless/ street-involved youth were more likely to report diagnoses such as ADHD (31%) or depression (31%). Twenty-three percent of homeless/street-involved youth reported addiction problems (Smith, Stewart, et al, 2015, p. 32). Cox, Smith, et al (2013, p. 18) report that among youth with concurrent mental health conditions or substance use disorders, the most common diagnoses were depression (64%), anxiety disorders/panic attacks (55%), and substance misuse (56%). Additionally, 34% of females were diagnosed with PTSD and 29% were diagnosed with an eating disorder (Cox, Smith, et al, 2013, p. 18).

Prevalence of Substance Use in BC

According to the 2013 *Adolescent Health Survey* data (based on a sample of approximately 30,000 youth enrolled in mainstream, public schools), the two substances most often used by youth are alcohol and marijuana (cannabis). Forty-five percent of youth reported they had tried alcohol. While 65% of youth first tried alcohol before they were 15 years of age (Smith, Stewart, et al, 2014), the most common age to first try alcohol was 14 years of age (24%). Only five percent of youth had tried alcohol when they were nine years of age or younger. Twenty-six percent of youth reported they had tried marijuana; the most common age for trying marijuana

[5] Smith, Cox, et al note that just over one-third (36%) of Aboriginal youth in custody indicated they had been diagnosed with FASD; furthermore, "virtually all youth in custody who had been diagnosed with FASD reported being of Aboriginal descent " (2013, p. 22).

[6] Cox, Smith, et al (2013) note that the majority of the youth with concurrent mental health and substance use disorders in their study had also experienced or were currently homeless at the time of the study. Furthermore, the youths recognized that the stress of not having anywhere to live can often lead to substance use; conversely, youth also reported that supported, stable housing and ensuring that other basic needs are met has a positive impact on both their mental health and substance use (Cox, Smith, et al, 2013, p.9).

was also 14 years of age (24%). Only three percent of youth reported they were nine years of age or younger when they first tried marijuana (Smith, Stewart, et al, 2014).

The McCreary Centre Society also produced a report called *Raven's Children IV: Aboriginal youth health in BC* (Tourand, Smith, et al, 2016) that focuses specifically on health indicators and substance use among Aboriginal youth who participated in the *BC AHS* (n = approximately 3,000, or 10% of the total survey sample[7]).

Among Aboriginal youth, 56% reported they had tried alcohol and approximately 75% stated they first tried alcohol when they were less than 15 years of age. Eight percent of Aboriginal youth reported they were nine years of age or younger when they first tried alcohol (Tourand, Smith, et al, 2016). Forty-one percent of Aboriginal youth reported they had tried marijuana. Among those who had tried marijuana, 75% were less than 15 years old when they first tried marijuana and five percent were nine years old or younger when they first tried it (Tourand, Smith, et al, 2016).

Among the three cohorts of at-risk youth, between 83% and 97% reported they had tried alcohol, with 73% of youth in custody and 29% of homeless/street-involved youth first trying alcohol when they were12 years of age or younger. Between 85% and 95% of the at-risk youth had tried marijuana, with 34% of homeless/street-involved youth and 45% of youth in custody reporting they were no older than 12 years old the first time they tried marijuana. (See Table 2a, below)

Table 2a: Prevalence of Substance Use Patterns among Various Groups of Youth

	2013 BC AHS Participants (N≅30,000)[1]			2013 BC AHS Aboriginal Participants (N≅3,000)[2]			2012 Youth in custody survey participants (N=114)[3]			2014 Homeless & Street-involved Youth Survey Participants(N=681)[4]			2012 Survey of Youth Struggling with Mental Health and/or Substance Use Disorders (N=74)[5]		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Have ever tried/used alcohol	–	–	**45%**	53%	58%	**56%**	–	–	**97%**	–	–	**83%**	–	–	**96%**
12 years or younger when first tried alcohol	–	–	**21%**	–	–	**32%**	–	–	**73%**	–	–	**29%**	–	–	**–**
9 years of age or younger when first tried alcohol	5%	3%	**5%**	–	–	**8%**	–	–	**–**	14%	6%	**10%**	–	–	**–**
% youth who had ever used alcohol that used it in month prior to survey*	–	–	**62%**	–	–	**62%**	–	–	**87%**	–	–	**74%**	–	–	**61%**
Have ever tried/used marijuana	–	–	**26%**	–	–	**41%**	–	–	**95%**	–	–	**84%**	–	–	**93%**
12 years or younger when first tried marijuana	–	–	**16%**	–	–	**30%**	–	–	**45%**	–	–	**34%**	–	–	**–**
9 years of age or younger when first tried marijuana	–	–	**3%**	–	–	**5%**	–	–	**16%**	13%	4%	**–**	–	–	**–**
% youth who had ever tried marijuana that used it in month prior to survey**	–	–	**15%**	–	–	**60%**	–	–	**–**	87%	78%	**–**	–	–	**67%**
Have ever tried/used other substances	–	–	**17%**	–	–	**25%**	–	–	**88%**	–	–	**80%**	–	–	**90%**

1. From Smith, Stewart, et al's (2014) report *From Hastings Street to Haida Gwaii: Provincial results of the 2013 BC Adolescent Health Survey.*
2. From Tourand, Smith et al's (2016) report *Raven's Children IV: Aboriginal youth health in BC.*
3. From Smith, Cox, et al's (2013) report *Time Out III: A profile of BC youth in custody.*
4. From Smith, Stewart, et al's (2015) report *Our communities, Our Youth: The health of homeless and street-involved youth.*
5. From Cox, Smith, et al's (2013) report *Becoming whole: Youth voices informing substance use system planning.*

– Data not reported (Note: Data reported inconsistently across surveys by sex and total or total only.

*Youth in custody were asked whether they drank alcohol at least once in the month before they entered custody.

**No data provided for whether youth in custody used marijuana at least once; data is reported differently and therefore is not comparable to the survey data for other youth cohorts.

[7] Note that while Aboriginal youth are generally *underrepresented* in educational and other institutions, Aboriginal youth are *overrepresented* in the youth justice system and among populations of at-risk, street-involved youth (Smith, Stewart, et al, 2015; Smith, Cox, et al, 2013).

Seventeen percent of non-Aboriginal youth and 25% of Aboriginal youth who regularly go to school reported trying a substance other than alcohol and marijuana: These youth were most likely to use prescription pills without a doctor's consent, hallucinogens, and mushrooms, and least likely to try cocaine, heroin, or amphetamines (Smith, Stewart, et al, 2014; Tourand, Smith, et al, 2016). See Table 2b, below, for details.

By comparison 80% of homeless/street-involved youth, 88% of youth in custody, and 90% of youth struggling with concurrent mental health issues or substance use disorders had tried substances other than alcohol and marijuana (Smith, Cox, et al, 2013; Smith, Stewart, et al, 2015; Cox, Smith, et al, 2013). These groups of youth were more likely to use a variety of substances—including cocaine, hallucinogens, prescription pills, and heroin—and were much more likely to inject substances (Smith, Cox, et al, 2013; Smith, Stewart, et al, 2015; Cox, Smith, et al, 2013). See Table 2b, below:

Table 2b: Other Substances Used by Various Groups of Youth

	2013 BC AHS Participants (N≅30,000)[1]			2013 BC AHS Aboriginal Participants (N≅3,000)[2]			2012 Youth in custody survey participants (N=114)[3]			2014 Homeless & Street-involved Youth Survey Participants(N=681)[4]			2012 Survey of Youth Struggling with Mental Health and/or Substance Use Disorders (N=74)[5]		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Prescription pills w/o a doctor's consent	10%	12%	**11%**	13%	18%	**16%**	–	–	**69%**	–	–	**41%**	–	–	**64%**
Cocaine	–	–	**3%**	–	–	**5%**	–	–	**74%**	–	–	**48%**	–	–	**71%**
Hallucinogens (incl. ecstasy)^#	5%	3%	**6%**	8%	6%	**10%**	–	–	**73%**	–	–	**43%**	–	–	**59%**
Mushrooms	6%	4%	**5%**	12%	9%	**10%**	–	–	**67%**	–	–	**52%**	–	–	**64%**
Amphetamines (incl. crystal meth)^^## (a.k.a. Amphetamines)	2%	1%	**2%**	3%	2%	**3%**	–	–	**41%**	–	–	**32%**	–	–	**44%**
Inhalants	–	–	**2%**	–	–	**4%**	–	–	**24%**	–	–	**22%**	–	–	**32%**
Heroin	1%	<1%	**1%**	3%	1%	**2%**	–	–	**32%**	–	–	**19%**	–	–	**32%**
Steroids w/o a doctor's consent	2%	<1%	**1%**	3%	1%	**2%**	–	–	**15%**	–	–	**7%**	–	–	**8%**
Ever injected an illegal drug	1%	<1%	**1%**	–	–	**2%**	–	–	**13%**	–	–	**10%**	–	–	**17%**

1. From Smith, Stewart, et al's (2014) report *From Hastings Street to Haida Gwaii: Provincial results of the 2013 BC Adolescent Health Survey.*
2. From Tourand, Smith et al's (2016) report *Raven's Children IV: Aboriginal youth health in BC.*
3. From Smith, Cox, et al's (2013) report *Time Out III: A profile of BC youth in custody.*
4. From Smith, Stewart, et al's (2015) report *Our communities, Our Youth: The health of homeless and street-involved youth.*
5. From Cox, Smith, et al's (2013) report *Becoming whole: Youth voices informing substance use system planning.*

– Data not reported (Note: Data reported inconsistently across surveys by sex and total or total only.
Also not all survey cohorts were asked the same questions. For example, Incarcerated youth and
youth with MH and/or SU disorders were not asked about their reasons for using substances or negative consequences of using substances.)
^For homeless/street-involved youth, this figure does not include the percent of youth who had ever tried ecstasy or MDMA (54%).
^^For homeless/street-involved youth, this figure does not include the percent of youth who had ever tried crystal meth (30%).
#For youth struggling with MH and/or SU disorders, this figure does not include the percent of youth who had ever tried ecstasy (75%)
##For youth struggling with MH and/or SU disorders, this figure does not include the percent of youth who had ever tried crystal meth (46%)

The *BC AHS* asks youth to list their reasons for using substances. In 2013, more than 60% of youth (both those who attend mainstream schools and at-risk youth who are street- or justice-involved) reported they wanted to have fun; almost one-third (31% of Aboriginal youth and 33% of non-Aboriginal youth) indicated they used substances because their friends were doing it, and just under 30% of youth (28% non-Aboriginal, 29% Aboriginal) indicated they wanted to experiment (Smith, Stewart, et al, 2014; Tourand, Smith, et al, 2016). Only a small percentage of youth (4% of Aboriginal youth and 2% of non-Aboriginal youth) who attend regular school reported they used substances because they had an addiction (Smith, Stewart, et al, 2014;

Tourand, Smith, et al, 2016)[8], where as 19% of homeless/street-involved youth reported having an addiction as a reason for using substances (Smith, Stewart, et al, 2015). While less than five percent of youth who responded to the 2013 BC AHS reported using substances because they had an addiction, more than 20% of non-Aboriginal females used substances to manage stress (25%) or sad feelings (21%); among Aboriginal females, 34% reported using substances to manage stress, and 27% reported using substances to deal with sad feelings (Smith, Stewart, et al, 2014; Tourand, Smith, et al, 2016). Among homeless youth, 57% of females reported using substances to manage stress, and 47% used substances to manage sad feelings (Smith, Stewart, et al, 2015). See Table 3, below, for additional reasons.

Table 3: Reasons for Substance Use

	2013 BC AHS Participants (N≅30,000)[1]			2013 BC AHS Aboriginal Participants (N≅3,000)[2]			2014 Homeless & Street-involved Youth Survey Participants(N=681)[3]		
	M	F	T	M	F	T	M	F	T
Wanted to have fun	60%	69%	65%	57%	65%	62%	61%	70%	65%
Friends were doing it	29%	37%	33%	28%	34%	31%	–	–	31%
Wanted to try it/experiment	27%	29%	28%	–	–	29%	–	–	21%
To manage stress	16%	25%	–	21%	34%	28%	44%	57%	50%
Felt down or sad	11%	21%	–	13%	27%	21%	36%	47%	43%
There was nothing else to do	9%	10%	–	–	–	12%	–	–	24%
To manage physical pain	5%	7%	–	–	–	9%	–	–	24%
Pressured into doing it	3%	4%	–	4%	7%	6%	–	–	6%
Because of an addiction	2%	2%	–	–	–	4%	–	–	19%
Thought it would help me focus	3%	3%	–	–	–	5%	–	–	15%
Change the effects of another drug/substance	1%	1%	–	–	–	1%	–	–	9%
Other	21%	16%	–	–	–	18%	–	–	7%

1. From Smith, Stewart, et al's (2014) report *From Hastings Street to Haida Gwaii: Provincial results of the 2013 BC Adolescent Health Survey.*
2. From Tourand, Smith et al's (2016) report *Raven's Children IV: Aboriginal youth health in BC.*
3. From Smith, Stewart, et al's (2015) report *Our communities, Our Youth: The health of homeless and street-involved youth.*

– Data not reported (Note: Data reported inconsistently across surveys by sex and total or total only. Also not all survey cohorts were asked the same questions. For example, Incarcerated youth and youth with MH and/or SU disorders were not asked about their reasons for using substances or negative consequences of using substances.)

More than 50% of youth (52% of non-Aboriginals and approximately 55% of Aboriginals) who completed the BC AHS reported that they experienced negative consequences as a result of using substances (Smith, Stewart, et al, 2014; Tourand, Smith, et al, 2016). Forty percent of Aboriginal youth and 37% of non-Aboriginal youth reported being told they did something they didn't remember doing; 32% of Aboriginal youth and 28% of non-Aboriginal youth reported passing out; 18% of Aboriginal youth and 14% of non-Aboriginal youth reported being injured; and 18% of Aboriginal youth and 13% of non-Aboriginal youth reported arguing with family members (Smith, Stewart, et al, 2014; Tourand, Smith, et al, 2016). By way of contrast to the youth in school, 76% of homeless/street-involved youth reported experiencing negative consequences as a result of using substances; more specifically, 48% of homeless youth reported passing out, 47% were told they did something they couldn't remember doing, and 38% reported arguing with family members (Smith, Stewart, et al, 2015).

[8] However, youth who completed the *BC AHS* had also reported relatively low rates of substance abuse disorders: six percent of Aboriginal youth and a maximum of one percent of non-Aboriginal youth stated they struggled with a substance use disorder (Smith, Poon, et al, 2014; Tourand, Smith, et al, 2016)

Among the youth that had completed the *BC AHS*, 2% of non-Aboriginal and 3% of Aboriginal youth reported overdosing on a substance; 1% of non-Aboriginal youth and 3% of Aboriginal youth indicated they had to get treatment for substance abuse (Smith, Stewart et al, 2014; Tourand, Smith, et al, 2016). Aboriginal youth either felt or were told they needed help for a substance abuse program at twice the rate of non-Aboriginal youth (Smith, Stewart et al, 2014; Tourand, Smith, et al, 2016). Thirteen percent of homeless and street-involved youth reported overdosing, and 10% reported having to get treatment for substance abuse (Smith, Stewart, et al, 2014).

Youth also reported getting into trouble with police, damaging property, or getting into a physical fight, although non-Aboriginal females were the least likely to report any of these consequences (Smith, Stewart, et al, 2014; Tourand, Smith, et al, 2016.). Among homeless and street-involved youth, 30% (triple the rate of Aboriginal youth and non-Aboriginal males in the BC AHS) reported getting into trouble with the police, 33% reported getting into a physical fight, and 25% of street-involved youth reported damaging property as a negative consequence of using substances (Smith, Stewart, et al, 2014). See Table 4, below, for a more detailed list of the negative consequences youth experienced as a result of using substances:

Table 4: Consequences of Substance Use for Various Groups of Youth in BC

	2013 BC AHS Participants (N≅30,000)[1]			2013 BC AHS Aboriginal Participants (N≅3,000)[2]			2014 Homeless & Street-involved Youth Survey Participants(N=681)[3]		
	M	F	T	M	F	T	M	F	T
Was told I did something I couldn't remember	31%	42%	37%	34%	45%	40%	–	–	47%
Passed out	26%	29%	28%	29%	34%	32%	–	–	48%
Was injured	12%	17%	14%	15%	21%	–	–	–	37%
Argued with family members	10%	15%	–	13%	22%	–	31%	44%	38%
Damaged property	10%	5%	–	10%	9%	–	–	–	25%
Got into a physical fight	8%	5%	–	10%	10%	–	–	–	33%
Had sex when I didn't want to	4%	7%	–	7%	10%	–	9%	21%	16%
Overdosed	2%	2%	–	3%	3%	–	–	–	13%
Had to get treatment for drug/alcoho abuse	1%	1%	–	1%	2%	–	–	–	10%
Needed help/Was told needed help for substance use	–	–	5%	–	–	6%	–	–	–
Got into trouble with the police	9%	5%	–	9%	9%	–	–	–	30%

1. From Smith, Stewart, et al's (2014) report *From Hastings Street to Haida Gwaii: Provincial results of the 2013 BC Adolescent Health Survey.*
2. From Tourand, Smith et al's (2016) report *Raven's Children IV: Aboriginal youth health in BC.*
3. From Smith, Stewart, et al's (2015) report *Our communities, Our Youth: The health of homeless and street-involved youth.*

– Data not reported (Note: Data reported inconsistently across surveys by sex and total or total only.
Also not all survey cohorts were asked the same questions. For example, Incarcerated youth and youth with MH and/or SU disorders were not asked about their reasons for using substances or negative consequences of using substances.)
N/A question not asked of this survey cohort.

Prevalence of Criminal Justice Involvement

According to a Juristat report on youth crime in Canada in 2014, almost 101,000 youth were accused of *Criminal Code* violations; an additional 15,300 youth were accused in various drug offences, 1,200 youth were accused in Criminal Code traffic violations; and 5,000 youth were accused in other federal statute violations (e.g., the *Youth Criminal Justice Act*) and

administration of justice offences (Allen & Superle, 2016, p.5). Allen and Superle note that police-reported youth crime most often consists of offences such as mischief (i.e. property damage), assault level 1 (common assault and uttering threats), cannabis possession (which accounted for 80% of drug-related offences by youth in 2014), and administration of justice offences such as failure to appear in court or breach of conditions (2016, p. 7). Allen and Superle also note that in 2014, youth between 12 and 17 years of age had the highest rates for police-reported crime for robbery, uttering threats, and motor vehicle theft (2016, p. 8).

The *Time Out III* survey results showed that a majority of the survey respondents (58%) were in custody for breach of probation or administration of justice offences, 37% were in custody for assault or uttering threats, 36% were in custody for robbery, 31% for weapons charges, and 12% were in custody for drug charges (Smith, Cox, et al, 2013, p. 16). It is not specified whether these youths' drug-related charges were possession-related or supply-related (i.e., making or selling controlled substances) or whether they pertained to cannabis or some other controlled substance, but based on Cotter, Greenland and Karam's (2015) analysis of drug-related cases (n=21,728) in youth courts between 2008/09 and 2011/12, it is probably reasonable to assume that at least some of the drug-related charges were more serious than simple possession of cannabis[9].

Furthermore, 31% of detained youth had previously been charged or found guilty of drug offences, 62% had previously been charged with assault or uttering threats, and 60% had previously been charged with breach of probation[10] or an administrative charge such as failing to appear (Smith, Cox, et al, 2013, p. 18) which suggests a high rate of reoffending among these youth, particularly as more than four-fifths (83%) of the youth surveyed indicated they obtained money from illegal sources such as drug dealing (63%), theft or robbery (57%), and other illegal activities (39%) before they were committed to custody (Smith, Cox, et al, 2013, p. 14).

At-risk Youth and the Youth Justice System

Allen and Superle point out that "not all youth offenders ... are destined for a life of crime. Many youth who commit crimes may be one-time offenders ...." (2016, p. 4). However, Scully and Finlay (2015) suggest that such youth maybe the exception rather than the rule among justice-involved youth, noting that a disproportionate number of youth in the youth justice system are "cross-over youth" from the child welfare system (i.e., youth in the foster care/group home system of care).

A 2009 British Columbia study of 50,000 youth and their involvement in the child welfare, youth justice, and education systems found that more youth in care were more likely to end up in the youth justice system (36%) than graduating from high school (25%), were more likely than youth in the general population to be recommended for charges by the police (41% versus 6%,

[9] Cotter et al found that while more than half the cases (57%) involving charges of possession of cannabis (marijuana) were either diverted from court (via referrals to alternative or extrajudicial measures) or processed through a prosecutorial decision to stay, withdraw, or dismiss the charges, cannabis supply-related drug charges were slightly more likely to proceed to court and result in a finding of guilt (2015, p. 36). Furthermore, analysis also indicates that both possession and supply-related drug charges are much more likely to result in a finding of guilt when the drug in question is methamphetimine, ecstasy, cocaine, or controlled substances other than heroin (2015, p. 36).

[10] Based on their observations in Ontario, Scully and Finlay note that traumatized youth staying in group homes are particularly likely to end up in the youth justice system and are at greater risk of incurring "breach of bail/probation" charges due to the restrictive conditions and rigid structure of such care arrangements and a propensity of staff to deal with behaviour issues by calling the police and laying charges against a youth (2015, p. 4).

respectively), more likely to appear in youth court than the general population (36% versus 5%), and more likely to be detained or sentenced to custody (16% versus 2%) than youth in the general population (BC Representative for Children and Youth and the Office of the Provincial Health Officer, 2009, cited in Scully and Finlay, 2015, p. 5).

Many of these "cross-over youth" have had the deck stacked against them from an early age, struggling to cope with multiple adverse factors—including trauma exposure in their family of origin and then additional traumas and losses as a result of being placed in care—that negatively impact their psycho-social development (National Crime Prevention Centre, 2012). A large body of research has now established that cumulative trauma exposure starting in early childhood not only contributes to significantly impaired functioning as an adult, but also contributes to pervasive functional impairment and high-risk behaviours in adolescence that include criminal behaviour, substance abuse, and attachment difficulties as well as compromised health and somatic symptoms (Layne, Greeson, Ostrowski et al, 2014; McCay, 2011; Kerig & Ford, 2014, Brown, McCauley, Navalta & Saxe, 2013).

As might be expected, justice-involved youth—along with homeless/street-involved youth and youth with mental health and/or substance use disorders who are also at risk of being justice-involved—have personal histories permeated by violence, victimization and mistreatment, grief and loss, intergenerational involvement with the justice system, experience of being placed in government care, and, for many Aboriginal youth, the intergenerational trauma of the residential schools (Smith, Stewart, et al, 2015; Smith, Cox, et al, 2013; Cox, Smith, et al, 2013). Based on the studies with at-risk youth in BC, produced by the McCreary Centre Society (Smith, Stewart, et al, 2015; Smith, Cox, et al, 2013; Cox, Smith, et al, 2013), many of these youth seem to revolve between some kind of government care arrangement (a foster home, a group home, or a Youth agreement), the streets, and custody centres, and many of these youth experienced challenges with problematic substance use—often in addition to struggling with mental health issues.

Substance Treatment Programs Offered through the Youth Justice System

According to Erickson and Butters (2005), the Canadian youth justice system has developed only a few specialized substance addiction treatment programs, with the most innovative programs developed for Aboriginal youth.

According to Erickson and Butters, substance treatment for young offenders in Ontario is based on an initial assessment and planning process, and an individualized treatment plan is created based on the youth's needs, level of motivation, and learning style (2005, p. 960), although it is not clear whether mental health diagnoses (particularly a PTSD diagnosis) is also taken into consideration during the assessment. Treatment options are also impacted by the youth's length of disposition: Given that the average length of time spent in custody was just under three months (Erickson & Butters, 2005, p. 961), any treatment program would have to be designed to be effective in a short space of time.

Erickson and Butters report they found very little information about programs for young offenders 12-15 years of age, other than twelve-step programs (e.g., AA, NA) and general drug and alcohol counselling (2005, 961). The researchers found four innovative programs for young offenders 16-17 years of age in secure custody: a short (2-3 week), multi-dimensional program called SOS (Staying off Substances), designed to help youth take stock of their substance using patterns (including recognizing the triggers for using substances), develop relapse prevention skills, develop pro-social activities such as a hobby or a sport, and enhance the primary

relationships in their lives (2005, p. 961); a program called the 7 Challenges Substance Abuse Treatment Program, provided to youth identified as high-risk, is based on a “stages of change” model and involves a self-paced approach to completing nine exercise books and one reader and occasional meetings with the program facilitator; a third program called the Substance Abuse (Crackdown) program is aimed at Aboriginal youth who used solvents, and is delivered as an education program to teach youth about the types, effects, treatment and control of solvents; a fourth program, called Addictions Awareness Program is designed to get youth to think about their addiction issues and encourage them to think about how their substance abuse relates to their criminal behaviour (Erickson & Butters, 2005, 962).

According to Erickson and Butters, youth corrections in Ontario also has a specialized treatment program (Adolescent Substance Abuse Program, or ASAP) for youth with a concurrent substance abuse and mental health disorder. The program works on a changes of stage model and is for offenders in open custody facilities; in addition, a longer term in-patient substance abuse program is offered through Portage which operates as a therapeutic community and works to integrate youth back into their communities through a re-entry phase and after care counselling (2005, p. 962.)

Erickson and Butters (2005) report that Ontario youth corrections also implemented a community-based Multi-systemic Therapy program that is located in the community and operates in the youth’s family home. The program is an amalgam of best practices that takes a social–ecological approach and recognizes that young offenders are often struggling with a constellation of problems, including mental health and substance use disorders (Erickson & Butters, 2005, p. 963). In order to be eligible for the program, youth must be assessed as having a high potential for future criminal conduct, an intact family that can meet the level of involvement required, and the youth must not be either a sex offender or manifesting acute psychosis as the program has not been empirically validated for either of these conditions (Erickson & Butters, 2005, pp. 963-964. Erickson and Butters (2005) note that none of the programs (with the exception of MST) developed for Ontario have been subjected to rigorous program evaluations or empirical validations, which raises some questions as to whether they are, in fact, effective programs.

Dowden notes that “one of the key debates ... in the substance abuse treatment literature is how to define an effective program. More specifically, given the multiple areas that are affected by substance abusing behaviour, it has been extremely difficult for researchers to agree on a single or comprehensive set of program success indicators” (2004, p. ii). Reviewers of published studies on treatment efficacy (Williams & Chang, 2000; Deas & Thomas, 2001) have noted that not only are there not many studies on substance abuse programs designed specifically for adolescents, but that most of the studies that do exist are methodologically weak. Brown (2004) contends that in order to “optimally evaluate adolescent treatment outcomes, it is important to ensure that research designs and measures are a developmental fit with the context of what is often a challenging phase of life for adolescents.

Williams and Chang (2000) reviewed 53 studies and found that most of them were generally methodologically weak. They observed that the methodologically stronger studies usually found that most adolescents receiving treatment had significant reductions in substance use and problems in other life areas in the year following treatment (Williams & Chang, 2000, p. 138). They noted that the average rate of sustained abstinence after treatment was 38% (range, 30–55) at six months and 32% at 12 months (range, 14–47). Wiillams and Chang found that while there were no particular merits to treatment location, the type of treatment is important (a community reinforcement approach worked best for alcohol abuse, and behavioural programs

were better than nonbehavioral treatment approaches for adolescents), and the quality of the therapist-client relationship was more important than the therapist's training, experience and discipline. William and Chang concluded that the variables most consistently related to successful outcome were treatment completion[11], low pre-treatment substance use, and peer/ parent social support/non-use of substances. Williams and Chang also concluded that outpatient family therapy appears to be superior to other forms of outpatient treatment (2000, p. 138).

Deas and Thomas (2001) conducted a review of only controlled studies of adolescent substance abuse treatment conducted between 1990 and 2000; they also noted the dearth of well-controlled studies. Deas and Thomas focused on five main types of treatment modalities: family-based and multi-systemic interventions, behavioral therapy, cognitive behavioral therapy, pharmacotherapy, and twelve step approaches (2001, p. 178). Deas and Thomas concluded that although "the results look especially promising for cognitive behavioral therapy and family-based/multi-systemic therapies for adolescents with SUDs, most of the relevant studies fail to utilize validated outcome measures, making it difficult to conclude that one treatment approach is more effective than another" (2001, p. 178).

Diamond, Godley, et al (2002) assessed five outpatient models designed to treat adolescents marijuana misuse. The five models tested involved a 6-week and 12-week combination of motivational enhancement therapy (MET) and group cognitive behavioural therapy (CBT); MET/CBT12 plus a family support network; a multi-component intervention consisting of parental education, family therapy and case management; a 12-week intervention based on the adolescent community reinforcement approach (ACRA); and multi-dimensional family therapy (MDFT). Diamond, Godley, et al found that all five models showed promising results for brief periods of treatment.

Several questions that were not addressed in some of the earlier studies and reviews were whether the subjects also had a trauma history in addition to a substance abuse disorder, and whether the poor self-regulation skills found in many traumatized youth might also be affecting treatment outcome, particularly if the programs are not trauma informed. Several researchers have since investigated this question and found that trauma symptoms influence treatment outcome. In a 2003 study, Grella and Joshi found that (1) adolescents with a history of physical abuse had a lower likelihood of abstinence after treatment ended unless they had a strong rapport with their counsellors; (2) abused adolescents had more service needs at treatment admission; and (3) attention to treatment processes and engagement strategies is crucial for treating youths' substance use disorders if the youth have a history of abuse. A study of adolescents in a long-term residential drug treatment program found that trauma exposed adolescents without PTSD left treatment sooner than adolescents who had not been exposed to trauma (Jaycox, Ebener, Damasek and Becker, 2004). Ford, Hawke, Alessi, Ledgerwood and Petri (2007) examined psychological trauma and PTSD symptoms as predictors of substance treatment outcomes in opiode-or cocaine-dependent adults. Ford et al found that complex PTSD symptoms were inversely related to short-term treatment but PTSD symptoms were positively related to long term treatment outcomes (2007).

[11] However, engaging and retaining adolescents in substance abuse treatment is often a challenge, and even more so for youth who have trauma histories (Jaycox, Ebener, Damesek & Becker, 2004; Ford, Hawke, Alessi, Ledgerwood & Petry, 2007; Shane, Diamond, et al, 2006).

Posttraumatic Dysregulation: Relevance to Custodial Juvenile Justice Programs and Residential Treatment

Adolescents with complex trauma histories make up a substantial portion of the population in custody centres and juvenile justice residential facilities, yet according to Mueser and Taub, "PTSD may be significantly under-diagnosed in facility records" (2008; cited in Ford & Blaustein, 2013, p. 2). As Ford and Blaustein note, "many detained youth meet criteria for a wide range of affective, anxiety, behavioural, and substance use disorders," yet even when their histories of complex psychological trauma are documented as part of the assessment and diagnostic process, they are often not given a definitive PTSD diagnosis (2013, p. 2). Often this is because the youth do not strictly meet the narrow diagnostic requirements for PTSD. Instead, they often receive multiple diagnoses that may not be accurate and subsequently lead to undertreatment, overtreatment, or unhelpful treatment (D'Andrea, Stolbach, Ford, Spinazzola & van der Kolk, 2012, cited in Zelechoski et al, 2013).

Traumatized youth committed to youth detention centres are often coping with significant functional impairment and dysregulation as a result of trauma-induced compromise to three major regulating systems in the brain: the reward/motivation systems, the distress tolerance systems, and the executive systems that regulate emotions and information processing (Thayer et al, 2009, cited in Ford & Blaustein, 2013, p. 3). Given these compromised self-regulation systems, traumatized youth in detention centres and residential treatment facilities likely find themselves having to have to cope with biological adaptations that impede their ability to delay gratification and make them prone to both excessive and blunted emotional reactions, as well as rigid, impulsive, and disorganized thinking and coping styles (Ford 2009; Steinberg 2009; cited in Ford & Blaustein, 2013, p.3).

Furthermore, given that self-regulation[12] "plays a pivotal role in increased adaptive functioning across a wide range of outcomes (e.g., social competence, academic achievement, maintaining or regaining emotional equilibrium)" (Buckner et al, 2009; cited in Ford & Blaustein, 2013, p.6), traumatized youth who do not have or cannot readily access self-regulation competencies are at a distinct disadvantage in terms of their ability to cope with either mandated programs that focus on changing or eliminating "negative" behaviours or with staff who rely on behaviour management and disciplinary techniques to maintain order and safety but have little awareness or understanding of traumatic stress issues (Ford & Blaustein, 2013, p. 5). Zelechoski notes that facility staff who are not trauma-informed will most likely misinterpret a traumatized youth's impulsive and excessive reactions as aggressive and acting out behaviour that needs to be managed, rather than seeing it as a core disturbance emanating from a scarcity of self-regulation skills (2013, p. 7). Furthermore, traumatized youth are at risk of becoming even more dysregulated in response to having their behaviour "managed" either through the use of restraints and seclusion or through behavioural management techniques that "limit an individual's choices and reduce the likelihood of accessing adaptive coping strategies" (Zelechoski, 2013, p. 7).

Because traumatic stress plays such a key role in youths' mental health and behavioural challenges, their unique treatment needs, their safety, and the success of their rehabilitation, Ford and Blaustein advocate strongly for a correctional philosophy and practice that focuses on self regulation (for staff as well as youth) and is grounded in trauma informed principles and

[12] Ford and Blaustein explain that self-regulation "involves the ability to: (1) consciously focus attention, (2) be aware of the environment and one's own physical and emotional body states; (3) draw on memory in order to learn from the past and adapt effectively in the present; and, (4) maintain or regain emotion states that provide a genuine sense of well-being and lead to further self-regulation." (2013, p. 6).

practices (2013). Ford and Blaustein suggest that instead of focusing on outcomes that miss the mark because they are focused on eliminating negative behaviours, it would be more effective and beneficial to educate youth about traumatic stress reactions and support youth in strengthening their self-regulation skills while they are in an environment that is free of many of the barriers and distractions that exist in youth's communities (2013, p. 5).

Ultimately, "successful self-regulation in traumatized youth provides them with an enhanced ability to cope with stressors without engaging in self-defeating or interpersonally ineffective attitudes and behaviour" (Compas 2006; cited in Ford & Blaustein, 2013, p.6). Furthermore, developing self-regulation skills that govern impulsivity and the ability to delay gratification would likely improve a youth's ability to successfully complete substance treatment programs or prevent relapses. Similarly, shifting the theoretical framework from mental health diagnoses and trauma symptoms to a framework that focuses on strengths, resilience and development impact has been shown to have a greater moderating effect on behaviour in that the more strengths a youth has developed, the less likely it is that the youth will engage in high-risk behaviours (Griffin et al, 2009; cited in Zelechoski, 2013).

Trauma-focused therapies shown to work with traumatized youth in general

Other trauma researchers (Zelechoski, 2013; Levin 2009, cited in Zelechoski, 2013; Bloom, 1997, cited in Ford & Blaustein, 2013; Spinazzola, Rhodes, et al, 2011) also concur with Ford and Blaustein on the importance and necessity of shifting the focus of facilities' programs from unhelpful, behavioral management approaches that emphasize compliance and conformity to trauma-specific programs offered within a trauma-informed organizational culture[13]. While these programs are not specifically designed to treat substance abuse disorders, their trauma-informed approach to meeting youths' needs and developing youths' regulating systems in a safe and supportive system most likely facilitate the ability to complete a substance treatment program.

Zelechoski points out that a crucial first step toward becoming a trauma-informed system is to educate all staff about the nature and impact of trauma (Brown et al. 2012a; Doyle and Bauer 1989; cited in Zelechoski, 2013, p.7). Citing Levin (2009) and van der Kolk (2005), Zelechoski explains that "understanding and accurately diagnosing a client with complex or developmental trauma may lead to increased empathy and understanding of the context of the client's current presentation, as well as increase efforts to offer adaptive coping and problem-solving strategies" (2013, p.7). Furthermore, an accurate understanding of the youth's trauma issues will ensure a youth is not inaccurately labelled with negative terms such as "unmotivated" or "oppositional" (Zelechoski, 2013).

Ford & Blaustein (2013, pp. 9-10) identify and discuss five trauma intervention models that have been developed; two have been specifically field tested for trauma-informed, self-regulation based services in youth detention and residential facilities. The models and their applications are listed below:

Attachment, Self-Regulation, and Competency (ARC): According to Ford and Blaustein (2013), the ARC treatment framework is a components-based model of intervention that was

[13] Buffington, Dierkhising, and Marsh (2010) propose that youth court professionals, especially judges, should also make it a priority to become trauma-informed and insist on thorough assessments (including trauma screening) in order to ensure that traumatized youth are referred to appropriate treatment programs.

designed to translate across service settings. Ford and Blaustein (2013) explain that the model identifies ten core intervention targets, nine of which fall within three domains of attachment (building and supporting a safe and responsive caregiving system by primary caregivers, providers, and milieus); self-regulation (supporting youth capacity to identify, modulate, and express emotional and physiological experience); and competency (building core self-reflective capacities including problem-solving skills and a coherent and positive understanding of self); the tenth core target involves processing and integrating life experiences, including but not limited to traumatic events. A core concepts framework guides the provider in using each target clinically, as well as in integrating them into systemic or milieu functioning, staff training, and other modalities. The framework emphasizes the importance of whole systems change in supporting youth competent development and caregiver safety, and has been applied in juvenile justice facilities, residential treatment programs, inpatient hospitals, group homes and therapeutic foster care, and outpatient treatment.

Sanctuary: Ford and Blaustein (2013) explain that the Sanctuary model, developed by Bloom (1997, cited in Ford & Blaustein, 2013), emphasizes the development of a trauma-informed culture which supports recovery from the impacts of traumatic stress, while simultaneously providing safety for clients. Bloom (2007, cited in Ford & Blaustein, 2013) has identified the following seven characteristics of a trauma-informed culture: nonviolence, emotional intelligence, inquiry and social learning, shared governance, open communication, social responsibility, and growth and change. Across intervention components, treatment is approached within an understanding of the core areas, or phases, of Safety, Emotion Management, Loss, and Future (SELF). Ford and Blaustein (2013) explain that the intervention components highlight the role of training, organizational development, development of collaborative teams which include clients, and trauma-informed and trauma-specific treatment. This model has been implemented extensively in inpatient and residential programs.

Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS): Ford and Blaustein (2013) explain that SPARCS is a group intervention designed to address the needs of adolescents who have experienced chronic trauma, and whose stress may be ongoing. Ford and Blaustein (2013) report that the model integrates key concepts from three evidence-based treatment programs: Dialectical Behavior Therapy (DBT; Miller et al. 2007), Trauma Affect Regulation: Guide for Education and Therapy (TARGET; Ford and Russo 2006), and the UCLA Trauma/Grief Program (Layne et al. 2002). Ford and Blaustein (2013) explain that SPARCS targets core areas known to be disrupted by chronic exposure to trauma, including challenges with self-regulation, relationships, self-perception, and future goals, and emphasizes the building of adolescent capacity to cope with current stressors, build effective relationships, and develop a sense of meaning and purpose. SPARCS has been successfully implemented in a wide range of child and adolescent-serving programs and with ethnically diverse groups.

Trauma Affect Regulation: Guide for Education and Therapy (TARGET): TARGET was developed by Ford and Russo (2006) and is an educational and therapeutic intervention for trauma-impacted adolescents and adults, which may be implemented as an individual or group therapy, or as a milieu intervention (Ford and Hawke 2012, cited in Ford & Blaustein, 2013). According to Ford and Blaustein (2013), the model emphasizes an understanding of trauma related dysregulation through the lens of the brain's emotion regulation and executive function systems, and reframes symptoms as adaptive responses. TARGET teaches a seven step sequence of self-regulation skills summarized by an acronym (FREEDOM). The first two skills, Focusing and Recognizing triggers, provide a foundation for shifting from hypervigilance to mentalizing (Allen et al. 2008, cited in Ford & Blaustein, 2013). The next four skills represent a

dual-processing approach to differentiating stress-related and core value-grounded emotions, thoughts, goals, and behavioral options. The final skill teaches ways to enhance self-esteem and self-efficacy recognizing ho or justice-involved youth with dual diagnosis substance use and trauma-related disorders (Ford et al. 2012b, cited in Ford & Blaustein, 2013), with evidence of effectiveness with detained or incarcerated youth provided by two quasi-experimental studies (Ford and Hawke 2012; Marrow et al. 2012, cited in Ford & Blaustein, 2013).

Trauma Systems Therapy (TST): Trauma Systems Therapy (Brown et al. 2013; Saxe et al. 2006, cited in Ford & Blaustein, 2013) is a framework for organizing intervention, with a simultaneous emphasis on the importance of (a) building the trauma-impacted child's capacity to regulate emotional state; and (b) building a self-regulating system, and able to support the child in managing emotions. Ford and Blaustein (2013) explain that TST actively targets the social environment, including the treatment system, and tailors treatment using a matrix system which identifies levels of the child's emotion regulation and the social environment's capacities to support this. Treatment is designed to encompass five phases: "Surviving, Stabilizing, Enduring, Understanding, and Transcending." Within each phase psychotherapy (e.g., cognitive processing and/or emotional regulation skills training, psychopharmacology) and home and community based services and advocacy are provided. TST has been successfully used with ethnoculturally diverse populations of troubled youth and families (Ford & Blaustein, 2013, pp 9-10).

In addition to the treatment models described above, Buffington, Dierkhising and Mars (2010) identify two evidence-based, cognitive-behavioural treatment models—Cognitive Behavioral Intervention for Trauma in Schools (CBITS), Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)—that are trauma focused and can be administered over a short period of time in either community or institutional settings.

Evidence-based, trauma-sensitive complementary therapies as adjuncts to treatment: Promising practices for adolescents with co-occurring disorders and substance abuse

A growing body of trauma research has established that exposure is associated with a range of negative sequelae affecting both mental and physical health (American Psychiatric Association, 2000; cited in Spinazzola, Rhodes, et al, 2011). Spinazzola, Rhodes, et al (2011) explain that despite the growing recognition of the inextricable connections between the body and mind in traumatic stress disorders, most evidence-base treatments emphasize narrative, cognitive-reframing, or memory processing, even though many trauma survivors also need to include some type of somatic therapy into their treatment plan so they can achieve a sense of safety and mastery over their bodies which have become significantly dysregulated as a result of chronic trauma exposure (van der Kolk, 2003; cited in Spinazzola, Rhodes, et al, 2011).

The physical postures and breath practices used in yoga have been shown to help individuals create stillness in the body and mind (Weiss, n.d.). Based on this knowledge, van der Kolk and his colleagues adapted a form of Hatha yoga into a trauma sensitive adjunctive component of intervention for use with complexly traumatized individuals exhibiting chronic affective and somatic dysregulation and associated behavioral, functioning, and health complaints (Spinazzola, Rhodes, et al, 2011). A trauma-sensitive yoga intervention is one such mind–body approach to treatment that has shown a positive impact on the physical and mental well-being of trauma survivors (Emerson, Sharma, Chaudhry & Turner, 2009, cited in Spinazzola, Rhodes, et al (2011). Emerson, Sharma, Chaudhry and Turner explain that through gentle breath and movement, trauma sensitive yoga offers trauma survivors a means to cultivate a more positive

relationship to their bodies and ease many of the symptoms of traumatic stress (2009, cited in Spinazzola, Rhodes, et al, 2011, p. 432).

Bessel Van der Kolk and his colleagues at the Justice Resource Institute have done extensive research on trauma-sensitive yoga with distinct groups of trauma survivors including veterans, women survivors of domestic violence, and youth in residential treatment centres. Spinazzola, Rhodes, et al (2011) note that studies conducted with both adults and youth have shown a decrease in traumatic stress symptoms and an increased capacity for self-regulation after participating in a trauma-sensitive yoga intervention. Reporting on a study that explored the use of yoga with traumatized youth (aged 12-21 years) in residential treatment, Spinazzola, Rhodes, et al (2011) note that based on clinical observations, trauma-sensitive yoga shows promise as a viable means of building self-regulatory capacity in traumatized youth.

Encouraged by the empirical research, yoga studios and yoga-service organizations such as Yoga Outreach in Vancouver, the Niroga Centre in the San Francisco Bay area, and UpRising Yoga in Los Angeles have been teaching trauma-sensitive yoga classes to a variety of at-risk, underserved populations in prisons, youth detention centres, alternative schools in inner city areas, and residential treatment centres. Testimonials from participants and anecdotal evidence of the benefits of trauma-sensitive yoga to their clients reflect the findings in published studies, and many of these yoga organizations are now formally conducting studies and publishing the results in diverse professional journals and publications.

The Niroga Center has published two studies on the positive effects of trauma-informed yoga on at-risk youth and incarcerated youth. Ramadoss and Bose (2010) designed a study to evaluate the effectiveness of the Transformative Life Skills program offered to youth incarcerated at a local juvenile justice hall. Specifically, the study employed a pre- and post-test methodology in order to measure program effectiveness at reducing stress and improving self-control among program participants. The program ran for 18 months, from June 2008 to December 2009, and was administered as a 60-minute class, five days per week. Participants completed baseline tests for perceived stress and self-control. The results indicated small but statistically significant decreases in stress levels and increases in self-control. The results were complemented by qualitative, observational data that indicated participants began to show increased self-awareness and an improved ability to resolve conflict in adaptive ways.

A study by Frank, Bose, and Schrobenhauser-Clonan (2014) evaluated the effects of an alternative school based yoga program on adolescent mental health, emotional distress and attitudes toward violence. Frank et al (2014) explain that the study aimed to assess the effectiveness of Transformative Life Skills—a universal yoga-based social-emotional wellness promotion program—on indicators of adolescent emotional distress, prosocial behavior, and attitudes toward violence in a high-risk sample of 49 students attending an alternative education school in an urban inner-city school district.

Students who participated in the Transformative Life Skills program demonstrated significant reductions in anxiety, depression, and global psychological distress (Frank et al, 2014). Furthermore, students reported significant reductions in rumination, intrusive thoughts, physical arousal; emotional arousal were reported as well. Frank et al (2014) note that students exposed to Transformative Life Skills reported being significantly less likely to endorse revenge-motivation orientations in response to interpersonal transgressions; they also reported overall less hostility than did students in the comparison condition. Frank et al did not see significant improvements in somatization or general affect. Frank et al (2014) contend that the results of

this pilot study provide evidence of the potential for Transformative Life Skills to influence important student social-emotional outcomes among high-risk youth.

The Art of Yoga[14], also located in the San Francisco Bay area, brings trauma-informed and gender responsive programming to incarcerated female youth. Harris and Fitton (2010) explain that the program runs as a year-long, comprehensive yoga and creative arts curriculum that is a mandatory part of the girls' rehabilitation. Although the organization collects empirical data for ongoing research and accountability reporting to its funders, it has not yet published any empirical studies on the effectiveness of its program in reducing trauma and strengthening resiliency.

Street Yoga and Ryther Child Center (Grove & Brady, 2011) undertook a pilot study investigating yoga as an adjunct therapy for youth in a residential treatment centre for chemical dependency and youth with subacute mental health diagnoses. The purpose of the study was (1) to investigate whether youth who attended a yoga intervention (6 – 8 yoga classes, offered once per week) would self-report changes in body awareness and resiliency, and (2) to assess the validity of a research instrument designed for the study. The researchers designed an 18-item Likert Scale and administered the instrument at baseline and at the end of treatment. The study was designed as a one group, pretest-posttest (2011). The authors report that given the very small sample of youth who completed both a pretest and posttest, data analysis was limited and precluded the ability to identify any correlations or causations. However, the authors report that mean scores for the youth in the chemical dependency group increased on most items related to body awareness and emotional regulation, noticing feelings without reacting to them, the ability to stay focused in the present, the ability to calm oneself when upset, the ability to notice body sensations when upset (2011, p 12). The authors contend that their study findings align with van der Kolk's findings that formal mindfulness practices increase awareness of internal sensory stimuli, and allow individuals to increase their ability to navigate stressful events (van der Kolk, 2006, p. 12, cited in Grove & Brady, 2011).

In addition to the trauma-focused treatment frameworks and trauma-sensitive yoga outlined above, several trauma-informed/trauma-sensitive complementary therapies such as Mindfulness-based Stress Reduction (MBSR), have been developed and tested as adjunct therapies for treating individuals experiencing traumatic stress and other concurrent mental health difficulties or substance use disorders. For example, Biegel, Brown, Shapiro and Schubert (2009) conducted a randomized clinical trial to assess whether a mindfulness-based treatment intervention would be effective for adolescents, ages 14 to 18, receiving treatment at an outpatient psychiatric facility. Biegel et al found that "relative to treatment-as-usual control participants, those receiving MBSR self-reported reduced symptoms of anxiety, depression, and somatic distress, and increased self-esteem and sleep quality" (2009, p. 855). Furthermore according to Biegel et al, "the MBSR group showed a higher percentage of diagnostic improvement over the five-month study period and significant increases in global assessment of functioning scores relative to controls, as rated by condition-naïve clinicians. These results were found in both completer and intent-to-treat samples" (2009, p. 855). The findings provide evidence that MBSR may be a beneficial adjunct to outpatient mental health treatment for adolescents.

In a study that sought to determine the feasibility of offering an MBSR program to young offenders in California, Himelstein, Hastings, Shapiro, and Heery (2012) incorporated a qualitative component in order to bring forward the voice of the subjects. The researchers taught

[14] Discussed in more detail in the Gender-Responsive Programs section of this literature review.

an adapted 10-week mindfulness–based intervention with 23 adolescent males in a youth detention centre. Drawing on interview data collected from participants at the end of the last class, Himelstein et al (2012) found four major clusters of themes related to increases in subjective well-being, increases in self-regulation, increases in awareness, and an accepting attitude toward the treatment intervention. The results suggest that adapted mindfulness-based interventions are promising as a complementary treatment intervention with incarcerated youth and that the youth have an accepting attitude toward the treatment intervention.

More recently, mindfulness programs have been used to help individuals in substance use treatment develop relapse prevention strategies (Khanna & Greeson, 2013), and cope effectively with poor sleep quality (Britton et al, 2010) that is associated with substance use and is a risk factor for relapse.
Khanna and Greeson (2013) reviewed three mindfulness-based clinical research programs designed to help substance users with relapse prevention strategies.

The first program Khanna and Greeson (2013) discuss is Mindfulness-Based Relapse Prevention (MBRP) for alcohol and illicit substance abuse. Khanna and Greeson describe this program as “an 8-week, group-based, psychoeducational intervention that combines traditional cognitive-behavioral relapse prevention strategies with meditation training and mindful movement” (2013, p. 247). Khanna and Greeson explain that the primary goal of MBRP is to help patients tolerate uncomfortable states and difficult emotions without automatically reacting by resorting to substance use (2013, p. 248). MBRP is informed by Kabat-Zinn’s standard, 8-week Mindfulness-Based Stress Reduction (MBSR) program, originally developed to help patients with chronic pain or chronic health conditions face stress, pain, and illness with greater awareness, skill, and compassion (Khanna & Greeson, 2013, p. 248). Khanna and Greeson explain that some modifications have been made to the original MBSR program, such as replacing six weeks of Hatha yoga with “mindful movement”, which includes light stretching and other basic, gentle movements and is taught from a trauma-sensitive framework (2013, p. 248). Khanna and Greeson explain that a trauma-sensitive framework means “each movement is guided with physical safety and respect for the body at the forefront, and patients are instructed to stay with the movement as it happening, observing physical sensations of moving and stretching, while also noticing striving, thoughts, and judgments about the body” (2013, p. 248).

Khanna and Greeson report that a recently published study of MBRP with 168 adults with substance use disorders found that MBRP, compared to a treatment-as-usual control group, resulted in significantly lower rates of substance use at 2-month follow-up; furthermore, the study also found that decreased substance use following MBRP could be explained by a weakened association between depressive symptoms and craving (2013, p. 248). Khanna and Greeson contend that “these findings provide empirical support for training in mindfulness meditation and mindful movement in targeting known cognitive-affective risk mechanisms underlying relapse” (2013, p. 248). Based on other research on the pathophysiology of addiction, Khanna and Greeson suggest it is plausible that “meditation and mindful movement or yoga could complement conventional [substance treatment] care by mitigating the highly conditioned chain of cognitive, emotional, and physiological processes known to predict relapse of addictive behaviour” (2013, p. 248). However an important caveat is that meditation between sessions, along with a strong therapeutic alliance between participants and the group instructors, are important predictors of initial increases in mindfulness after the 8-week MBRP program (Khanna & Greeson, 2013, p. 248).

The second mindfulness-based treatment model reviewed by Khanna and Greeson is the Mindfulness Oriented Recovery Enhancement (MORE) program, a 10-session, group-based,

psychoeducational intervention designed by Garland (2010) to disrupt cognitive, affective, and physiological mechanisms implicated in alcohol dependence (2013, p. 249). Khanna and Greeson explain that MORE is adapted from the Mindfulness-Based Cognitive Therapy (MBCT) for Depression treatment manual and has been tailored for addiction: MORE does not include yoga, but it does include other mindfulness meditation practices such as mindful breathing, body scan, mindfulness of perceptions and sensations, mindful walking, and compassion meditation (2013, p. 249).

Khanna and Greeson note that MORE also includes a focus on meditative approaches to coping with cravings (e.g., "urge surfing") as well as education and training about how to identify and skillfully change, or mindfully let be, mental processes, such as suppression or attachment, that are part of alcohol dependence and other forms of addiction (2013, p 249). Khanna and Greeson note that unlike MBSR or MBRP, MORE explicitly addresses spirituality (2013).

Garland et al (2010, cited in Khanna & Greeson, 2013) conducted a pilot random clinical trial (RCT) of the MORE treatment model with alcohol dependent adults in a residential therapeutic community. According to Khanna and Greeson, Garland et al found that compared to an evidence-based support group, the participants who completed the MORE program produced a number of superior outcomes, including reduced stress and thought suppression, increased physiological recovery from alcohol cues indexed by heart rate variability during a laboratory task, and decreased alcohol attentional bias (2010, cited in Khanna & Greeson, 2013, p. 249).

The third clinical research program discussed by Khanna and Greeson is a study on autonomic changes during several distinct forms of ancient yoga meditation. Khanna and Greeson report that "the researcher found the greatest reduction of sympathetic nervous system (SNS) activity and the greatest activation of parasympathetic nervous system (PNS) activity occurred during the state of effortless meditation" (2013, p. 249). Khanna and Greeson (2013) claim this finding is relevant because most mindfulness-based interventions offered today emphasize cultivating receptive awareness and place less emphasis on practicing prolonged periods of deeply focused, single-pointed concentration.

It is unknown whether any of the studies described by Khanna and Greeson (2013) include adolescent substance users; however, the programs may still be applicable—and helpful—to justice-involved youth seeking treatment for substance use disorders, given that the following reviews and studies with adolescents seem promising.

Cohen, Wupperman and Tau (2013) reviewed the available literature on using mindfulness training to reduce or prevent substance use relapses in both adults and adolescents. After providing a detailed description of mindfulness and considering potential mechanisms of how mindfulness works to target substance use disorders (e.g., attention to the present moment facilitates early awareness of negative emotions and urges, which in turn allows for the use of adaptive strategies before unpleasant feelings and thoughts become overwhelming), Cohen et al (2013) conclude that because mindfulness training facilitates the ability to experience and tolerate negative emotions without the need to react, such training could provide a protective factor in youth whose difficulty in tolerating negative mental states makes them susceptible to substance use as a means of dealing with negative feelings and thoughts.

Zoogman, Goldberg, Hoyt and Miller (2014) conducted a meta-analysis of the literature on mindfulness meditation with youth. The results of their analysis showed that while mindfulness interventions with youth in the general population were helpful and did not carry any iatrogenic harm, a significantly larger effect size was found in clinical samples, leading Zoogman et al

(2014) to recommend that future studies on mindfulness interventions with youth should focus on clinical settings in order to establish the efficacy of mindfulness in targeting symptoms of psychopathology.

Himelstein, Saul, Garcia-Romeu and Pinedo (2014) designed a study to investigate how to teach mindfulness to incarcerated youth who were substance users. Himelstein et al acknowledge that while there are a number of evidence-based interventions for young offenders that have been shown to reduce substance use and recidivism—e.g., Multidimensional Family Therapy and Multisystemic Therapy—these treatment protocols require more resources (both financial and professional) than publicly funded youth detention centres and the youths' parents can afford (2014, p. 560). Furthermore, because low-cost substance user interventions (such as Motivational Interviewing) have shown mixed efficacy, at best, with adolescents, there is a need for effective and fiscally sustainable treatment interventions for incarcerated youth who require substance abuse treatment (Himelstein et al, 2014, pp. 560-561). Himelstein et al (2014) used a grounded theory approach (i.e., using qualitative data to develop a theory) to collecting interview data from 10 male youth sentenced to a juvenile detention camp and mandated by the court to undergo substance user treatment. Himelstein et al (2014) note that the mindfulness-based treatment intervention was part of a larger study in which participants were randomly assigned to either a treatment condition where they received mindfulness training as part of individual therapy, or they were assigned to the control condition that consisted only of individual therapy.

The participants in the mindfulness treatment condition were taught six mindfulness-based exercises once a week for 10–15 weeks (Himelstein et al, 2014, p. 562). Semi-structured interviews were administered at the end of the training and sought to elicit feedback on two central research questions related to determining the most effective methods for teaching mindfulness to incarcerated youth and (2) what is the impact of mindfulness meditation on the lives of incarcerated youth (Himelstein et al, 2014, p. 563). Feedback from the youth emphasized the importance of providing a clear explanation of what mindfulness is (and is not) as erroneous preconceptions about mindfulness might deter some youth from taking the training; furthermore, youth offered feedback on the optimal length of time for a meditation (Himelstein et al 2014, p. 564). Participants were also asked about the impact of the mindfulness training on their lives. All of the youth reported enhanced psychological well-being, reflected in an increased ability to self-regulate and relax, take care of the self; six participants reported improved sleep quality as a result of the mindfulness meditation, several participants reported enhanced decision-making, one participant specifically indicated mindfulness might help to reduce recidivism and another participant reported that use of one of the mindfulness techniques helped him to abstain from substance use (Himelstein et al, 2014). While this is a small study sample, the qualitative feedback suggests that mindfulness training as an adjunct to other substance use treatment interventions (e.g., individual or group therapy) for incarcerated young offenders offers hope as a promising practice that is cost effective and able to be delivered in a short space of time.

Britton, Bootzin, Cousins, Hasler, Peck and Shapiro (2010) conducted a study specifically geared to supporting adolescents who were experiencing sleep difficulties following being treated for substance abuse. Britton et al explain that "poor sleep is common in substance use disorders (SUDs) and is a risk factor for relapse" (2010, p 86). The researchers designed a multi-component, mindfulness-based sleep intervention that included a mindfulness meditation (MM) for adolescent outpatients with SUDs (n = 55). The analysis assessed the contributions of MM practice intensity to gains in sleep quality and self-efficacy related to SUDs. Britton et al (2010) report that eighteen adolescents completed a 6-session study intervention and questionnaires on psychological distress, sleep quality, mindfulness practice, and substance

use at baseline, 8, 20, and 60 weeks post-entry. Program participation was associated with improvements in sleep, emotional distress, and reduced substance use. MM practice frequency correlated with increased sleep duration and improvement in self-efficacy about substance use. Increased sleep duration was associated with improvements in psychological distress, relapse resistance, and substance use–related problems. Britton et al contend that these findings suggest sleep is an important therapeutic target in substance abusing adolescents, and that MM may be a useful component to promote improved sleep. (2010, p. 86)

The need for culturally relevant/gender specific treatment programs for justice-involved youth

It is well established in the literature that substance use is a major risk factor for youth offending and youth recidivism (Erickson & Butters, 2005; Dowden, 2004; National Crime Prevention Centre, 2012)—even more so for youth who initiate substance use at a young age (White & Godley, 2003), have histories of chronic trauma exposure (Kerig & Ford, 2014; Layne et al, 2014) and for Aboriginal youth (Sittner, 2016). Given that untreated substance use and mental health disorders (especially when they are concurrent with complex trauma) tend to get worse if not treated (Ford & Blaustein, 2013), getting youth into an appropriate and effective treatment program is crucial.

Gender responsive treatment programs for justice-involved female youth

Le (2012) notes that despite an increasing number of female youth who are being charged with serious offences and being sentenced to custody, there is a paucity of gender-responsive programs available for these adolescent female offenders in the Canadian youth justice system; most of the youth justice services are designed and delivered mainly for boys (Le, 2012; Totten, 2007). While there are some similarities between male and female young offenders—e.g., a strong link between substance misuse and criminal behaviour and a high rate of substance use disorders—adolescent females' developmental pathways into the youth justice system are distinctly different from those of adolescent males (Totten, 2007, 2). Even the most effective treatment programs available may not be appropriate for female youth offenders if such programs do not take these gender-based (and gendered) differences into consideration (Totten, 2007). Totten notes that "whereas therapeutic settings for boys focus on independence and separation ... the foundation of quality programming for girls "is developing a sense of efficacy and empowerment" (2007, p. 3).

Given that many female young offenders have extensive histories of complex trauma, gender-responsive treatment means relating to these youth from a trauma-informed perspective[15], building trust, making sure they feel safe, that their needs in multiple areas of their lives are met and addressed in a holistic manner, and ensuring that programs are strengths-based (Kerig & Ford, 2014). Kerig and Ford suggest that operationalizing gender-responsive programming can occur in two ways: either develop new gender specific interventions for justice-involved girls or develop gender-responsive accommodations to existing evidence-based, trauma-informed treatment programs (Kerig & Ford, 2014).

Traditional treatment and corrections models typically focus on what is lacking or "wrong" with an individual (Harris & Fitton, 2010, p. 114); however, since most female youth offenders struggle with negative self-concepts and poor self-esteem (Le, 2012; Totten, 2007), they would benefit more from being told what is "right" with them and to have their strengths and skills

[15] Harris and Fitton define the term "trauma-informed" as acknowledging the traumatic histories of the youth in every element of [a] program" (2010, p. 114).

affirmed and supported. Strength-based programs are crucial to fostering motivation, internal and external strength, and the skills that support females to cope more effectively (Harris & Fitton, 2010). According to Totten, a strengths-based approach "... builds 'pillows' against the unique risks faced by young women and develops resiliency" (2007, p.1)

Totten (2007, p. 2) identifies numerous paths and activities that ought to be included in strengths-based programming. Specifically, he contends that strengths-based programming should include: (1) opportunities to develop a range of educational and vocational skills, (2) an emphasis on a variety of activities that help to facilitate empowerment, self-respect, and self-efficacy; (3) counselling and education on issues that are relevant to adolescent female offender's lives (e.g., harm reduction approaches to reducing risk behaviours and improving health, parenting education and training); and (4) therapeutic interventions and models that effectively support female youth in processing and healing the adversities that contributed to their difficult lives.

Le (2012) notes that unlike the Canadian youth justice system, a multitude of gender-specific programs for female young offenders have been developed and implemented in the American juvenile justice system since 1992, and identifies several programs that would be both applicable to and effective in Canadian youth justice correctional settings[16]. One such program is Girls' Circle, a strengths-based program that has been implemented in both community and secure (e.g., detention and residential treatment facilities) settings. Roa, Irvine and Cervantez's study of the program's effectiveness found that short-term effects included a more positive body image and increases in expressing verbal affection, while long-term effects included decreased alcohol use and self-harming behaviours and increased self-efficacy (2007; cited in Le, 2012, p. 29). Le notes that Roa et al's (2007) study also found that female youth held in secure settings did not show as much improvement in short-term skills and self-efficacy gains compared to program participants who were not in secure settings; Le speculates that perhaps additional research needs to be undertaken to better understand the experiences of incarcerated female young offenders (2012, p. 29).

A second gender-responsive program discussed by Le is a program from North Carolina known as Holistic Enrichment for At-Risk Teens (HEART), and specifically designed to reduce recidivism and substance use relapse among female youth offenders. According to Le, the HEART program uses gender-specific perspectives such as feminist and relational theories and uses a Bio-Psycho-Social-Spiritual (BPSS) model of addiction that takes into account multiple factors that contribute to substance abuse as well as multiple levels of risk (e.g., biological, societal, developmental, familial) that contribute to criminal behaviour (2012, p. 29). Roberts-Lewis, Welch-Brewer, Jackson, Kirk and Pharr note that the treatment comprises three approaches: therapeutic community, cognitive-behavioural therapy, and a blended educational model (2010, p. 484). The educational model was designed to "integrate academic skills with life skills and social skills and to re-engage girls in the learning process through the use of "individualized, innovative, and gender-specific educational practices" (Roberts-Lewis et al, 2010, p. 484). Le notes that participants in the HEART program improved in their use of social support and peer acceptance (i.e., social functioning), as well as their self-esteem and educational status (2012, p. 29).

Roberts-Lewis et al point out that while the girls in the HEART program showed improvements in problems related to social functioning, they did not demonstrate the same kind of

[16] Le (2012) is focused primarily on programs that would be suitable for violent female youth in secure detention; however, it is likely that many of the community-based programs would be appropriate and applicable for community-based sentences.

improvement in problems related to personal functioning; furthermore because the participants were in custody at the time, changes in behaviours related to substance use were not measured, and the participants were not followed up after they completed their sentences, so it is not known whether the treatment is effective in preventing relapse (2010, p. 490).

A third gender-specific program considered by Le (2012) is a Florida-based program known as PACE (Practical Academic Cultural Education) Center for Girls: a prevention program (offered as a day treatment program) that recognizes the relationship between prior victimization (i.e., a history of trauma exposure) and crime and uses a gender-responsive approach to education, counselling, and career planning as a means of strengthening pro-social, protective factors. According to Le, a program evaluation conducted in 2009/10 found that "for girls who were transitioning in 2007-2008, 93% were not adjudicated nor had adjudication withheld while they were enrolled in the program, 94% had not been adjudicated nor had adjudication withheld within 6 months from the day program, and 91% had not been adjudicated nor had adjudication withheld within 1 year from the day program" (2012, p.30). Le (2012, p. 30) also notes that the program exceeded its academic goals of having at least 25% of the participants back into a mainstream public school (64% were back in mainstream, public schools at the end of the program) and having at least 75% of participants increase their academic functioning (95% met this goal).

Based on her review of several gender-specific programs, Le (2012) concludes that several of these programs would be appropriate gender-responsive program options for female young offenders in the Canadian youth justice system. A program that Le did not consider in her review is the Art of Yoga program used with female young offenders in the San Francisco Bay area. The program is a central part of the girls' rehabilitation and is a year-long program[17] that occurs during school hours; a key feature of the program is its aftercare mentoring program to support girls in their re-entry into their communities (Harris & Fitton, 2010, p. 111). According to Harris and Fitton (2010), the Art of Yoga operates from a gender-responsive approach that seeks to address the participants' unique needs, reflects the participants' realities and acknowledges their developmental pathways into the youth justice system.

Acknowledging that many of the female youth in the program have trauma histories—both as victims of abuse and as witnesses to violence—and grew up in socially disorganized homes and communities, Harris and Fitton explain that the program's Yoga and Creative Arts Curriculum is designed to support the girls in learning self-awareness, self-respect and self-control in order to facilitate better decision-making through a combination of learning the tenets of Patanjali's eight limbs of yoga (e.g., nonviolence to self and others, integrity, contentment), a yoga practice comprised of asanas, breath work, and meditation, and creative arts (Harris & Fitton, 2010). Creative art is used a vehicle for expressing emotions and thoughts and as a safer alternative to acting out through high-risk behaviours (Harris & Fitton, 2010).

Culturally relevant programs for justice-involved Aboriginal youth

Similar to justice-involved female youth, Aboriginal youths' developmental pathways into both substance use disorders and the criminal justice system are also distinct from the paths of justice-involved youth from the dominant culture. While there has been some development of culturally relevant programs for Aboriginal youth in custody, availability seems to vary by

[17] However, according to Harris and Fitton, given that the participants' sentence lengths vary, each class, practice session, and creative arts workshop is designed as an independent unit in order to allow participants to enter or exit the program at anytime and still benefit from the program, even if only for a day or a week (2010, p. 112).

province and by regions within provinces[18]. Aboriginal youth face some additional challenges within the justice system, including experiencing racial discrimination by other youth within the institution, participating in programs that may not be sensitive to the effects of colonization or do not reflect Aboriginal values, and, for many Aboriginal youth, coping with the cognitive, social, emotional, and behavioural challenges that accompany a diagnosis of Fetal Alcohol Spectrum Disorder FASD (FASD)[19]. Programs that are not sensitive to issues of colonization, residential schools and the legacy of intergenerational trauma (McCormick, 2000; McCaslin & Boyer, 2009), or treatment programs that are not appropriately tailored to the development level and functioning of youth with FASD (McLachlan, Wyper & Pooley, n.d.) could be more harmful than helpful to Aboriginal youth.

McCormick (2000) notes that mainstream alcohol/substance abuse treatment approaches have resulted in minimal success, at best, for Aboriginal people, mainly because Aboriginal people either do not use the services, and when they do use such services, they tend to drop out after the first session. The reasons most often cited for not engaging with mainstream treatment programs include (1) a misalignment between Aboriginal people and mainstream treatment providers vis-à-vis value orientations and beliefs about the causes of and solutions for substance abuse (McCormick, 1996, cited in McCormick, 2000); and (2) cultural barriers to treatment such as experiencing embarrassment or shame about admitting to having problems with substance use and a reticence about freely giving trust to a new therapist (Wing & Crow, 1995, cited in McCormick , 2000).

According to McCormick (2000), an increasing number of Aboriginal scholars and healers attribute the prevalence of mental health issues and substance disorders among Aboriginal people and communities to the traumatic disconnection from their traditional cultural values and practices due to forced assimilation policies and practices imposed on them by the dominant culture. It follows, therefore, that reconnecting and re-engaging with traditional practices and values is the appropriate healing/treatment strategy (Coyhis & White, 2002; McCormick, 2000; Gone, 2012; Rowan, Poole, et al, 2004).

Unlike Western approaches to treating substance use disorders that are grounded in an individualistic, biomedical framework, an Aboriginal approach to healing takes a holistic view of wellness, is collectivist in its orientation (i.e., it sees family and community and traditional activities as a significant source of meaning) and is grounded in a spiritual framework that emphasizes attaining and maintaining harmonious connections between the human spirit and the rest of creation—family, community, culture, the natural world, and the spiritual world (McCormick, 2000, p. 27; Rowan, Poole, et al, 2014; Comeau, Stewart, Mushquash, Wojcik, Bartlett, Marshall, Young & Stevens, 2005; Dell, Dell & Hopkins, 2005).

There is some evidence to suggest that connecting with cultural practices and customs acts as protective factor for Aboriginal youth: for example, data from the BC *Adolescent Health Survey* indicate that Aboriginal youth who were learning a First Nations language or otherwise connected with their culture on a regular basis were less likely to use substances (Tourand, Smith, et al, 2016). Furthermore, Comeau et al (2005) found that developing a culturally relevant, early intervention program that revitalized Aboriginal youths' self-esteem and sense of

[18] For example, Smith, Cox et al note that while Aboriginal programs were available at all three youth custody centres in BC, youth who had been in custody in northern BC and the lower mainland, indicated the programs were better at the centre in Prince George (2013).

[19] As noted earlier in this literature review, Smith, Cox, et al (2013) indicated that 36% of Aboriginal youth in custody reported having a diagnosis of FASD.

belonging by focusing on revitalizing their roots—cultivating a sense of pride in their Aboriginal identity, history, culture and language—through creative expression was effective in preventing alcohol abuse among Mi'kmaq First Nations youth in Cape Breton.

Rowan, Poole, et al (2014) conducted a scoping study that reviewed the outcomes and effects of 19 studies on cultural interventions for healing addictions in Aboriginal people found that in 74% of the studies, participants showed increases in all dimensions of wellness (spiritual, mental, physical, emotional) and a reduction or elimination of substance use problems. Rowan, Poole, et al (2014) concluded that cultural interventions appear to be a promising practice for supporting Aboriginal people in healing from substance use disorders; however, they also note that some of the studies had some design problems that made it difficult to assess which element of the intervention was responsible for bringing about change. Furthermore, very few of the studies were specifically focused on youth, so caution in applying the results to youth with substance use difficulties.

One youth-specific program that was included in the Rowan, Poole, et al (2014) scoping study is a national program—the National Native Youth Solvent Abuse (NNYSA) program—that was developed specifically in response to for Aboriginal youth who are addicted to inhalants and need more intensive treatment in a residential treatment centre (Dell et al, 2005. The program has nine centres (and a total of 112 treatment beds) across the country and offers culturally appropriate, therapeutic treatment along with community intervention programming. Dell and Hopkins (2002, cited in Erickson & Butters, 2005) explain that First Nations youth clients can be admitted wherever there is a bed, not necessarily in their region, and travel is paid for the youth and for family visits. Erickson and Butters (2005) note that although these centers are not specifically identified as young offender facilities, 47% in 1999–2000 and 41.5% in 2000–2001 of the national clientele had been involved with the youth justice system, and justice system involvement is included as one of their outcome measures.

In a subsequent publication by Dell, Dell and Hopkins (2005), the authors discuss the program in more detail, particularly the fundamental role that a holistic conception of "resilience" and "spirit" plays in the National Native Youth Solvent Addiction (NNYSA) program's traditional teachings program. Dell et al (2005) also discuss the importance of getting the family and community involved in a youth's recovery process and ensuring that after-care and follow-up are in place in order to help reduce the risk of relapse. Dell et al report (2005) that after implementing a policy that requires primary caregivers to participate in the family portion of the treatment program, rates of family participation increased from 73% to an average of 97%, and by 2003, completion rates increased from 73% to 80%.

In a later publication (2011), Dell and Hopkins report that 50% of youths who completed the program stated they were maintaining abstinent lifestyles at the three-month follow-up and 74% of completers reported abstinence at the six-month follow-up; 54% of youth had returned to school by the three-month follow-up and 84% returned to school six months after they had completed the program; furthermore, 81% of youth had had no criminal justice involvement (2011, cited in Zhou and Reider, 2012).

Another example of an innovative, culturally relevant program for Aboriginal youth in need of substance use treatment is the Punky Lake program, in British Columbia. According to Erickson and Butters (2005), the program is designed to serve two groups of young people—youth at high risk for offending, and adjudicated young offenders. At risk youth staying at the camp are engaged in various activities that foster self-esteem and teach responsibility. According to the Department of Justice (2000; cited in Erickson & Butters, 2005), the camp also runs a 4-month

program specifically targeting young offenders that incorporates a drug and alcohol user counselling component into the general activity structure.

A third example of a culturally relevant program for Aboriginal youth at risk is the Poundmaker's Adolescent Treatment Centre in Alberta. According to Erickson and Butters (2005), the facility targets Aboriginal youth between the ages of 12 and 17 and provides an intensive 3-month substance use program. Erickson and Butters (2005) explain that although it is not a correctional institution, the treatment facility has been designated open custody status, which permits the referral of any young offender with a disposition of probation, open custody, or closed custody and eligible to be changed to temporary release status. According to Erickson and Butters (2005), the program adopts the treatment philosophy that Native clients will respond more positively to specialized treatment embodying Native cultural awareness and emphasizes abstinence philosophies. Citing the organization's website, Erickson and Butters (2005) note that although changing substance use patterns is the primary goal of the program, family reintegration, continued education (classes for 4 hours a day), and addressing mental and physical health issues are also outlined as essential goals to effect change in their lives (http://poundmaker.org/Adolescent.htm).

A First Nations project aimed at helping Aboriginal youth with suspected Fetal Alcohol Spectrum Disorder (FASD) was founded in rural BC. The project, called the Youth Outreach Program (YOP) was established as a three-year intensive outreach and support program for at-risk Aboriginal youth between 13 and 18 years of age. Drawing on the findings and lessons from an external evaluation that used multiple sources of data and methods, Hubberstey, Rutman, and Hume (2014) report that the Youth Outreach Program led to a number of positive outcomes for youth in areas of safety, relationships, school attendance, sexual health, substance use, and knowledge and use of community resources. Furthermore, The Youth Outreach Program made an important contribution in developing and implementing a program model for promoting positive change for highly marginalized youth who display characteristics of FASD and have limited community and family support. This type of program appears to address many of the barriers to treatment and services identified by McLachlan et al (n.d.) and could serve as a model for similar types of outreach services in community or correctional settings.

McCaslin and Boyer caution that "First Nations bring different histories, relationships, cultures, and perspectives to healing" (2009, p. 66); therefore it is important to remember that there is no "one size fits all", magical solution when considering how or whether to implement treatment models that have shown success in one region or sector.

Conclusions

A review of the literature on substance abuse treatment models for adolescents indicates that most treatment interventions produce mixed results at best (Williams & Chang, 2000; Deas &Thomas, 2001), particularly when the treatment models were originally designed for adult substance users. Treatment models that are based on (1) cognitive-behavioural therapy (CBT) and/or (2) multisystemic/family-based therapies that take place in a youth's community appear to produce the best treatment outcomes.

Several studies have shown that psychological trauma and PTSD tend to negatively impact substance treatment outcomes. Given that youth with complex trauma histories comprise a majority of the population of youth detention facilities and residential treatment facilities, an accurate diagnosis and appropriate, trauma-specific treatment is critical to ensuring traumatized youth are equipped with self-regulation skills and adaptive coping strategies that will then support youths' ability to successfully navigate substance treatment interventions.

A growing body of studies shows that trauma-sensitive complementary treatment interventions such as trauma-sensitive yoga (also referred to as trauma-informed) and mindfulness-based stress reduction training are promising practices as adjunct treatments for substance use programs. Furthermore, these programs can contribute to positive treatment outcomes and can be delivered over a relatively short time frame. More formative research needs to be conducted and published in order to provide guidelines and best practices regarding the design of programs that are developmentally appropriate (and enticing) for justice-involved and at risk youth.

It is also important to take into account and provide appropriate, effective services for specific subgroups of justice-involved youth, namely females and Aboriginal youth. As noted in the body of the literature review, each of these groups has unique developmental paths into substance abuse and the youth justice system, but often existing programs, developed for male youths of the dominant culture, are not well suited to adequately meeting the needs of female and Aboriginal youth.

While a number of culturally relevant substance treatment programs have been developed for Aboriginal youth in the Canadian youth justice system, fewer gender-specific or gender-responsive treatment programs have been developed for adolescent females in the youth justice system. Both types of programs are considered most beneficial when they are strength-based and help to build resilience. More formative and evaluation research studies are needed to guide the development of gender-responsive and culturally-responsive treatment programs that can be manualized and readily implemented in a variety of community-based or institutionally-based settings.

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