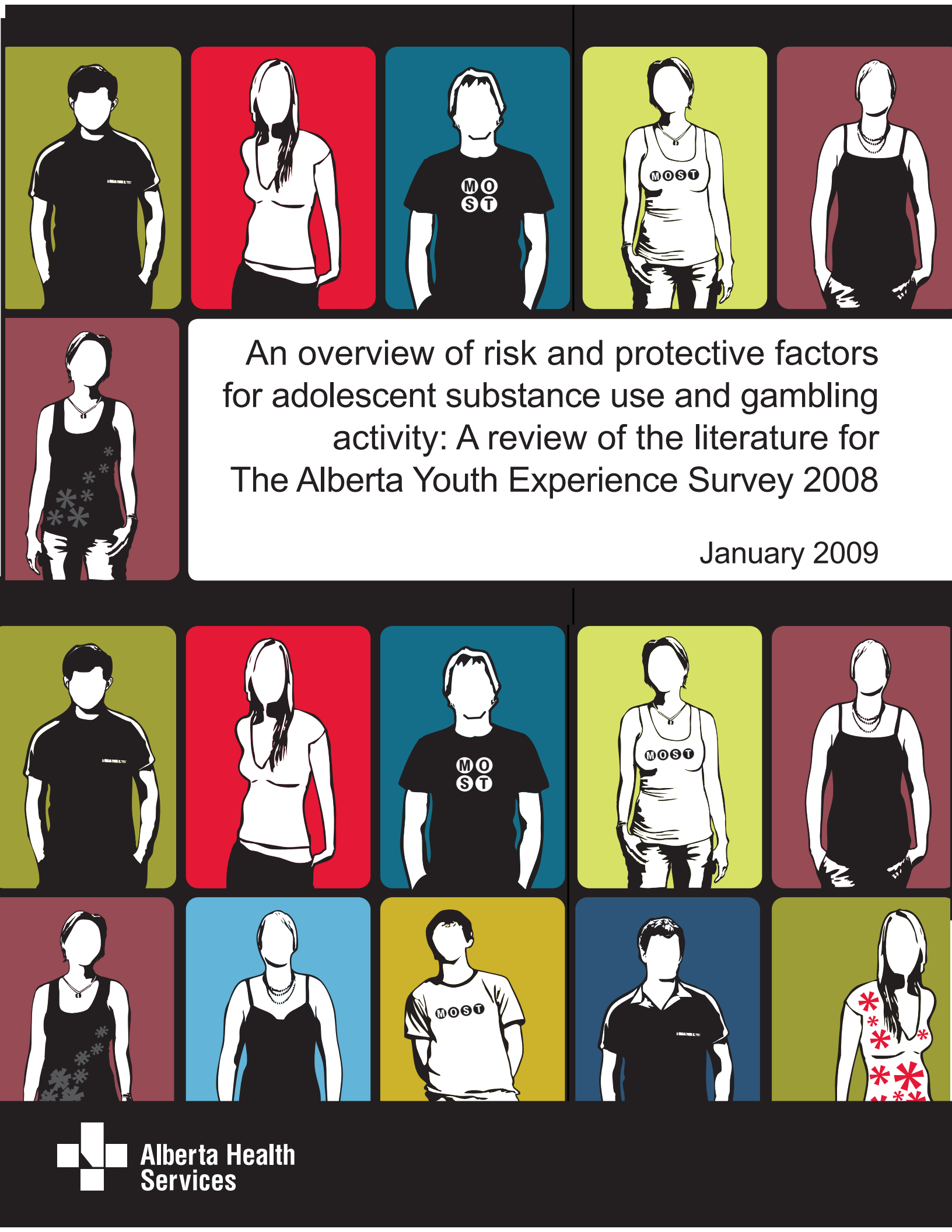


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On April 1, 2009, AHS brought together 12 formerly separate health entities in the province: nine geographically based health authorities (Chinook Health, Palliser Health Region, Calgary Health Region, David Thompson Health Region, East Central Health, Capital Health, Aspen Regional Health, Peace Country Health and Northern Lights Health Region) and three provincial entities working specifically in the areas of mental health (Alberta Mental Health Board), addiction (Alberta Alcohol and Drug Abuse Commission) and cancer (Alberta Cancer Board).



An overview of risk and protective factors
for adolescent substance use and gambling
activity: A review of the literature for
The Alberta Youth Experience Survey 2008

January 2009

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Alberta Health Services—Alberta Alcohol and Drug Abuse Commission

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Executive summary

The purpose of this literature review is to offer a framework for The Alberta Youth Experience Survey (TAYES) 2008 and to provide addiction services staff and allied professionals with up-to-date information on risk and protective factors within the field of youth substance use and addiction. To assist in the interpretation of TAYES 2008 results, this report presents an up-to-date summary of peer-reviewed literature examining the risk and protective factors associated with use and abuse of alcohol, tobacco, other drugs and gambling (ATODG). This document can be used to support evidence-based strategies within the youth substance use and addiction field.

Risk factors are defined as life events or experiences that are associated with increases in problematic behaviour (e.g., substance use or problem gambling). As the number and severity of risk factors increase, the likelihood of participating in problematic behaviour increases. Protective factors are the life events or experiences that mitigate the effects of risk factors and reduce the likelihood of problematic behaviour. Protective factors increase resiliency, which is the ability to overcome adversity.

The risk and protective factor framework used in this literature review was developed by Hawkins, Catalano and Miller (1992). The framework organizes risk and protection factors by environmental context, namely intrapersonal (individual), interpersonal, school and community domains (also addressing interaction within and between domains). In this report, therefore, risk and protective factors that interact to influence the use and abuse of ATODG by youth are most often organized into the four broad categories, intrapersonal, interpersonal, school and community.

Intrapersonal risk and protective factors for ATODG use by youth include age, gender, personality and mental health. Intrapersonal risk factors for ATODG use by youth include young age of first use, male gender, impulsivity, pessimistic attitude, antisocial behaviour patterns, low motivation, perception of ATODG use as having positive outcomes, and presence of mental illness. The presence of one or more of these risk factors increases the likelihood of developing dependence or addiction in adulthood. Intrapersonal protective factors include the absence of risk factors and the ability to self-regulate, cope, interact in a socially appropriate manner and set and attain healthy life goals. These skills are all necessary for developing and maintaining resiliency.

During adolescence, relationships with parents, family and friends are the most significant interpersonal risk and protective factors for ATODG use. Parental substance abuse or problem gambling behaviour, neglectful or ambivalent parenting styles, family violence, mental illness in one or both parents, and affiliation with deviant peers are all interpersonal risk factors for ATODG use. Resilience is fostered when a child who lives in a home in which one or more parent abuses substances has a positive role model (e.g., relative, teacher, coach, or leader outside of their home environment) who encourages

non-use. Interpersonal protective factors include parental engagement, parent-youth bonding, family bonding, open communication within family, regular family dinners and friendships within peer groups with positive values.

North American youth spend the majority of their time in school, an environment that can greatly influence the likelihood of youth participating in ATODG use. Risk factors in the school environment include poor individual social skills, affiliation with deviant peers, weak academic achievement, and school climates that have few behavioural and academic expectations for their students (e.g., tolerance of ATODG use by students during school hours and on school property, irregular school attendance and lack of expectations among student body and staff that students will pursue post-secondary education). Protective factors within the school environment, include school bonding (i.e., attachment to teachers, peers and school), high academic expectations of students, presence of educational resources to nurture and support learning, involvement of students in decisions that affect their school and non-tolerance and de-normalization of ATODG use within the school environment.

Role models, opportunities and recognition for community involvement, neighbourhood and community resources, media and public policy are all aspects of the community environment that offer the opportunity to increase protection and decrease risk. Youth are less likely to take part in ATODG use when one or more positive role models within a community spend time with youth and teach them the necessary skills to lead a healthy life; opportunities exist for youth to take part in positive, constructive community activities; neighbourhoods are free from the production and sale of drugs; community members are motivated and continually set and achieve life goals; and communities support prevention and education efforts related to ATODG use by youth. Furthermore, youth are less likely to use substances when local, provincial and federal policies exist that prevent and de-normalize ATODG use by youth.

Intrapersonal, interpersonal, school and community risk and protective factors help identify risk for ATODG use during adolescence, and also identify opportunities to develop resilience. Risk and protective factors outlined in this review are similar for substance use and gambling behaviour, and many other social and behavioural problems experienced during adolescence (e.g., teen pregnancy, early school drop-out, criminal activity and deviant behaviour). Therefore, it is socially and economically beneficial to create and implement integrated strategies and resources that decrease risk and increase resilience for ATODG use and other potentially harmful behaviour.

Introduction and background

In 2002, the Alberta Alcohol and Drug Abuse Commission (AADAC) initiated The Alberta Youth Experience Survey (TAYES) to provide a benchmark of current and relevant information measuring use of alcohol, tobacco and other drugs and gambling (ATODG) by Alberta's adolescents. This survey also collected information on the risk and protective factors associated with ATODG use. The results were disseminated through a series of information sheets and published reports that are available on the website <http://aadac.com>.

The second cycle of TAYES occurred in 2005 in partnership with the University of Alberta's Addiction and Mental Health Research Laboratory. The 2005 survey measured ATODG use and associated adolescent attitudes, perceptions and social networks. In 2005, 3,915 Alberta youth in grades 7 through 12 participated in the survey.

In 2008, the third cycle of TAYES occurred.¹ The 2008 survey measured substance use and gambling behaviour, and associated risk and protective factors. Approximately 3,469 adolescents participated in the survey. To assist in the interpretation of TAYES 2008 results, this report presents an up-to-date summary of peer-reviewed literature examining the risk and protective factors associated with ATODG use and abuse. This document can be used to support evidence-based strategies within the youth substance use and addiction field.

The risk and protective factor framework used in this literature review was developed by Hawkins, Catalano and Miller (1992) and organizes risk and protection factors by environmental context. The framework organizes factors into intrapersonal, interpersonal, school and community domains and also addresses interaction within and between domains. Research studies often use these domains when examining predictors of health and behaviour in youth. These categories also guide prevention and intervention strategies, especially for at-risk youth. For example, based on the risk and protective factor framework, Hawkins and Catalano developed the Communities That Care system (CTC), which includes a research foundation that provides prevention materials and implements evidence-based strategies that allow "communities to use advances from prevention science to guide their prevention efforts" (Substance Abuse and Mental Health Services Administration [SAMHSA], 2007a).

¹ During the administration of TAYES, the creation of Alberta Health Services (AHS) was announced. Subsequently all TAYES 2008 reporting will be conducted by AHS.

Methods

PsycINFO, MEDLINE and PubMed databases were searched using a combination of the following search terms: “risk factors,” “protective factors,” “addiction,” “gambling,” “alcohol use,” “alcohol abuse,” “drug use,” “drug abuse,” “substance use,” “substance abuse,” “youth,” “adolescent,” and “adolescence.” The literature search yielded thousands of articles, about 62 of which are cited in this literature review. Google and Google Scholar were used to gather information from government and other credible websites and a library search was conducted to gather books related to the risk and protective factors associated with ATODG use by youth. All articles cited in this review were written in the English language and preference was given to recent articles published from 2002 to 2007.

Literature review

Since the publication of TAYES 2002, thousands of studies on the risk and protective factors associated with adolescent alcohol, tobacco and other drug use and gambling activity (ATODG) have been published. The majority of these publications describe risk and protective factors using four broad categories: intrapersonal, interpersonal, school and community (Harbin & Murphy, 2006). Recognizing that risk and protective factors interact both within and between these categories, this categorization takes into account that human development is a process that occurs along a pathway within a set of embedded social systems (Randolph, 2004).

Risk factors refer to the circumstances associated with problematic behaviour (e.g., ATODG abuse) (Mayes & Suchman, 2006; Hawkins et al., 1992). Conversely, protective factors are not only the absence of risk factors but include the circumstances that decrease the likelihood of engaging in health-damaging and harmful behaviour. Rather than just being the inverse of risk factors, protective factors are the life events or experiences that lessen the exposure to risk factors (Wolfe & Mash, 2006) and increase the development of resilience (Harbin & Murphy, 2006). Resilience, according to Wolfe and Mash (2006), is the dynamic process that develops over time to minimize or protect youth from the harmful effects of ATODG use and abuse.

The study and application of risk and protective factors research recognizes individual uniqueness, as each person has an individual set of circumstances (e.g., biological, psychological, environmental) that change over time (Galanter, 2005). Trends in risk and protective factors research emerge when studies examine many diverse adolescent populations and are able to find relationships or links among ATODG use and non-use in certain circumstances and over specific time frames (Secades-Villa, Fernandez-Hermida, & Vallejo-Seco, 2005; Tolan, Szapocznic & Sambrano, 2007).

Literature currently supports two major trends. First, there is a greater likelihood of participation in problematic behaviour (e.g., ATODG abuse) as the number and severity of risk factors accumulate in relation to protective factors (Harbin & Murphy, 2006; Randolph, 2004). Second, some risk and protective factors may have a greater impact than others depending on a youth's developmental stage. For example, during adolescence, friends, family and social relationships greatly influence the initiation of ATODG use (Mayes & Suchman, 2006). These trends, along with others profiled in this literature review, provide the basis for evidence-based prevention and intervention strategies (Tolan et al., 2007).

Intrapersonal factors

Intrapersonal factors are those related specifically to the individual, such as age, gender, personality and mental health.

Age

The earlier the age of initiation into substance use, the greater the likelihood of developing substance dependence in adulthood. One explanation for this finding is that youth who begin using alcohol or drugs at earlier ages have a greater likelihood of being exposed to other drugs (Mayes & Suchman, 2006). For example, youth who start drinking alcohol before the age of 14 are 40% more likely to develop a substance use disorder in their teens or early adulthood than are youth who delay their use of alcohol until high school (Mayes & Suchman, 2006; Oman et al., 2004). Similarly, Wolfe & Mash (2006) found that youth who use marijuana before the age of 15 are nearly five times (11.8%) more likely to develop dependence than are youth who first use marijuana after the age of 17 (2.1%). The same research group also found that early onset of alcohol and marijuana use is predictive of binge drinking (Mayes & Suchman, 2006).

Illicit drug use tends to peak in the late teens and then decline in early adulthood (i.e., the twenties) (Liddle & Rowe, 2006). This trend likely occurs because illicit drug use is inconsistent with North American social norms of what society considers “grown-up” behaviour (Novins & Baron, 2004). Abstaining from alcohol, tobacco and marijuana during adolescence serves as a protective factor against initiating illicit drug use during adulthood (Liddle & Rowe, 2006). Therefore, if substance use is not initiated during adolescence, this behaviour is less likely to occur later in life (Bryant, Schulenberg, O’Malley, Bachman & Johnston, 2003).

According to Magoon and Ingersoll (2006), children as young as eight years old have received a diagnosis of pathological gambling. As with substance use, the younger a child initiates gambling behaviour, the greater the likelihood of developing problem gambling behaviour during adolescence and adulthood (Felsher, Derevensky & Gupta, 2004).

The gateway or stage theory (Kandel & Yamaguchi, 1993) suggests that the use of a specific class of substance (e.g., legal substances such as alcohol and tobacco) is necessary for the progression to the next class of substances (e.g., marijuana, then other illicit drugs, then cocaine and crack); however, not all users follow this progression (Novins, Beals & Mitchell, 2001). For example, in a sample of more than 2,000 youth aged 14 to 20 years old, those who reported marijuana or inhalant use (versus youth who reported alcohol use only) were more likely to progress to other illicit drugs (Novins & Baron, 2004). However, when these youth were separated by gender, culture and type of substance used, youth who reported using three or more types of substances (e.g., alcohol, marijuana and other illicit drugs) did not follow the substance use path provided by the gateway theory (Novins et al., 2001). There is a steady increase in likelihood of using heavier drugs for 4.5 years after youth first use alcohol, marijuana or inhalants; the likelihood decreases after this critical period.

Gender

Males are at a greater risk for initiating substance use, developing substance use disorders and participating in gambling (Liddle & Rowe, 2006; Walker, Mason, & Cheung, 2006; Knyazev, 2004); however, this gender disparity is lessening (Bukstein, 2005; Canadian Centre on Substance Abuse [CCSA], 2007). Johnston, O'Malley, Bachman and Schulenberg (2003) speculate that this gap is narrowing because girls tend to date and emulate older boys, who are more likely to use substances because of their age group.

There may be gender-related differences in preference for certain types of substances. For example, one study found that among students in grades 8 and 10, males reported greater past-year marijuana use, whereas females reported greater use of amphetamines, inhalants and tranquilizers. Males and females reported similar rates of use with respect to the following specific drugs: lysergic acid diethylamide (LSD), cocaine, crack, heroin, Ritalin®, Rohypnol® and gamma-hydroxybutyrate (GHB) (Johnston et al., 2003).

Male youth are more likely than female youth to report gambling. Males are more likely than females to engage in heavy gambling, display more symptoms of pathological gambling and lose more than 100 dollars on games of chance (Adlaf, Paglia-Boak, Beitchman, & Wolfe, 2006; Desai, Maciejewski, Pantalon, & Potenza, 2005). Males tend to start gambling at an earlier age and participate in a wider variety of gambling venues (e.g., playing cards or dice, betting on sports pools, engaging in video gambling, or Internet betting); whereas female youth gamblers tend to purchase more draw or scratch tickets (Adlaf et al., 2006; Desai et al., 2005; Felsher et al., 2004).

Personality

Haley and Baryza's maturation theory of substance use (1990) describes the initiation of substance use in childhood as a result of a child's "difficult temperament" (e.g., arrhythmicity,² inflexibility and distractibility) and a stressful or adverse home environment. Children who experience these circumstances use substances to regulate their affect and behaviour (Wolfe & Mash, 2006). In one study examining the association between emotion and substance use, Mayes and Suchman (2006) found that "pessimistic youth"³ used more substances than youth who reported more positive emotion. Furthermore, as the "pessimistic youth" used fewer substances, they reported greater positive emotion and less negative emotion (Mayes & Suchman, 2006). Stressful life events are considered a risk factor for substance use during adolescence (Hoffman & Cerbone, 2002). For example, adolescents who reported stress from the termination of relationships (e.g., break-ups), an automobile accident, or an academic failure reported using more substances following these stressful events than during situations where they experienced

² Arrhythmicity refers to the non-cyclical nature of a child's sleep-wake cycles, eating times and other behaviour that typically follows a pattern or cycle (Weiner, Freedheim, Gallagher, Schinka, Nelson, Velicer et al., 2003).

³ In this study, Mayes and Suchman (2006) defined pessimistic youth as those who displayed more negative emotion.

less stress (Wolfe & Mash, 2006). These findings support the notion that youth use substances as a coping mechanism.

Other personality factors associated with substance use are early onset of conduct disorder,⁴ sensation-seeking, lack of impulse control or disinhibition, aggression, antisocial patterns and social withdrawal (Wolfe & Mash, 2006; Mayes & Suchman, 2006; Walker et al., 2006). Impulsivity is a risk factor for alcohol abuse by adolescent females, whereas for adolescent males, impulsivity is associated with illicit drug use (Barnes, Welte, Hoffman, & Dintcheff, 2005). Low self-esteem, low career aspirations and weak academic motivation are risk factors for substance use (Van den Bree & Pickworth, 2005). Like adolescents who use substances, adolescent problem gamblers tend to be impulsive, excitable, anxious and extroverted in nature (Kaufman, 2004). Adolescent gamblers are more likely to be risk-takers and have poor coping skills (Delfabbro, Lahn, & Grabosky, 2006).

Extroversion has also been associated with increased risks for substance use and gambling; however, when extroverted youth have strong relationships with their parents, this association does not exist (Van den Bree & Pickworth, 2005). Therefore, a strong relationship with their parents serves as a protective factor against ATODG use.

The progression from substance use to substance abuse is more likely to occur when youth perceive their substance use as a positive experience. For example, youth are more likely to use substances when they perceive their substance use increases social confidence, cognitive functioning and motor performance (Wolfe & Mash, 2006; Secades-Villa et al., 2005).

Resilience

A key feature of resiliency is the ability to cope actively with changes in circumstance (AADAC, 2002a); therefore, most intrapersonal protective factors for ATODG use are innate and learned coping behaviour (AADAC, 2002b). Protective factors against the initiation of substance use include positive temperament (i.e., thinking, behaving and reacting in a way that is cheerful and sociable), ability to self-regulate, social competence, low risk-taking and negative expectations of substance use (Tolan et al., 2007; Wolfe & Mash, 2006; Beyers, Toumbourou, Catalano, Arthur, & Hawkins, 2004). Resilient youth tend to have higher self-esteem, self-efficacy and competence and to set long-term realistic educational goals (AADAC, 2002b). In a retrospective sample of adults who, in their youth, had parents who abused substances, those who were more goal-oriented, used education or work opportunities to move away from their substance-abusing parents and reported feeling in control and capable of creating a life free from the harmful effects of substance use were less likely to use and abuse substances in their youth and adulthood (Wolfe & Mash, 2006). Resilient youth whose

⁴ According to the DSM-IV-TR, the essential feature of a diagnosis of conduct disorder is a persistent pattern of behaviour that violates the basic rights of others or is inconsistent with major age-appropriate social norms (American Psychiatric Association, 2000).

parents abuse or abused substances are better able to deal with change, solve problems, and remain hopeful for a brighter future (Harbin & Murphy, 2006); youth who become disengaged, aggressive or avoidant when life's challenges arise are more likely to use ATODG. Furthermore, resilient youth believe they can and are able to recover from adversity and actively cope (e.g., by gathering information, considering alternatives and remaining positive) with life stress (Anderson, Ramo & Brown, 2006).

Mental health

There is a strong relationship between ATODG use and mental health issues among youth (Rowe & Liddle, 2006). ATODG use and mental health disorders frequently co-exist (e.g., experiencing alcohol dependence and depression at the same time). For example, in a community sample of 1,507 adolescents from the ages of 14 to 18 years, about two-thirds (66%) met the criteria for substance use disorder⁵ and at least one other Diagnostic and Statistical Manual (DSM)⁶ clinical disorder (Lewinsohn, Rohde & Seeley, 1995). Other studies suggest that 64% to 90% of adolescents seeking substance abuse treatment are diagnosed with a DSM disorder before they enter treatment (Mayes & Suchman, 2006). Youth with co-existing substance use problems and mental health issues are often diagnosed with disruptive behaviour disorders (e.g., oppositional/defiant disorder,⁷ conduct disorder,⁸ and attention-deficit/hyperactivity disorder⁹) and mood disorders (e.g., major depression or bipolar disorder¹⁰) (Bukstein, 2005). According to Jaycox, Morral and Juvonen (2003), the three most reported psychiatric disorders among adolescents seeking substance abuse treatment are conduct disorder, major depression and attention deficit disorder. In females, the most frequently reported disorder is major depression, followed by post-traumatic stress disorder¹¹ (usually in addition to depression). Young males are more likely to present with conduct and attention problems in addition to their substance use.

⁵ According to the Diagnostic and Statistical Manual-IV-Theory Revised (DSM-IV-TR), substance use disorders are classified as substance dependence (i.e., collection of cognitive, behavioural and physical symptoms that indicate a person continues to use substances despite significant problems associated with repeated use) and substance abuse (i.e., maladaptive use of substances repeatedly over 12 months or more despite significant adverse consequences related to use) (American Psychological Association, 2000).

⁶ The Diagnostic and Statistical Manual of Mental Disorders (DSM) is published by the American Psychological Association and is a handbook for mental health professionals listing different categories of mental disorders and the criteria for diagnosing each. It is used internationally by clinicians, researchers, insurance companies, pharmaceutical companies and policy makers (American Psychological Association, 2000).

⁷ According to the DSM-IV-TR, the essential features of oppositional defiant disorder are a "re-occurring pattern of negativistic, defiant, disobedient and hostile behaviour toward authority figures that persists for at least 6 months" (American Psychological Association, 2000, p. 100).

⁸ According to the DSM-IV-TR, the essential features of conduct disorder are a "repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms or rules are violated" (American Psychological Association, 2000, p. 93).

⁹ According to the DSM-IV-TR, the essential features of attention-deficit/hyperactivity disorder "is a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequently displayed and more severe than is typically observed in individuals at a comparable level of development...some symptoms that cause impairment must be present before age seven...impairment from the symptoms must be present in at least two settings (e.g., at home and at school or work)...there must be clear evidence of interference with developmental functioning" (American Psychological Association, 2000, p. 85).

¹⁰ These disorders will be described and explained further under their respective headings in this section.

¹¹ According to the DSM-IV-TR, the essential features of post-traumatic stress disorder are the person is exposed to threat of injury to self or others, the person reacts with fear or horror, the event is re-experienced after it has occurred several times, the person avoids situations or stimuli that are associated with the traumatic event, arousal symptoms are present that were not present before the fearful event occurred, the person experiences disturbance for more than one month after the event and the disturbances affect activities of daily living (DSM-IV-TR, 2000).

Youth who abuse substances and struggle with mental health issues typically have more risk factors (e.g., more problems with their family, school and community) and have more difficulty quitting their substance of choice than youth who abuse substances but do not struggle with mental health issues. For example, youth with mental health issues who attended substance abuse treatment were more likely to continue using marijuana and hallucinogens and engage in delinquent behaviour after completing substance abuse treatment than were youth who completed the same substance use treatment plan and were not diagnosed with mental health disorders (Bukstein, 2005). Research examining the directionality of the relationship between substance use problems and mental health problems suggests that the relationship is bidirectional; that is, ATODG use may be a factor associated with the escalation of mental health issues, or mental health issues may be associated with an escalation of ATODG activity (Wolfe and Mash, 2006; Siewert, Stallings & Hewitt, 2003).

Youth who begin gambling before the age of 10 are more likely to experience poor mental health and be involved with the criminal justice system than their non-gambling peers (Duhig, Maciejewski, Desai, Krishnan-Sarin & Potenza, 2007; Desai et al., 2005). Furthermore, gambling youth have a greater risk of developing alcohol or other drug addictions than non-gambling youth have (Gerdner & Svensson, 2003).

Depression¹²

According to SAMHSA (2007b), youth diagnosed with depression are more likely to initiate alcohol and drug use in their adolescence. For example, youth who experienced depression were twice as likely (29.2%) as youth not experiencing depression (14.5%) to have taken their first drink of alcohol in the year prior to the survey (Bukstein, 2005). Of young adults aged 18 to 25 years, those who had experienced depression within the previous year were more than twice as likely to initiate illicit drug use than were young adults who had not experienced depression within the previous year (SAMHSA, 2007b). In another study, 16.1% of youth who experienced depression within the previous year reported using illicit drugs versus 6.9% of youth who did not report depression (SAMHSA, Office of Applied Studies, 2007). One study found that in clinical samples of adolescents seeking treatment for their substance use, from 24% to over 50% were also experiencing depressive disorders (Bukstein, 2005).

Youth who experience both depression and problems related to substance use are more likely to have poor coping skills, more conflicts with parents and guardians, poor academic achievement and low academic motivation. For female youth, depression is associated with higher levels of binge drinking, especially after a negative life event (e.g., the death of a parent before the age of 15) (Sydow, Lieb, Pfister, Hoffer & Wittchen, 2002; Pirkle & Richter, 2006). Furthermore, female youth who use substances and are depressed

¹² According to the DSM-IV-TR, the essential features of major depression are at least two weeks of irritable mood and loss of interest in nearly all activities (American Psychological Association, 2000). For a more detailed discussion of the diagnosis of depression, refer to the DSM-IV-TR.

tend to move more rapidly from initial substance use to substance abuse or dependence, versus young females who use substances and are not depressed (Henry, Slater, & Oetting, 2005).

Chronic substance use is a factor in the development of depression. Youth who use substances are at an increased risk for suicidal behaviour such as suicidal ideation, suicide attempts and completed suicide (Bukstein, 2005). The majority of suicides committed by youth are substance-related; one study that examined adolescent post mortem case files found that almost 75% were alcohol- or drug-related (Mayes & Suchman, 2006).

Youth who gamble are more likely to report one or more negative life events prior to their gambling behaviour and report more suicidal ideation and attempts than non-gambling youth do (Gupta, Derevensky & Margot, 2004). Although youth who gamble are more likely to experience depression than non-gambling youth, female youth gamblers are at a greater risk for experiencing depression during their lifetime than male youth gamblers (Desai et al., 2005).

Anxiety disorders¹³

The prevalence of anxiety disorders co-occurring with substance use by youth ranges from 7% to 40% in the literature (Bukstein, 2005). Specifically, social phobia¹⁴ and agoraphobia¹⁵ typically precede substance use, whereas panic disorder¹⁶ and generalized anxiety disorder¹⁷ typically follow the onset of substance abuse. According to Mayes and Suchman (2006), the combination of anxiety and chronically stressful living environments (with or without the diagnosis of antisocial personality disorder¹⁸) increases the risk of developing substance abuse in later life. Adolescents who experience anxiety manifested as shyness in addition to aggressiveness are at a greater risk for initiating cocaine in early adulthood (Mayes & Suchman, 2006).

¹³ Anxiety disorders are a group of disorders that affect behaviour, thoughts, emotions and physical health. (American Psychological Association, 2000). For more details, see the DSM-IV-TR.

¹⁴ According to the DSM-IV-TR, the essential features of social phobia are that the person has an excessive fear of one or more social or performance situations when she or he encounters unfamiliar people or scrutiny from others, the person recognizes that the fear associated with the social situation is unreasonable, the feared social situation causes anxiety or a panic attack, the avoidance of the feared social situation interferes with daily living and relationships, and the fear or avoidance of social situations cannot be explained by substance abuse or a medical condition (American Psychological Association, 2000).

¹⁵ According to the DSM-IV-TR, the characteristics of agoraphobia are: marked anxiety about situations or places where escape may be difficult or help may not be accessible in an emergency situation arises (e.g., being alone outside or traveling in a plane), avoidance of anxiety-provoking situations or situations are endured with marked anxiety and distress, the anxiety or phobia is not accounted for by a medical condition or other mental disorder (American Psychological Association, 2000).

¹⁶ According to the DSM-IV-TR, the diagnosis of panic attack requires that four of 13 somatic or cognitive complaints are present during the time of the intense fear, which occurs in the absence of real danger; the panic attacks occur unexpectedly; one month after the panic attack there is a continued concern about having more panic attacks; there is worry over the implication of the panic attack (e.g., having a heart attack); a change in behaviour results from the panic attacks; the panic attacks are not explained by a medical condition, substance use, or another mental disorder (American Psychological Association, 2000).

¹⁷ According to the DSM-IV-TR, the essential features of generalized anxiety disorder are excessive worry and anxiety about many activities of daily living occurring more days than not for at least six months, the worry is not controllable, the presence of three or more physiological complaints, the worry is not centralized to specific situations and cannot be explained better by other anxiety disorders, the worry causes impairment in daily routine and functioning and the disturbance cannot be explained by substance abuse, medical conditions, or other mental disorders (American Psychological Association, 2000).

¹⁸ The diagnosis of antisocial personality disorder is indicated by the persistent pattern of disregard or violation of others' rights since the age of 15. At least three of the seven characteristic patterns of behaviour must be present, which include breaking the law, deceitfulness, impulsivity, aggressiveness or irritability, lack of fear for the safety of others and self, financial or occupational irresponsibility and lack of remorse (American Psychological Association, 2000)

Conduct disorder¹⁹

Of the disruptive disorders, conduct disorder is the most commonly diagnosed psychiatric disorder among youth who use substances; an estimated 50% to 80% of youth attending substance abuse treatment display characteristics associated with conduct disorder (Bukstein, 2005). Conduct disorder is associated with earlier onset of substance dependence and is found to both precede and accompany substance use. According to Mayes and Suchman (2006), children diagnosed with conduct disorder along with aggression and attention problems are at greatest risk for initiating substance use. For example, children diagnosed with both conduct disorder and attention deficit hyperactivity disorder (ADHD)²⁰ used as much as five times more alcohol and cigarettes than children with ADHD alone did. They also found that female youth with conduct disorder who abused substances (versus male youth with the same diagnosis) were more often addicted to nicotine, initiated drinking at a later age and were more likely to run away from their families (Mayes & Suchman, 2006).

Eating disorders²¹

Eating disorders are linked with ATODG use. One study, using data from the 1997 Ontario Student Drug Use Survey, found that both male and female binge eaters are more likely to use all types of substances, particularly cannabis and other drugs. Furthermore, binge eating was associated with more frequent and harmful substance use and with lower self-esteem and more depression (Ross & Ivis, 1999).

Poor body image is also linked to substance use. Girls with poor body images (e.g., who view themselves as overweight, wish to lose weight, and engage in unhealthy dieting behaviour such as fasting, consuming diet pills or laxatives, or binge eating and purging) drink more alcohol than girls with positive body images who think they are of a healthy weight (Bukstein, 2005). One study found that female youth with eating disorders were more than two times as likely to engage in binge drinking as their healthier counterparts (Pirkle & Richter, 2006).

Protective factors and mental health

Psychological well-being (e.g., high self-esteem, self-efficacy,²² coping ability and absence of psychopathology) is considered a protective factor against ATODG use (Wolfe & Mash, 2006; Gupta et al., 2004; Knyazev, 2004). According to Zubin and Spring's 1977 stress vulnerability model, individuals have unique biological, psychological and social elements that provide coping abilities for dealing with stress (Petersen & Kellam, 2005). This model suggests

¹⁹ According to the DSM-IV-TR, the essential feature of conduct disorder is a repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate social norms or rules are violated (American Psychological Association, 2000).

²⁰ The essential features for a DSM-IV-TR diagnosis of ADHD include a persistent pattern of inattention or hyperactivity-impulsivity that is more frequently displayed and more severe than is typically observed in individuals at a comparable level of development. Some impairment from the symptoms must be present in at least two environments (e.g., school and home) and there must be clear evidence of interference with developmentally appropriate social, academic, or occupational functioning (American Psychological Association, 2000).

²¹ According to the DSM-IV-TR, eating disorders are characterized by severe disturbances in eating behaviour. Anorexia nervosa is the refusal to maintain a minimally normal body weight and bulimia nervosa is characterized by repeated episodes of binge eating followed by inappropriate compensatory behaviours such as self-induced vomiting (American Psychological Association, 2000).

²² Self-efficacy refers to a person's perception of control over events that affect their life (Pajares, 2004).

life stress should be considered in addition to risk and protective factors and states that active coping (e.g., where problems are dealt with assertively, without avoidance or denial) is associated with lower rates of developing substance dependence (Anderson et al., 2006). One study with young offenders found that fewer psychiatric diagnoses along with high academic achievement and social competence predicted less alcohol and marijuana use five years after substance abuse treatment (Clingempeel, Pickrel, Henggeler, & Brondino, 2005).

Interpersonal factors

Interpersonal risk and protective factors for ATODG use include the impact of the adolescent's parents and family, friends and other social relationships.

Parental use

The impact of parental substance abuse on their offspring is well documented and associated with numerous negative health and social consequences (Avenevoli, Conway, & Merikangas, 2005; Harbin & Murphy, 2006). Not only are children whose parents use substances at a greater risk for developing a wide range of behavioural problems, including substance use and problem gambling (Felsher et al., 2004), these children are also more likely to experience poor, ambivalent, inconsistent or neglectful parenting and witness or fall victim to verbal, physical, or sexual abuse (Harbin & Murphy, 2006). These children are more likely to live in hostile and stressful environments and are at risk for developing substance use and psychosocial problems (Wolfe & Mash, 2006; Kirisci, Vanyukov & Tarter, 2005). Children growing up where parents produce, buy or sell illicit drugs are exposed to criminal activity (e.g., the making, buying, or selling of illicit drugs), witness drug use (including injection drug use) and become familiar and comfortable with drug paraphernalia (Mayes & Suchman, 2006). Furthermore, when children have low self-esteem, experience stressful life events, have low family cohesion and associate with substance-using peers, parental substance use or abuse is a greater risk factor for adolescent alcohol and drug use (Hoffman & Cerbone, 2002).

Of children who eventually develop substance dependence, those whose parents abuse substances do so earlier (e.g., 15 to 17 years) than those whose parents do not (for these, dependence tends to occur in the early to mid-twenties) (Liddle & Rowe, 2006). Children whose parents both abuse substances are more likely to use substances. Maternal alcohol use is associated with earlier initiation into substance use and greater likelihood of progressing from occasional to regular alcohol use during adolescence (Randolph, 2004); in contrast, paternal alcohol use is associated with greater likelihood of moving from regular to hazardous alcohol use during adolescence (Rowe & Liddle, 2006). When only one parent abuses substances, children are more likely to use if the using parent is of the same gender and there are limited adult role models in the child's life (Vachon, Vitaro, Wanner & Tremblay, 2004; Mayes & Suchman, 2006).

Finally, children who think their parents use marijuana are more likely to use marijuana and other illicit substances (Mayes & Suchman, 2006).

For children raised in households in which people buy or sell substances, resilience is fostered when immediate family members (e.g., parent or sibling who does not abuse ATODG), extended family, or an individual community member (e.g., teacher, coach) acts as a stable role model and encourages non-use (Harbin & Murphy, 2006). A study examining ATODG abstinence among youth with parents who abused substances found that youth chose non-use because they recognized that substance use was incompatible with what they planned and wanted for themselves in the future (Dillon et al., 2007). They did not want to receive disapproval from significant people in their lives (e.g., in a family, substance use may lead to being “kicked out”; among friends, substance use may lead to exclusion from the peer group; and in a team or club, substance use may lead to being cut from the activity). Youth who had substance-abusing parents and chose not to use substances even though substance-abusing family members encouraged them to use suggested that this choice was based more on the benefits of not using than on the negative consequences of using (Jaycox et al., 2003; Dillon et al., 2007). In households where both parents abuse substances, children are less likely to try substances during adolescence if they are able to spend time away from their substance-filled home (e.g., live with a non-using family member or adult), challenge users and commit to staying free of substances (Harbin & Murphy, 2006).

The majority of parents of youth who gamble report awareness, approval and enabling of their gambling behaviour. For example, in a study of Ontario students, most students reported that their parents or guardians introduced them to gambling and the majority (86%) of youth who gambled once a week or more gambled with their parents (Felsher et al., 2003). In addition, most youth gamblers believe that their parents also participate in gambling activities. For example, most youth with serious gambling problems reported that their father also had a serious gambling problem (Vachon et al., 2004).

Parenting style

Family factors are the strongest predictors of ATODG use by youth. In a study examining drinking behaviour of youth aged 12 to 19 years, findings show that both younger and older teens reported that they first used alcohol in a social setting, that drinking behaviour typically occurred in social settings and that it was important to youth to have close friends around when consuming alcohol (Health Canada, 2007). Parents lessen the influence of peers on their child’s initiation into ATODG use by setting clear standards and limits for their children (Sheckter, 2000). Although peers directly affect the likelihood of adolescent ATODG use, parents moderate these effects by monitoring and maintaining close relationships with their children (Liddle & Rowe, 2006). When parents have open communication and express their beliefs in staying free from the harmful effects of substance use and gambling, their children are less likely to use (Kumpfer & Bluth, 2004).

Parents who display antisocial behaviour, lack involvement in their child's life, are not affectionate, are inconsistent disciplinarians (with excessive punishing), have poor monitoring of their child's whereabouts and behaviour and have negative parent-child interactions are more likely to have children who participate in ATODG use (Wolfe & Mash, 2006). Children who are excessively punished or grow up in households where there is family violence are more likely to use ATODG, even if their parents do not actively use substances. In addition, children with parents who have mental health problems are more likely to use substances (Mayes & Suchman, 2006).

Parental engagement is the greatest protective factor against ATODG use. According to the Center on Addiction and Substance Abuse (CASA) (2005), parental engagement often occurs over family dinner, especially when families have dinner together regularly (i.e., more than five times a week). Dinner time provides the opportunity to discuss many topics including school, sports, friends, social activities, family values, current events, family issues or tensions, religious matters, curfews, peer pressure, dating and substance use. Children and youth who regularly eat dinner with their families are more likely to report feeling that their parents are proud of them and they are more likely to receive A's and B's in school, which are both protective factors against ATODG use (CASA, 2005).

Role of family environment

Alcohol is the substance most widely used by adolescents and family functioning²³ is the strongest predictor of its use (Dillon et al., 2007; Almodovar, Tomaka, Thompson, McKinnon, & O'Rourke, 2006). Family functioning is also linked to tobacco use (Rumpold et al., 2006). Although peers directly affect the likelihood of adolescent drinking, parents moderate these influences by setting clear standards and limits for their children (Liddle & Rowe, 2006). Households where parents are connected to their children's lives, encourage and maintain open communication among all family members and are proud of their children are half as likely to have a child that abuses alcohol (CASA, 2005).

Rates of substance abuse are substantially higher among homeless youth, transient youth and youth living in single-parent households. For example, among transient youth, alcohol, tobacco and marijuana use was reported more often by those who frequently ran away from their homes, changed residences, or were "on the run" (Oman et al., 2004). The majority of homeless youth come from abusive families in which substance use serves as a coping mechanism for dealing with negative life events and stressors. In addition, youth living on the street are more likely to form bonds with peers who engage in criminal activity and use substances (Thompson, 2004). Youth living in inner city environments are also more likely to use substances, especially alcohol, if they live in single-parent households (Oman et al., 2004).

²³ According to the McMaster model, using a systems perspective, family functioning is defined as the structure, organization and transactional patterns of family members (Epstein, Bishop, & Baldwin, 1984).

Home environments with positive parent-child relationships, parental supervision, consistent discipline, communicated family values and parental disapproval of their children's ATODG use positively influence youth substance use (Borkowski & Weaver 2006). Family bonding and parental support are also considered protective factors against youth ATODG use (Beyers et al., 2004).

Families can foster resilience by encouraging open communication, improving problem-solving skills and spending time together (Kuntsche & Kuendig, 2006). Family bonding²⁴ increases when family members are encouraged to constructively express their feelings, points of view and concerns and are listened to empathetically. By using statements that begin with "I," such as "I feel concerned when I do not know where you are after school," family members can express their feelings without blame or judgment. Parents can model active listening by not interrupting their children or encouraging conversations, for example by asking "How did that make you feel?" When family units work together to solve problems, they become more attached and individual members learn the necessary skills to overcome adversity (Canadian Health Network, 2004; Centre for Addiction and Mental Health, 2007). In a study examining family-related risk factors, Kuntsche and Kuendig (2006) found that family bonding (listening to child's worries, spending time together as a family, providing help when necessary) was a better predictor of children's (in grades 5 to 9) experience of "drinking too much alcohol," than was family structure (e.g., living in a single-parent family) or child perception of excessive drinking in the family.

Influence of friends

During childhood and adolescence, social ties are expanded beyond the home and family unit to include peers, who become a strong factor for initiating ATODG use (Wolfe & Mash, 2006; Unger, Baezconde-Garbanati, & Soto, 2004). Association with peers who disregard societal norms of non-use and abuse substances is a risk factor for adolescent substance abuse. These types of social networks not only increase the availability of substances (Henry et al., 2005) but also provide an environment that adopts the values and beliefs consistent with a substance-using way of life (Liddle & Rowe, 2006; Wolfe & Mash, 2006). In a study examining alcohol use in a sample of high school students, peer influence was the strongest predictor of binge drinking, drinking to get drunk, drinking and driving and alcohol-related harm (Almodovar et al., 2006).

Peer cluster theory²⁵ (Tragesser, 2007) considers ATODG use a social behaviour that is influenced by the types of peers an adolescent socializes with. Many studies support this theory since peer group associations predict the greatest amount of variance of substance use by youth. For example, during adolescence,

²⁴ Family bonding is defined as the feeling of closeness and intimacy family members experience when families use open communication, they spend time together doing activities, and parents monitor their children (Kuntsche & Kuendig, 2006)

²⁵ Peer cluster theory was developed in the 1980s to explain how peers, during adolescence, affect beliefs, values and behaviours that determine if, when and with whom youth participate in ATODG use. This theory incorporates the psychosocial factors that promote or protect against drug use during adolescence (Oetting & Beauvais, 1986).

peer groups that encourage the use of ATODG are more likely to have members that use ATODG, whereas youth in peer groups that sanction against ATODG are less likely to participate in these activities (Urberg, Lou, Pilgrim & Degimencioglu, 2003; Best et al., 2005). Also, when youth change social circles, their ATODG behaviour tends to transform to correspond with the new group's beliefs and behaviour regarding ATODG use (Henry et al., 2005). Youth who associate with gangs and groups where ATODG use is encouraged are more likely to use substances and gamble (Beyers et al., 2004; Bond, Toumbourou, Thomas, Catalano, & Patton, 2005). Adolescents who rank peer acceptance and friendship quality as very important are more at risk of conforming to their peer substance use behaviour (Urberg et al., 2003). Peer rejection or negative social environments may increase feelings of isolation and increase risk of future ATODG use by youth (Mayes & Suchman, 2006).

Social learning theory²⁶ suggests adolescents may be affected by drinking behaviour of their friends through imitation, social reinforcement and norms of the group or community, beliefs and expectations (Henry et al., 2005). For example, youth are more likely to drink alcohol if they repeatedly watch their parent or parents have a drink after work, or if their friend asks someone out on a date after drinking at a drinking party. Similarly, community beliefs affect youth perceptions of harm associated with alcohol use. That is, during times when youth perceive alcohol use as causing harm in the future, they are less likely to drink; this serves as a protective factor, even if their friends continue to drink (Henry et al., 2005).

Social bonding theory²⁷ proposes that people are more likely to engage in deviant behaviour when they have weak or shallow bonds to conventional society (Chriss, 2007). A commitment to social norms and values may prevent adolescents from using ATODG, even if their friends encourage substance use and gambling. In North America, social norms about the use of ATODG by youth are ambiguous. ATODG use is illegal before adulthood; however, media increasingly glamorizes ATODG use by youth (Perkins, 2003). This may account for youth overestimating the number of their peers who binge drink, smoke tobacco and use illicit drugs (Urberg et al., 2003).

Youth who experience success in school and are able to cope or release stress without using substances are more likely to socialize and identify with peer groups with positive values. Within these friendships, youth experience acceptance and support for non-deviant behaviour (Mayes & Suchman, 2006). These same youth report that substance use is incompatible with their lifestyle and what they plan and want for themselves in the future. They tend to be very involved in their communities and use their spare time to work at part-time jobs, play on teams and volunteer (Dillon et al., 2007). These youth value strong social skills, good refusal skills and high educational and career

²⁶ Social learning theory was developed by Albert Bandura in the 70s and suggests learning occurs in social contexts by observation, imitation and modeling (Pajares, 2004).

²⁷ Travis Hirschi developed social bonding theory in the late 60s. This theory proposes that through socialization and social learning, self-control increases and deviant or antisocial behaviour is less likely to occur (Chriss, 2007).

aspirations, which are all protective factors against initiating ATODG use (Dillon et al., 2007; Urberg et al., 2003).

School environment

Adolescents spend a large part of their lives in school, where they develop not only academic skills but also the social and emotional skills required to live in society. There are several school-related variables that increase the risk for ATODG use by youth: aggressive behaviour in the classroom, poor social skills (e.g., inappropriate or shy behaviour), affiliation with deviant peers, poor academic achievement,²⁸ school climates with few enforced rules about youth substance use and gambling, and low academic and behavioural expectations of students among staff members (Mayes & Suchman, 2006; Thompson, 2004; Van den Bree & Pickworth, 2005; Secades-Villa et al., 2005). Furthermore, students who do not envision themselves attending post-secondary programs (e.g., college or university) are more likely to use drugs, drink heavily and smoke tobacco (AADAC, 2002b). In contrast, school bonding (e.g., attachment to teachers, peers and school), regular attendance, high academic motivation and performance, long-term educational goals, high academic and behavioural expectations for students, nurturing and supportive learning environment and involvement in decisions that affect their schools are all school-related variables that deter youth from ATODG use (Mayes & Suchman, 2006; AADAC, 2003; National Institute on Drug Abuse [NIDA], 2005). Finally, active discouraging (e.g., setting clear standards and rules) of ATODG non-use in school environments helps create a social culture that de-normalizes use and, in turn, decreases ATODG use (Van den Bree & Pickworth, 2005).

Community environment

The risk and protective factors associated with community environments (e.g., relationships, social networks, groups and institutions within a given physical location) include role models, community involvement, neighbourhood and community resources, media and public policy.

Role models

As in the extended family and school contexts, the presence of one or more positive role models within a community may provide youth with the opportunity to connect with support outside of their family unit. Positive role models are a protective factor against ATODG use by youth as they often encourage social cohesion and the realization of high academic expectations. By spending time with positive role models, youth are more likely to learn many of the necessary skills to form healthy relationships and build satisfying lives (AADAC, 2002b).

²⁸ This includes low grade point average, low academic motivation, low intelligence, the presence of a learning disability, problems with teachers, attention problems, frequent absenteeism, dropping out of school, suspension, repeating a grade, expulsion, lack of future educational goals.

Community involvement

Community factors that protect youth from ATODG use include opportunities for positive, constructive involvement in the community and recognition for this involvement. For example, youth who participate in positive activities in their community (e.g., clubs, extracurricular events, sport teams, church groups, etc.) are more likely to have a purpose when they meet with friends and are less likely to initiate ATODG use (Oman et al., 2004; Walker et al., 2006). Involvement in activities, however, may also be a risk factor for ATODG use, especially in some athletic activities. For example, some sports (e.g., wrestling and football) have been associated with anabolic steroid use; other athletic teams have been associated with binge drinking and other drug use (Pumariega, Rodriguez, & Kilgus, 2004). Rewards and recognition for positive community involvement by adolescents reduces the likelihood that youth will use ATODG (Beyers et al., 2004; Bond et al., 2005).

For youth, lower levels of community engagement in positive, constructive community activities and increased levels of inactive pastimes (e.g., hours spent watching television, listening to music, or playing video or computer games) are associated with increased substance use (Van den Bree & Pickworth, 2005; Walker et al., 2006). For example, one of the most frequently reported reasons for binge drinking by high-risk youth was to relieve boredom (Pirkl & Richter, 2006).

Impact of part-time employment

In a national study involving 20,745 students (aged 11 to 20 years) investigating the relationship between work intensity and alcohol use, Paschall, Flewelling and Russell (2004) found that, in general, youth who worked more than 10 hours a week were significantly more likely to participate in heavy drinking (drinking more than five drinks in a row). Taking into account risk and protective factors, however, attenuated this relationship. For example, students working 11 to 20 hours a week were less likely to participate in heavy drinking if several protective factors were present (e.g., younger age, no or limited previous experience with alcohol use and heavy drinking, friendships with ATODG abstainers, closeness/bonds with parents, religiosity and commitment to school). Students were more likely to participate in heavy drinking if risk factors were present (e.g., older in age, larger personal income, prior experience of heavy drinking, friendships with substance-using and deviant peers, lack of bond with parents and lack of commitment to school) (Paschall et al., 2004).

Neighbourhood

Youth living in communities where substances and gambling paraphernalia are readily available are at greater risk for ATODG use. Youth living in neighbourhoods where drugs are produced and sold with ease are more likely to come into contact with various substances and also be exposed to a culture that promotes and accepts the use of substances (Mayes & Suchman, 2006).

For example, in 2002, youth living in disadvantaged neighbourhoods where cocaine was widely accessible and available were more than five times as likely to be offered cocaine as youth living in relatively advantaged neighbourhoods (AADAC, 2002b).

Community resources

Youth living in highly motivated communities where members continually set and achieve their goals are less likely to use substances and gamble (Walker et al., 2006). Communities that support education about and prevention of ATODG use during adolescence are more likely to have youth who do not use substances and view gambling as an unfavourable activity (Lavoie & Ladouceur, 2004).

Media

The influence of media on substance use and gambling behaviour depends on the susceptibility of youth to social marketing (Mowery, Farrelly, Haviland, Gable, & Wells, 2004). For example, youth who owned tobacco promotional items and could name a tobacco brand were more than twice as likely to have smoked 20 or more cigarettes in the previous 30 days (Kaufman et al., 2002).

Public policy

The risk and protective factors associated with public policy include federal and provincial policies on age restrictions, enforcement, advertising and legislation of ATODG (Messerlian, Derevensky, & Gupta, 2005). Several studies have found that youth perceptions of laws and social norms influence their use of illicit substances and purchase of gambling paraphernalia (Mayes & Suchman, 2006; Walker et al., 2006; Messerlian et al., 2005).

Conclusions and implications

Among children and youth, there are multiple risk and protective factors associated with ATODG use and non-use (Walker et al., 2006). People have unique circumstances as they move from childhood to adolescence and then young adulthood (National Institute on Alcohol Abuse and Alcoholism, 2006). Identifying individual risk and protective factors across multiple life domains provides an opportunity to increase protective factors (which foster the development of resilience) and decrease risk factors (especially for high-risk youth who are more vulnerable to health-damaging behaviour) (AADAC, 2003). Both these activities require the involvement of the child, the family and wider social networks (e.g., peer groups, school and community) (Harbin & Murphy, 2006).

The risk and protective factors described in this paper are associated with ATODG use, and with other social and behavioural problems (e.g., involvement in crime, failure to use condoms and teen pregnancy, school drop-out, violence

[AADAC, 2003]), suggesting that different types of problematic behaviour share similar roots (e.g., prevalence of similar risk factors or relative scarcity of protective factors) (Winters, Stinchfield, Botzet, & Anderson, 2002). Therefore, the design and implementation of interventions to reduce problem behaviour by decreasing or eliminating risk factors and increasing protective factors should help to reduce ATODG use and other harmful health and social behaviour (Pirkle & Richter, 2006).

Future program planning

ATODG prevention programs should be delivered prior to the teenage years, that is before the age of ATODG initiation (Winters et al., 2002), and include developmentally appropriate materials (Dickson, Derevensky, & Gupta, 2004; Harbin & Murphy, 2006). High-risk children and youth should be targeted by prevention efforts, as they will likely receive the most benefit from such activities (NIDA, 1996). Tatchell and Waite (2004) suggest assessing the risk and protective factors of students who receive prevention programming before and after the program is implemented to ensure the programming is effective (e.g., reductions in risk factors and maintenance or increases in protective factors).

Behavioural change is more successful when individuals make healthy choices and when families, neighbourhoods, communities and societies promote and encourage all members to behave generously, co-operatively and constructively (Centre for Youth Drug Studies, 2006; United Nations, 2003). Evidence-based prevention and intervention programs must reach intrapersonal, interpersonal, school and community domains. Specifically, attention should be given to intrapersonal skills (e.g., self-regulation, social competence, academic performance and problem-solving/life skills training), interpersonal skills (e.g., peer social interactions, family social interaction, family functioning and parental involvement), school environment (e.g., learning problems, academic performance, school belonging, participation in school community, school bonding and family-school interaction) and community involvement (e.g., participation in community events, accessibility of substances and policy), especially among high-risk youth (Tolan et al., 2007).

In practice, this translates into policy development where young people are presented with the facts and tools necessary to develop resilience. Youth should be provided with accurate information about ATODG to encourage them to build lives that are free from the harmful effects of substance use and gambling (Dillon et al., 2007).

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