

High Risk Alcohol Consumption and Contraceptive Use  
by Young Women in the Greater Victoria Area

by

Julie Adams  
B.Sc., University of Victoria, 1997  
BSW, University of Victoria, 2003

A Thesis Submitted in Partial Fulfillment  
of the Requirements for the Degree of

MASTER OF ARTS

in the School of Child and Youth Care  
Faculty of Human and Social Development

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**Departmental Member****Abstract**

High-risk alcohol consumption in combination with unprotected sexual activity can have deleterious results for the individual, their family and their larger community. In this investigation, a secondary analysis was performed on the female data of Wave 3 of the Healthy Youth Survey to determine rates of female drinking and unprotected sex and to create a predictive model of high-risk drinking behaviour. Three dependent variables were examined: heavy drinking, weekly binge drinking and having a CAGE score of 2 or more, and Jessor and Jessor's (1977) Problem Behaviour Theory is drawn on in the interpretation of results. Age, the influence of negative peers, physical victimization, and the presence of an addiction-prone personality were found to be predictive of engaging in heavy drinking and weekly binge drinking; the influence of negative peers was found to be predictive in having a CAGE score of 2 or more. A difference in contraceptive use was only found for the young women engaging in weekly binge drinking. The results of this study highlight the importance of how different drinking styles can impact the likelihood of engaging in high-risk sex.

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## Dedication

I dedicate this thesis to the following people:

To my daughter, Isley, for filling my life with joy, laughter and love on a daily basis.

To my husband, Ryan, for his years of love and never-ending support.

To my parents, Bob and Gayle, for raising me to believe in myself and to trust that I could do anything I set my mind to.

## Introduction

In June 2008, I gave birth to my first child - a baby girl born 5 weeks early, and weighing only 3.5 pounds. Despite being perfect in every way, she was very small and needed some help to grow. She spent the first three weeks of her life in the Special Care Nursery at our local hospital, and I spent much of my time during those three weeks at her bedside. While she was in the nursery, there was another baby there who spent the first few weeks of his life in a separate room from the other babies. This room was kept very dim as the baby could not handle too much stimulation, and the nurses were very quiet when they attended to him. At times he was inconsolable and would cry for hours on end. I overheard the nurses talking, and they mentioned that this child's mother had been "using" while pregnant. I don't know if they were referring to illicit drugs or alcohol but I couldn't help but hope that the life that this child was going to live would be better than his first weeks of life; his first isolated, overwhelmed, alone and inconsolable weeks of life.

An article in a local newspaper suggests that one in twenty babies born in a northern British Columbia town have been exposed to alcohol and/or other drugs while in the womb ("Doctor", 2008). That same article states that one hospital in BC's lower mainland treats at least 100 addicted pregnant women a year. Yet this report is only from one facility, and those are only the women who have been identified as being addicted to a substance - not those that use alcohol and/or other drugs recreationally while pregnant, or who are addicted to a substance but who are not identified as such. Are these two locations representative of the entire province?

Substance use is a serious problem faced by Canadian society, taking its toll on our children, youth, and families. In 2002, it was estimated that the overall social cost of alcohol

use and abuse in Canada was \$14.6 billion, accounting for 36.6% of the total cost of substance abuse (Rehm, Baliunas, Brochu, Fischer, Gnam, Patra, Popova, Sarnocinska-Hart & Taylor, 2006). This is close to twice the amount from ten years previous, and includes costs associated with health care and law enforcement as well as the loss of productivity in the workplace and at home due to premature death or disability. Second only to tobacco, the social costs related to alcohol use are close to double those for all of the illegal drugs combined (Rehm et al, 2006).

Alcohol is the most common substance used by youth, with two-thirds of students in grades 7-9 having tried alcohol, and 83% of Canadian youth between the ages of 15-24 being current drinkers (Canadian Centre on Substance Abuse, 2007). Health Canada (2000) suggests a link between heavy alcohol use by adolescents and increased numbers of motor vehicle accidents and deaths, academic problems, job difficulties, relationship problems, physical and mental health issues and exposure to violence and crime. In investigating children's deaths in British Columbia, the former Children's Commission found alcohol to be present at the time of death in two-fifths of Motor Vehicle Incidents and one third of suicides and drownings (Mitic and Greshner, 2002). Clearly, the social and health costs associated with alcohol consumption by youth are profound, with almost all youth vulnerable to being exposed to its negative consequences, through their own use or by the use of their friends or family.

Sex and sexuality are typically healthy, enjoyable aspects of the human experience. Adolescence is a time when North American teens normally begin to explore their sexuality, with approximately 28% of Canadian youth between the ages of 15-17, and 80% of 20-24 year olds, being sexually active with the average age of first intercourse being 16.5 (Rotermann, 2005). With alcohol consumption and sex being commonplace for today's adolescent, the concern for pregnancy and babies born affected by prenatal alcohol exposure is justifiable.

While rates of teen pregnancy are indeed decreasing, the number of abortions performed on young women between the ages of 15-19 is increasing, suggesting that teenagers and young adults may have difficulty accessing reliable contraception (Health Canada, 1999a). Early childbearing can have both social and health-related consequences: teen mothers are less likely to complete their education and are more likely to have limited career and economic opportunities. Babies born to young mothers are at increased risk of preterm birth, low birth weight and death during infancy (Health Canada, 1999a).

#### *Project Objectives*

This project involves a secondary analysis of data collected during wave 3 of the Healthy Youth Survey. Using Jessor and Jessor's (1977) Problem Behavior Theory as the lens for analysis, the following objectives are posited:

- To describe the high-risk alcohol consumption levels of the young women in this survey
- To describe the contraceptive use patterns of the young women in this survey
- To investigate if girls who consume alcohol at high-risk levels are less likely to use contraception during sexual activity (combined risk);
- To explore how a young woman's personal and social vulnerabilities and controls impact the likelihood of her engaging in high risk alcohol consumption;
- To test and refine an integrative model for predicting the likelihood of each high-risk drinking dependent variable.

There will be a deliberate gender bias to the analysis, with a focus on female data. Data from males will be used in comparison when necessary. This is not to suggest that the high-risk drinking and sexual activities of young males are not important or relevant, but as only women can bear children, they are beyond the scope of this project.

*Operational Definitions*

What constitutes ‘risky drinking’ is still up for debate. Heavy alcohol use, when defined as consuming five or more standard drinks on one occasion, clearly increases FAS risk for women and their children (Nayak & Kaskutas, 2004). However, the level of drinking required for less severe fetal effects has yet to be determined. The US Centers for Disease Control and Prevention (2002) classifies risky drinking for women of child-bearing age to include either past-month average use of 7 or more drinks per week or past-month binge drinking of 5 or more drinks on one occasion. According to the US Department of Health and Human Services (2005), “drinking more than seven drinks per week increases a woman’s chances of abusing or becoming dependent on alcohol” (p. 6). The United States Department of Health and Human Services/National Institute on Alcohol Abuse and Alcoholism (1995) suggests that women may be considered ‘at risk’ for developing alcohol-related problems if they consume 7 or more drinks per week or 3 or more drinks on any given day.

For the purposes of this study, risky drinking will be divided into two domains: heavy drinking and binge drinking. Heavy drinking will be defined as drinking 7 or more drinks in a week. Binge drinking will be defined as consuming 5 or more alcoholic beverages at a sitting at least once/week in the past 12 months. Some define binge drinking for females as drinking four drinks in one sitting (Marlatt & Baer, 1997; Wechsler & Nelson, 2001), but this study used five drinks in one sitting as its threshold for binge drinking. These criteria for weekly binge drinking are consistent with that of the Canadian Centre for Addiction and Mental Health and the US Centers for Disease Control and Prevention (2002). An additional high-risk domain

will be examined, that of scoring 2 or more on the CAGE<sup>1</sup>, a measure for potential alcohol abuse issues.

The high-risk drinking variables will be categorized dichotomously- either the participant meets the criteria or she doesn't. While this works well for the binge drinking and CAGE domains in that both of these variables have concrete inclusion criteria, the heavy drinking variable is more continuous in nature, and limiting the analysis to a simple either/or dichotomy will prevent a deeper investigation of how 'severe' the heavy drinking actually is. For example, a young woman who consumes 8 drinks in a week will be considered a heavy drinker, as will a young woman who consumes 30 drinks in a week. Clearly there is a difference in their behaviours but this will not be captured by the dichotomous heavy drinking variable. However, in order to compare the heavy drinking variable with the weekly binge drinking and CAGE of 2 or more variables, the same statistical model had to be used. Therefore, the heavy drinking variable was dichotomized and its definition was synchronized with previously defined 'at risk' guidelines. In addition, the use of the US Centre for Disease Control and Prevention's definition of risky drinking allowed for an investigation into the characteristics of "at risk" female drinkers.

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<sup>1</sup> The acronym CAGE stands for *cut-down, annoy, guilt, eye-opener*, referring to the four questions of the questionnaire.

## Literature Review

In preparation for this project, the mega-database EBSCOhost, which is comprised of a variety of smaller databases, including, but not limited to: Academic Search Elite, CINAHL with Full Text, Health Source- Consumer Edition, Health Source- Nursing/Academic Edition, MEDLINE, PsycARTICLES, PsycINFO, Social Work Abstracts, and Women's Studies International, was queried to locate studies on the topics presented. Keywords (and combinations of keywords) such as *adolescent, teen, youth, substance use, alcohol use, alcohol consumption, sexual activity, sexuality, pregnancy, contraceptive use, theories of addiction, fetal alcohol spectrum disorder, Canadian, and addiction* were used to narrow down the vast amount of empirical and/or theoretical literature on these topics. Due to the extensive amount of existing literature, an exhaustive literature search was not conducted in that not all papers on the topic(s) were consulted. Selection criteria for articles chosen included relevancy to the topic(s), recentness and availability.

### *Canadian Adult's Alcohol Consumption*

Vygotsky's 'sociocultural-historical theory' suggests that "individual development must be understood in, and cannot be separated from, its social and cultural-historical context. ....the efforts of individuals are not separate from the kinds of activities in which they engage and the kinds of institutions of which they are a part" (Rogoff, 2003. p. 50). Jessor and Jessor (1977) assert that most juvenile problem behaviors can be understood by examining the characteristics and experiences of the juvenile (individual factors) within the contexts of the larger society or culture. After all, "[o]nly the personal history of each adolescent and the relational frameworks to which they belong can shed light on their acts" (Le Breton, 2004, p. 1). Given this, it would be inappropriate to discuss adolescent alcohol use and sexuality

without including a discussion on the cultural context in which such behaviours occur. As the focus of this research project is on the use of alcohol and the sexual activities of adolescent women, there will be a gendered lens to the information presented.

The 2004 Canadian Addiction Survey found that 79.3% of Canadians aged 15 or older had consumed alcohol in the 12 months preceding the survey (76.8 % of women and 82.0% of men surveyed). In addition, men tend to consume alcohol more frequently and in greater quantities: 55.2% of men report consuming alcohol at least once a week as compared to 32.8% of women; 23.2% of men usually drink 5 or more drinks<sup>2</sup> at one sitting, where only 8.8% of women do; 9.2% of men reporting drinking 5 or more drinks at one sitting at least once a week compared to 3.3% of women; and 30.2% of men reported alcohol consumption that exceeded low-risk guidelines<sup>3</sup> with only 15.1% of women doing so (Adlaf, Begin & Sawka, 2005). However, alcohol is the most commonly used substance by women, and its use is on the rise (Poole & Dell, 2005). As compared to women in the rest of the country, the women in British Columbia report consuming alcohol on the greatest number of days per year (Grahams, Bernards & Demers, 2007).

While women may tend not to drink as frequently or consume as much alcohol as men, it has been shown that women are more susceptible to developing health-related problems based on their problematic substance use. Due to differences in metabolisms, women achieve higher concentrations of alcohol in their blood, and become more impaired than men, after drinking equivalent amounts of alcohol. Women tend to develop alcohol-induced liver disease over a shorter period of time and after consuming less alcohol, and MRI

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<sup>2</sup> A “standard drink” is considered 1.5 ounce of hard alcohol, or 12 ounces of beer or 5 ounces of wine (Wattendorf & Meunke, 2005)

<sup>3</sup> Low-risk drinking guidelines recommend that men consume no more than 14 standard drinks, women no more than 9 standard drinks as week and that alcohol intake be limited to no more than 2 drinking on any given day (Adlaf, Begin & Sawka, 2005).



imaging suggests that women may be more vulnerable than men to develop alcohol-induced brain damage (National Institute of Alcohol Abuse and Alcoholism, 1999). Other health risks women may experience due to heavy drinking include hypertension, osteoporosis, breast cancer and gastric ulcers (National Institute of Alcohol Abuse and Alcoholism, 2003). As only women can bear children, the risk of having a child born with fetal alcohol syndrome increases if a woman continues to consume alcohol while pregnant.

Yet health-related problems aren't the only consequences women may experience due to their, or others, problematic drinking. Adversities include victimization, both verbal and physical, serious argument, harm to ones friendships and social life, finances, home life or marriage, work, studies or employment opportunities, legal problems, learning difficulties and housing problems (Adlaf, Begin, Deguire, Garlick, Racine, Sawka & Single, 2004). Fewer women than men report having experienced harm in the past year because of their own drinking (7.1% versus 10.5% respectively), and gender does not appear to be a factor in whether one reports harm based on someone else's drinking (32.6% of women versus 32.9% of men) (Adlaf, Begin & Sawka, 2005). Women are more likely to be victims of domestic violence after their partner's have been drinking (Fals-Stewart, 2003; Barnett & Fagan, 1993; Roberts, 1987), and women who have been battered often turn to alcohol and other substances to help them cope with their situation (Kaysen, Dillworth, Simpson, Waldrop, Larimer & Resick, 2007; Clark & Foy, 2000; Amaro, Fired, Cabral & Zuckerman, 1990). Clearly, problematic alcohol use by women can have devastating effects on themselves, their families and society as a whole.

*Risk and Protective Factors*

In the simplest terms, risk factors are those that increase the likelihood of a negative event occurring; protective factors are those that help to diminish the likelihood of it occurring. More technically, according to Jessor, Van Den Bos, Vanderryn Costa and Turbin (1995),

“Risk factors are those conditions or variables that are associated with a higher likelihood of negative or undesirable outcomes- morbidity or mortality in classical usage or more recently, behaviors that can compromise health, well-being or social performance... Protective factors are conceptualized as decreasing the likelihood of engaging in problem behavior: through direct personal or social controls against its occurrence... through involvement in activities that tend to be incompatible with or alternatives to problem behavior...and through orientations toward and commitments to conventional institutions (e.g. schools) or to adult society more generally” (p. 923-924).

Typically, risk and protective factors are classified as either psychosocial or behavioural, with psychosocial protective factors referring to those models that promote positive or pro-social behaviour (such as having friends who engage in the positive behaviour), personal and social controls against norm-violating behaviours (such as an intolerance of deviance), and an environment of support (e.g. family closeness). Behavioural protective factors include the actual involvement in positive or pro-social activities (e.g. attendance at religious services), which tend to promote conventional attitudes and values and locate the young person within a group of peers more likely to engage in positive behaviours. Psychosocial risk factors refer to models for risk behaviour, opportunity to engage in risky behaviour, and personal and social vulnerability to engage in risk behaviour; behavioural risk factors refer to the actual involvement in the risky behaviour (Costa, Jessor & Turbin, 2007). Risk and protective factors should be treated as conceptually distinct from each other, not merely unique ends of the same continuum in that “protective factors are considered independent variables that can have their own direct effects on behaviour but that, in addition, can moderate the relationship between

risk factors and behaviour.” (Jessor et al, 1995, p. 923). The protective and risk factors for adolescent substance use will be discussed later in this paper.

#### *Adolescent Substance Use*

Youth experimenting with substances is not a new phenomenon, and is in fact a fairly common event among adolescents. After all, “part of the normal growing up process consists of adopting adult-like attitudes and behaviours. Since most adults consume alcohol, smoke or commit minor delinquent acts, it is not surprising that young people adopt these habits [as well].” (Engles & ter Bogt, 2001, p. 676). Experimentation with drugs and alcohol is a way of testing boundaries, exploring independence and ‘bucking the system’. Youth cite several reasons for their substance using behaviours including peer pressure, curiosity, fun, and availability; at other times, they may use substances to cover up negative feelings and emotions (Hotton & Haans, 2004). Yet, people who are frequent binge drinkers in late adolescence and early adulthood increase the likelihood that they will experience concurrent and long-term alcohol abuse (Chassin, Pitts, & Prost, 2002; Bonomo, Bowes, Coffey, Carlin & Patton, 2004; Viner & Taylor, 2007; Pitkänen, Kokko, Lyyra & Pulkkinen, 2008; ).

Results from the Canadian-based 1998/99 National Longitudinal Survey of Children and Youth showed that approximately 40% of children aged 12-15 had consumed at least one alcohol beverage in their life- 17% of 12 year old had done so, and that number rose to 66% by age 15 (Statistics Canada and Human Resources and Social Development Canada, 2000). Drinking to intoxication was also fairly common, with 22% of adolescents reporting that they had been drunk at least once. While the percentage of 12 year olds who had been drunk was low (4%), this number rose to 44% by age 15. Interesting, while more boys reported to having tried alcohol as compared to girls (44% vs. 39%), more girls reported having been intoxicated at least once (24% as compared to 20% of boys). However, the perception of intoxication

may differ between males and females. The average age for first having tried alcohol was 12.35 years (12.4 years old for boys, 12.3 for girls); both boys and girls reported an average age of 13.2 years for when they first drank to intoxication.

In British Columbia, the McCreary Centre Society, a non-government, non-profit organization specializing in researching and promoting the unmet health needs of young people, found that alcohol use by BC students (grades 7-12) actually declined between 1992 and 2003 (68% vs. 58% respectively) but that binge drinking<sup>4</sup> amongst students who had ever tried alcohol increased from 35% in 1992 to 45% in 2003 (Tonkin, 2005). Both male and female students reported binge drinking at approximately the same proportions (46% and 43% respectively). While the Kootenay region of the province had the highest percentage of frequent binge drinking (26%), and the Greater Vancouver area the lowest (16%), it would be difficult to draw a correlation between setting (rural vs. urban). Even though it may be that the percentage of teens drinking is on the decline, the consequences of alcohol use are still acute on both a personal and societal level. After all,

“For the developing young adult, drug and alcohol abuse undermines motivation, interferes with cognitive processes, contributes to debilitating mood disorders and increases risk of accidental injury or death. For the society at large, adolescent substance abuse extracts a high cost in health care, educational failure, mental health services, drug and alcohol treatment and juvenile crime” (Hawkins, Catalano and Miller, 1992, p. 64).

Risk and protective factors for problematic alcohol use have been extensively discussed in the literature (see Hawkins, Catalano & Miller, 1992 for a summary of the literature to that date). Figure 1 presents a summary of the risk factors identified by Hawkins, Catalano and Miller (1992), with other risk factors identified by Kilpatrick,

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<sup>4</sup> Binge drinking is defined as consuming 5 or more drinks in a row within a couple of hours (Tonkin, 2005).

Acierno, Saunders, Resnick, Best and Schnurr (2000) to include having experienced physical or sexual assault and/or witnessing violence. High risk alcohol consumption protective factors include, but are not limited to: the individual's level of vulnerability and resilience, a strong attachment to parents/family, parent conventionality, parental marital harmony, the existence of an extended support system and the individual's interpersonal characteristics such as a positive temperament/disposition (Hawkins, Catalano & Miller, 1992).

Bronfenbrenner's 'ecological systems theory' would suggest that risk and protective factors operate in spheres of influence on a young person's alcohol consumption. The young person will be impacted (or protected) by individual, social, cultural, historical, and legal influences which will shape their response to the pressures to consume alcohol. For the purposes of this study, some of the individual (personal) and social risk and protective factors that may be factors in high-risk drinking behaviour will be examined. Table 1 presents the independent variables that will be examined for the dependent variable of 'high-risk drinking' (also termed high-risk alcohol consumption) based on the questions posed in wave 3 of the Healthy Youth Survey.

Red box = social/cultural factor  
Yellow box = individual/interpersonal factor

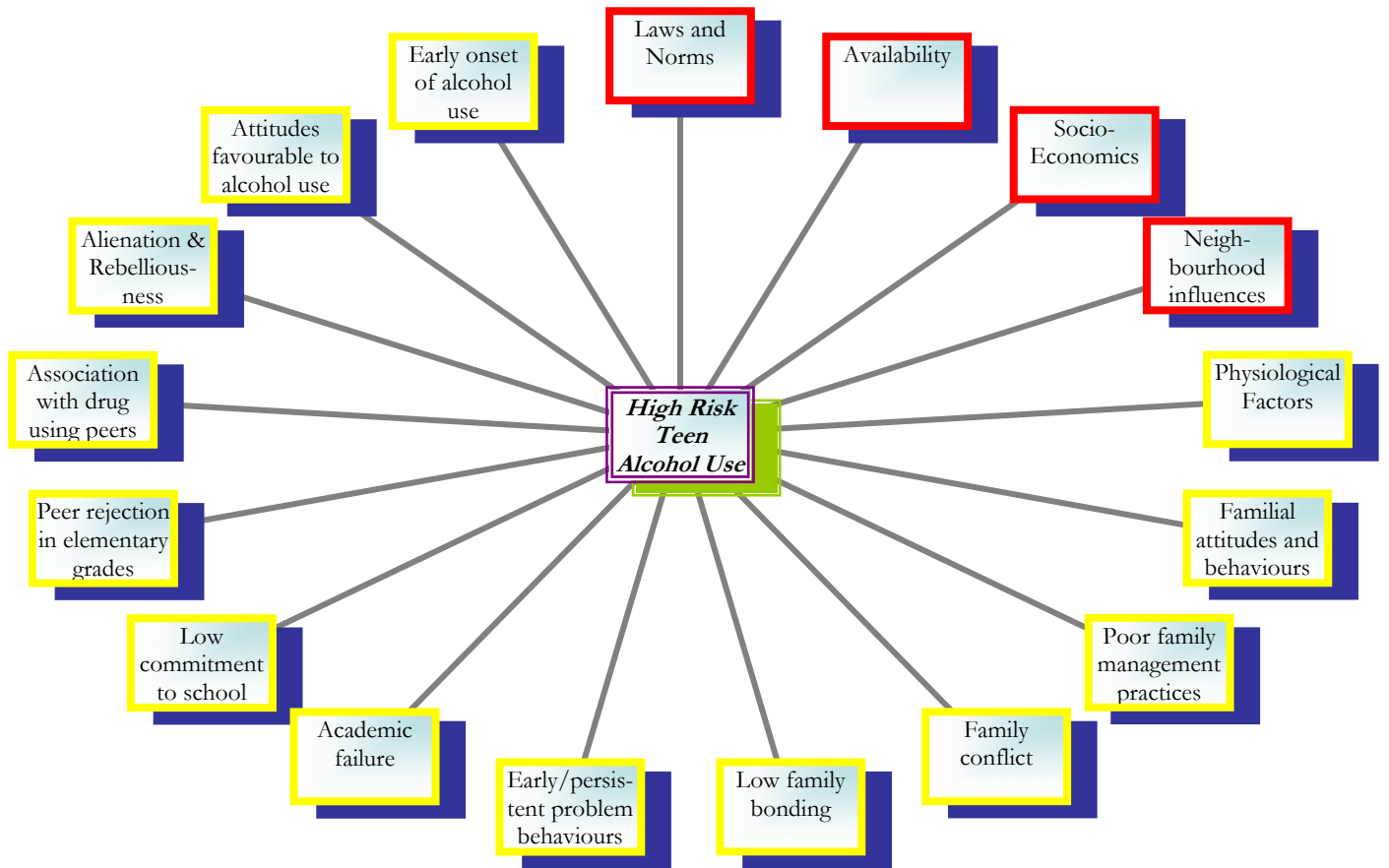


Figure 1: Risk factors associated with high-risk adolescent alcohol use (adapted from Hawkins, Catalano & Miller, 1992)

Table 1: High-risk drinking variables

<b>High Risk Drinking Independent variables</b> measures with description (number of questions, format of items, Cronbach $\alpha$ )	Source
<p><b>Psychosocial Risk</b></p> <ol style="list-style-type: none"> <li>1. <i>Risky peer modeling/ affiliations</i> (5 Yes/No, .527)</li> <li>2. <i>Personal vulnerability</i> <ul style="list-style-type: none"> <li>Life stress (26, Yes/No, .649)</li> <li>Money problems (familial) (3, 3 pt Likert, .670)</li> <li>Number of household moves (1, open-ended)</li> <li>Physical victimization (5, Yes/No, .678)</li> <li>Relational victimization (6, Yes/No, .712)</li> <li>'Sensation-seeking personality' (11, Yes/No, .778)</li> <li>'Addiction-prone personality' (21, Yes/No, .747)</li> <li>Risk Taking and Impulsivity (5, 5 pt Likert, .897)</li> </ul> </li> <li>3. <i>Social vulnerability</i> <ul style="list-style-type: none"> <li>Psychologically controlling mother (8, 3pt Likert, .779)</li> <li>Psychologically controlling father (8, 3 pt Likert, .774)</li> </ul> </li> </ol>	<p>Developed by research team*</p> <p>Developed by research team Developed by research team</p> <p>Developed by research team</p> <p>Crick &amp; Grotpeter (1995)</p> <p>Crick &amp; Grotpeter (1995)</p> <p>Zuckerman Kuhlman Personality Questionnaire Barnes, Murray, Patton et al (2000)</p> <p>Cherpitel (1993)</p> <p>Barber (1996)</p> <p>Barber (1996)</p>
<p><b>Behavioural risk</b></p> <ol style="list-style-type: none"> <li>1. <i>Age of first drink</i> (1, open-ended)</li> </ol>	
<p><b>Psychosocial Protection</b></p> <ol style="list-style-type: none"> <li>1. <i>Protective peer modeling</i> (6, Yes/No, .324)</li> <li>2. <i>Personal Controls</i> <ul style="list-style-type: none"> <li>Mastery and Control (9, 3 pt Likert, .739)</li> </ul> </li> <li>3. <i>Family Support</i> <ul style="list-style-type: none"> <li>Supportive mother (5, 3 pt Likert, .734)</li> <li>Supportive father (5, 3pt Likert, .832)</li> </ul> </li> <li>4. <i>Social Controls</i> <ul style="list-style-type: none"> <li>Parental supervision (5, 3 pt Likert, .816)</li> </ul> </li> <li>5. <i>Supportive Neighbourhood</i> (9, 5 pt Likert, .552)</li> <li>6. <i>Peer support</i> (9, Yes/No, .699)</li> </ol>	<p>Developed by research team</p> <p>Petersen, Schulenberg, Abramowitz, Offer &amp; Jarcho (1984)</p> <p>Schaefer (1965)</p> <p>Schaefer (1965)</p> <p>Barber (1996); Barber, Olsen, &amp; Shagle (1994)</p> <p>Developed by research team</p> <p>Procidano &amp; Heller (1983)</p>

<b>Behavioural Protection</b>	
<i>1. Lifestyle choices</i>	
Participating in volunteer activities (6, Yes/No, .553)	Developed by research team
Healthy Lifestyle (8, 3 pt Likert, .795)	Gillis (1997)

<b>High Risk Drinking Dependent</b> variables measures with description (number of questions, format of items, Cronbach $\alpha$ )	Source
<i>Alcohol use</i> Total number of drinks last week (1, open-ended) Drinking past year (1, 5 pt likert) 5+ drinks on one occasion (1, 5 pt likert) CAGE alcohol scale (4, Yes/No, .674)	Based on wheel  Adapted from Canadian and province-wide surveys Adapted from Canadian and province-wide surveys Ewing (1984)

\*The research team was comprised of academics from the fields of Psychology, Sociology, and Child and Youth Care from the University of Victoria as well as a representative from the Child and Youth Officer's office and one from the Vancouver Island Health Authority.

*Psychosocial Risk*

*Risky peer affiliation*

Hussong (2002) suggests that peer context is the most influential predictor of adolescent substance use. Her research shows that youth who are highly embedded within a peer group that uses drugs and alcohol are more likely to use substances themselves. Because substance use tends to be a social activity, youth who are relatively disengaged from their substance using peers may be less likely to become involved with drug using behaviour. Sutherland & Shepherd (2001) found that peer influence played a greater role than that of the family for youth who already used substances; and that substance-using youth were more likely to spend more time with their friends than with their families. There may also be gender differences associated with peer influence on adolescent drinking- Barber, Bolitho and Bertrand (1998) found that “the dominant predictor of young adolescent boys’ drinking was whether their friends drink, whereas girls’ drinking was more strongly related to levels of interpersonal disorder. Peer pressure was a more important predictor of drinking among older



girls. But for boys, peer pressure remained highly significant throughout adolescence” (p. 164).

Vakalahi (2002) proposes that sibling drug use can also be a predictor of adolescent alcohol, tobacco and marijuana use. Adolescents with siblings who use alcohol, tobacco and/or marijuana are more likely to use these substances themselves; whereas having a high level of family involvement and an active religious affiliation can act as protective factors for adolescent drug use. Thus, not only does peer modeling of substance use influence teen substance use, family modeling, such as that by siblings can do so as well.

#### *Personal Vulnerability*

In this project, life stress is operationalized by the presence of a major life stressor such as family breakdown/discord, relationship breakup, death of a loved one, pregnancy, etc. Wills, McNamara, Vaccaro, and Hirky (1996) report that, for those between the ages of 16-25, the presence of a major life stress can result in an increased acceleration of the substance use trajectory.

Since participants in the survey were never asked about their family’s income level, parent education level is used as an indicator of family socio-economic status. A money problems scale is used as an indicator of perceived socio-economic vulnerability, and the number of household moves as an indicator of social instability (Barnes, Mitic, Leadbeater & Dhimi, 2009). It is acknowledged that, given the age of participants in this wave of the HYS, some of the participants may no longer be living in the family home. However, as substance use problems often have roots from ones teenage years, it is conceivable that issues from ones household of origin will still have an impact on ones actions, despite the potential physical distance between the two. The same may be true for one’s experiences in high-school such as

being a victim of bullying (both physically and relationally, see below) and neighbourhood influence.

Sullivan, Farrell and Kliever's (2006) research found that victimization, both physical and relational, can influence one's alcohol use, with physical victimization being significantly related to cigarette and alcohol use, and relational victimization contributing to all categories of drug use after controlling for physical victimization. Kaukinen (2002) reports that adolescent victims of physical violence are more likely to engage in binge drinking, and to experience negative consequences associated with their drinking, particularly negative financial consequences. Paul and Cillessen (2003) found that victimized girls had higher levels of depression, anxiety, negative social self-perceptions, as well as self-reported disruptive behaviour compared to any other group. As may be true with the influence of a family's socio-economic status, even though some participants may no longer be subjected to physical or relational victimization, the effects of having been bullied in high-school may be long lasting as "a growing body of research documents the detrimental effects of peer victimization on children's psychosocial development" (Sullivan et al, 2006, p. 119).

Sensation seeking has been defined as the willingness to take physical and social risks for the sake of varied, novel and complex sensations (Zuckerman, 1979 as cited by Cherpitel, 1993), and sensation-seeking variables such as thrill-seeking, impulsivity and instant gratification have been shown to have a significant influence on substance use (Wood, Cochran, Pfefferbaum, & Arneklev, 1995). Baker and Yardley (2002) report that as one's level of sensation seeking/impulsivity increases, so does their substance use. Cherpitel (1993) found a predictive relationship between alcohol consumption, risk-taking/impulsivity and sensation seeking on injury occurrence, with those reporting injuries being more likely to be moderate/heavy drinkers and to engage in frequent drunkenness as compared to those not

reporting any injuries. Zuckerman's 1979 Sensation Seeking Scale is one of the more widely used measures of personality when studying the relationship between personality and alcohol use (Clapper, Martin & Clifford, 1994).

The Addiction-Prone Personality (APP) measure predicts one's vulnerability to substance-use related problems and research with this measure has been successful in "discriminating drug addicts from non-addicts, predicting the severity of addiction and likelihood of remission during recovery" (Barnes, Barnes & Patton, 2005, p. 1852). This measure has also been found to be a "significant predictor of the development of new alcoholism over the seven-year follow-up period, even after controlling for possible confounding variables in a regression analysis" (Anderson, Barnes & Murray, n.d.). Personality traits measured by this scale include neuroticism, social conformity, self-regulation and sensation-seeking.

#### *Social Vulnerability*

The influence of family on a youth's level of delinquency and substance using habits has been widely discussed in the existing literature. A basic premise of Hirschi's (1969) social control theory is that parents have a direct, independent effect on their teen's delinquent behaviour, and that this effect holds even if the youth does not interact with delinquent friends. Hirschi suggests that it is parents, not peers, who exert a greater influence over the actions of their children. The values and norms taught by parents are internalized by their children and continue to exert influence in their behaviour even after they have left the home (Johnson, 1980).

Barber (1996) suggests that parental psychological control, "particularly as perceived by the pre-adolescent or adolescent, is consistently predictive of youth internalized behaviours (depression) and, in some cases, externalized behaviours (delinquency)" (p. 3296). He defines

psychological control as control attempts that intrude into the psychological and emotional development of the child and attempts that,

“potentially inhibit or intrude upon psychological development through manipulation and exploitation of the parent-child bond (e.g., love withdrawal and guilt induction), negative, affect-laden expression and criticisms (e.g., disappointment and shame) , and excessive personal control (e.g., possessiveness and protectiveness)” (p. 3297),

These are compared to behavioural controls, which are those in which the parent attempts to manage or control the child’s behaviour and which, as a component of an authoritative parenting style, have been associated with positive developmental traits such as academic success and educational engagement (Steinberg, Lamborn, Dornbusch, & Darling, 1992). Separating psychological control from behavioural control emphasizes where the control is located or focused, and enables one to shift the focus from how much control is good or bad for a child to asking in which areas of the child’s life is control facilitating or inhibiting (Barber, 1996). Pettit, Laird, Dodge, Bates & Criss (2001) found that high levels of psychological control were associated with more delinquent problems for girls and for teens who were low in preadolescent delinquent problems, and with more anxiety/depression for girls and for teens who were high in preadolescent anxiety/depression.

Research has also shown that family disruption/conflict, family functioning, parental family managing techniques, parental involvement with the justice system, parental anti-social behavior, familial stress, parental substance use, parent’s attitude toward drug use and parent-child involvement can all be considered strong predictors of adolescent substance use (Hawkins, Lishner & Catalano, 1985).

### *Behavioural Risk*

#### *Age of first drink*

The age at which one starts to consume alcohol can have long-term effects on their overall health. Research has shown that those who begin to consume alcohol between the ages of 11-14 are more likely to progress to develop DSM-IV alcohol disorders (DeWit, Adlaf, Offord, & Ogborne, 2000; Grant & Dawson, 1997). For females in particular, women with a diagnosis of alcohol abuse/dependence are more likely to have a significantly younger age of alcohol disorder onset, and are more likely to have a relapse of the alcohol disorder (Lewinsohn, Rohde & Seely, 1996). The habit of frequent drinking and the feeling of having been drunk before age 14 increases ones risk of experiencing a traumatic brain injury in later adolescence and young adulthood (Winqvist, Jokelainen, Luukinen, & Hillbom, 2006).

### *Psychosocial Protection*

#### *Protective peer influence and lifestyle choices*

As discussed above, ones peer affiliation can have a profound influence on the sorts of activities, behaviours and lifestyle choices in which one engages, and just as interacting with peers who use drugs and alcohol can affect one's likelihood of consuming such substances themselves, the inverse is true as well: having a circle of peers who don't engage in substance using behaviours makes one less likely to consume such substances (Curran, Stice & Chasson, 1997; Bray, Adams, Getz & McQueen, 2003; Li, Barrera, Hops & Fisher, 2002). Simons-Morton (2007) suggests that,

“shared behavior among close peers could be due to socialization (the effect on behavior of friends' attitudes and behavior commonly referred to as peer influence or peer pressure) or to selection (seeking out peers with similar behaviors). Selection, therefore occurs when adolescents develop or retain friends based on their similarity of beliefs, attitudes and behavior, whereas socialization occurs when adolescent adjust their beliefs, attitudes and behavior to conform to their friends. Socialization may be overt in the form of actual encouragement or

discouragement to engage in a behavior, or subtle and indirect in the form of adolescent perceptions about group norms, expectations, social acceptance and status associated with the behavior” (p. 672-673).

#### *Personal Controls*

The mastery and control questions in the HYS pertain to the amount of control the adolescent feels they have over aspects of their life. The questionnaire from which the mastery and control questions were drawn (the SIQYA- Self-Image Questionnaire for Young Adults) is an adaptation of the Offer Self-Image Questionnaire (OSIQ), and is designed to measure dimensions of self-image in young adolescents (Petersen, Schulenberg, Abramowitz, Offer & Jarcho, 1984). Petersen et al (1984) cite research indicating that girls typically have poorer self-images than boys during adolescence, and suggest that the entrance into junior high school, the onset of puberty and the beginning of sexual relationships/dating may be compounding factors, with girls experiencing all three factors at once being more susceptible to declines in self-esteem.

#### *Family Support*

“A child’s perception of his parents’ behaviour may be more related to his adjustment than is the actual behaviour of his parents” (Schaefer, 1965, p. 413). As such a youth who believes his or her parents to be supportive, regardless if their actions speak to such care, may be less likely to engage in high-risk drinking behaviours.

Henry, Robinson and Wilson (2003) investigated the effects of witnessing a parent use drugs and/or alcohol on the actions of their children and the perceived levels of parental support by that child. A significant relationship was found to exist: “parental substance use was directly related to adolescent substance use” (p. 44). Youth that see their parents as being supportive (providing praise, encouragement and physical affection) tend to be at lower risk for substance use. In the Henry, Robinson and Wilson (2003) study, adolescents who saw

their parents as current substance users also perceived their parents to be less supportive, suggesting an interaction effect between parental substance use and perceived levels of support.

#### *Social Control*

Parental monitoring has been associated with both a delay in the initiation of alcohol use (Oxford, Harachi, Catalano & Abbott, 2001) and a lowered likelihood that the adolescent who does drink alcohol will progress to being a heavy drinker (Reifman, Barnes, Dintcheff, Farrell & Uhteg, 1998). Tucker, Ellickson & Klein (2008) found that growing up in a “permissive household”<sup>5</sup> was associated with heavy drinking, and amongst sixth graders, those who believed that their parents would not be upset by their drinking were 2.6 times more likely to start drinking by the end of the school year compared to those who believed their parents would be upset by such behaviour (Simons-Morton, 2004). Pettit et al (2001) found that parental monitoring was anteceded by a pro-active parenting style and advantageous family-ecological characteristics such as supervising the teen’s activities and whereabouts and fostering a climate of information-sharing and communication. In addition to monitoring their adolescent’s behaviour, parents may also deter alcohol use by clearly communicating that substance use by the child will not be tolerated (Tucker et al, 2008).

#### *Supportive Neighbourhood*

As suggested in Bronfenbrenner’s ecological theory, in order to fully understand a behaviour, one must also have an understanding of the context in which it is occurring. While not specific to alcohol use or drug use, Schneiders, Drukker, van der Ende, Verhulst, van Os and Nicolson (2003) found the living in a disadvantaged neighbourhood is associated with

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<sup>5</sup> A “permissive household” was defined as having at least three of the following four characteristics: parents being “not at all” or “a little” upset to know that their child drank alcohol, being “not at all” or “a little” upset to know that their child used marijuana, knowing “sometimes” or less often their child’s whereabouts and telling the child “sometimes” or less often what time to be home.

greater behavioural problems and may lead to an exacerbation of such problems as the child moves from childhood to adolescence. In addition, children living in more deprived neighbourhoods have a greater chance of coming into contact with mental health care services (van der Linden, Drukker, Gunther, Feron & van Os, 2003). For this study, measures that included perceptions of safety and closeness with neighbours were used to determine levels of neighbourhood support.

*Adolescent Contraceptive Use when Drinking*

Like drinking, adolescence is a time when young people begin to experiment with their sexuality. A Canadian national survey from the year 2000 revealed that nearly half of Canadian youth aged 15-19 are sexually active (Bibby, 2001, as cited by Calgary Health Region, 2006). And while the number of youth who are sexually active is on the decline, the risk of contracting a sexually transmitted infection (STI), HIV/AIDS and/or becoming pregnant remain serious health risks for today's teens. Given that so many youth are sexually active, it can hardly be considered a deviant activity as it has been in the past. However, the number of sexual partners one has and the means taken to protect oneself from STIs and/or pregnancy can still result in such behaviour being considered problematic.

After a period of increase between the mid 1980's to the mid 1990's, rates of teenage pregnancy in Canada are on the decline, falling from 53.9 per 1000 births in 1974 to 32.1 per 1000 births in 2003, with the greatest decline seen amongst younger teens aged 15-17 (McKay, 2006). In Canada, rates of teenage pregnancy actually represent the rates of teenage conception, not just rate of live births to teenage mothers. Such rates are calculated as the sum of recorded live births, induced abortions and miscarriages per 1,000 of the population of females between the ages of 15-19 (McKay, 2006). The decline in teen pregnancy is good news, as "in Western countries, rates of teenage pregnancy are often viewed as a general



indicator of adolescent sexual and reproductive health as well as a bellwether of community socio-economic status” (McKay, 2006, p. 157). However, Maticka-Tyndale, Barrett and McKay (2000) suggest that Canada has limited sources from which to develop a comprehensive, reliable, coherent national profile of adolescent sexual behaviour and self-protective practices, therefore profiles on teens that become pregnant at an early age must be built from other, international research sources.

Small and Luster (1994) suggest that the likelihood of a teenager being sexually active is based on the accumulation of a number of risk factors, including having a steady boyfriend/girlfriend, low parental monitoring, permissive parental values, low grade-point average, a history of sexual abuse and alcohol use. In addition, different risky sexual behaviours (such as no condom use, multiple partners, and young age of first intercourse) often co-occur, making research that addresses only one risk factor of limited value (Metzler, Noell & Biglan, 1992).

Unlike drinking, a behaviour that usually occurs in social settings, sexual intercourse is typically a private experience between two people. Therefore, no one but the people involved can know for certain that the intercourse took place. Given this, it makes sense that the initiation of adolescent sexual behaviour is associated with what is *perceived* as normal within one’s peer group, not necessarily with the number of peers who are actually sexually active (Furstenberg, Moore & Peterson, 1985; Flick, 1986). “Risky peers” in this case may not actually be engaging in sexual intercourse, but if it is believed that they are, the influenced youth is more likely to engage in such behaviours than if it is believed that their peers are still virgins.

There is no doubt that alcohol use and sexual activity often co-occur: 39% of grade 9 males and 28% of grade 9 females used alcohol or drugs prior to their last sexual intercourse,

compared to 38% of grade 11 males and 21% of grade 11 females (Council of Ministers of Education, 2003). But the verdict on the relationship between alcohol consumption and contraceptive use is still inconclusive: some studies suggest a correlation between the two, others do not. Problem Behaviour Theory would view contraceptive non-use as one aspect of a spectrum of problem behaviour, and as being more likely given the presence of other risky activities (high-risk drinking).

Flisher and Chalton (2001) found no significant relationships between contraceptive non-use and the use of alcohol, cigarettes or inhalants amongst South African youth. Both Fortenberry, Orr, Katz, Brizindine, and Blythe (1997) and Leigh, Vanslyke, Hoppe, Rainey, Morrison, and Gillmore (2008) used diary submissions to establish a temporal relationship between alcohol consumption and condom use while controlling for individual differences by using a within-subjects analysis, and both found that alcohol consumption was not related to condom use when the participants usual condom use patterns were considered. If a participant typically used condoms, being under the influence of alcohol did not significantly affect their behaviour, and vice versa. Fortenberry et al (1997) do suggest that condom non-use may be related to substance use before intercourse, but only in the context of a change in, or new, sexual partner. However, this relationship is important as the non-use of a condom with a new partner not only increases the chance of an unintended pregnancy; it increases the chance of contracting an STI as well.

Based on their meta-analysis of three separate studies using three different adolescent and/or young adult populations, Senf and Price (1994) also sought to establish a temporal relationship between drinking and condom use. In each study, they failed to find a significant relationship between drinking and the use of a condom, regardless if the measure was a) one's own alcohol/drug use, b) neither/one/both partners using alcohol/drugs or c) being "high"

on alcohol. Senf and Price suggest that the disinhibiting effect of alcohol use is not a major factor in young adults failing to use a condom.

Coleman and Cater (2005) suggest that the impact of alcohol consumption upon risky sexual behaviour operates through a “continuum of influence”. The five points along this continuum, possibly influenced by the persons level of inebriation, include: 1) alcohol affecting a young person’s assessment of the other person’s sexual attractiveness; 2) alcohol used as an excuse for intended, but socially unacceptable, behaviour; 3) increased confidence and lowering of inhibitions; 4) impaired judgement in accurately recognizing and controlling a potentially risky situation; and 5) complete loss of control, memory loss and “black outs”.

In the Coleman and Cater study (2005), for those participants who reported engaging in both risky and non-risky sexual behaviours, the risky events were more likely to occur when their alcohol consumption had increased, and when the impaired judgement and complete loss of control explanations were applicable. “Risky sexual behaviour is measured as the number of behaviours in which the respondent has ever engaged that are identified as increasing the risk of contracting AIDS and other STDs” (Gillmore, Butler, Lohr & Gilchrist, 1992, p. 257). For females, pregnancy is often a consequence of not taking appropriate measures to protect against HIV/AIDS or other sexually transmitted infection, therefore engaging in risky sexual behaviours would also increase a woman’s chance of getting pregnant.

Hingson, Strunin, Berlin, and Heeren (1990) conducted a state-wide survey of Massachusetts youth to investigate adolescent condom use. Their research found that adolescents who consumed at least 5 alcoholic drinks daily were less likely to always use a condom when compared to abstainers (29% vs. 35%), and 16% of the adolescents who said they had had sex after drinking reported using condoms less often after drinking than when not drinking. Compared to other sexually active adolescents who drink, those who were less

likely to use condoms after consuming alcohol were more likely to hold erroneous beliefs about HIV transmission, were more likely to believe that condoms reduced sexual pleasure, more likely to have had sex after drug use, and more likely to have had 10 or more sexual partners in the past year.

Siebenbruner, Zimmer-Gembeck and Egeland (2007) followed participants for 16 years (birth through middle-adolescence) in their longitudinal study of antecedents and correlates of sexual behaviour. Those who were considered “high-risk takers” (HRTs) were those who had a lifetime history of six or more sexual partners and who failed to use contraceptive on each sexual encounter. HRTs were also found to have initiated intercourse at a younger age and reported higher levels of alcohol and drug use by age 16. The odds of being an HRT, rather than a “sexual abstainer” (SA), increased with more advanced romantic relationship progression and greater frequency of drug use at age 16. The odds of being a “low-risk taker”, rather than an SA, increased with a more mature appearance at age 13, more advanced romantic relationship progression and a greater frequency of alcohol use at age 16. These results are consistent with Jessor and Jessor’s Problem Behavior Theory in that, at age 16, the high risk takers were more likely to engage in drug use, which is consistent with the notion that high-risk taking may be a symptom of problem behaviour.

In a study on the adolescent substance use and sexual behaviours of teens in the Atlantic region of Canada, “the risk of sexual intercourse increased approximately two- and threefold as alcohol use increased” (Poulin & Graham, 2001, p. 611). In this study, 37.6% of the sexually active participants reported having unplanned sexual intercourse while under the influence of alcohol in the 12 months preceding the research, with the highest risk of unplanned intercourse under the influence of a substance being associated with alcohol use more often than once a month. Both males and females who reported having engaged in

unplanned sex while under the influence were twice as likely to report inconsistent condom use as compared to those who had not engaged in unplanned intercourse and were 27 and 12 times more likely respectively to report inconsistent condom use because they, or their partner, had been under the influence at the time.

Dye and Upchurch (2006) report that inebriated girls are significantly less likely to use a condom at first intercourse as compared to their more sober counterparts, and that girls who first have sex under the age of 14 and who are drunk at the time are the least likely group to use condoms. This may help explain why “excluding homosexual men and prostitutes, female teenagers have the highest rates of gonorrhea, cytomegalovirus, Chlamydia cervicitis, and pelvic inflammatory disease of any age group” (Brooks-Gunn & Furstenberg, 1989, p. 254). Girls who begin having intercourse at a younger age may be at increased risk of contracting an STI due to increased biological vulnerabilities, and because these young women may have more sexual partners than teenage girls who wait until they are older to engage in sexual intercourse, they may expose themselves to a greater pool of potentially infected partners (Baker, Rosenthal, Leonhardt et al, 1999).

Guo, Chung, Hill et al (2002) found a connection between early patterns of alcohol use (i.e. binge drinking) and subsequent sexual risk taking, and Ellickson, Tucker and Klein (2003) report links between early alcohol consumption and other problem behaviours, including pregnancy and parenthood by 12<sup>th</sup> grade. In a study examining the relationship between early alcohol use and subsequent alcohol use and sexual risk behaviours among urban adolescents, Steuve and O’Donnell (2005) found that young women who used alcohol by the 7<sup>th</sup> grade were four times more likely than their non-drinking peers to report recent sexual intercourse as 10<sup>th</sup> grade students, with the early drinkers being more likely to report subsequent alcohol problems, multiple sexual partners, unprotected sexual intercourse, being drunk or high during

sexual intercourse and pregnancy. And while the younger a woman is when she becomes sexually active the less likely she is to use contraception upon first coitus, those in a committed relationship or with one steady boyfriend are more likely to contracept as the relationship continues (Flick, 1986).

“It has been suggested that the factors which influence birth control nonuse are independent and additive, that is, that one factor may result in one woman's not using contraceptives, while another factor may result in a different woman's not using a contraceptive.” (Flanigan, McLean, Hall & Propp, 1990). Luster and Small (1994) cite other factors associated with irregular/no contraceptive use at the individual level including: low academic skills and educational inspirations, infrequent intercourse and recent initiation to intercourse, being a young teen, lack of knowledge of sex and contraception, a lack of acceptance of one's own sexual behaviour, a fear of side effects from the contraception, and a general tendency to engage in more risk taking activities. Family factors may include: low parental education, a lack of communication about contraception, strained relationships, and parental use of corporal punishment. Mott, Fondell, Hu, et al (1996) suggest that teens who had had sex by the age of 14 were more likely to be from a poorer family, to lack a father figure and have a mother who also engaged in sexual activity at an early age.

#### *Theoretical Perspective*

The theory chosen for this analysis is Jessor and Jessor's (1977) Problem Behavior Theory (PBT), which Petraitis, Flay and Miller (1995) suggests is an multivariate approach, integrating "cognitive-affective, learning commitment and attachment and intrapersonal pieces in the puzzle of [experimental substance use]" (p. 76). PBT “is a social-psychological framework that helps to explain the nature and development of alcohol abuse, drug misuse and other problem behaviours” amongst young people (Jessor, 1987, p. 331). From a

psychosocial stance, as opposed to a more biological, medical or genetic one, a basic tenet of this perspective is that, like all learned behaviour, the problem behaviour<sup>6</sup> serves a purpose- it is functional, purposive and instrumental towards the attainment of a specific goal. While the goals and means attached to the goal may vary from person to person, they have all been shaped by the norms and expectations of the larger culture and by the particular experiences the young person has had in the more immediate context of his/her everyday life. PBT considers the milieu in which the behaviour/action occurs, both personal and environmental; it does not just focus on the attributes of the situation in which the problem behaviour takes place, or on the outcome or consequences of the behaviour.

Three 'realms' of psychosocial influence form the primary focus of Problem-Behavior Theory- the Personality System, the Perceived Environment System and the Behavior System<sup>7</sup> (Jessor, 1987). Within each of these systems there are explanatory variables that reflect either *instigations* towards problem behaviour or *controls* against it, and together these variables generate a dynamic state referred to as a *proneness*, which suggests the likelihood of occurrence of socially acceptable behaviour or of problem behaviour. The *instigations* and *controls* are similar to the risk and protective factors discussed above; and *proneness* in all three systems is combined and used in the prediction and explanation of variation of problem behaviour.

In PBT, the Personality System is represented by three component structures that constitute the nature of the person- a motivational-instigation structure, a personal belief

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<sup>6</sup> Problem behaviour is one that is "socially defined as a problem, a source of concern or as undesirable by the norms of conventional society and the institutions of adult authority, and its occurrence usually elicits some kind of social control response (Jessor & Jessor, 1977, p. 33).

<sup>7</sup> Depending on its purpose, the spelling of behaviour will vary throughout this section. When used in a title such as Problem Behavior Theory or the Behavior System, the American spelling will be used as this is the way the theory's creators have spelled it. When referring to an action, the Canadian spelling to be used to be consistent with the rest of the paper.

structure and a personal control structure<sup>8</sup> (Jessor & Jessor, 1977). The theoretical concern of the motivational-instigation variable is that of directional orientation of action, that is the goals toward which a person strives and with the motivational sources or pressures than instigate particular behaviours. The value placed on the goal, and the person's expectations for achieving that goal, have motivational properties that influence whether behaviour towards or against its achievement are more likely to occur. High value placed on a goal implies a greater likelihood of action in that direction; low value placed on a goal implies that action would be oriented towards another, more highly valued goal.

Of the socio-psychological goals that animate action, three have been determined to be central and salient towards the actions of school-age youth- academic achievement, independence and peer affection. With each variable being influenced by the person's values and expectations towards the achievement of the goal, each variable can be seen as instigating or influencing the direction of action. Depending on the value placed by a person on a goal, and their expectations and motivations for achieving that goal, their willingness to engage in problem behaviour(s) that may jeopardize their success should be negatively correlated to their actions (high value and high expectations should result in lowered likelihood of putting the goal's achievement in jeopardy).

The theoretical concern of the variables in the personal belief structure is with the cognitive controls that are exerted against the occurrence of problem behaviour and which "refer to those restraints on engaging in nonconformity that originate in a variety of beliefs about self, society and self in relation to society" (Jessor & Jessor, 1977, p. 20). There are four variables within this structure- social criticism, alienation, self-esteem and internal-external

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<sup>8</sup> It is recognized in PBT that the three component structures of the personality system in no way represent an exhaustive definition of personality.



locus of control, with each variable considered a factor for controlling against problem behaviour. Although these variables are conceptualized as being distinct from each other, it is likely that they are in fact related to each other, and interact to form a patterned set of beliefs which guide the person's likelihood of engaging in problem behaviour.

As its name implies, the theoretical concern of the personal control structure is with control against non-normative, or unconventional, behaviour (Jessor & Jessor, 1977). Although similar in role to the personal belief structure, the personal control structure differs from the personal belief structure in the degree of directedness that characterizes its relationship to problem behaviour. Of the variables in the personal belief structure, none of them relate directly to the problem behaviour, that is to say that problem behaviour is an indirect consequence derived from the nature of the variables. In contrast, the three variables of the personal control structure- attitudinal tolerance of deviance, religiosity and the discrepancy between positive and negative functions (reasons for and against engaging in) problem behaviours, are more directly linked to, and actually refer to, the behaviours involved.

When taken as a group, the three structures of the Personality System can help comprise a *personality proneness* to problem behaviour. A person with a personality 'prone' to engaging in problem behaviour would place a lower value on academic achievement, a higher value on independence, lowered expectations of attaining both goals (academic achievement and independence), greater social criticism, greater alienation, lower self-esteem, more external control, greater tolerance of deviance, less religiosity and a greater positive versus negative functions discrepancy (Jessor, 1987). The more these personality characteristics and instigation and control variables fall into these patterns, the greater the likelihood (or greater the proneness) of problem behaviour.

The Perceived Environment System is the social-psychological context in which the person lives and how she/he experiences (or perceives) and gives meaning to that environment- it is the environment to which the actor is responding (Jessor & Jessor, 1977). The Perceived Environment System is comprised of environmental characteristics- supports, influence, controls, models and expectations of others, which are differentiated into two structures of variables: distal structures and proximal structures. Distal structure variables are those that are relatively more remote or removed from the causal chain- “variables that do not directly or necessarily implicate problem behaviour but can be linked to its occurrence by reliance on theory and the mediation of other variables” (Jessor & Jessor, 1977, p. 27). Distal structure variables serve mainly to characterize whether the social context in which the adolescent is located is more parent- and family-oriented as opposed to more friends- and peer oriented. The six variables in the distal structure include: perceived support from parents and from friends, perceived controls from parents and friends, compatibility or consensus between parents and friends in their expectations for the adolescent and the perceived influence on the young person from parents as opposed to that of friends. A more peer oriented environment would suggest less involvement with conventional norms, more exposure to models for problem behaviour and less control over transgression (Jessor, 1987), indicating a greater proneness for problem behaviour to occur.

In contrast, proximal variables are those that are directly or more obviously related to the likelihood of occurrence of problem behaviour, such as having friends who already participate in the problem behaviour - the adolescent is already located in a social context in which the problem behaviour is prevalent and there is social support for its occurrence (Jessor & Jessor, 1977). Where social support exists for a particular behaviour, engaging in said behaviour may serve to help the adolescent gain peer acceptance and establish connections

with others through the sharing of a common action. The three variables that comprise the proximal structure of the Perceived Environment System include: friend's approval or disapproval of the problem behaviour, parental approval or disapproval of the behaviour, and friends modeling the behaviour. Of all the variables in the overall social-psychological framework, those of the proximal structure are expected to be among the most powerful- a high prevalence of friends who model and support the behaviour constitute not only a direct influence on the likelihood of engaging in the problem behaviour, they also may be an indirect reflection of other problem-prone behaviours - ones that would account for the membership in the group of peers who engage in problem behaviour as compared to membership in a more conventionally-oriented peer group.

The primary dynamic relationship of the Perceived Environment System is between the perception of social controls against the problem behaviour and the perception of models and supports for the problem behaviour. How the adolescent balances these two pressures reflects their likelihood of engaging in the problem behaviour. In a perceived environment in which there is low parental support and controls, lower friends controls, lower parent-friends compatibility, greater friends-than-parents influence, lower parental disapproval of problem behaviour, and greater friends approval for and models of problem behaviour, the greater the proneness for problem behaviour (Jessor, 1987).

The last psychosocial influence of PBT is the Behavior System, comprised of two structures- the structure of problem behaviour and the structure of conventional behaviour (Jessor & Jessor, 1977). The boundaries of behaviour definition are complex, as the acceptance of a given behaviour is context-dependent and relies on a variety of considerations beyond just the act itself- its personal meaning, its social definition, its relation to age and status, and its time in history. The term 'problem behaviour' is not intended to be a value-

based term, but instead refers to a behaviour that has been socially defined as problematic, and ones that often serve similar social-psychological functions, such as repudiating conventional norms, exercising independence from parental controls or as a coping mechanisms for dealing with heavy emotional or mental health issues such as anxiety, depression, frustration, inadequacy or failure. Engaging in problem behaviour may be an instrumental effort to obtain goals that are blocked or that otherwise seem unattainable, or as an attempt to claim a more mature status than is actually true (Jessor, 1987).

The problem behavior structure is concerned with those actions of youth that society has deemed inappropriate or undesirable, those that depart from widely held and institutionalized legal and social norms and those that are deemed to warrant some degree of social control (Jessor & Jessor, 1977). Activities that are included within the problem behavior structure include activism, drug use, sexual intercourse, drinking alcohol, problem drinking, and general deviance (stealing, lying, property destruction, disruptive behaviour and aggression).

The opposite of the problem behavior structure is the conventional behavior structure which concerns itself with behaviour that is socially acceptable, normatively expected and codified and institutionalized as appropriate for adolescents and youth (Jessor & Jessor, 1977). The two variables that make up this structure are involvement with a church or religious group and involvement with academic course work. Both church and school are considered institutions which encourage youth to orientate towards conventional socialization, supporting both traditional and established networks of the larger society.

The dynamic between the two structures of the Behavior System serves to act as a constraint upon or alternative to engaging in the other- the behaviours associated with engagement in one typically aren't compatible with the behaviours in the other, they tend to be

mutually exclusive. An important connection between the behaviours is the degree to which they are linked by the social ecology so that the occurrence of one may increase the likelihood of engaging in others. This premise will form a major thrust of the hypotheses generated for this research: are the youth from this survey who engage in high-risk alcohol consumption also engaging in high-risk sexual activity?

Jessor and Jessor (1977) also stress the importance of considering a time dimension when applying the PBT to adolescent psychological development:

“[A]pplying the conceptual framework to development in adolescent rests on several key points: there is stratification of society in term of age, that access to valued roles, statuses and rewards varies with different age strata, that adolescence, especially early adolescence can be characterized as an age stratum of relatively limited access to certain valued roles, statuses and rewards; that age strata have associated norms and expectations that regulate what behaviors are considered to be appropriate; that many of the behaviors we have referred to as problem behaviors are normatively age graded, that is, are proscribed for those who are younger but are permitted, and even proscribed, for those who are older; and that because of this, engaging in such behaviors can serve to mark a transition in status, their occurrence representing a developmental change towards, or claim upon, a more mature status” (p. 40-41).

Thus, in considering ones proneness to engage in problem behaviour, one should consider the adolescent’s age, in addition to their social learning, social characteristics, the social definitions of his/her environment, and the particular stage of cultural and historic evolution (Jessor & Jessor, 1977).

#### *Hypothesized model*

Figure 2 presents a hypothesized model of influence based on the social, individual and behavioural risk and protective factors presented in Table 1 and the literature discussed. This model allows for the testing of possible mediation effects.

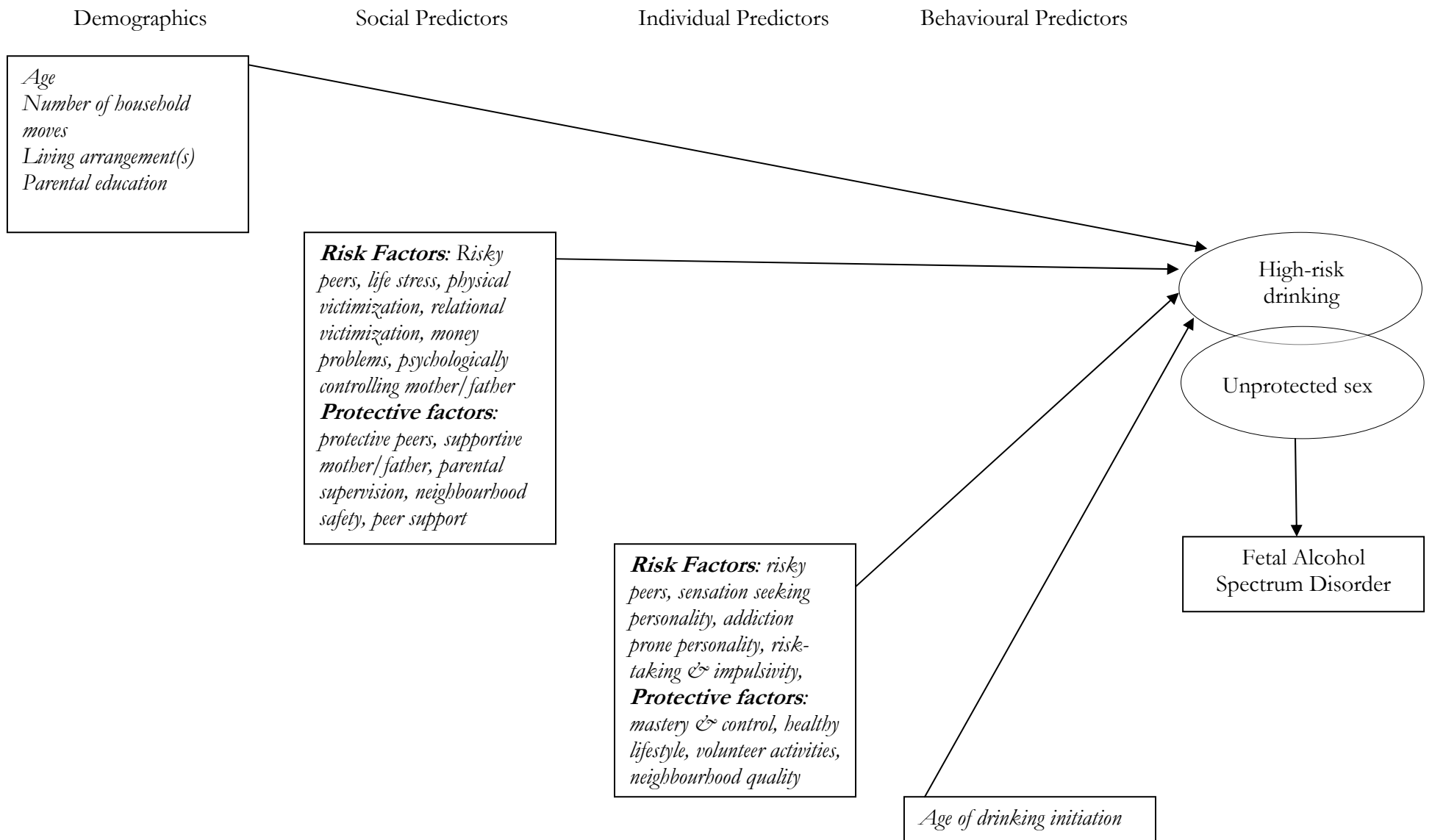


Figure 2: Psycho-social determinants of high-risk drinking behaviours

## Methods

### *Design*

This study is a secondary analysis of data collected via the administration of the Healthy Youth Survey, a multiyear initiative funded by the Canadian Institute of Health Research (CIHR), which investigates the risk and protective factors for injury among youth. Secondary analysis is the "further analysis of an existing data set which presents interpretations, conclusions or knowledge additional to, or different from, those presented in the first report on the inquiry as a whole and its main results" (Hakim, as cited by Hinde, 1991, p. 248). Secondary analysis has several advantages including: being cost-effective, the availability and timeliness of the data, such data sets typically have a large sample size that allows for population representation, and the original data collection is usually undertaken by experts in research and research methodology. Disadvantages to secondary analysis are that the new researcher is not involved in the design process so there may not be a good fit between the posed research question(s) and the existing data set, it takes time to learn the nuances of a new data set, the 'vanishing sample' in which an interested subpopulation comprises only a fraction of the existing sample and the subpopulations sample size does not allow for a meaningful analysis, and the data may be used for purposes other than why it was originally collected (Hinde, 1991; Hoffman, 2005).

Data for the Healthy Youth Survey has been collected in three 'waves'; wave 1 of the survey was conducted in 2003; wave 2 in 2005 and wave 3 in 2007. Data were collected in Victoria British Columbia, a mid-sized city on the west coast of Canada. Ethical approval for the Healthy Youth Survey was granted by both the University of Victoria's Human Research Ethics Board and that of the Vancouver Island Health Authority.

### *Research Participants*

The target age and eligibility for the initial wave of this survey (wave 1, conducted in 2003) was 12 to 18 years. For this project, the wave 3 data will be analyzed- participants will be 4 years older, between the ages of 16-23. It was decided to analyze the latest wave of the data as the participant's would be older and more likely to be engaging in the activities being examined.

Initially, 9,500 random households in the Victoria Census Metropolitan<sup>9</sup> area were contacted by telephone; however, only 1,035 households included youth between the ages of 12-18 who would be eligible to participate. Of the 1,035 households that were eligible to be included in the study, 664 (64.2%) youth agreed to participate. The socio-demographics of this wave 3 sample population are presented in Table 2. As household income was not a measure on the survey, parent education level and full-time employment status has been used as a marker of socio-economic status.

### *Data Collection*

The Healthy Youth Survey (HYS) was created by academics from the fields of Psychology, Sociology and Child and Youth Care at the University of Victoria, in collaboration two community partners, one from the Child and Youth Officer's<sup>10</sup> office, and the other from the Vancouver Island Health Authority. Prior to initiating telephone contact with the randomly selected households, a one page letter was sent-out in an effort to legitimize the research, advise the household of the impending telephone contact and to distinguish the HYS telephone call from telemarketers.

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<sup>9</sup> The Victoria Census Metropolitan area includes Greater Victoria, and extends north to the Malahat, northwest to Port Renfrew and northeast out the Saanich Peninsula.

<sup>10</sup> Now known as the Representative for Children and Youth; formerly known as the BC Children's Commission



Table 2: Socio-demographics of the Wave 3 sample (N = 539)

<b>Socio-demographic Variable</b>	<b>n</b>	<b>%</b>
<b>Gender</b>		
Male	245	45.4
Female	294	54.4
<b>Age (females only N=294)</b>		
16	31	10.5
17	48	16.3
18	38	2.9
19	48	16.3
20	42	14.3
21	50	17.0
22	36	12.2
23	1	.3
<b>Socio-economics (females only N=294)</b>		
Dad finished high school (n=284)	254	86.4
Mom finished high school (n=290)	277	94.2
Dad employed full-time (n=288)	228	77.6
Mom employed full-time (n=291)	193	65.6

The survey portion of this study was administered in person by trained interviewers and took place at an agreed upon location, typically within the youth's home. The survey was administered in two parts: first, the trained interviewers would ask survey questions to participants whose verbal responses were recorded by the interviewer, then in part two, the more sensitive part of the interview pertaining to the youth's engagement in risk-taking behaviours and sexuality, the interviewer would again read the question aloud, with the youth recording their responses themselves. The interview concluded with youth independently completing a questionnaire about sexuality and self-harm. As some participants were no longer living in the Greater Victoria area, some interviews took place via the

telephone. In these cases, participants were sent the questionnaire in advance, filled out the self-completed portion and mailed it back. On average, the survey took about one hour to complete. Verbal consent to participate was obtained from both the youth and their parents upon the initial phone call and formal written consent was gained by the interviewer before the interview process began. Youth were provided with a \$25 honorarium for their participation.

For further discussion on collection methods and the ethics debated during the study design and data collection process, please refer to Jansson, Mitic, Hulten and Dhimi, 2006.

### *Measures*

The entire Healthy Youth Survey Wave 3 contained over 900 variables, a subset of which was selected for this study. Reliabilities were computed for those variables where internal consistency was expected, but not for variables (for example, life stress, risky and protective peer affiliations and neighbourhood quality) in which it was not expected that they would be unidimensional. Reliabilities reported in this paper are based on the 2007 cross-sectional data upon which this study is based. Unless otherwise indicated, scales and questions were developed by the research team.

#### *Demographic Domain Measures*

*Gender and Age:* The gender and age, in months, of the youth was collected during the interview portion of the survey. For analysis purposes, the age variable was recoded to correspond to the age, in years, of the participant.

*Number of household moves:* Participants were asked to indicate the number of different homes they had lived in during the past two years.

*Living arrangements:* Participants were asked to indicate whether they lived with both biological parents for at least one month or more in each of the past three years. Data from

ages 13-16 were obtained in the current wave of the study; data referring to the period of time before age 12 was taken from wave 1 of the survey. Aggregated variables were created and dichotomized into "yes" or "no".

*Parent's education:* Parental education level was obtained by asking the youth the following question: "What is the highest level of education completed by your "mother"?" The exact same question was asked pertaining to the father's level of education. The education level categories provided formed an ordinal scale with the least amount of education ("did not finish high school") coded as 1, and the highest amount ("finished college/university") coded as 5.

*Social Risk Factors Domain Measures*

*Risky peer modeling/affiliations:* Peer interests/activities were assessed via 5 questions asking "Are your close friend into: smoking, drinking or doing drugs, asking for money downtown (panhandling), skateboarding or gang-related activities?" Answers were dichotomous, either "yes" or "no". These items were totalled for a Risky Peers Scale variable.

*Life stress:* Twenty-six important, stressful experiences for adolescents were assessed in a yes/no format for their occurrence in the past 12 months. The 26 items measuring stressful experiences were: separation or divorce of parents; marriage of parents; friends moved away, or you moved away from friends; breaking up with or being rejected by boyfriend/girlfriend; trouble with supervisors at work; trouble with teachers at school; failing a course; death of a friend; death of a parent; death of a brother or sister; unplanned pregnancy; being the victim of an interpersonal crime; fired from a job; collecting unemployment compensation; visiting a food bank; being sexually assaulted; being married; being in a long-term committed relationship; self or partner having an abortion; having a child/children; getting divorced; having a nervous breakdown; having a severe physical problem; having a severe psychological

problem; spending at least one night in the hospital; and getting into trouble with the law. These items were totalled and a scale summarizing the total number of events which had occurred was created.

*Victimization:* Questions pertaining to physical and relational victimization were adapted from Crick and Grotpeter (1995). A three-point scale of “never”, “sometimes” and “almost all the time” was used to assess the likely of each situation. Questions assessing physical victimization were: “how often do you get hit by people?”; “How often do people yell at you or call you mean names?”; “How often do you get pushed or shoved by people?”, “How often do people kick you or pull your hair?”, and “How often do people say they will beat you up if you don’t do what they want you to do?”. Cronbach’s alpha for physical victimization was .68. The questions assessing relational victimization were: “How often do people leave you out on purpose when its time to do an activity?”, “How often do people who are mad at you try to get back at you by not letting you be in the group anymore?”, “How often do people make fun of you because of the way you look?”, “How often do people tell lies about you to make others not like you anymore?”, “How often do people say they won’t like you unless you do what they want you to do?”, “How often do people try to keep others from liking you by saying mean things about you?”, and “How often do people go out after school or work and not invite you?”. Cronbach’s alpha for relational victimization was .71.

*Money problems (familial):* A three-point Likert scale (never; sometimes; often) was used to assess money problems within the family. Questions were developed by the research team and were phrased: “How often does your family have problems paying for basic necessities (like food, clothing, or rent)?”, “How often does your family have problems paying for things you need for school, college or university (i.e. school supplies, tuition or transportation)?”, and “How often does your family have problems paying for things that you like to do (like playing

sports or other games, going to movies, going out for dinner, going on vacation, or taking music lessons)?”. The Cronbach's alpha for this measure was .67.

*Parental Psychological Control:* Selected from a sample of variables described by Barber (1996), these eight items (for each parent) measured the adolescent's perception of their parent's level of psychological control. Questions were, “My mother/father is a person who: is always trying to change how I feel or think about things; changes the subject whenever I have something to say; often interrupts me; blames me for other family members' problems; brings up past mistakes when she/he criticizes me; is less friends with me if I do not see things her/his way; will avoid looking at me when I have disappointed her/him; and if I hurt her/his feelings, stops talking to me until I have pleased her/him again.” A three-point ordinal scale with responses ranging from “not like her/him” to “like her/him” was used to assess this variable. These items were totalled to created Mother/Father Psychological Control Scale variables. Cronbach's alpha for mother's psychological control was .78; for fathers psychological control it was .77.

*Social Protective Factors Domain Measures*

*Protective Peer Modeling:* Peer interests/activities were assessed via 6 questions asking “Are your close friend into: working hard for high grades in school, college or university; computers; working at a paid job; playing sports; performing in drama, music or band; or church/spiritual groups?” Answers were dichotomous, either “yes” or “no”, and these items were totalled for a Protective Peers Scale variable.

*Supportive Parents:* A three-point ordinal scale with responses ranging from “not like her/him” to “like her/him” was used to assess this variable which was selected from a sample of variables described by Schaefer's Children's Reports of Parental Behavior Inventory (1965). These five items (for each parent) measured the adolescent's perception of their parent's level

of support with the following questions: “My father/mother is a person who: understands my problems and worries, is able to make me feel better when I am upset; enjoys talking things over with me; has a good time with me; and enjoys doing things with me.” Cronbach alpha’s for supportive mother was .73, for supportive fathers it was .83.

*Parental Supervision:* Five questions based on Barber (1996) and Barber, Olsen and Shagle (1994) assessed how much parents really knew about where the participant went at night, where they were most afternoons after school or work, how the youth spent their money, what the adolescent did in their free time and who the teen’s friends were. Answers were on a three-point Likert scale ranging from “they don’t know” to “they know a lot”. Reliability (Cronbach’s alpha) for this variable was .82.

*Supportive Neighbourhood:* A five-point ordinal scale ranging from “strongly disagree” to “strongly agree” was used to assess the following statements about the neighbourhood in which the participant lived: “I feel safe in my neighbourhood; I know my neighbours; There are activities I like to do in my neighbourhood; The people I like to hang around with live in my neighbourhood; My school is in (or near) my neighbourhood; My neighbourhood is clean; My neighbourhood has the groceries and services I need close by; There are places that children can play in my neighbourhood such as parks or community centres; and The health services I need are available in my neighbourhood.” Cronbach’s alpha for the ‘supportive neighbourhood’ variable was .55.

*Peer support:* Support from friends was measured using a nine-item social support questionnaire designed by Procidano and Heller (1983). Participants answered either “yes”, “no” or “don’t know” to the following statements: “My friends/peers give me the moral support I need; I rely on my friends/peers for emotional support; If I felt that one or more of my friends/peers were upset with me, I’d just keep it to myself; There is a friend/peer I could

go to if I were just feeling down, without feeling funny about it later; My friends/peers and I are very open about what we think about things; My friends/peers are sensitive to my personal needs; My friends/peers are good at helping me to solve problems; I have a deep sharing relationship with a number of friends/peers; and I have a relationship with a friend/peer that is as intimate as other people's relationships with friends/peers." Cronbach's alpha for this scale was .70.

*Individual Risk Factors Domain Measures*

*Sensation-seeking personality:* Based on the Zuckerman Kuhlman Personality Questionnaire, the eleven questions assessing a sensation-seeking personality included: "I like to have new and exciting experiences even if they are a little frightening", "I would take off on a trip with no pre-planned or definite routes or timetables", "I like to do things just for the thrill of it", "I tend to change interests frequently", "I sometimes like to do things that are a little frightening", "I'll try anything once", "I would like the kind of life where I am on the move and travelling a lot, with lots of change and excitement", "I sometimes do "crazy" things for fun", "I like to explore a strange city or section of town by myself, even if it means getting lost", "I prefer friends who are excitingly unpredictable", and "I like "wild" uninhibited parties". Answers to these questions were either "yes" or "no". The Cronbach's alpha for this variable was .78.

*Addiction-prone personality:* Twenty-one yes/no questions assessed the presence of an 'addiction-prone personality'. These questions were taken from the Addiction Prone Personality Scale created by Barnes, Murray, Patton, Bentler and Anderson (2000). Anderson, Barnes, Patton and Perkins (1999) identified four sub-scales within the addition prone personality measure: Sensation Seeking (SS- 5 items), Impulsivity/Recklessness (IR- 5 items),

Negative View of Self (NV- 5 items and Non-Loading (NL- 6 items). The questions asked were as follows: “Have you had very strange or peculiar experiences?”, “Have you often gone against your parent’s wishes?”, “Are you a steady person?”, “Do you wish you could have more respect for yourself?”, “Have you ever been in trouble with the law?”, “Do you prefer rock music over ballads?”, “Have your parents often objected to the kind of people you went around with?”, “Have you lived the right kind of life?”, “Have people said that you sometimes act too rashly?”, “Do you prefer loud music over quiet music?”, “Are you unable to keep your mind on one thing?”, “Do you go to church almost every week?”, “Do you prefer sports cars over passenger cars?”, “Do you often feel “fed up”?”, “Do you have strange or peculiar thoughts?”, “Would you prefer to be a stunt-man/woman over a prop-man/woman?”, “Do you prefer endurance sports over games with rests?”, “Did you ever feel that strangers were looking at you critically?”, “Did you play hooky from school quite a bit as a youngster?”, “Do you prefer electric music over unamplified music?”, and “Do you give money to charities?”. The Cronbach's alpha reliability for the 21 scale was .75. Sub-scales of the APP were not employed in this investigation.

*Risk Taking and Impulsivity:* A five point ordinal scale with measures of strongly agree, agree, neither agree nor disagree, disagree and strongly disagree was used to answer the following questions assessing levels of risk taking and impulsivity: “I often act on the spur of the moment without stopping to think”, “I get a real kick out of doing things that are a little dangerous”, “You might say I act impulsively”, “I like to test myself every now and then by doing something a little chancy”, and “Many of my actions seem to be hasty”. These measures were based of the work of Cherpitel (1993) and the Cronbach alpha for this variable was .90.



*Individual Protective Factors Domain Measures*

*Mastery and Control:* Based on Peterson, Schulenberg, Abramowitz, Offer & Jarcho's (1984) Self-Image Questionnaire for Young Adolescents and using a 3-point ordinal response scale ("disagree, neither agree nor disagree, and agree"), the 9 questions asked for this variable were: "I have a lot of control over the things that happen to me; My work, in general, is at least as good as the work of most others; There is usually a way I can solve the problems I have; There is little I can do to change many of the important things in my life; I often feel confident in dealing with problems of life; I am looking forward to the years ahead; Sometimes I feel that I am being pushed around in life; What happens to me in the future mostly depends on me; and I can do just about anything I really set my mind to." Cronbach's alpha for this scale was .74.

*Behavioural Risk Factors Domain Measure*

*Age of first drink:* Participants were asked, "How old were you when you first had a drink of beer, wine or liquor?"

*Behavioural Protective Factors Domain Measures*

*Healthy Lifestyle:* An eight-item test measuring a fitness and health-oriented lifestyle was adapted from the Adolescent Lifestyle Questionnaire designed by Gillis (1997). Participants were asked how often they did the following things: read labels on packaged food; limit their "junk food" intake; exercise 3-4 times a week; follow a healthy diet; exercise vigorously for 20-30 minutes at least 3 times per week; limit foods high in fats; choose salads,

fruits and vegetables for snacks; and participate in a regular program of sports/exercise.

Answers that could be provided were “never”, “sometimes” and “always”. Cronbach’s alpha for this test was .80.

*Participating in Volunteer Activities:* This measure was assessed via yes/no answers to six questions about the participants volunteer activities including: doing activities at school, college or university; supporting or helping a cause; fund raising; helping out in the community; helping neighbours or relatives; or any other type of activity which the youth specified. Reliability was .55.

### *High-Risk Drinking*

In addition to the question regarding the age of drinking initiation, the questions from the Healthy Youth Survey pertaining to alcohol consumption selected for analysis in this study included the following:

“Starting yesterday and looking back over the last 7 days, how many drinks of alcohol did you have on each day?” Participants were able to specify how many drinks they had consumed on each day of the week prior to the survey. The number of drinks was tallied to represent the total number of drinks for the week, with seven or more drinks being considered heavy drinking. This variable was then recoded into a dichotomous variable: those who consumed seven or more drinks and those that did not.

“How often in the past 12 months have you had 5 or more drinks on one occasion?” A likert-type scale with measures of “never; a few times per year; a few times per month; once a week; and more than once a week” being possible answers. This variable was then recoded into a dichotomous variable representing those who binge drank weekly or more versus those who did not.

The four questions of the CAGE were asked in the survey: “Have you felt that you should cut down on your drinking; Have people annoyed you by criticizing your drinking; Have you felt bad or guilty about your drinking; and Have you had a drink first thing in the morning to steady your nerves or get rid of a hangover?” Answers were either “yes” or “no” to these questions. The Cronbach's alpha for these questions was .67. A total CAGE score was computed into a summed variable, which was subsequently recoded into a dichotomous variable representing those who scored two or more on the CAGE and those who did not.

#### *High-Risk Sex*

The following questions about sex and sexuality were used in the analysis of this survey:

“Have you ever had sex?” Sex was defined as either vaginal, oral or anal sex. Answers were either “yes” or “no”.

“Do you use some form of contraception or birth control to guard against pregnancy when having sexual intercourse?” A three-point likert scale with measures of “never; sometimes; or always” was used. A dichotomous variable was created to represent participants who did not consistently use contraception (those who never or only sometimes did) versus those who always did.

“Do you use some form of protection against STI's when having sexual intercourse?” A three-point likert scale with measures of “never; sometimes; or always” was used. A dichotomous variable was created to represent participants who did not consistently use protection (those who never or only sometimes did) versus those who always did.

“Have you ever been (or made someone) pregnant?” This was a “yes”/“no” question. If participants answered yes, they were asked how many times they had been pregnant or made someone pregnant.

“Do you have any children of your own?” This was a “yes”/“no” question. If participants answered yes, they were asked how many children they had and how much involvement they had in caring for their child(ren).

“Do you use a condom when having sex?” A three-point likert scale with measures of “never; sometimes; or always” was used. A dichotomous variable was created to represent participants who did not consistently use condoms (those who never or only sometimes did) versus those who always did.

#### *Data Analysis*

The first step of the data analysis process was to look at the descriptive data for the sample demographics, for each of the dependent variables and for contraceptive non-use. Next, the risk and protective factors for high-risk alcohol consumption as presented in Table 1 were tested in a series of analyses - cross tabulations, chi square analysis, bivariate correlations and univariate *F* tests were used as appropriate to determine which predictors were significantly associated with high-risk drinking. After significant predictors were identified, efforts were taken to develop a set of non-overlapping predictors to avoid problems of multicollinearity. An aggregated and standardized parenting index had been created in a previous study utilizing this data (see Barnes, Mitic, Leadbeater and Dhimi, 2009) by combining the protective and risky parenting factors of Mother Support, Father Support, Parental Supervision, Mother Psychological Control, and Father Psychological Control. The parenting index was used in this data analysis.

In the individual/ personality domain, the factors ‘Addiction Prone Personality’ and ‘Risk Taking and Impulsivity’ were found to be highly correlated ( $r_2 = .62$ ,  $p > .01$ ,  $N = 90$ ). The Risk-Taking and Impulsivity measures were dropped as measures of these personality aspects are included in the ‘Addiction Prone Personality’ measure.

Once the variables significantly associated with each of the high-risk drinking behaviours had been identified, binary logistic regression modeling was used to determine which variables would be the most important in predicting the high-risk drinking behaviours. Other popular models for analyzing binary response data include the probit model and discriminant analysis, however logistic regression was more suitable for the data of this survey because it makes no assumptions about the variable distribution, it is a direct probability model, and it can provide valid estimates regardless of the study design (Hailpern & Visintainer, 2003). The regression models were constructed in a hierarchical fashion of four blocks: socio-demographics, social risk and protective factors, individual risk and protective factors and age of drinking initiation were entered in that order. This model building approach was utilized to test for possible mediating effects. Mediating effects are suggested when variables entered early in the model become non-significant in later stages of the data entry (Baron and Kenny, 1986).

## Results

### *Demographics Characteristics of the sample*

The total number of female participants for this sample was 294, representing 54.4% of the total sample population (total sample N= 540). The mean age for the young women of this survey was 19 years 6 months (s.d. +/- 1.92). Parental education and employment status was used as an indicator of socio-economic status as family income level was not queried. The parents of female participants in this survey were well educated - 88% of fathers and 94% of mothers had finished high school, and most were employed either full-time or part-time (85% of both fathers and mothers). Most of the female participants in this survey were attending school: 32% were attending either middle or high school and 41.8% were attending some form of post-secondary institution.

### *Alcohol Use Patterns*

The vast majority of all participants, both male and female, had at least tried alcohol, with only 31 people (16 males and 15 females) indicating that they had never done so. Over 60% of both genders engaged in weekly heavy drinking (7+ drinks per week) with fewer people reporting engaging in weekly binge drinking (5+ drinks on one occasion) (see table 3). No significant differences were found between males and females and heavy drinking,  $\chi^2(2, N=531) = .56, p > .05$ . However, this finding is misleading given the dichotomous nature of the heavy drinking variable. Even though it appears that near equal proportions of males and females are engaging in heavy drinking, this does not mean they are consuming the same amount of alcohol. The heavy drinking males of the studied drank an average of 15 drinks per week; the heavy drinking females averaged 10 drinks per week and the difference between these two groups is significant,  $F = 7.22; df = 1, 337; p < .05$ . A significant difference

between males and females and weekly binge drinking was found,  $\chi^2(2, N=535) = 8.43, p < .05$  with 19.5% of females engaging in this behaviour and 30.3% of males doing so.

Table 3: Engagement of high-risk drinking by gender

	7 + drinks per week			Weekly binge drinking		
		n	%		n	%
Males (N= 239)	No	82	34.3	No	168	69.7
	Yes	157	65.7	Yes	73	30.3
Females (N= 291)	No	109	37.5	No	236	80.5
	Yes	182	62.5	Yes	57	19.5

Questions from the CAGE questionnaire, a screening tool for alcohol dependence, were used to assess participant risk for alcoholism, with a score of two or higher on the four-item questionnaire being considered high-risk. 69 of 244 males (28%) and 90 of 294 (31%) females met the criteria for being high risk. The difference between the young men and women was not found to be significant,  $\chi^2(1, N= 538) = .35, p > .05$ . Of the ninety women who scored 2 or more on the CAGE, 37% of them report engaging in heavy drinking; 3% of them report only weekly binge drinking; and 33% report engaging in both heavy drinking and weekly binge drinking (see figure 6)

When cross-tabulated against each other, significant relationships were found between all three alcohol-related problem areas for females. Of the female heavy drinkers, 64 of the 182 (35%) scored 2 or more on the CAGE and 53 of the 182 (29%) were weekly binge drinkers. Of the 57 women who report weekly binge drinkers, 58% scored 2 or more on the CAGE (33 of 57) and 93% (53 of 57) are also heavy drinkers. Heavy drinking and weekly binge drinking were found to be significantly related,  $\chi^2(1, N= 290) = 30.19, p < .05$ . In addition, significant relationships were found to exist between young women's heavy drinking and alcoholism (a CAGE score of 2 or more),  $\chi^2(1, N=291) = 4.08, p < .05$  and weekly binge

drinking and alcoholism,  $\chi^2(1, N= 293) = 24.56, p < .05$ . Thirty young women reported engaging in weekly binge drinking, heavy drinking and had a CAGE score of 2 or more.

Twenty three of the young women report having a CAGE score of 2 or more but not engaging in either heavy drinking or weekly binge drinking. This is perhaps best explained by the fact that the CAGE is a lifetime measure of alcohol-related problems. Therefore, it appears that some of the participants may have changed their drinking habits, and may no longer be engaging in high-risk drinking behaviours (see figure 3).

Participant age was found to be a significant factor in females heavy drinking but not for either the weekly binge drinking or CAGE of 2 or more categories (see table 4). Given that the age range of participants for this study was limited to those between the ages of 16-23, perhaps it is not surprising that no significant differences were found between the high-end of the age spectrum as compared to the low-end for two of the high-risk drinking categories; the age range isn't large enough to notice differences in drinking habits.

Table 4: High--risk alcohol consumption patterns and age for female participants

	Heavy		Binge Weekly		Cage 2 or more	
Females	F= 16.88; df= 1, 289; p < .05		F= 1.20; df= 1, 292; p > .05		F= .078; df= 1, 292; p > .05	
	Yes	No	Yes	No	Yes	No
N	182	109	57	236	90	204
Mean Age	19.44	18.51	19.35	19.03	19.04	19.11
SD	1.82	1.96	2.00	1.91	1.87	1.96



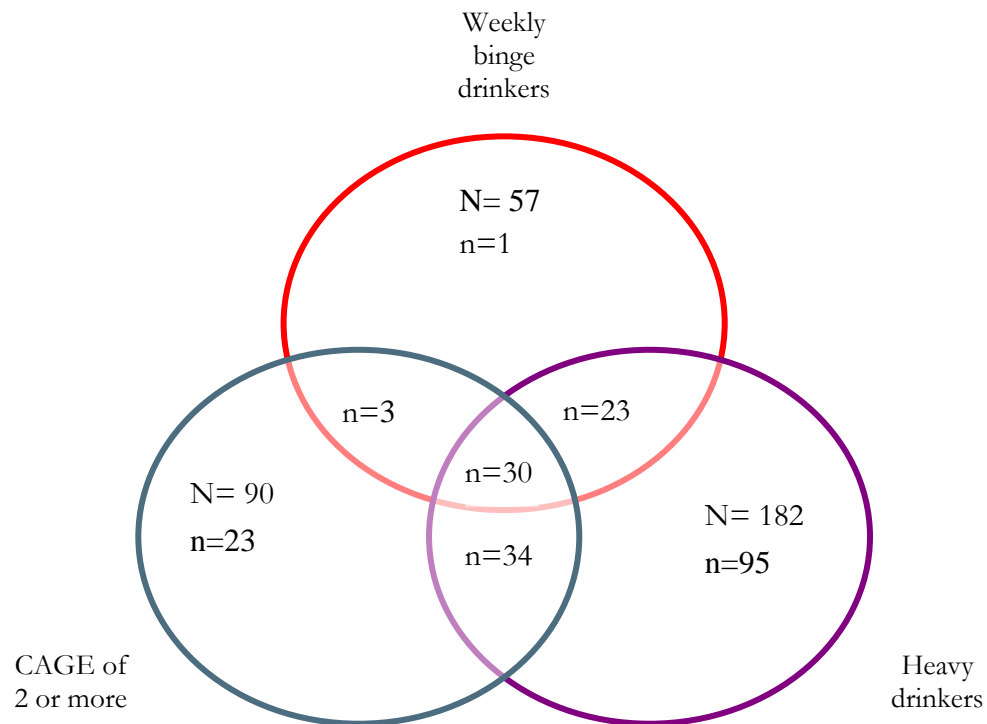


Figure 3: Females rates of engagement in high-risk alcohol consumption behaviour

The overall mean age of first drink was 14.01 (s.d. +/- 2.43, N= 508) with a difference between men and women. The gender difference in age initiation was significant ( $F = 4.44$ ;  $df = 1, 506$ ;  $p < .05$ ) with the mean age of first drink being 13.76 for males (s.d. +/- 2.39) and 14.22 (s.d. +/- 2.44) for females. For females, the age of drinking initiation variable was significantly associated with heavy drinking ( $F = 5.97$ ;  $df = 1, 275$ ;  $p < .05$ ) and weekly binge drinking ( $F = 15.15$ ;  $df = 1, 276$ ;  $p < .05$ ) but not with having a CAGE score of 2 or more ( $F = 2.27$ ;  $df = 1, 277$ ;  $p > .05$ ) (see table 5).

Table 5: Age of drinking initiation and significance to high-risk alcohol consumption

	Heavy		Binge weekly		Cage 2 or more	
Females	F= 5.97; df = 1, 275; p < .05		F= 15.15; df = 1, 276; p < .05		F= 2.27df = 1, 277; p > .05	
	Yes	No	Yes	No	Yes	No
N	182	95	57	221	90	189
Mean age	13.98	14.73	13.12	14.50	13.90	14.37
SD	2.32	2.59	2.28	2.41	2.65	2.32

Pearson's correlational analyses of the relationships between the socio-demographic, social and/or individual risk or protective factors and the high-risk alcohol consumption factors identified for the young women of this survey were performed and presented in tables 6-10. For each table, \*\* indicates that the correlation is significant at the 0.01 level (2-tailed); \* that the correlation is significant at the 0.05 level (2-tailed). Only those factors that were identified as being significant for at least one of the high-risk drinking factors were entered into the binary logistic regression models.

Table 6: Pearson's correlations, socio-demographics

	Heavy drinking	Binge drinking	Cage 2 or more
Age	.22**	.07	-.02
Fathers highest education	.05	.03	.04
Mothers highest education	-.01	-.08	-.01
Number of household move	.11	.13*	.11
Lived with bio parents aged 12	.01	.01	.03
Lived with bio parents aged 16	-.04	-.03	-.04

Table 7: Pearson's correlations, social risk factors

	Heavy drinking	Binge drinking	Cage 2 or more
Risky peers	.27**	.40**	.35**
Life stress	.12*	.27**	.28**
Money problems	.01	-.04	.12
Physical victimization	.14*	.12*	.04
Relational victimization	.07	.04	.05
Psychologically controlling mother	.07	.12*	.26**
Psychologically controlling father	.08	.07	.09
Risky Parenting	.10	.12	.21**

Table 8: Pearson's correlations, social protective factors

	Heavy drinking	Binge drinking	Cage 2 or more
Protective peers	-.18**	-.15*	-.09
Supportive mother	.00	-.07	-.23**
Supportive father	-.03	-.04	-.08
Parental supervision	.07	-.03	-.08
Protective Parenting	-.10	-.11	-.19**
Neighbourhood safety	-.02	.02	-.06
Peer support	.05	.05	-.03
Aggregated parenting index	-.11	-.13*	-.24**

Table 9: Pearson's correlations, individual and behavioural risk factors

	Heavy drinking	Binge drinking	Cage 2 or more
<i>Individual</i>			
Sensation-seeking personality	.00	-.06	-.04
Addiction-prone personality	.21**	.35**	.24**
Risk-taking and impulsivity	.23**	.34**	.24**
<i>Behavioural</i>			
Age of first drink	-.15*	-.23**	-.09

Table 10: Pearson's correlations, individual and behavioural protective factors

	Heavy drinking	Binge drinking	Cage 2 or more
<i>Individual</i>			
Mastery & control	.01	-.10	-.21**
<i>Behavioural</i>			
Healthy lifestyle	-.11	-.04	-.01
Volunteer activities	-.09	-.09	-.09

*Heavy Drinking*

Results of the binary logistic model predicting females heavy drinking are presented in Table 11. In the first step of the analysis, the model was significant ( $\chi^2(2, N= 264)= 10.64, p < .05$ ), with the Nagelkerke  $R^2$  statistic indicating that 5.5% of the variance in heavy drinking was explained. The Hosmer and Lemeshow Goodness-of-Fit Test indicated that the model in the first state of the data analysis fit the data well,  $\chi^2(8, N= 264) = 11.21, p > .05$ . At this stage of the model, age was the only significant predictor (Odds ratio<sup>11</sup> (OR) = 1.02; 95 % Confidence Interval (CI) =1.01– 1.03) with heavy drinking increasing with age.

In the second stage of analysis, the second block of predictors (social factors) added significantly to the model,  $\chi^2(3, N=264) = 38.52, p < .05$  and the Nagelkerke  $R^2$  statistic increased to explain 19% of the variance. The Hosmer and Lemeshow Goodness-of-Fit Test indicated that the model still fit the data well,  $\chi^2(8, N=264) = 4.36, p > .05$ . In this block of the model, age remained a significant predictor, with risky peers (OR= 1.61; CI = 1.16-2.23) and physical victimization (OR = 6.67; CI= 1.56-28.23) being added as significant predictors.

<sup>11</sup> The odds ratio is a relative measure of risk of how much more likely it is that someone experiencing factor A (the one under study) will develop the outcome as compared to someone not experiencing factor A. (Crichton, 2001).

Table 11: Binary logistic regression for female heavy drinking

Step	Step 1	Step 2	Step 3	Step 4
Predictors	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
<i>Demographics</i>				
Age	1.02 (1.01-1.03)‡	1.02 (1.01-1.03)‡	1.02 (1.01-1.03)‡	1.03 (1.01-1.04)‡
<i>Social</i>				
Risky peers		1.84 (1.34-2.51)‡	1.61 (1.16-2.23)‡	1.56 (1.12-2.16)‡
Physical victimization		5.77 (1.48-22.48)*	6.67 (1.56-28.23)*	6.34 (1.51-26.66)*
Life stress		1.07 (.94- 1.21)	1.03 (.89- 1.20)	1.02 ( .89- 1.20)
<i>Individual</i>				
Protective peers			.88 (.69-1.12)	.89 (.69-1.13)
Parenting			1.42 (.78-2.58)	1.48 (.81-2.72)
Addiction prone personality			1.12 (1.02-1.23)*	1.12 (1.02-1.23)*
<i>Age of first drink</i>				
				.91 (.80-1.04)
Model $\chi^2$	10.64†	38.52‡	46.76‡	48.64‡
Nagelkerke $R^2$	.06	.19	.23	.23

‡ p &lt; .001; † p &lt; .01; \* p &lt; .05

At the next stage of this analysis, the third block of predictors (individual factors) again added to the strength of the model,  $\chi^2(3, N=264) = 46.76, p < .05$ , and the Nagelkerke  $R^2$  statistic now suggested the 22.5% of the variance was explained. The model still adequately fit the data, as indicated by the Hosmer and Lemeshow Goodness-of-Fit Test,  $\chi^2(8, N=264) = 15.54, p = .05$ . The predictors age, risky peers and physical victimization remained significant, with addiction-prone personality being added as a significant predictor, (OR = 1.12; CI = 1.02-1.23).

In the final stage of the analysis, the fourth predictor, age of first drink did not add significantly to the model, although the overall model remained significant,  $\chi^2(3, N=264) = 48.64, p < .05$ . The Nagelkerke  $R^2$  statistic increased slightly to 23% of the variance explained. The model remained an adequate fit to the data, as indicated by the Hosmer and Lemeshow Goodness-of-Fit Test,  $\chi^2(8, N=264) = 10.55, p > .05$ . At the final stage of the model, the predictor variables included age, risky peers, physical victimization and addiction prone personality. The age of first drink was not found to be a significant predictor in this model. In addition, no mediating effects were found in this model, as all predictor variables indicated in previous steps of the model were present in the final model.

#### *Weekly Binge Drinking*

Results of the binary logistic regression modeling for female's weekly binge drinking are presented in Table 12. In the first step of the analysis, the model was not found to be significant,  $\chi^2(2, N=227) = 2.03, p > .05$ , and the Nagelkerke  $R^2$  statistic accounted for only 1.4% of the variance. However, the Hosmer and Lemeshow Goodness-of-Fit Test indicates that the model does adequately fit the data,  $\chi^2(8, N=227) = 4.78, p > .05$ . Neither of the variables entered at this stage were found to be significant predictors of female weekly binge drinking.

Table 12: Binary logistic regression for female weekly binge drinking

Step Predictors	Step 1 OR (95% CI)	Step 2 OR (95% CI)	Step 3 OR (95% CI)	Step 4 OR (95% CI)
<i>Demographics</i>				
Age	1.01 (.99-1.02)	1.02 (1.00-1.04)*	1.03 (1.01-1.05)†	1.03 (1.01-1.05)†
Number of household moves	1.11 (.88-1.38)	.87 (.66-1.14)	.83 (.63-1.10)	.83 (.63-1.10)
<i>Social</i>				
Risky peers		3.31 (2.11-5.19)‡	3.01 (1.88-4.81)‡	2.88 (1.79-4.63)‡
Physical victimization		5.96 (1.56-22.78)‡	7.72 (1.82-32.45)‡	8.57 (1.96-37.50)‡
Life stress		1.16 (.98-1.34)	1.10 (.92-1.32)	1.08 (.90-1.30)
<i>Individual</i>				
Protective peers			.77 (.55-1.10)	.76 (.53-1.08)
Addiction prone personality			1.22 (1.07-1.38)†	1.20 (1.06-1.37)†
Mastery & control			3.22 (.75-13.86)	3.49 (.80-15.23)
<i>Age of first drink</i>				
				.87 (.72-1.05)
Model $\chi^2$	1.86	56.59‡	69.04‡	72.13‡
Nagelkerke $R^2$	.01	.35	.42	.43

‡ p &lt; .001; \*\* p &lt; .01; \* p &lt; .05

In the second step in the analysis, the model was found to be significant,  $\chi^2(2, N=227) = 58.88, p < .05$ , and the percentage of variance accounted for via Nagelkerke  $R^2$  statistic jumped to 35.5%. As in the first step of the analysis, the Hosmer and Lemeshow Goodness-of-Fit Test found that the model still fit the data adequately,  $\chi^2(8, N=227) = 10.37, p > .05$ . At this step in the analysis, age was found to be a significant predictor of female weekly binge drinking, as were risky peers and physical

In the third step of the analysis, the model remained significant,  $\chi^2(2, N=227) = 73.08, p < .05$ ; 42.8% of the variance was accounted for by the Nagelkerke  $R^2$  statistic; and the model still fit the data well according to the Hosmer and Lemeshow Goodness-of-Fit Test,  $\chi^2(8, N=227) = 1.33, p > .05$ . Significant predictor variable at this stage of the analysis included age, risky peers, physical victimization and an addiction prone personality.

In the fourth and final stage of the analysis, the model remained significant  $\chi^2(2, N=227) = 75.23, p < .05$ , and the Nagelkerke  $R^2$  statistic indicated that 43.8% of the variance was accounted for. According to the Hosmer and Lemeshow Goodness-of-Fit Test, the model adequately fit the data,  $\chi^2(8, N=227) = 5.54, p > .05$ . The final list of predictor variables for the completed model includes age, risky peers, physical victimization and the presence of an addiction prone personality. There were no mediating effects found in this model, with all predictor variables being indicated in previous steps of the model present in the final model.

*CAGE score of 2 or more*

The only predictor variable found to be significant for females having a CAGE score of 2 more or more was negative peers, which entered in at step two of the analysis and remained significant through step four. The final odds ratio for the negative influence of



peers was 1.93 with a 95% confidence interval ranging from 1.33 to 2.80. In the final stage of analysis, the model remained significant,  $\chi^2(10, N = 237) = 35.46, p < .05$  with 21% of the variance accounted for.

#### *Sexual Activity*

Close to 75% of the sample has engaged in sexual intercourse<sup>12</sup> (73% of males and 75% of females) with no significant differences between the genders,  $\chi^2(2, N=538), = .642, p > .05$ . The average age of first intercourse for female participants was 16 (s.d. +/- 1.79) (N=219), with participants having an average of 6.39 (s.d. +/- 13.32) (N= 292) lifetime partners and 1.88 partner(s) in the past year (s.d. +/- 3.34) (N=292). Figure 4 presents the number of young women engaging in sexual intercourse based on age. As might be expected, the older the sample gets, the more likely they are to have engaged in sex,  $\chi^2(7, N=293), = 23.33, p < .05$ .

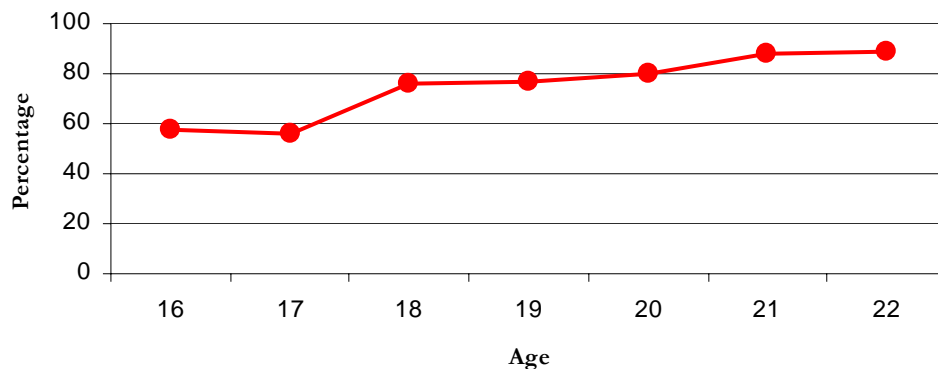


Figure 4: Female rates of sexual activity based on age

<sup>12</sup> Sexual intercourse refers to vaginal, oral or anal sex

The majority of female participants (63.3 %) always use some form of birth control/contraception to guard against pregnancy (n =186) with 8.5% (n=25) reporting that they sometimes do and only 3.7% (n=11) stating that they never use birth control/contraceptives. For the purposes of this research, the “never” and “sometimes” categories have been amalgamated into one “fail to always contracept” category. Interestingly, far fewer women report consistently taking precautions against contracting a sexually transmitted infection (STI), with only 31 % (n = 91) reporting that they always take such measures, 27.6% (n = 81) sometimes doing so and 16.3% (n= 48) of the young women never taking measures to protect themselves from STIs. 13.3 % of the young women report having had at least one STI in their lifetime.

Only 24.8% of the women report that they always use a condom while having sex (n = 73); 35.4% (n = 104) report sometimes using a condom and 14.6% (n = 43) saying that they never use a condom. However, one cannot assume that the young women who are not always using a condom are not utilizing other means of protecting themselves from pregnancy (such as the birth control pill or Depo Provera). As reported, the rates of always using some form of birth control to protect against pregnancy are far higher than the rates of consistent condom use.

Twenty of the young women (6.8%) report having gotten pregnant, with the majority of those women only having been pregnant once (n = 17). Two of the female participants report having one child each. The survey did not question whether the females that had been pregnant but do not currently have a child had terminated the pregnancy, miscarried, or had a live birth but put the child up for adoption.

Of the female heavy drinkers, 89% of them are sexually active, and a significant difference exists between the sexually active heavy drinkers versus the women who are sexually

active but who are not heavy drinkers,  $F= 55.70$ ;  $df = 1, 288$ ;  $p < .05$ . The number of past year sex partners for heavy drinkers was significantly higher than the number of past year partners for non-heavy drinkers,  $F= 10.21$ ,  $df = 1, 287$ ;  $p < .05$ ; however, the number of lifetime sexual partners between the two groups was not found to be statistically significant,  $F= 3.55$ ,  $df = 1, 287$ ,  $p > .05$  (see table 13). Seventy one percent of the female heavy drinkers are engaging in risky sex in that they are failing to consistently use a condom. Fortunately, far fewer female heavy drinkers, (15%) are engaging in sex without the use of any form of contraceptive. When compared to the sexually active non-heavy drinkers, no significant difference was found for consistency of contraceptive use,  $\chi^2(1, N= 220) = .39$ ,  $p > .05$ . Only 38% of the female heavy drinkers report that they always take steps to protect themselves from sexually transmitted infections. Eleven of the female heavy drinkers have been pregnant, but only one reports currently having a child.

Table 13: Past year and lifetime sexual partners by high-risk drinking domain

	Past year sexual partners		Lifetime sexual partners	
	Mean	SD	Mean	SD
Heavy drinkers (n=180)	2.37	3.41	7.58	11.54
Non-heavy drinkers (n=109)	1.09	3.12	4.53	15.84
	$F=10.21$ ; $df= 1, 287$ ; $p < .05$		$F=3.55$ ; $df= 1, 287$ ; $p > .05$	
Weekly binge drinkers (n=57)	4.68	6.31	12.88	13.79
Non-weekly binge drinkers (n=234)	1.20	1.41	4.82	12.76
	$F=59.75$ ; $df=1, 289$ ; $p < .05$		$F=17.69$ ; $df=1, 289$ ; $p < .05$	
CAGE of 2 or more (n=88)	2.91	3.89	7.83	9.74
CAGE of less than 2 (n=204)	1.44	2.97	5.76	14.57
	$F=12.39$ ; $df=1, 290$ ; $p < .05$		$F=1.48$ ; $df= 1, 290$ ; $p > .05$	

Almost all (98%) of the females who engage in weekly binge drinking are sexually active, with a significant difference found between the two groups of sexually active young women (weekly binge drinkers versus those who don't engage in this behaviour),  $F = 21.32$ ;  $df = 1, 290$ ;  $p < .05$ . The number of past year sex partners for weekly binge drinkers was significantly higher than the number of past year partners for non-weekly binge drinkers,  $F = 59.75$ ,  $df = 1, 289$ ;  $p < .05$ . As well, the difference between the number of lifetime sexual partners between the two groups was found to be statistically significant,  $F = 17.69$ ,  $df = 1, 289$ ,  $p < .05$  (see table 13). Seventy one percent of the female weekly binge drinkers report that they do not consistently use condoms compared to 66% of sexually active non-weekly binge drinkers; the difference between these two groups was not found to be significant,  $\chi^2(1, N=219) = .63$ ,  $p > .05$ . Twenty nine percent of sexually active weekly binge drinkers report that they do not always use some form of contraception compared to only 12% of sexually active non-weekly binge drinkers. The difference between the lack of contraceptive use of sexually active non-weekly binge drinkers and that of sexually active weekly binge drinkers was significant,  $\chi^2(1, N=221) = 8.30$ ,  $p < .05$ . Again, 38% of the female weekly binge drinkers report that they consistently take steps to protect themselves from STIs. Six of the fifty-seven (11%) report having been pregnant at least once with none of the female weekly binge drinkers report that they currently have children.

Of the young women who scored two or more on the CAGE, 88% of them report being sexually active. A significant difference was found to exist between the sexually active women with a CAGE score of 2 or more, and the sexually active women without such a CAGE score,  $F = 10.59$ ;  $df = 1, 291$ ;  $p < .05$ . The number of past year sex partners for those with a CAGE score of 2 or more was significantly higher than the number of past year partners for those without such a CAGE score,  $F = 12.39$ ,  $df = 1, 290$ ;  $p < .05$ ; but the

number of the number of lifetime sexual partners between the two groups was not found to be statistically significant,  $F= 1.48$ ,  $df = 1, 290$ ,  $p > .05$  (see table 13). Seventy four percent of the sexually active women with a CAGE score of 2 or more report that they fail to always use a condom; 20% report failing to consistently use some form of contraceptive and 40% report that they always takes measures to protect themselves from STI transmission. Compared to the young women who did not score higher than two on the CAGE, the contraceptive non-use of those with a CAGE score higher than 2 was not statistically significant,  $\chi^2 (1, N=222) = 1.47$ ,  $p > .05$ ; 14% of the sexually active young women with a CAGE score of less than 2 report failing to consistently use some form of contraception. Eight of the ninety (9%) young women with CAGE scores of 2 or more report having been pregnant, with one of the young women reporting that she currently has a child.

## Discussion

### *High-Risk Alcohol Consumption*

The purpose of this study was to analyze the prevalence and predictors of high-risk alcohol consumption in a sample of females between the ages of 16-23. In addition, rates of sexual activity without the consistent use of contraception (“high-risk sex”) and number of sexual partners were also examined. The overall frequency of females who had at least tried alcohol was 279 or 95%: 62.5% reported drinking 7 or more drinks per week; 19.5% report engaging in weekly binge drinking and 31% scored 2 or more on the CAGE. It should be noted that these prevalence rates are specific to the Greater Victoria area during the year 2007. In general, prevalence rates are time and place specific and it would be presumptuous to assume that these rates would be consistent with other Canadian or North American cities.

The 2004 Canadian Addiction Survey reports that, “past-year drinking rates peak among youth 18-24 years of age with about 90% of people in that age range consuming alcohol during the course of the year” (Adlaf et al, 2004, p. 4). The overall rates of females’ drinking found in this study are consistent with those found by Adlaf et al (2004). Compared to other racial backgrounds, heavy drinking and drinking problems among White women are most common in younger age groups (US Department of Health and Human Services, 2005). The majority of women in this study were white.

In the past ten years, two other major surveys of the drug and alcohol use of youth in British Columbia have been conducted: the fourth wave of the Adolescent Health Survey (AHS IV) conducted in 2008 by the McCreary Centre Society (Smith, Stewart, Peled, Poon Saewyc & the McCreary Centre Society, 2009) and the Lower Mainland Youth Drug Use Survey conducted by Vancouver’s Pacific Community Resource in 2001. The AHS IV used a school-based sample with participants between the ages of 12-18. The Lower Mainland Youth

Drug Use Survey utilized a standardized self-reporting questionnaire with a convenience sample of youth between the ages of 12-24. The McCreary study reported that 54% of their participants had ever tried alcohol; 77% of participants in the Youth Drug Use Survey had tried alcohol, whereas 94% of the sample for this survey had done so (both males and females). Neither the AHS IV nor the Lower Mainland study reported their results categorized by gender or by drinking 'style' (heavy/binge).

The difference in alcohol consumption rates is likely best explained by the differences in participant ages. Both the McCreary survey and the Youth Drug Use Survey had participants as young as 12, compared to the sample for this wave of the survey whose lowest age was 16. Without the inclusion of younger participants, those who are less likely to have tried alcohol to lower the average, the number of young women from this study who have ever tried alcohol appears much higher. In addition, the mean age of female participants for wave 3 of the HYS was 19.6, above the legal drinking age for the province of British Columbia. Therefore, there should not have been any fear around reporting having tried alcohol as it is legally acceptable for many of the young women to drink.

Compared to other studies that measure binge drinking monthly or in the two weeks preceding the survey<sup>13</sup> (Feldman, Harvey, Holowaty & Shortt, 1997; Johnston, O'Malley, Bachman, Schulenberg, 2006) this study measured binge drinking weekly. Seventy percent of the females in our sample admitted to having consumed 5 or more drinks on one occasion a few times in the past year, and forty percent admit to binge drinking a few times per month. Because binge drinking is a common activity amongst the women of this survey, only those at

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<sup>13</sup> Some referenced studies refer to drinking 5 or more drinks in one sitting as 'heavy drinking'. Because heavy drinking in this study refers to drinking 7 or more drinks in a week, the term binge drinking will be used for consistency to refer to the 5+ drinking behaviour even when the referenced study refers this pattern of drinking as heavy drinking.

greatest risk for negative effects, those that binge drank weekly, were classified as binge drinkers.

Based on data obtained from the original data set of the 2002/03 Canadian Community Health Survey (CCHS), 26.5% of females ages 15-24 report binge drinking monthly. This is compared to 40% of this survey who binge drank a few or more times a month. The discrepancy in percentages might be due to the larger age range in the CCHS data set - this age range included females one year younger, who may not have started binge drinking, as well as females two years older, who may have stopped binge drinking, and the inclusion of these young women may have lowered the overall average compared to the females of the Healthy Youth Survey. This difference may also be attributable to the fact that the female's age of drinking initiation was higher in the Canadian Community Health Survey as compared to the HYS (15.56 +/- 2.05 vs. 14.22 +/- 2.44 respectively). The young women who start drinking at a younger age would have more time to develop drinking experience and alcohol tolerance, perhaps leading to an increased willingness and ability to consume 5 or more drinks on one occasion.

The 2004 Canadian Campus Survey (CCS) examined drinking rates among university undergraduate students at forty universities in Canada (Adlaf, Demers & Gliksman, 2005). The average of age of CCS participants was 22 years, with an age range from 16-65 inclusive. Twenty point six percent of women in the CCS reported being 'heavy-frequent' drinkers - *usually* consuming 5 drinks or more per day and drinking at least once a week. This is strikingly similar to the 19% of females in our survey who reported the same type of drinking behaviour. In the month prior to the Canadian Campus Survey, 34.2% of females reported engaging in 'episodic heavy drinking' of five or more drinks and 10.6% report consuming eight



or more drinks, twice or more in the past month (Adlaf, Demers & Gliksman, 2005). Prior month usage was not queried in the Healthy Youth Survey.

In their survey comparing drinking levels across birth cohorts in the United States, Keyes et al (2008) found a monotonic increase in young women's weekly binge drinking rates: only 2.3% of the females in the oldest birth cohort (birth between 1913-1932) admitted to weekly binge drinking, compared to 16.2% of the youngest birth cohort (birth between 1968-1984). While the women's weekly binge drinking rates still lagged behind those of their male counterparts, the odds ratios comparing male-to-female binge drinking rates decreased with each successively younger cohort. Despite being the alcohol measure with the greatest discrepancy between men and women, the greatest degree of gender conversion was seen for binge drinking.

Significant differences were found for the binge drinking rates and the levels of heavy drinking between the men and women of our survey, and Nolen-Hoeksema and Hilt (2006) suggest several factors, both biological and psychosocial, that may play a role in the gender differences in alcohol use and alcohol-related problems. Biological factors include: women potentially being less genetically prone to alcohol-use disorders; and women suffering the negative physiological effects of drinking more quickly and to a greater degree, which may act as a disincentive to drink. Psychosocial factors may include: perceived (or real) social sanctions against women's drinking; differing motives and expectancies for drinking (men being more likely to report drinking to escape, cope with distress and/or relieve depression); women being less likely to have 'masculine' characteristics associated with excessive drinking including aggression, sensation-seeking, behavioural undercontrol and antisociality and more likely to have desirable 'feminine' traits such as nurturance that are protective against excessive drinking; alcohol-use disorders being co-morbid with other internalizing disorders such as

depression and disordered eating; women's drinking rates that tend to mirror those of the male partners, but not vice versa; childhood sexual assault being more common among women; and heavy drinking placing women at greater risk of spousal and serious sexual assault.

There may also be an evolutionary explanation why women tend to drink less than men: if alcohol consumption affects a women's fertility and leads to offspring that are less likely to survive to produce their own offspring, there would be selection pressures against alcohol consumption in women (Nolen-Hoeksema, 2004). Room (1996) proposes that in order to fully understand the differences between the drinking patterns of men and women, it is essential to understand the strong social and interactional elements that precede, accompany and follow the alcohol/drug use and which have been shaped by, and shape, gendered roles .

Just over thirty percent of the females of this survey scored 2 or more on the CAGE. The CAGE is a screening test for alcohol dependence, a score of 2 or more does not indicate that the person is dependent on alcohol simply that they may be at risk for meeting the DSM-IV criteria for alcohol abuse or dependence. Harford and Muthén (2001) found that 9.5% and 3.8% of female current drinkers and 19.8% and 9.7% of female heavy drinkers (drinking 6 or more drinks on one occasion at least once in the past month) met the DSM-IV criteria for alcohol abuse and dependence. Their research used participants who were between the ages of 24-31 and therefore older than the participants of this research.

Given that 95% of the research sample has at least tried alcohol, many of whom are drinking at high-risk levels, perhaps it is not surprising that over 30% have experienced negative effects from their drinking. The questions on the CAGE pertain to lifetime drinking; they are not specific to a particular time within a person's life. Therefore it's possible that someone may have experienced the issues queried a number of years ago and have cut down

on their drinking but still be considered “at risk” for becoming alcohol dependent. Jackson, Sher, Gotham and Wood (2001) suggest that “as individuals age beyond their college years into young adulthood, many exhibit a tendency to moderate or “mature out” of alcohol involvement” (p. 378).

The relationship between the age of drinking initiation and later development of an alcohol disorder is thoroughly discussed in the existing literature (for example DeWit et al, 2000; Grant, 1998; Grant & Dawson, 1997). However, the age of drinking initiation and a CAGE score of 2 or more were not found to significantly related for the young women of this study. A possible explanation for this is that the CAGE is not a measure of alcohol abuse or dependence. Perhaps a significant relationship would have been found between the two variables if the DSM-IV criteria for alcohol abuse or dependence had been assessed.

#### *Predictor Variables*

Predictor variables were examined in the relation to the three dependent variables: heavy drinking, weekly binge drinking and having a CAGE score of 2 or more. Heavy drinking and binge drinking were found to be significantly related to each other, with 93% of binge drinkers also being heavy drinkers; therefore it is not surprising that the same predictor variables (age, negative peers, addiction prone personality and physical victimization) were found for both of these high-risk drinking domains (see figures 5 and 6). As no mediating effects were found, the variables can all be presented at the same level. However, as the odds ratios for each predictor variable differs by drinking domain, these results will still need to be presented separately.

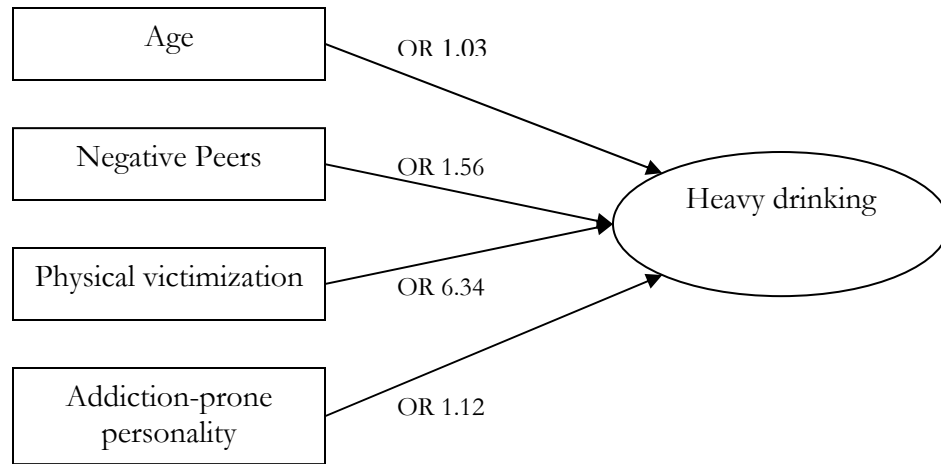


Figure 5: Predictor variables for heavy drinking

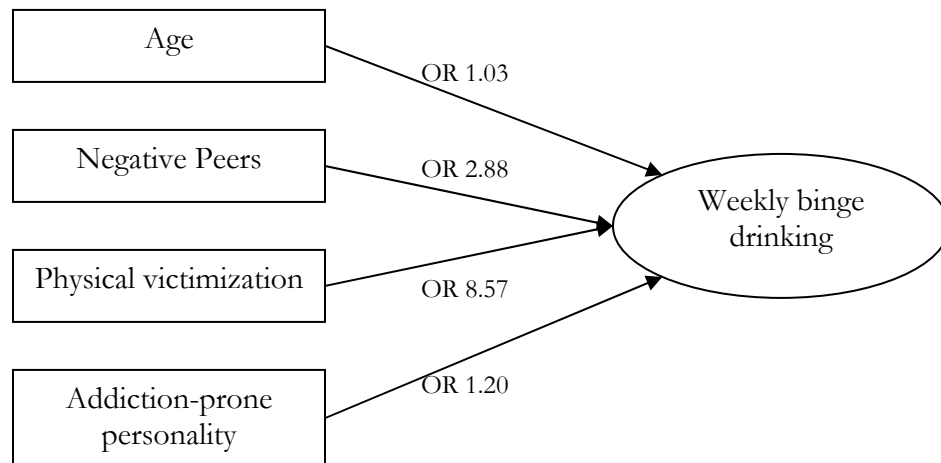


Figure 6: Predictor variables for weekly binge drinking

*Age*

Although participant age was found to be a significant contributor to engaging in both heavy and binge drinking, its impacts were quite small (OR= 1.03 (1.01-1.04) for female heavy drinking and OR= 1.03 (1.01-1.05) for female binge drinking). Perhaps it is not surprising that the contribution of age is so minimal given the restricted age range of the participants. All of the participants fall into the high-risk age bracket for heavy and binge drinking - ages 18-24 have been identified as highest in prevalence of involvement in alcohol and drug use (Jessor, Donovan & Costa, 1991) and “regular heavy drinking is most common among youth in Canada” (Health Canada, 1999, p. 176).

Health Canada (1999) reports a bell-shaped relationship between drinking prevalence and age, with the proportion of regular drinkers rapidly increasing from age 12-14 through age 20-24 and then levelling out until decreases begin around the age of 55. Greenfield and Rogers (1999) found that adolescents and young adults between the ages of 18-29 are the more likely to engage in binge drinking compared to older adults - this age group represents only 27% of the US population, yet they constitute 63% of the heaviest drinkers (those averaging 6+ drinks per day).

*Negative peers*

The influence of negative peers was the only predictor variable found to make a significant contribution to all three high-risk drinking domains (see figures 5-7). The odds ratio for heavy drinking was 2.88 (1.79-4.63); for weekly binge drinking it was 1.56 (1.12-2.16); and for a CAGE score of 2 or more it was 1.93 (1.33-2.80).

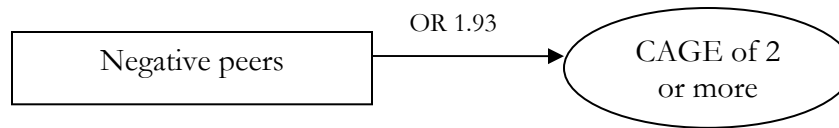


Figure 7: Predictor variables for CAGE of 2 or more

Peer influence on drinking behaviour has been discussed extensively in the literature (for example Barber et al, 1998; Reifman, et al, 1998; Sutherland & Shepherd, 2001; Hussong, 2002). The results from this study add to the current body of knowledge on peer influence by showing that the ‘amount’ of influence depends on the ‘type’ of drinking behaviour, with peers having a strongest influence on binge drinking. Given our criteria for heavy drinking (7+ drinks per week) participants could have 1-2 drinks per day and be considered a heavy drinker. Youth may feel less pressure to join in when their peers are having only 1-2 drinks as compared to when the peers are drinking to feel intoxicated (binge drinking).

Peer cluster theory suggests that, “the socialization factors that accompany adolescent development interact to produce peer clusters that encourage drug involvement or provide sanctions against drug use” (Oetting & Beauvais, 1987, p. 205). It is these small, tight subsets of peer groups (“peer clusters”) that shape and determine the attitudes, values and beliefs about drugs and drug-using behaviours (Oetting & Beauvais, 1987). Verkooijen, de Vries and Nielsen, (2007) examined adolescent subgroup involvement with substances and found that youth who identified with the pop, skate/hip-hop, techno and/or hippie crowds were at higher-risk of substance use as compared to those who identified with the sporty, quite, religious or computer nerd subgroups. Since the high-risk subgroups are also those that tend to be more social, Verkooijen et al (2007) also investigated if the amount of time spent with

peers influenced substance use involvement. Indeed, respondents who reported spending the most time with friends were also the most likely to report smoking cigarettes and marijuana and getting drunk.

Borsari and Carey (2001) suggest that peer pressure to drink is a combination of three distinct influences: overt offers of alcohol, modeling and social norms. Offers of alcohol are direct mechanisms of influence and can range from polite gestures to intense goading or commands to drink, such as when playing a “drinking game”. Modeling occurs when a person’s behaviour corresponds to another’s concurrent drinking behaviour; perceived social norms can serve to make excessive alcohol use appear common and acceptable (Borsari & Carey, 2001). As the influence of peer drinking was not a focus of inquiry in this study, we do not know which mechanisms of influence were most at play in effecting participant’s drinking.

#### *Addiction Prone Personality*

The Addiction Prone Personality Scale is a 21-item scale measuring the presence of personality traits known to be associated with addiction and addictive behaviours (Barnes et al, 2000). Personality traits measured by this scale include neuroticism, social conformity, self-regulation and sensation-seeking. Questions specific to substance use were dropped from a previous version of this scale without affecting its reliability and validity.

The presence of an addiction prone personality (APP) was found to be a significant contributor to both heavy and binge drinking behaviours, although its impacts were quite small (OR for heavy drinking = 1.20 (1.06-1.37); OR for weekly binge drinking = 1.12 (1.02-1.23)). An addiction prone personality was not found to be a significant contributor to having a CAGE score of 2 or more although it was found to be correlated with this domain.

Some suspicion existed as to the mediating effects of the age of drinking initiation variable to the APP variable; therefore the inclusion order of these variables was manipulated.

Including the age of drinking initiation variable did not result in the APP variable no longer being significant, therefore it cannot be considered a mediating variable. The addiction prone personality variable and the age of drinking initiation variable are independent from each other, with an APP being the stronger predictor.

### *Physical Victimization*

For this analysis, our measure of physical victimization was an aggregate of the different types of victimization the participant experiences (hitting, being called mean names, pushed/shoved, kicking, hair pulling and/or threats). The odds ratio for heavy drinking was 6.34 (1.51-26.66); for weekly binge drinking it is 8.57 (1.96-37.50).

Rusby, Forrester, Biglan and Metzler (2005) found that frequent peer harassment (both physical and verbal) in middle school predicted antisocial behaviour, alcohol use, aggression, deviant peer association and multiple problem behaviours in high school. The influence of peer victimization is particularly important as adolescents' transition from adult-centred (primarily parent-centred) to peer-centered relationships (Nansel, Haynie & Simons-Morton, 2003). As the importance of peer relationships grow, physical victimization may prevent the development of supportive peer networks - victims are often rejected or marginalized from peer groups (Sullivan, Farrell & Kliewer, 2006). Paul and Cillessen (2003) found that grade 7 girls who had experienced victimization by their peers were more depressed and socially withdrawn as compared to non-victimized girls and boys and victimized boys. Barnes et al (2009) found significant positive correlations between alcohol use and internalizing symptoms such as depression and social withdrawal.

Forty percent (117 out of 294) of the young women of the survey report having been subjected to some form of physical victimization by their peers; 38.5% of female heavy drinkers, 35% of female weekly binge drinkers and 42% of young women with a CAGE score



of 2 or more report having experienced peer physical victimization. However, this study only looks at one wave of the Healthy Youth Survey data and does not query the potential bi-directionality of the alcohol consumption/physical victimization relationship - does victimization precede alcohol use or does alcohol use contribute to victimization? Graham, West and Wells (2000) found that the effects of alcohol were found to be relevant to most incidents involving violence at bars and given that many of the participants of this survey were above the legal drinking age, it is possible that some of them have experienced violence related to their alcohol intake. Even though the Graham, West and Wells (2000) research focuses on male-to-male aggression, their findings highlight the need to consider the convoluted (and potentially causal) relationship between alcohol use and physical victimization. Further analysis of the HYS data would need to be conducted to determine a casual direction of this effect.

*Alcohol consumption, sexual activity and contraceptive use*

The vast majority of the young women who are engaging in some form of high-risk alcohol consumption are also sexually active. Heavy drinkers and those with a CAGE score of 2 or more were found to differ from their control counterparts for the past year number of sexual partners, but not for the number of lifetime sexual partners; weekly binge drinkers were found to have significantly greater numbers of both past year and lifetime sexual partners. Beadnell, Morrison, Wilsdon, Wells, Murowchick, Hoppe, Gillmore, and Nahom (2005) report that the risks for sexually transmitted infection and pregnancy increase with larger number of partners and a greater frequency of intercourse - weekly binge drinkers were found to be at highest risk.

Fortunately, most of the female participants report consistently taking precautionary measures to protect themselves from pregnancy. In comparison with consistent contraceptive

users, inconsistent users have 2.8 times and nonusers have 11.4 times the odds of becoming pregnant (Brückner, Martin & Bearman 2004). Those who fail to consistently use contraception are putting themselves at risk for having a child born with Fetal Alcohol Spectrum Disorder. When compared to the other sexually active young women of the survey, a significant difference between the contraception habits of the groups was only found for those who binge drink weekly, with 29% of weekly binge drinkers failing to consistently use some form of contraception.

Fetal Alcohol Spectrum Disorder, while not a clinical diagnosis in itself, is an umbrella term used to describe the physical, mental, and behavioural effects and/or learning difficulties that may occur as a result of pre-natal exposure to alcohol and includes the conditions Fetal Alcohol Syndrome (FAS), Fetal Alcohol Effects (FAE), alcohol-related neurodevelopmental disorder (ARND) and alcohol-related birth defects (Alberta Alcohol and Drug Abuse Commissioner, 2007). Health Canada (2006) *estimates* that, in Canada, nine babies in every 1,000 are born with FASD each year, resulting in more than 3,000 babies born in this country each year with a 100% preventable health condition. With an estimated lifetime cost of \$1 million per case, this translates to a purely economic cost of between \$3-4 billion annually for Canadian society (Stade, Ungar, Stevens, Beyen & Koren, 2007). There is no 'cure' for FASD, the effects of which are life-long and can have detrimental consequences for the person, their family and society, including disrupted school experiences, trouble with the law (including detention, jail, prison or psychiatric or alcohol/drug inpatient treatment), inappropriate sexual behaviours on repeated occasions and alcohol and/or drug problems (Caley, Kramer & Robinson, 2005).

Fetal Alcohol Syndrome is characterized by facial anomalies, including a smooth philtrum (space between upper lip and nose), thin upper lip, upturned nose, flat nasal bridge

and midface, epicanthal folds, small palpebral fissures and a small head circumference; other physical anomalies may include curved pinky fingers, upper palmar creases (hand crease) that widens and ends between the second and third fingers, hirsutism (excessive body hair) and cardiac defects (Wattendorf & Muenke, 2005). Cognitively, the consequences of prenatal alcohol exposure may include difficulties in planning, organization and attention, failure to learn from consequences, memory deficits, problems with speech/language and/or visuospatial functioning (Green, 2007). While cognitive and intellectual functioning are typically impaired and low, most individuals with FASD do not meet the criteria for DSM-IV mental retardation. However, an IQ in the low-average or even average range does not preclude the presence of debilitating neurocognitive deficits or mental health problems. Academically, children with FASD may exhibit lower-than-average skills in reading and mathematics and have difficulties with phonological processing. Additionally, the difficulties with attention and impulsivity that are strongly associated with prenatal alcohol exposure may compound a child's ability to concentrate and learn in a classroom setting (Green, 2007).

Any woman who consumes alcohol and fails to take precautionary measures to prevent pregnancy could be at risk for having a baby born with alcohol-related health issues. Since many women do not know they are pregnant for several weeks after they have conceived, any alcohol consumed during this period could cause negative health issues for their baby. At this time, North American women are advised that no alcohol is best while they are expecting or trying to conceive.

Dell and Roberts (2005) report that younger women (between the ages of 18-20) are more likely to drink more than once per month, be frequent drinkers and report consuming 5 or more drinks on one occasion, but that it is older women (35 and older) who were more likely to consume alcohol during pregnancy. This could be due to older women having had

more time to develop long-term alcohol problems as compared to young women who have only been consuming alcohol for a few years. Despite their best intentions, older women may have a harder time stopping drinking during pregnancy due to the physical needs of their addiction.

In our survey, the average age of the women at highest risk for having a baby with alcohol-related health effects (those who binge drink weekly and don't consistently use a form of contraception) was 19.13 (s.d. +/- 2.2). There were 28 young women who fell into the highest-risk category, representing 9.5% of the total female sample population from Wave 3. Half of these highest-risk young women were not enrolled in school, 37.5% were attending high school and 12.5% were enrolled at a post secondary institution. The mean age of first drink for this population was 12 (s.d. +/- 2), 2.5 years less than the overall average age of drinking initiation for female binge drinkers. This finding is consistent with research that suggests that the younger one starts to consume alcohol, the more likely they are to experience other health risk behaviours (DuRant, Smith, Kreiter & Krowchuk, 1999) and has important implications for both policy makers and practitioners.

#### *Theoretical analysis*

Despite the fact that the participants' ages span youth versus legal adult status (ages 16-23), the majority of female participants are still in school (either high school or a post secondary institution). Therefore, Jessor and Jessor's (1977) Problem Behavior Theory that focuses on youth will be used for this theoretical analysis- the variables such as academic achievement and independence are more salient to the life-stage of the participants of this study, as compared to those proposed in Jessor, Donovan and Costa's PBT for young adults (1991). In addition, this categorization is consistent with Jessor et al (1991) characterization of persons within our sample's age range as being youth rather than young adults.

Both sexual activity and drinking are problem behaviours that are “defined relative to age and are only considered problematic for those below a certain age or stage of life” (Jessor et al, 1991, p. 24). For the older participants of the survey, these activities are both permitted, and in some cases prescribed (for example, marriage), and shift from being problematic behaviours to normative ones. However, as this study examines drinking at potentially harmful levels and sexual activity that may lead to an unintended and possibly unhealthy pregnancy, both activities will still be considered problem behaviours for this analysis. This is consistent with Jessor et al’s (1991) concept of problem drinking that focuses on alcohol consumption to the point of drunkenness, and on the negative social and interpersonal consequences associated with drinking as opposed to focusing solely on the amount of alcohol consumed.

PBT posits that adolescents/young adults more heavily involved in one area of problem behaviour are more likely to be involved in other areas of problem behaviour as well. For this study, it was hypothesized that the participants who were represented in the high-risk alcohol domains would also fail to use contraception regularly - there would be a combined risk. Results found that weekly binge drinkers were the only group found to be statistically different than the control group (sexually active non-weekly binge drinkers) in terms of contraceptive non-use. In addition, weekly binge drinkers were found to have statistically significant higher numbers of both past year and lifetime sexual partners. These results support Jessor and Jessor’s (1977) notion that involvement in one problem behaviour increases the likely of being involved in others.

No significant differences were found between the contraceptive usage or number of lifetime sexual partner of sexually active heavy drinkers or those scoring 2 or more on the CAGE and their control counterparts. These results are inconsistent with the tenets of

Problem Behavior Theory but are consistent with Newcomb and Bentler's (1988) finding that across-age-averages of teenage substance use generally did not directly affect sexual behaviour in young adulthood.

The difference in results between the drinking styles is interesting in that they add support for both arguments pertaining to the relationship between alcohol use and contraceptive use (Senf & Price, 1994; Fortenberry et al, 1997; Flisher & Chalton, 2001; Vanslyke, Hoppe, Rainey, Morrison, & Gillmore, 2008). These results suggest that contraceptive non-use may be an issue for women who binge drink on a weekly basis but not for those who engage in heavy drinking or with a CAGE score of 2 or more. Prior research has established a relationship between the co-occurrence of drinking and sex (Council of Ministers of Education, 2003) and it may be that the weekly binge drinkers are having sex when they are intoxicated and their ability to insist on, or even remember, contraception is impaired. Likewise, binge drinkers may be more willing to have sex with a greater number of partners when their judgement is impaired. Heavy drinkers on the other hand may have more drinks during the course of a week, but they may not drink to the same daily levels as the binge drinkers. Therefore, the heavy drinkers may have more control over their faculties while they are having sex and be able to make better decisions around their choice of partners and make sure that some form of contraception is used.

Of the variables identified in this study as predictors of heavy and binge drinking, only the influence of negative peers is consistent with the variables put forward by Problem Behavior Theory as being important. Under PBT, peer influence is considered a proximal variable in that it is obviously related to the occurrence of the problem behaviour. In a perceived environment, if one's peers are already engaging in high-risk drinking, joining in may increase ones 'cultural capital'- a type of knowledge that gives a person higher status within

their social group (Bourdieu, 1986). For youth that run in circles where alcohol use is accepted, knowing where or how to obtain alcohol or being able to hold ones drink may make them 'cool'. The influence of peers may have a spiral effect- the youth who were once following the behaviour of others may eventually lead other youth into engaging in high-risk drinking, creating a cycle of 'recruitment'.

Although it is not identified by Jessor and Jessor (1977) as being a significant variable of the perceived environment system, physical victimization could be considered a distal variable for high-risk drinking. In the model of PBT for young adults, an additional variable is added to the Distal Structure of the Perceived Environment System, that of Perceived Life-Area Stress. This variable represents "an effort to capture the degree to which stress is seen to characterize significant areas of social interaction- family, work, friendships and sex" (Jessor et al, 1991, p. 30). The inclusion of this variable in the young adult model reflects an interpretation of environmental stress as an instigator to problem behaviour. In that experiencing physical victimization is stressful and can affect the victim's ability to form trusting friendships, this variable has important implications for both behaviour and methods of coping.

The main thrust of the Personality System of the PBT is to establish an *overall psychosocial proneness* "for the prediction and explanation of variation in problem behaviour" (Jessor et al, 1991, p. 18). This proneness is for engaging in the spectrum of negative behaviours "that are considered a problem, a source of concern, or undesirable by the social or legal norms of conventional society" (Jessor et al, 1991, p.99). In a similar vein, the Addiction Prone Personality variable represents a personality measure that was developed to predict who might be prone to abusing alcohol and other drugs (Barnes et al, 2000). Where Jessor and

Jessor's (1977) psychosocial proneness looks at all problematic behaviours, the APP focuses on one aspect of delinquency- substance use.

Age is the only predictor variable that cannot be likened to one of the components of Problem Behaviour Theory. While age is considered a fundamental piece of PBT, in that some behaviours are only problematic for those of a certain age group, it is not variable that is a part of the three 'realms' of psychosocial influence.

*Implications for policy, practice and future research*

*Policy*

Canadian policies pertaining to controlling the health and social harms of alcohol are based on two basic approaches: 1) the population health approach which targets overall drinking rates, and 2) the harm reduction approach which targets drinking patterns at the individual level. These two approaches are not mutually exclusive and most countries apply a mix of policies from the two approaches (Thomas, 2004). In addition, Canada has implemented each of the international 10 "best practices" identified for reducing harms associated with alcohol use, including: 1) alcohol taxes, 2) blood alcohol content laws, 3) administrative suspension of driver's licenses, 4) sobriety checkpoints, 5) graduated licensing, 6) brief interventions for hazardous drivers, 7) public monopolies for the production or sale of beverage alcohol, 8) minimum legal purchase age, 9) restricted hours and days of sale, and 10) outlet density restrictions (Babor et al, 2003, as cited by Thomas, 2004). While Canada appears to be doing much to minimize the negative effects of alcohol consumption, there is room for improvement.

Much of the advertising for alcohol in Canada reminds us to "drink responsibly", to "make it home alive" and to have a designated driver. Television advertisements portray drinking as a social, fun activity; one that makes you popular and sexy. All of these messages



encourage us to consume, but to do so with a conscience. Perhaps policy needs to shift to be more like that of the tobacco industry- it is illegal to advertise tobacco or tobacco products on television, radio or in any form of print media. In fact, in British Columbia, Tobacconists are not even permitted to display tobacco-related items in their shops windows. Yet, alcohol distributors seem to be popping up on every corner and the hours of availability seem to be increasing - the number of liquor stores increased from 786 in 2002 to 1294 in 2008 and changes in 2002 to the *Liquor Control and Licensing Act* allowed licensed establishments to extend their hours of operation from 2am until 4am (Kendall, 2008).

Both alcohol and tobacco are addictive substances that have major economic, health and social costs for Canada but the policies that guide their marketing seem to be at different ends of the spectrum. By aligning alcohol policy more closely with tobacco policy, and shifting the focus to highlight the dangerous effects excessive alcohol consumption can have, perhaps we can reduce the number of young people who start drinking in the first place. It has worked with tobacco with almost 50% fewer adolescents smoking compared to 1992 (Tonkin, 2005). “Drinking behaviour is highly influenced by *societal norms* and the behavioural patterns of those around youth, from their closest interpersonal relationships (including parents and peers) to *societal-level structural forces and barriers*” (Bullock & Room, 2006, p. 121, emphasis added). Perhaps the time has come to challenge the social mechanisms that promote alcohol consumption without providing a balanced perspective of its benefits and harms.

“Controls on price, usually through taxation, are among the interventions with the highest evidence for effectiveness in reducing levels of harm in the population, especially for young people. Taxes on the alcohol and tobacco content of products (e.g., favouring drinks with a lower alcohol content) and indexed for consumer pricing movements are the most effective.” (Toumbourou, Stockwell, Neighbors, Marlatt, & Rehm, 2007, p. 1394).

Yet, the reverse is true for alcohol pricing in British Columbia, with retail prices per unit of alcohol being highest for the lower alcohol content beers and coolers (Stockwell, Pakula, Macdonald, Zhao, Reist, Thomas, Puri, Buxton, Tu & Duff, 2007). With the goal of reducing alcohol consumption and related harm in BC, Stockwell et al (2007) make the following recommendations: 1) provide incentives for the production, sale and consumption of lower alcohol content products; 2) ensure that alcohol prices keep pace with the cost of living; and 3) create a “nickel a drink” harm reduction levy to fund new addiction treatment and prevention programs. Bishai, Mercer and Tapales (2004) found that government policies, such as taxes on alcohol, can have an impact on adolescent risk behaviour.

In societies that are consumer-based and individually focussed, such as those found in North America, policies that reduce alcohol availability or restrict where and when one can consume alcohol may be seen as infringements of consumer choice, on market freedom and on lifestyle issues that are considered private matters (Sulkunen, Rantala & Määttä, 2004). As the line between private lifestyle choices and public health issues becomes more and more blurred, government interference into what are considered private moral choices is becoming less welcome - policies that may be for the good of the nation may no longer be acceptable if they are seen to heavily impede on one’s right to self determination. Yet this matter gets even more complicated when it is the public purse that must pay for the treatment and medical costs of individuals who misuse substances. Harm reduction strategies may be seen as a middle ground for promoting an individual’s right to choose while reducing costs to the public health system.

Harm reduction, an approach that focuses on the risks and consequences of substance use rather than on the use itself, has largely become accepted as the philosophical underpinning of the public health response to substance use in Canada (Poulin, 2006).

However, such an approach remains controversial with youth, given the existing legislations that serve to restrict alcohol consumption by minors, the debate around the autonomy and abilities of youth to make wise decisions around their substance use, and the specific risks and harms associated with youth substance use (Poulin, 2006). However, a harm reduction approach can take the social context and developmental stage of the individual into context, something the current zero-tolerance approach cannot do (Bonomo & Bowes, 2001).

Adolescent development occurs in stages, starting with the physical development and physiological changes or puberty. Next, as this study confirms, peers begin to take a more central role of influence, and it is at this time that the experimentation with drugs and alcohol is likely to occur. While not all adolescence progress from experimentation to regular use/abuse the level of use should not be taken as a measure of the danger from drug use as initial experimentation of substances may be particularly dangerous due to low levels of knowledge and experience of the individual and peer group. Later adolescence is characterized by aspirations for the future, including employment and relationships (Bonomo & Bowes, 2001). Developmentally-appropriate harm reduction strategies for adolescents who consume alcohol may include learning how to drink more safely, role-playing high risk drinking situations and teaching youth how to care for someone who has consumed too much alcohol (Howard, Griffin, Boekeloo, Lake & Bellows, 2007).

Harm reduction strategies aimed at youth must also take the social context into consideration: teaching street-involved youth a safer way to inject drugs may be appropriate, but for the average student who lives at home and attends school, such advice may be inappropriate and may even promote drug use (Hawthorne, Garrard & Dunt, 1995). By considering the 'when', 'how' and 'with whom' adolescent alcohol use occurs, strategic harm reduction interventions can be put into action.

As high-risk drinking is often a response to peer victimization, one method to decrease such drinking (as well as other negative behaviours and outcomes) would be to include anti-bullying programs, for both students and teachers, as a mandatory part of the school curriculum. Jacobs (2008) provides an overview of some evidence-based anti-bullying interventions and suggests that the more effective programs are those that are the most comprehensive, considering the school dynamics, multiple roles and environment in which the bullying occurs. In addition, programs that serve to strengthen school competence and peer sociability (protective factors for victimization) and those that minimize internalizing and externalizing behaviours (risk factors for victimization) would also be valuable additions to school programming (Paul & Cillessen, 2003). Studies have shown that interventions as early as grade one can have positive impacts on future problem behaviour development (Furr-Holden, Jalongo, Anthony, Petras & Kellam, 2004; Jalongo, Vaden-Kiernan & Kellam, 1998). As with any problematic behaviour, focusing solely on the individual without considering the broader social context is to miss out on a major piece of the puzzle.

As this study shows, not only is youth drinking still an important health concern, the drinking levels of some young women, combined with their lack of consistent contraception use are certainly cause for concern. Adolescents often believe that the harmful by-products of their actions won't happen to them- that they are somehow immune to negative consequences (Lemay, Cashman, Elfenbein & Felice, 2007). Public education campaigns need to reinforce the message that *any* woman having sex without adequate protection could end up pregnant *at any time* during her menstrual cycle as ovulation is not necessarily tied to menses. Antiquated sex education programs that teach the "typical 28 day cycle" need to be reformed to be more reflective of the current, evidence-based knowledge and understanding of women's health. Harm reduction strategies for safer sex need to be reinforced as often as possible.

*Practice*

Results from this study support research suggesting that peer relationships are a significant influence on problem behaviours. Yet, one of the most common public interventions for deviant youth involves segregating them from their mainstream peers and aggregating them into settings with other deviant youth (for example, treatment groups, life skills training, outdoor adventure groups, etc) (Gifford-Smith, Dodge, Dishion & McCord, 2005). Research suggests that amassing high-risk youth into such groups may in fact escalate problem behaviour(s) (Dishion & Andrews, 1995; Dishion, McCord, & Poulin, 1999). Dishion et al (1999) offer two possibilities that may explain the iatrogenic effects of grouped peer influence: 1) youth who are actively reinforced through laughter, social attention and interest for deviant behaviours are likely to increase such behaviour; and 2) high-risk adolescents may derive meaning and value from the deviancy training process, which provides a cognitive basis for motivation to commit delinquent acts in the future. From an ecological perspective, peer contagion effects may result from the interaction of three spheres of influence: the developmental status of the individual, the informal and formal interactions of group participants and the context of the program or service (Dishion & Dodge, 2005). Helping professionals would do well to keep these mechanisms of influence in mind when planning interventions for youth engaging in high-risk drinking as failing to do so may actually increase the problematic drinking behaviour.

Prochaska and DiClemente's (1983) "Transtheoretical Model" of behaviour change (also known as the Stages of Change model) is a useful tool for guiding brief intervention strategies. This model proposes that "[m]odification of addictive behaviours involves a progression through five stages- precontemplation, contemplation, preparation, action and maintenance- and individuals typically recycle through these stages several times before

termination of the addiction” (Prochaska, DiClemente & Norcross, 1992, p. 1102).

Accompanying the stages of change are the ‘processes of change’ which serve to explain how shifts in addictive behaviours occur. Considered compatible with any counselling or helping theory, this approach can be used to design interventions that fit with the person’s current stage and motivation to change and to help move a person from one stage of change to the next.

Motivational interviewing (MI) is a therapeutic process that is consistent with a harm reduction approach to substance use and can be a useful way of engaging youth in examining their change process (Masterman & Kelly, 2003; Toumbourou et al, 2007). MI is a directive, client-centered counselling style that seeks to elicit a change in behaviour by helping clients to explore and resolve any ambivalence to the change process (Rollnick & Miller, 1995). It involves five basic principles that guide practice: express empathy, develop discrepancy, avoid argumentation, roll with resistance and support self-efficacy (Miller, 1996), which may be particularly useful with youth as such principles place the responsibility for change with the person. Given the tendency for youth to be resistant to adult attempts to control their behaviour, this approach is consistent with the adolescent need for autonomy and individualism (Masterman & Kelly, 2003). When used in combination with the stages of change model, Motivational Interviewing can be an effective tool for helping young people examine their actions and incentives for change.

“Child and youth care (CYC) is an active and diverse, relatively new field of professional practice that is broadly concerned with promoting and supporting the optimal development and well-being of infants, children, youth and families in specific contexts through approaches that focus on individuals and their social circumstances and environments.” (White, 2007, p. 227).

As an approach to working with young people, CYC utilizes a model of social competence rather than a pathology-based orientation to child development (School of Child and Youth Care, 2005). These principles fit well with the Motivational Interviewing philosophy of trusting that the person has the capacity to change and encouraging reflection on one's behaviour.

Drawing from a Health Realization perspective, Kelley (2003) suggests that youth problems such as high-risk drinking and high-risk sex are not responses to emotional disturbance, but rather are indicators of the absence of contentment, common sense and other positive qualities of healthy child development. Therefore, the best ways to prevent 'youthful dysfunction' is to help young people understand and maximize the experience of healthy mental functioning. Kelley (2003) cites several studies whose results show that delinquent youth who became involved in positive relationships with adults, teachers and peers, began to display healthy psychological functioning, as predicted by the Health Realization perspective. Child and Youth Care practitioners can play an important role in modeling positive mental health and forging genuine relationships with youth in need of re-establishing their healthy psychological functioning.

According to Mahoney (2003), "A constructive helping relationship is characterized by a nonauthoritarian collaborative style in which the persons involved work together and share a joint responsibility for the process and results of their endeavour" (p. 34). Helping professionals would do well to keep this characterization in mind when working with youth engaging in high-risk drinking or sexual behaviours or both. Problem Behavior Theory would suggest that the problem behaviour(s) help to achieve a goal. Working together, the practitioner and adolescent can piece together what purpose the problem behaviours serve,

how they help and hinder the adolescent and which healthier and more productive behaviours could replace them.

As this research suggests, different drinking patterns can result in different levels of contraceptive use. Heavy drinkers are the most likely to report consistent contraceptive use, followed by those scoring 2 or more on the CAGE and lastly by binge drinkers. If working with a female adolescent who consumes alcohol and is sexually active, it is important for the helping professional to know what style of drinking she engages in so that appropriate interventions can be planned, including helping the youth to explore why she engages in the high-risk behaviours and what meaning(s) they have for her.

Lemay et al (2007) identify several barriers to obtaining and utilizing contraception, including: embarrassment discussing the topic, concerns about confidentiality, inability to obtain contraception without parental knowledge and lack of knowledge regarding methods. As trusted members of an adolescent's life, practitioners can play an important role in helping the youth obtain reliable information and/or contraception if needed. By initiating or encouraging frank and open discussions about sex, sexuality and relationships, helping professionals can be a valuable resource for helping reduce the awkwardness some youth feel in discussing these topics with their parents or health care provider(s).

It's also important for helping professionals to assist youth to see how their social and cultural location has shaped their thoughts, views, actions and behaviours. By encouraging the youth to locate themselves within a broader social context, the youth may become aware of how they have been influenced by forces beyond them. While writing about young offenders and youth crime, the same arguments can be applied to youth with substance use issues. Kelly (1996, as cited in Alvi, 2000), claims that,

“Treatment programs focusing exclusively on the individual are usually unsuccessful because policymakers and practitioners



have failed to recognize that those being “treated” exist in a social world to which they must return after treatment. That social world has made demands on them, has played a central role in making that person who he or she is, and will continue to do so after the person has been “rehabilitated.” To ignore this is to misunderstand the realities of that individual’s life...” (p. 87).

Equally important is the need for practitioners to be aware of how their own social location shapes their work, after all “different world views and ideologies influence the manner in which [practitioners] conceptualize and approach their work” (Coates, 1991, p. 87).

#### *Future Research*

Funding has been secured for three more waves of this survey, taking participants to the ages of 22-28. This will be an excellent opportunity to explore the transition from adolescence to young adulthood in a general population sample. In their longitudinal study extending Problem Behavior Theory into young adulthood, Jessor et al (1991) found that greater earlier involvement in problem behaviour is indeed linked to greater involvement in problem behaviour later on in young adulthood. However, “there is almost no support for a relationship between variation in involvement in problem behaviour in adolescence/youth and variation in life outcomes later on in young adulthood” (Jessor et al., 1991, p. 263). Life outcomes measures included young adult life-areas of work, education, friends, family and health and the young adults who had been involved in problem behaviours in their adolescence had similar experiences and accomplishments as young adults. Will similar results be found with this sample?

Further exploration of issues identified in this paper are also important areas for research. This study identified the predictor variables for engaging in high-risk alcohol consumption. What are the predictor variable for engaging in high-risk sex? Are there also predictor variables that act as protectors against participating in these behaviours? In what

other ways do the three groups of high-risk drinkers differ from each other? In what ways are they similar?

Patterns of contraception use examined in combination with high-risk drinking also need further investigation. Are sex and high-risk drinking occurring at the same time? Why are the patterns of contraception use different between the high-risk drinking groups? Does one group possess certain risk or protective factors that the other group(s) don't? Was there something preventing the binge drinkers from being able to use contraception consistently? What would help overcome this/these barrier(s)?

Adding the opportunity to provide qualitative answers would also be an important contribution to subsequent versions of this survey. Providing participants with an opportunity to add their voice and further explain their circumstances, in their own words, would deepen the type of data collected and enrich the learning gleaned from the information accrued.

#### *Limitations*

Despite making some important contributions to the literature, there are some limitations to this study that should be acknowledged. Although the fact that this is a general population survey is also a major advantage of this research, how the survey was conducted can also be considered a drawback. Even though the sample was randomly selected from the general population, it may be difficult to generalize the results as the majority of youth in this population attended school regularly, self-identified as White/Caucasian, and can be assumed to have stable housing given the method of recruitment via telephone. This limitation presents a concern that youth who are more transient such as homeless youth and youth who are not enrolled in school, are not adequately represented when it comes to their involvement in the high-risk activities being studied - their inclusion in the survey may have impacted the results.

Given the length of time between each wave of this survey series, some participant attrition has occurred. While 52% of the original sample (539 of 1035 eligible households) agreed to participate in this wave of the survey, there were some participants who either refused to participate or could no longer be contacted. While it may be possible to compare the earlier data of current participants versus non-participants in order to identify similarities or trends in non-participants, there is no way to determine why non-participants were not willing or able to participate in this wave of the survey.

This wave of the study targeted a sample population between the ages of 16 to 23, and the minor respondents needed parental permission in order to participate. Both the presence of an adult interviewer and parental knowledge of the youth's participation may have skewed the responses given by the minors pertaining to questions about their alcohol use (as the questions about sexual activity were asked on a separate questionnaire, which the youth completed by themselves, it is assumed that the responses to such questions are accurate).

As this study involves a secondary analysis of the data, the researcher was not involved in the original formulation of the survey and therefore had no input into the creation of the questions. If qualitative-type questions had been included in the original survey design it may have been possible to explore specific incidents where alcohol was consumed and unprotected sex occurred, allowing for prediction models to have been devised. Without information pertaining to the chronology of drinking and sexual activities, no causal relationship between high-risk alcohol consumption and contraceptive non-use can be determined.

Due to the minor status of some of the participants, as well as the fact that this was not an anonymous survey, questions about experiences of physical or sexual abuse could not be asked. Pursuant to section 14 of BC's *Child, Family and Community Service Act (2002)*, a person who has reason to believe that a child needs protection under section 13 must

promptly report the matter to a director or a person designated by a director. Therefore any admissions of physical or sexual abuse would have required notifying the appropriate authorities. Previous studies have demonstrated the relationship between trauma and alcohol use/abuse (Clark, Lesnick, & Hegedus, 1997; Kilpatrick et al, 2000; Clark, De Bellis, Lynch, Cornelius & Martin, 2003; Becker & Grilo, 2006; Harrison, Fulkerson, & Beebe, 1997) and it would have made for an interesting analysis to ascertain if the participants who were engaging in the high-risk drinking activities had histories of childhood physical or sexual abuse.

Lastly, the quantitative nature of this survey does not examine the social or historical contexts in which the high-risk activities are taking place - the survey fails to question 'why' or 'when' the problematic behaviours are occurring. Since the survey does not ask questions about issues such as power differentials, perceived roles and/or definitions of self, no inferences can be made about how these important issues impact the results. Doing so would have required a more feminist interpretative lens and was beyond the scope of this project.

## Conclusion

In this study, close to 10% of the female sample population fell into the high risk category of being a weekly binge drinking, being sexually active and failing to consistently use contraception; and weekly binge drinkers had the highest number of past year and lifetime sexual partners. These young women are engaging in behaviours that could have serious negative consequences, ones that could last a lifetime. With only half of these highest risk young women attending school, policy makers and practitioners must employ systems other than the education system to provide outreach and services to encourage these young women to re-evaluate their actions.

Age, the influence of negative peers, physical victimization and the presence of an addiction prone personality were all found to be significant predictors of engaging in heavy drinking and weekly binge drinking. The influence of negative peers was the only significant predictor variable of having a CAGE score of 2 or more. All of these predictor variables are risk factors and no protective factors were identified as being predictive of these high risk behaviours. These risk factors are not mutually exclusive and youth who are influenced by all of them at the same time can be especially vulnerable.

Evidence has been presented throughout this paper to suggest that alcohol consumption is a common and accepted part of Canadian society. Alcohol and its use has a long and varied history in this country, and its legalization and proliferation is part of our cultural fabric. Alcohol is advertised on television, in movies and in magazines, glorifying its consumers as having fun and being popular. So perhaps we should not be surprised when youth and young adults are consuming alcohol at high-risk levels - they have not yet learned how to enjoy alcohol responsibly and in a manner consistent with what society considers acceptable use. But this risky drinking behaviour often results in unintended and unforeseen

consequences such as pregnancy, injury and sometimes death. While youth and young adults find their way through learning how to maturely engage in adult behaviours, they must also learn how to keep themselves safe and alive. These are often difficult lessons.

As decision makers and practitioners, it is essential that we be cognizant of the developmental stages of adolescence when writing policy and planning individual-specific interventions. Failing to consider the socio-cultural context in which behaviour is occurring is to miss half of the puzzle and can result in ineffective courses of action. By taking the time to learn about a youth's unique life history and their current situation, we have the potential to assist youth engaging in high risk behaviours to change their life's direction. As advocates for youth's rights, CYC professionals can play an important role in promoting overall, long-term social health by helping adolescents and young adults successfully navigate their way into responsible, socially aware adulthood.

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