

Personality:
Reasons for Drinking and Alcohol Consumption & Abuse Patterns
Among Youth

by

Sharon Alexis Burrows
B.A., University of Victoria, 1997

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

MASTER OF ARTS

In the School of Child & Youth Care

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ABSTRACT

Some youth are engaging in alcohol consumption patterns putting themselves and others at risk. This behaviour places them at high risk for self-harm, and has the potential for developing into adult alcoholic behaviour dependency. A secondary analysis utilizing the Vancouver Family Survey data was conducted to increase our understanding and awareness regarding youth alcohol consumption patterns and related problems. Youth alcohol use and abuse is examined within domains of socio-demographics, personality, cognition, and alcohol consumption patterns and related problems. With regard to personality, an addiction prone personality is found to be a predictor for enhancement and coping motivators in both the male and female youth population. Cognition, such as drinking to feel good and drinking to forget worries was found to mediate the relationship between an addiction prone personality and alcohol consumption patterns and related problems. Traits such as agreeableness and conscientiousness were found to be protective factors.

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Personality:
Reasons for Drinking and Alcohol Consumption & Abuse Patterns Among Youth

INTRODUCTION

Health Canada (Health Canada, 2000), estimated the health and social costs of alcohol consumption in Canada to be upwards of \$7.52 billion dollars. The cost to society as a whole from alcohol abuse includes: hospitalization, treatment services, prescription drugs; workplace issues related to Employment Assistance Programs and drug testing. Health Canada (2000) further suggests a link between heavy alcohol use by youth and motor vehicle accidents and deaths, academic problems, job difficulties and relationship problems. In other words, heavy alcohol use and abuse by youth is seen as contributing to an increase in spending of health and social services dollars. Early onset drinking is also a major risk factor for the later development of alcohol dependence or abuse (Costa, Jessor, and Turbin, 1997; Health & Welfare Canada, 1990; NHSDA, 1998) and the costs associated with research and prevention.

The McCreary Centre (2004) reports the percentage of youth who consume alcohol has decreased. Conversely, the number who reported binge drinking increased from 35% in 1992 to 45% in 2003 (McCreary Centre Society, 2004). Given the social and health costs associated with alcohol consumption among youth, there appears to be an obvious need for further and expanded research into the reasons why so many youth have turned to using alcohol in a way that is harmful to themselves and others.

A need to understand and validate the specific role that addiction prone personality plays in predicting high-risk drinking patterns in our youth is the impetus for pursuing the connection of those variables shown in Table 1.

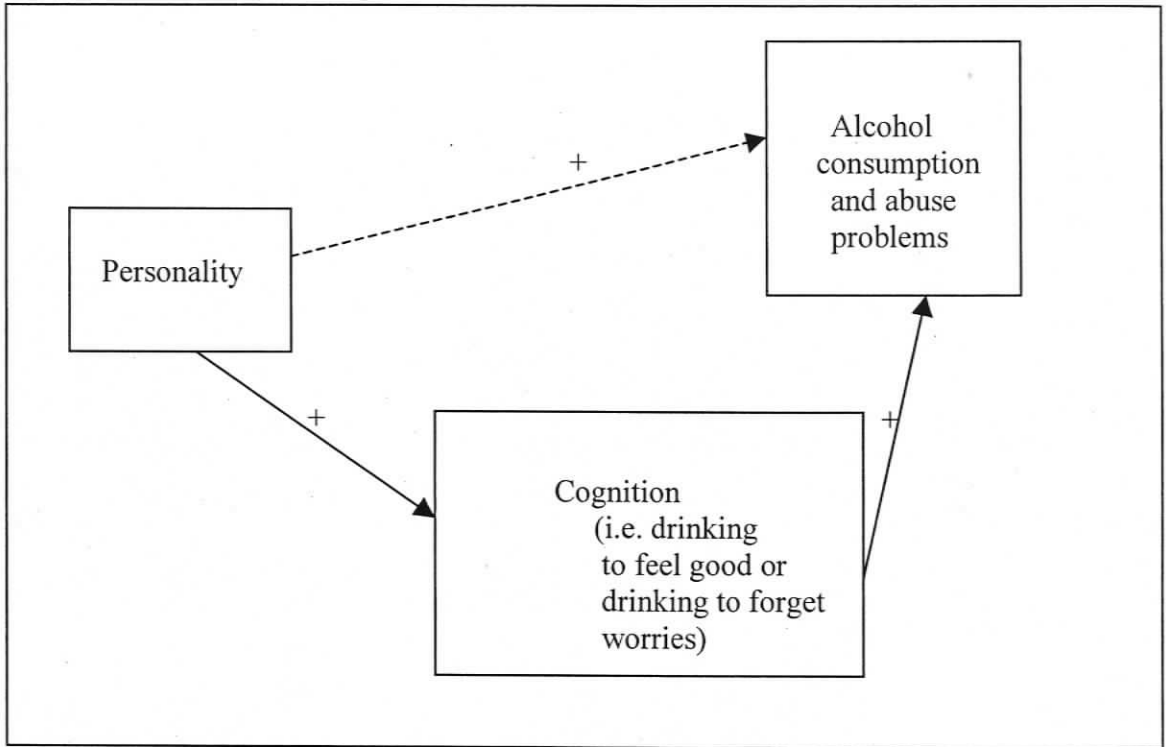
Table 1.
Summary of Variables to be Used in Data Analysis

Personality	Cognition (Reasons for Drinking)	Drinking Behaviour
Addiction Prone Personality	Drink to be sociable?	Daily Average alcohol consumption
Neuroticism	Drink to add to the enjoyment of meals?	Heavy drinking (more than 8 glasses of wine, beer, or liquor)
Extraversion	Drink to feel good?	Michigan Alcohol Screening Test scale scores
Openness	Drink to help you relax?	CAGE scale scores
Agreeableness	Drink to forget worries?	
Conscientiousness	Drink to feel less shy and inhibited?	
Confounding Variables		
Age		
Gender		
Family Net Worth		
Mother's Years of Education		

Research to date in the field of alcohol abuse has been deficient in that it has focused too narrowly on either the cognitive or the personality areas (Barnes et al. 1997; Barnes et al. 2000; Carpenter & Hasin, 1998; Cox and Klinger, 1988; Finn, Sharkansky, Brandt, & Turcotte, 2000; and Kwakman, Zuiker, Schippers, & de Wuffel, 1988). Sufficient efforts to integrate these two areas and apply these theories to youth have not materialized.

Basic to understanding youth consumption and drinking patterns is a cohesive theory integrating identified factors associated with youth alcohol consumption abuse and related problems and delineating mediated pathways from personality to reasons for drinking and to at-risk drinking behaviour (see Figure 1). This approach would (a) determine whether there is a positive relationship between neuroticism and drinking to relieve tension and anxiety (b) determine whether an addiction prone personality is a strong indicator of reasons for alcohol consumption, and (c) investigate correlational pathways that show cognitions as a mediator when choosing to use alcoholic beverages. Moreover, this will allow for the mapping of significant pathways from addiction prone personality characteristics to drinking patterns with cognition being the mediator.

Figure 1
Cognition Mediates the Relationship Between Personality and Alcohol Consumption and Abuse Patterns



MAIN OBJECTIVES

Based on literature regarding the reasons youth consume alcohol, the effects of personality on alcohol use and abuse, and data on the quantity and frequency of youth alcohol consumption, I expect my secondary analysis of the Vancouver Family Survey data to validate the following hypotheses:

1. Neuroticism and drinking to relieve tension and anxiety will be positively associated.
2. An addiction prone personality will be a strong indicator of reasons for alcohol consumption.
3. Cognitions (i.e. reasons for drinking) will act as mediators between a set of personality factors (addictive prone personality, agreeableness, conscientiousness, extraversion, neuroticism, and openness) and alcohol consumption patterns and behaviour.

Operational Definitions

For purposes of this research project, the following operational definitions of variables used apply:

1. Personality as defined in *Webster's New World Dictionary and Thesaurus* (1996) is a set of "... distinctive individual qualities of a person, considered collectively" (p 460). Personality can be measured in general ways using comprehensive personality inventories or using more specific personality measures designed to predict specific behaviour. The Vancouver Family Survey utilizes a combination of these types of measures.

Personality Measures used in the Vancouver Family Survey include the NEO Five-Factor Inventory short form (Costa & McCrae, 1992), which measures the five broad dimensions of personality: agreeableness, conscientiousness, extraversion, neuroticism, and openness. Appendix A illustrates The Addiction Prone Personality Scale (Barnes et al. 2000) employed in the Vancouver Survey. This is a specific test used to measure personality vulnerability to substance abuse.

2. Cognition is defined as “. . . 1. The process of knowing, perceiving etc. 2. An idea, perception etc.” (Webster, 1996, p 113). Thus, the idea behind alcohol consumption, or the reasons a person consumes alcohol are used to measure the cognitive processes associated with alcohol consumption and abuse for the youth surveyed in the Vancouver Family Survey.
3. There are a variety of ways to assess alcohol use behaviour. In the alcohol epidemiology, researchers mainly focus on quantity and frequency of alcohol consumption, heavy alcohol use or binge drinking, or alcohol abuse and dependence. The Vancouver Survey obtained data in each of these domains. The Volume-Variability Index (Cahalan & Cisin, 1968) measured alcohol consumption. The Volume-Variability Index contains questions regarding quantity and frequency of wine, beer, and liquor consumed over a 12-month period. The daily average of alcohol consumed each day during the past year is estimated based on answers to questions contained in Vancouver Family Survey questionnaire B

4. booklet for youth. Consuming eight glasses or more of wine, beer, or liquor at one sitting defines Heavy Drinking.
5. The MAST test (Pokorny, Miller, & Kaplan, 1972) and the CAGE test (Ewing & Rouse, 1970) assessed problems associated with alcohol abuse. See appendix B and C for copies of these questionnaires.

In this thesis, I plan to examine the association between personality, reasons for drinking and alcohol consumption and abuse patterns. I am particularly interested in whether the reasons for drinking mediate the relationship between personality and alcohol consumption and abuse (see Figure 1). More specifically, I expect to show a positive correlation between neuroticism and drinking to relieve tension and anxiety. I also expect to show that an addiction prone personality is a strong indicator of reasons for drinking. Finally, I expect that through a hierarchical regression model of analyses, cognition will mediate the relationship between personality and alcohol consumption and related problems. In other words, drinking to feel good and drinking to forget worries mediate the relationship between certain personality factors and alcohol consumption and abuse patterns.

LITERATURE REVIEW

Drinking Patterns

The phenomenon of youth drinking behaviour is of major concern both internationally and nationally. International studies report that more North American youth (82.3%) have had an alcoholic drink in their lifetime than Dutch (71%) or Chinese (52.5%) youth (Koopmans and Boomsma 1996; Houghton, Carroll, Odgers, & Allsop 1998; Lo and Globetti 2001).

Australian researchers (Houghton et al. 1998) found the number of youth drinkers in Australia was consistent with American and Canadian studies. A sample of 640 randomly selected primary and secondary school students in Perth, Western Australia participated in data collection using the "Which Group" picture booklet questionnaire. They found that 73% males and 70.6% of females had tried alcohol at least once in the past year.

There is also a variety of research on heavy drinking or binge drinking. A survey conducted by telephoning American youth in 1998 suggests that 30 % of youth in the United States drink at least six drinks at one sitting (Robert Wood Johnson Foundation, 1998) compared to the reported 1996 Canadian youth average of 21.2% (Northwest Territories Bureau of Statistics, 1996).

In Canada, the frequency of heavy drinking is highest among youth aged 16 to 24 years of age, peaking in the years following high school (Prevention Source B.C., 2001). These investigators also found that 41% of Canadians over the age of 15 report experiencing some kind of harm from another person's drinking. In addition, Prevention Source BC (2001) states that the Canadian national average age of first use of alcohol is 12 years. This is fairly close to the age for British Columbia students' first use (AHS I,

1992 and *Healthy Connections: Listening to BC Youth* (1999). However, the Adolescent Health Survey III (2003) has found that 15% of the school population had their first alcoholic drink when they were 10 years of age or younger.

In addition to the national prevalence surveys, there have been several recent surveys conducted on alcohol consumption patterns among B.C. youth. The McCreary Centre Society has conducted three separate surveys of students in grades 8 through 12 within the province. These surveys are The Adolescent Health Survey I (1992), II (1999) and III (2003).

In 1992, The Adolescent Health Survey (AHS I) surveyed 15,549 students from grades 7 through 12 across British Columbia public and independent schools. Two-thirds of all students in the province reported some use of alcohol. The trend lines for males and females were similar and showed that alcohol consumption commenced between the ages of 11 and 14 with approximately 34 % of males and 20 % of females having had their first drink before the age of 11.

Section six of *Healthy Connections: Listening to BC Youth* (1999) highlights the findings from the McCreary Centre Society Adolescent Survey II (AHS II). During the 1998/99 school year, 25,838 students from classrooms in Grades 7-12 participated in AHS II. Data indicates that overall, patterns of alcohol use have not had any significant increase since 1992. Of the students who did consume alcohol, about 75% did drink in the month before the survey. The McCreary Centre defined binge drinking as consuming five or more drinks of alcohol within a couple of hours. They reported an increase from 28% as compared to 24% from the 1992 survey. The AHS II (1996) also notes that students in the Greater Vancouver area were more likely to drink less than students do in

other parts of the province. Data also suggest that 63% of students have consumed an alcoholic beverage with 10% of those who do drink having used alcohol on more than 100 days of their lives. This report also provides data related to injury-related risks and supports the need for research on the alcohol consumption habits and patterns of today's youth

The differences in findings between the AHS I and AHS II precipitated a third data collection from British Columbia's students. Ergo, the McCreary Centre conducted the Alcohol Adolescent Health Survey III. The AHSIII showed that alcohol consumption among British Columbia's youth decreased from 63% in 1992 to 57% in 2003 (McCreary Centre Society, 2004). The percentage of reported binge drinker rose from 35% in 1992 to 45% in 2003). The McCreary Centre (2004) defined binge drinking as consuming five or more drinks in a row.

Analyses of the Vancouver Family survey data results led Barnes et al. (1997) to conclude that 87% of Vancouver youth aged 14 -25 had consumed alcohol at some time in their lives. Fourteen percent stated that they had a drinking problem while 6% reported they had consumed more than 2 drinks per day on average.

Although the findings from the above-mentioned surveys are not identical, they are close enough to raise concern on youth's misuse of alcoholic beverages and the need to delineate those pathways that connect the prediction of alcohol consumption and its consequences. The majority of youth are using alcohol and significant numbers of youth are engaging in high-risk behaviour as a result. The following sections of this thesis review the literature on cognitive and personality models of drinking.

Models of Drinking

Cognitive Model

Several cognitive models that have proven to be valuable in understanding youth alcohol use and abuse have evolved over the years. These models include:

1. *Coping*: Research has been examining drinking to cope with negative emotions such as depression, rejection, stress, and feelings of inadequacy since the early 1970s (Centre for the Study for Social Research, Davies & Stacey; Costa, F., Jessor, R., and Turbin, M., 1999; Harford & Spiegler; Jessor & Jessor; O'Connor; Schippers; Weschler & Thum, as cited in Kwakman, A.M., Zuiker, A.J.M., Schippers, G.M., & de Wuffel, F.J., 1988; Kuntsche, E., Knibbe, R., Gmel, G., and Engels, R., 2005; and Kuntsche, E., Knibbe, R., Gmel, G., and Engels, R., in press). They have also studied, in detail, alcohol use and abuse use as a form of avoidance coping (Cooper et al, 1992; Kuntsche et al. 2005; Kuntsche et al. in press; Laurent et al. 1997; Mijuskovic, 1988; and Wills, Sandy, Yaeger, Cleary, & Shinar, 2001,).
2. *Motivational*: The motivational formulation incorporates alcohol-related behaviour with motivational factors. Motivational Model theorists posit the necessity of a particular motive or reason as a condition for alcohol consumption, thus assuming that an individual makes the decision, whether conscious or unconscious to drink. (Cooper, 2004; Cox & Klinger, 1988,).
3. *Expectancy*: Smith and Goldman (1994) postulated that when a memory reflects on past drinking and assigns either positive or negative reinforcement consequences, then these expectancies affect the likelihood of future drinking.

4. *Reasons for drinking*: The literature consistently suggests that self-reported perceptions, (e.g. the belief that drinking increases the ability to handle stressful situations), constitute the majority of reasons for drinking (Carpenter & Hasin, 1998; Goldman & Rather, 1993; Greenwald and Banaji, 1995).

Coping Model

In their efforts to establish the role of risk and protective factors in understanding youth alcohol use and abuse, Costa et al. (1999) collected data from a four-wave longitudinal study of 1,591 youth from urban schools in United States. They found that the strongest predictor of problem drinking was stress. These findings follow on the research by Cooper et al. (1992) and Laurent et al. (1997) in which they had proposed a stressor vulnerability model of drinking in which the use of avoidant forms of coping with negative emotions were important factors for predicting stress-related alcohol use in adult male populations. In order to generalize this concept to the youth population, Laurent et al. (1997) replicated the study using data collected from 184 students from Grades 7 to 12. Hierarchical multiple regression analysis allowed for direct comparison with the Cooper et al. model with all equations estimated using the same procedures. Laurent et al. findings are generally supportive of the 1992 Cooper et al. study in which avoidant coping preferences coupled with stress were predictive of consuming alcohol to cope, and subsequently leading to alcohol related problems. The Laurent et al. (1997) study did not find any significant differences between male and female drinking patterns.

Wills (1986) surveyed two cohorts of participants at the beginning of grade seven with three follow-ups at six-month intervals. He found that alcohol consumption inversely related to both behavioural coping and cognitive coping. However, the use of

cognitive coping (e.g. trying to see problems in a different light) strategies were slightly more sporadic than behavioural coping strategies. Further research by Wills et al. (2001) tested a sample of 1,688 youths with a mean age of 12.5 to determine whether relationships existed between seven coping dimensions and alcohol consumption.

Research on coping and substance use by Carver et al. (as cited in Wills, 2001) provided the instrument for the intention-based assessment method used to measure coping. The inventory includes three classifications of coping (behavioural, cognitive, and physical). Results indicate an increase in heavy alcohol consumption from 3% of Grade 7 students to 9% of Grade 9 students. As expected, when individuals experiencing negative emotions consumed alcohol, their inability to choose suitable or appropriate strategies for coping increased.

Choosing inappropriate strategies for coping with negative emotional states are also associated with high levels of Neuroticism (Kuntsche, et al. in press). There is sufficient research to support the proposition that Neurotic individuals place high importance on choosing to consume alcohol to cope with negative affect (Cooper et al. 2000; Loukas et al. 2000; Stewart and Devine, 2000; Stewart et al. 2001). In addition, Loukas et al. (2000) report that after statistically controlling for other motive factors, only coping motives remained significant.

Motivational Model.

Cox and Klinger (1988) emphasize close ties between the net motivation to drink and those incentives in other areas of life that affect change. Cox initially used albino rats in his research with incentive motivation, affective change, and alcohol use. He concluded that his experiments provide, to date, “the only evidence of which we are aware that alcohol changes

organisms' reactions to incentives, presumably by changing their evaluation of incentives and their emotional reactions to them" (p.170). Simply, the higher the expectation that alcohol will have a positive effect, the motivation to use alcohol for coping is increased. Thus, one's incentive to drink increases based on whether the consequences to drinking outweigh the consequences of not drinking.

Following on the Cox and Klinger premise of a conceptual model of drinking motives, Cooper (1994) developed a four-factor measure. In addition, a second fundamental premise by Cutter & O'Farrell (as cited in Cooper, 1994) is conceptualised into this study. Cutter & O'Farrell state that motivational models of alcohol use, "share – either implicitly or explicitly – the assumption that drinking behaviour is motivated by different needs or serving different functions characterized by unique patterns of antecedents and consequences" (p. 117). The purpose of Cooper's 1994 study was to validate the conceptual and pragmatic utility of Cox and Klinger's model. The four motive variables used in this study are: (a) internally generated, positive reinforcement; (b) externally generated, positive reinforcement; (c) internally generated, negative reinforcement; and, (d) externally generated, negative reinforcement.

A five-item measurement tool listing reasons for drinking measured the four drinking motives. This set of four drinking motives account for 14% to 20% of the frequency of consumption and quantity variance (Cooper, 1994). In considering the data collectively, Cooper (1994) found support for several conclusions. First, the data suggests "substantial cross-time stability in the effects of coping, social, and enhancement motives" (p.127). Finally, subscales formed internally exhibit largely invariant relationships to contextual antecedents and drinking-related outcomes. Thus, the

consequence of being in a state of drunkenness (outcome) generates either a positive or a negative reinforcement of an internal or external motive for consuming alcohol (antecedent). In other words, an expected outcome motivates and enhances alcohol consumption by youth.

The usefulness of motivational models is described in the literature. Drinking motives were consistently associated with specific personality traits and stable across the life-span (Cook et al.; Kjaerheim et al.; Vollrath & Torgersen; Gotham et al.; McCrea et al. as cited in Kuntsche et al. in press). Kuntsche et al. also found that the motivational model ran parallel with gender specific drinking patterns and associated problems from youth to adulthood.

Expectancy Theory.

According to Smith and Goldman (1994), lack of available theory on the cause of alcohol problems hinders the attempt to prevent problem drinking. Expectancy theory may help fill the gap by providing an understanding of adolescent acquisition of drinking problems.

Expectancy was originally referred to as the "... capacity to use information stored at one time point to organize and guide responses to information encountered later" (Tolman, as cited by Goldman, Del Boca, & Darkes, 1999, p. 206). Ergo, the expectancy concept is a memory-based cognitive learning theory. Smith and Goldman (1994) postulate that the repeated perception of an association between a given behaviour and expected outcomes results in the development and continuation of the new behaviour. They go on to surmise, that it is these stored memories, known as expectancies, that influence a person's future decision to drink or not to drink. Smith and

Goldman (1994) further postulate that the acquisition of alcohol expectancies is not necessarily the result of direct experiences. They concur with Casswell, Gilmore, Silva, & Brasch; Spiegler; Dunn & Goldman (as cited in Smith and Goldman, 1994) that vicarious learning (watching the responses of others) accounts for very young children having a clear view of both the appropriateness and effects of drinking alcohol.

Smith and Goldman selected 203 grade seven students for a multiyear study in the development of adolescent drinking patterns. Their criteria for choosing subjects were: 1) that they had not yet begun to drink at the beginning of the study, and 2) data had to be available from each of three annual data collections. Their data analysis suggests that expectancies from consumption of alcohol correlate with drinking behaviour. This is consistent across adults and adolescents who range from low-level social drinkers to alcoholics. They further propose that expectancies predict future onset of problem drinking, and manipulation of these expectancies may very well produce significant reduction in heavy drinking (Smith and Goldman, 1994).

That same year Cooper (1994) found unique information concerning youth drinking behaviour and expectation. For example, it is quite possible that drinking behaviour among youth who are beginning to experiment with alcohol consumption is associated more with a need to conform, rather than other internalized drinking motives (Copper, 1994). In other words, youth use alcohol in relation to a need to conform and thus an expectation of acceptance by peers.

Reasons for Drinking.

In addition to the need for further study in the areas of cognitive models of drinking patterns and behaviour, the literature consistently reports on perceptions such as

self-reported reasons for drinking and the problems created. Carpenter and Hasin (1998) suggest operationalized reasons for drinking as the degree of endorsement given to specific statements describing specific affective or social motivators.

Carpenter and Hasin (1998) investigated relationships between self-reported reasons for drinking alcohol and its use and consumption patterns in 777 heavy drinkers as defined by the Diagnostic and Statistical Manual of Mental Health Disorders (4th ed. [DSM-IV]: American Psychiatric Association). These 424 men and 353 women completed Grant and Hasin's *Alcohol Use Disorders and Associated Disabilities Interview Schedule* (Carpenter & Hasin, 1998).

Carpenter and Hasin (1998), found that "the relationship between reasons for drinking and alcohol consumption change across subgroups of participants with and without alcohol use disorders" (p. 170). Of note is the resulting substantiation that an increase in drinking to cope with negative affect was associated with an increase in having an alcohol dependency disorder (Carpenter & Hasin, 1998). Notwithstanding the aforementioned, Carpenter & Hasin (1998), discuss the memory processing conciliation effect of situational cues and recommend addressing the reason for drinking construct within a larger cognitive-memory framework. This suggestion is based on the work of Cooper et al. (cited in Carpenter & Hasin, 1998) in which emotional coping reasons have independent associations with alcohol consumption and negative alcohol consequences suggesting further exploration of cognitive mediated reasons for alcohol consumption.

The memory-based cognitive learning reinforced by certain expectancies leads to an if-then relationship that influences drinking decisions made at future choice points. The stored memory of the anticipated reward for drinking provides the mechanisms by

which early learning mediates the relationship between risk factors such as personality and alcohol related problems (Goldman et al. 1991; Goldman & Rather, 1993; Smith, 1989).

Personality and Addiction.

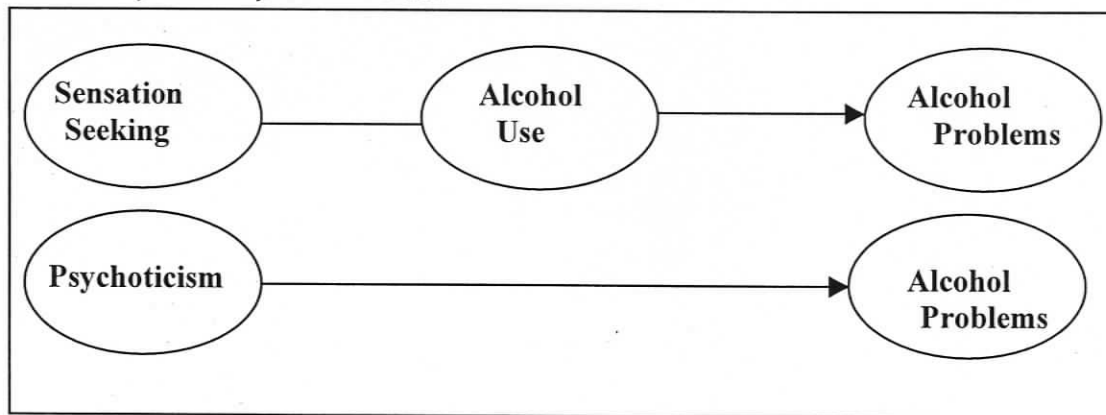
Several decades of longitudinal research indicate that the combination of Excitement seeking and social deviance proneness personality traits are associated with a vulnerability to abuse alcohol and other drugs (Barnes, Murray, Patton et al. 2000).

Personality and Alcohol Abuse: The Winnipeg Health and Drinking Survey Phase III, known as WHADS (2000), is a collaborative effort of three colleagues: Dr. G. Barnes of the University of Victoria, Dr. R. Murray of the University of Manitoba and R.E. Anderson from the University of New Mexico. The primary purpose of the WHADS was to investigate and determine if the existence of certain personality traits can cause a person to become alcoholic. A secondary benefit of the survey was the development of the Addiction Prone Personality measurement scale.

Barnes, Murray, Patton, et al. (2000) found that the two general population studies and the clinical study provided similar results supporting the position that individuals who are low in social conformity and self-regulating and high in sensation seeking have a higher risk of developing addictive behaviour. However, the clinical study supplies information indicating that neuroticism and its related traits tend to show up within a "Clinical Alcoholic Personality" more often than a "Prealcoholic Personality" (Barnes, Murray, Patton et al, 2000). One may then assert that neuroticism may not be a good prospective predictor of alcohol abuse in the general population.

Phase III of the WAHDS provided an excellent opportunity for examining the longitudinal direction in the relationship between personality, alcohol consumption, and problems. The main finding in the seven-year sample follow up was the strong evidence of a causal effect of personality with alcohol consumption and abuse (Barnes, Murray, & Anderson, 2005). In particular, persons high in sensation seeking are more likely to increase their risk of developing heavier alcohol consumption patterns leading to alcohol problems while persons with a proneness for high psychoticism/social deviance link more often with alcohol problems directly (See Figure 2). Barnes, Murray, & Anderson (2005) did not find a causal link between extraversion, neuroticism, and alcohol use or alcohol problems.

Figure 2
Personality Pathways to Addiction



The Barnes, Murray & Anderson dual pathway model matches remarkably close to that outlined by Finn et al. (2000) For example, Finn et al. (2000) posit a pathway from Social deviance proneness to alcohol problems and another from excitement seeking to alcohol problems with alcohol use mediating the effect. Subsequently, Barnes, Murray, and Anderson (2005) adopted the Finn et al. labels of Social Deviance Proneness for the

Psychoticism pathway, and sensation seeking for identification of the their two personality pathway model.

Addiction Prone Personality (APP-21).

Mac Andrew (as cited in Barnes, Murray, Patton, et al. 2000) suggested that a strong way to measure a phenomenon is by using a specifically designed instrument to measure that particular phenomenon. Ergo, Barnes, Murray, Patton, et al. (2000) developed an Addiction Prone Personality Questionnaire based on their selection of personality items meeting the following two criteria: 1) A family history of alcoholism. 2) Ability to discriminate alcoholics from non-alcoholics. This process resulted in a 23-item questionnaire having a satisfactory internal consistency ($\text{Alpha}=.76$) and a high two-year test reliability (Barnes, Murray, Patton, et al. 2000).

The Addiction Prone Personality-21, (APP-21) used in the Vancouver Family Survey and shown in Appendix A, resulted from the deletion of the two items directly related to substance misuse or to a possible consequence of drug and/or alcohol use. These items are: 1) "would you take drugs which may have strange or dangerous effects" and 2) "have you had blank spells in which your activities were interrupted and you did not know what was going on around you?"

The Vancouver Family Survey provided an opportunity for the validation of the newly constructed APP-21. Results showed that the removal of the two items did not reduce the reliability of the scale nor did it change the correlations with validity criteria (Barnes, Murray, Patton, et al. 2000). Results reported by Anderson et al. (1999) confirmed the ability of the APP 21 item test to predict substance use patterns across age and gender cohorts in the VFS Wave 1 sample. Analysis of data collected in the WHADS III further validated the use of the APP questionnaire for the prediction of an

addiction-prone personality by confirming that the APP-21 questionnaire predicted the development of alcohol abuse in the seven-year follow up sample (Anderson, Barnes & Murray 1999).

UNDERSTANDING AND INTEGRATION OF STREAMS OF RESEARCH ON YOUTH DRINKING

The literature review in this paper indicates the presence of distinct personality characteristics that are common in at-risk youth who consume alcohol. Of note is that previous research on this personality connection is limited in that the studies simply correlate personality and substance use disorders without exploring the mediation factor. However, several noteworthy projects address this connection.

In a study of Canadian college students, Stewart and Devine (2000) used multiple regression analysis to reveal that personality traits predicted coping and enhancement as internal reasons for drinking. They further found that individuals who tend to feel things more negatively than others are at greater risk for using alcohol to diminish these feelings and thoughts suggesting that individuals presenting with high Neuroticism choose alcohol to cope (Stewart & Devine, 2000).

Theakston, J., Stewart, S., Dawson, M., Knowlden-Loewen, S., and Lehman, D., (2004) studied 733 undergraduates. Their aim was to replicate the finding of Stewart and Devin (2000) by using the International Personality Item Pool (IPIP). They hypothesized that even with a change in the personality assessment tool multiple regression analysis would provide one pathway from emotional stability to coping motives and another from extraversion to enhancement motives. Their analyses supported past research in that emotional stability and extraversion significantly and independently predicted residual Coping motive scores. Additional findings showed that high extraversion and low conscientiousness predicted residual Enhancement motives scores (Theakston et al. 2004). However, Theakston et al.'s 2004 study unexpectedly found that low

agreeableness was also a significant independent predictor of residual enhancement motives scores. Theakston et al. indicated that research in the area of alcohol prevention would benefit by evaluating the usefulness of a screening tool that identifies individuals with specific personality vulnerability factors.

Finn et al. (2000) further explore how cognition mediates increased alcohol consumption and alcohol use in persons prone to excitement seeking or social deviance. Their study of 224 young adult offspring of alcoholics and 209 offspring of non-alcoholics supports personality-risk pathways. They found that subjects with higher traits of excitement seeking tended to present with more positive alcohol expectancy and increased alcohol use. These findings support the research by Henderson et al. (as cited in Finn et al, 2000) whereby they posited that "alcohol expectancies mediated the association between risk (sensation seeking) . . . and alcohol consumption." (p. 123). However, Finn et al. (2000) take it one-step further giving credence to the assumption that excitement or pleasure seeking individuals have stronger alcohol expectancies because of their familiarity with alcohol consumption in which they have experienced a greater sensitivity to the rewarding effects of alcohol.

Research has consistently shown the relationship between cognition theory and alcohol consumption. However, this consistency does not provide the ability to predict alcohol abuse. Personality is one construct that is making its way into the equation. As early as 1994, Sher & Trull, (as cited in Fischer, S., Smith. G., Anderson, K., & Flory, K., 2003) suggested that problem drinking is a risk for those individuals who present as extraverted or have a high level of sociability. Fischer, et al, (2003) suggest that in general personality factors alone are not perfect predictors of alcohol abuse. Fischer and

colleagues thus conducted a study in which they hypothesized “that the likelihood that a given trait will lead to symptoms is in fact moderated by the degree to which one endorses expectancies for reinforcement from the addictive behaviour” (p. 108).

In their study, Fischer et al. (2003) examined extraversion and positive expectancies from drinking with alcohol consumption. They based their choice on previous findings by Smith, Goldman, et al. (1995) and Carey (1993) that indicated drinking alcohol in order to enhance social experiences positively relates to alcohol consumption and drinking patterns. Participants consisted of 112 male, 246 female and 43 students who did not identify their gender. All individuals were taking an introductory psychology course.

Results showed that the interaction between extraversion and drinking positively correlates in those participants who were high in social facilitation expectancy. Fischer et al. (2003) found that persons presenting with higher levels of extraversion tended to drink more. However, the level to which they endorsed these expectancies mediated the amount of alcohol consumed (Fischer et al. 2003). They conclude that although they did not demonstrate a causal relationship among extraversion, expectancy and drinking patterns, they did concur with prior studies that indicate traits and expectancies develop prior to the set of symptoms that are associated with abusive drinking patterns.

We now believe that the presence of certain personality factors and cognition explain under what situations one is likely to develop certain drinking patterns (Cooper, 1994, Cox & Klinger, 1988, Sher et al. 2000, and Theakston, et al. 2004). In their review of the literature, Theakston, et al (2004) cite the work of Stewart & Zeitlin, 1995 and Stewart, Zvolensky, et al, 2001 which supports the theory that anxiety predicts coping

and conformity as negative reinforcement which in turn mediates the relationship between anxiety sensation and drinking patterns. Additionally, sensation seeking predicates enhancement motives, which mediates the relationship between sensation-seeking and alcohol consumption patterns.

SUMMARY

Health and social costs resulting from alcohol consumption patterns and related problems are continuing to put a financial drain on both the provincial and federal budgets. With a high number of British Columbia's youth consuming alcohol on a regular basis, we need an integrated and specific approach to decreasing the number of youth who are at risk for developing problems related to alcohol use and misuse. Identification of an addiction prone personality as a precursor to reasons for drinking may be the key to understanding and validating the roles cognition and personality have in alcohol consumption and drinking patterns.

The focal point of this project is on those cognitions that specifically associate with youth alcohol consumption patterns and related problems. Cognitive factors addressed in this project include drinking to feel good and drinking to forget worries. In addition, the VFS allows for an investigation into how those factors mediate the effects of personality on alcohol consumption patterns and related problems (see Figures 3 and 4).

In conclusion, there is limited literature on the mediating effect cognition has between personality and alcohol consumption patterns with even less on how this connection may relate to youth. The VFS provided a starting point for further exploration of this connection by adopting a general population study design.

Figure 3
Integrating Mediation Effect With Neuroticism and Alcohol Consumption and Abuse Patterns

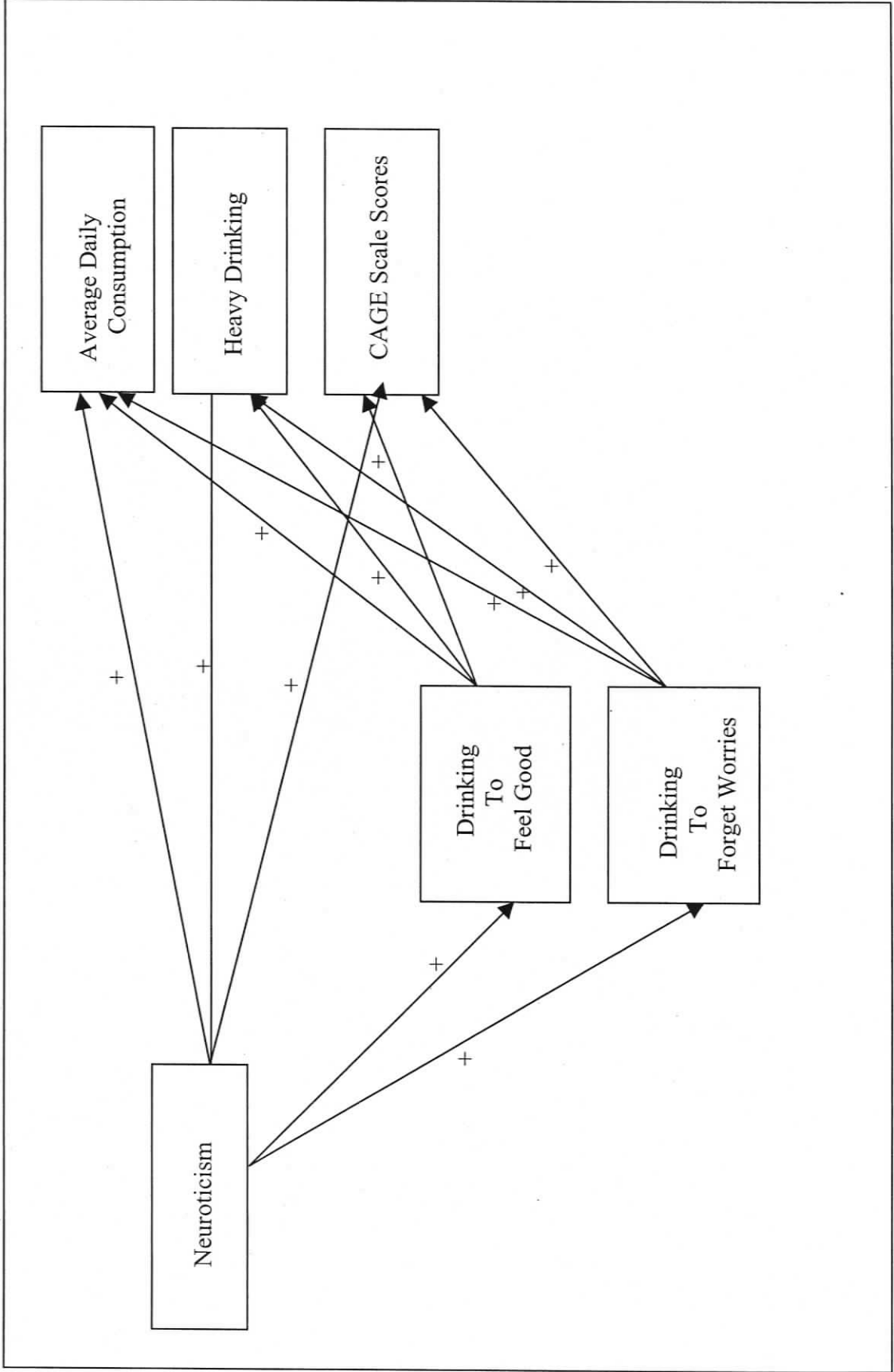
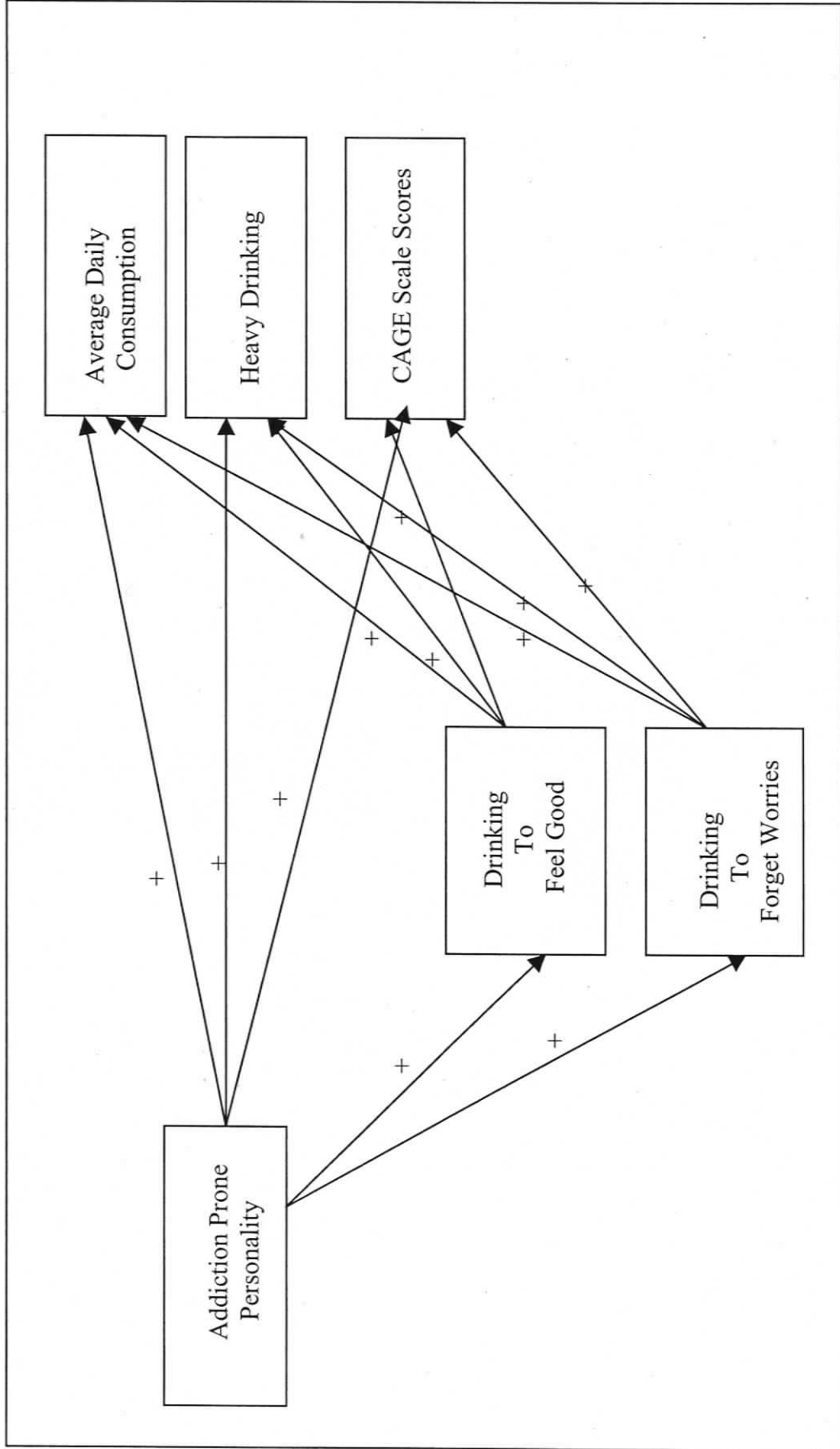


Figure 4
Mediation Effect between Addiction Prone Personality and Drinking Patterns and Related Problems



METHOD

Design

In this project, secondary analyses of the VFS data was conducted using correlational and regression analyses to explore the relationships between personality, cognition, and drinking patterns.

There are several advantages to using a secondary analysis approach rather than conducting primary analyses. There is access to data from a large representative sample. Relevant data has been coded and imputed from the existing primary data source which has both time and cost savings (Hinde, 1991; Hyman, 1972). Finally, secondary analysis takes advantage of the experience and expertise of the original researchers (Hinde, 1991).

Notwithstanding the aforementioned advantages, Hinde (1991) suggests that the use of variables within the original set of data may not adequately represent the situation in relation to additional topics. A second disadvantage may be that secondary analysis uses data for purposes not originally intended.

The purpose of this secondary analysis is to make use of existing data to determine which personality factors predict risky drinking patterns and behaviours by youth and to examine pathways demonstrating the mediating role that cognition plays. This survey uses the data collected from VFS biological youth sample as outlined in the Vancouver Family Survey (Barnes et al. 1997).

Selection of Research Participants

The research design for the VFS was created to accumulate data from a large representative sample of intact families with children ranging in ages from 14 to 25 and living in the east side of the greater Vancouver area. The greater Vancouver area

telephone directory provided listings for the original wave of data collection. Shortly after contacting 19,253 families, it became evident that the number of intact adoptive families with children in the appropriate age bracket was very low, particularly of families from the west side of the Greater Vancouver area. Thus, the east side became the focal point for the remainder of the screening process. This resulted in a large ($n = 5120$) sample of biological families but only 177 adoptive families.

Further selection of participants was based on the willingness of all three family members to participate and the ability of family members to complete questionnaires in English. An average time for questionnaire completion was one hour: Thus, a sample that includes 477 biological families and 75 adoptive families (family participation rate of 53%). When the screening process for adoptive families became quite costly, the recruitment strategy was expanded to include recruitment via newspaper advertisements and referrals. An additional 57 adopted families were included with the others. The data cleaning process eliminated three randomly selected adoptive families; one non-randomly selected adoptive family, and one biological family, as they did not meet study inclusion criteria. This produced a final sample of 601 families completing 1803 questionnaires (601 Mothers, 601 Fathers, and 601 Offspring). Demographic characteristics of the volunteer group were similar to the randomly selected adoptive families other than education level of mothers. Mothers in the volunteer group tended to be slightly better educated than the general population sample. Data from biological offspring only ($n=473$) was in the current investigation to avoid some of the sampling complexities associated with the adoptive family sampling strategy. The exclusion of the adopted families resulted in the age range of youth being 14 to 24 years of age.

Measures

As shown in Table 1 this study analysed those variables from the Vancouver Family Survey that are relevant for examining the research hypotheses.

Demographic Domain.

Each respondent was asked a number of demographic questions. The variables that have been selected as being able to contribute or act as confounding variables in the prediction of alcohol use and abuse phenomenon include: gender, age, income level as reported by the father, mother's years of education, and father's years of education.

Personality Domain.

The VFS used the sixty-item Five Factor Inventory Scale known as FFI-S (Costa and McCrae, 1992). The FFI-S is a shorter version of the NEO PI-S that involved selection of 12 items having the highest loadings on each of the five primary factors. The reliabilities for this shortened version are somewhat lower than for the longer version of the scale (alphas of .86, .77, .73, and .81 for NEOA and C respectively). Nevertheless, Costa and McCrae (1992) suggest the shortened version of their test accounts for about 85% as much variance in predicting convergent criteria as the longer version.

The Addiction Prone Personality (APP) Questionnaire measures personality vulnerability to alcohol. The 21-item Addiction Prone Personality (APP) Questionnaire (see appendix A.) was used in the VFS. Internal consistency for the youth's responses on the scale was .71.

Cognition (reasons for drinking).

Participants in the VFS were asked to give a yes or no response to six questions on reasons for drinking: 1) to be sociable, 2) to add to the enjoyment of meals, 3) to feel good, 4) to help you relax, 5) to forget worries, and 6) to feel less shy and inhibited. Drinking to be sociable, to add to the enjoyment of meals, and to feel good are characterised as enhancement motives while drinking to help relax, to forget worries, and to feel less shy and inhibited are classified as coping motives.

Drinking Patterns and Behaviour.

The alcohol use frequency questions followed standard alcohol use frequency questions used in Canadian surveys. Respondent were asked if they had ever taken a drink of beer, wine, liquor or other alcoholic beverages. Those who answered no were instructed to continue with the next section. Thus, lifetime abstainers did not become a confounding variable. A series of questions related to drinking patterns and use was then administered to those who answered yes. Those who had not consumed alcohol in the previous 12 months were also excluded from answering the questions related to individual alcohol consumption.

Questions regarding quantity and frequency of wine, beer, and liquor consumption in the previous 12-month period are from The Volume-Variability Index (Cahalan & Cisin, 1968, as cited in Barnes et al, Dec. 1997). Included in the analyses of drinking patterns associated with the independent variables previously mentioned are daily drinking estimates based on the number of drinks consumed each day during the most recent one week period.

Based on responses to the Volume-Variability Index, measures of getting drunk (number of days intoxicated per month) and heavy drinking (number of days a month drinking more than eight glasses of wine and/or beer and/or liquor at one setting) were analyzed.

Scales for alcohol-related problems were derived from responses concerning questions about the harmful effect of alcohol on friendships or social life; physical health; outlook on life (happiness); home life; work, studies or employment; and/or financial opportunities (possible range of 0 to 6) vis a vis the incidence of these same six problems in the past 12 months.

Other measures of indicators of problems due to alcohol include the Brief Michigan Alcohol Screening Scale (Pokorny, Miller & Kaplan, 1972) and the CAGE Scale (Ewing & Rouse, 1970; Mayfield, McLeod, & Hall, 1974). Appendix B and C respectively show the questions asked. The MAST is a 10-item questionnaire used for measuring drinking related consequences, while the CAGE screens for both alcohol abuse and prevalence of alcohol related problems. (Ewing & Rouse, 1970)

Limitations

One major limitation of this project is the generalizability of the results. As previously stated, the youth in this sample are from intact English speaking families with at least one child in the 14 to 24 years of age bracket. The survey questionnaires from the adopted sample have been eliminated. Thus, findings and implications may be generalized only to youth who live with two biological white middle class or higher parents whose spoken language is English and who live in a large urban centre.

Statistical Procedures

The Statistical Package for the Social Sciences, version 10.0 (SPSS 10.0) was used to analyse the data. The first step in the data analyses sequence involved the examination of frequencies and means output for the variables of interest. Prevalence rates for alcoholic consumption and abuse patterns were then examined. Next, the univariate relationships between reasons for drinking and alcohol consumption and abuse patterns were examined using correlational analyses. For all of the analyses involving the alcohol measures abstainers were assigned a score of zero. The correlations between personality and reasons for drinking and alcohol consumption and abuse patterns were also examined. In the final stage of the analyses, a regression model was tested. Demographic variables, personality and reasons for drinking were entered in a blocked model to test the hypothesis that personality prediction patterns with respect to alcohol consumption and abuse patterns are mediated through the relationship that personality has on reasons for drinking, and reasons for drinking have on alcohol consumption and abuse patterns. In blocked or hierarchical regression models, evidence for mediation is provided when predictors entered earlier in the model have their effects reduced by variables added later in the model.

Expected Results

I expect the data analysis will result in validating my hypotheses. In particular, I expect to show a positive correlation between neuroticism and drinking to relieve tension and anxiety (see Figure 2). Second, I expect to show that an Addiction Prone Personality is a strong predictor of reasons for drinking (see Figure 3). Finally, I expect to show that cognition mediates the relationship between personality and alcohol consumption patterns and related problems. In other words, reasons for drinking mediate the

relationship between certain personality factors and drinking patterns and behaviour (see Figures 2 and 3).

RESULTS

Descriptive Results

Socio-Demographic Characteristics

Table 2 presents the demographic characteristics of the 473 youth and their families who comprised the biological family sub-sample of the Vancouver Family Survey. The results show that the mean age of the youth in the sample is 17.66 years of age with a relatively even division between genders. The majority of the sample (93%) spoke English while growing up. Three hundred and fifty seven (76.4%) of the youth surveyed attended school full-time compared to 33 (7.1%) attending school on a part time basis with 25% of students in grade 12 and 12.6% working full time. Parent's education level data indicates that the majority of parents had either completed high school or gone on to receive post secondary education (65.4% of fathers and 64.5 % of mothers). As well, 62.8% of participants had a family net worth of \$50,000.00 or more. Forty-five percent of the participants indicated no religious preference with the remaining 55% evenly distributed among Protestants (17.2%), Catholics (18.9%), and Other (18.7%).

Table 2
Demographic Characteristics of the Sample

	N	%
Age		
Mean	473	17.66 years
Range		14 – 24 years
Gender		
Female	242	51
Male	231	49
Language spoken while growing up		
English	440	93.0
Other	33	7.0
Current Vocation		
Working Full Time	59	12.6
Going to school part-time	33	7.1
Going to school full-time	357	76.4
Other	18	3.9
Father's Educational Level		
Some Grade School	2	.4
Completed Grade School	12	2.5
Some High School	44	9.3
Completed High School	105	22.2
Some College/technical	170	36.0
University Graduate	71	15.0
Some postgraduate work	29	6.1
Masters degree or doctorate	39	8.3

Mother's Educational Level

Some Grade School	2	.4
Completed Grade School	4	.9
Some High School	26	5.5
Completed High School	135	28.7
Some College/technical	204	43.4
University Graduate	69	14.7
Some postgraduate work	16	3.4
Masters degree or doctorate	14	3.0

Family Net Worth

Less than 10,000	1	.2
10 to 19,999	9	1.9
20 to 29,999	19	4.1
30 to 39,999	26	5.6
40 to 49,999	53	11.5
50 to 59,999	64	13.9
60 to 69,999	66	14.3
70 to 79,999	67	14.5
over 80,000	157	34.0

Current Employment Status

Working Full Time	50	29.9
Working Part-Time	73	43.7
Unemployed/looking for work	44	26.3

If in school, what year

9 th grade	12	3.0
10 th grade	77	19.2
11 th grade	89	22.2
12 th grade	102	25.4
University	67	16.7
College	54	13.5

Times moved in last year		
None	437	93.2
Once	22	4.7
Twice	9	1.9
Thrice	1	.2
Religious Preferences		
None	211	45.3
Protestant	80	17.2
Catholic	88	18.9
Other	87	18.7

Drinking Patterns by Gender

As shown in Table 3, the means for quantity of consumed alcohol and related problems indicate significant variations between genders. The reported daily average of alcohol consumption in the previous 12 months was higher for males. Males consumed a daily average of .55 ounces (sd .89) while females consumed a daily average of .33 ounces (sd 1.21). Data also showed that males reported higher mean scores when questioned about their heavier drinking pattern (1.93 vs.78) showing a standard deviation of 4.39 and 1.69 respectively. Mean scores on the MAST were also higher for males (1.49 sd .92) than for females (.89 sd.83). Differences in Cage Scale scores between males and females were not found to be significant.

Table 3
Drinking Patterns Based on Gender

	N	M	SD	F*
Ethanol Daily Average in past 12 months				
Female	238	.33	.89	5.19*
Male	226	.55	1.21	
Heavy Drinking				
Female	240	.78	1.69	1.43***
Male	227	1.93	4.38	
Mast				
Female	237	.89	1.66	8.32**
Male	229	1.49	2.50	
Cage				
Female	237	.45	.83	1.43
Male	228	.55	.92	

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Reasons for Drinking based on Gender

Reasons for drinking are relatively equal between males and females (see Table 4). Drinking to be sociable received the highest endorsement from both males and females (64.6% and 64.37% respectively). Fifty-six percent of the males and 47.9% of the females indicated that they drank to feel good. Drinking to help relax was chosen as a reason for drinking by 39.5% of the males and 34.8% of the females. Drinking to forget

worries were endorsed by 25.7% of the males and 23.8% of the females. Thus, it would appear that females are drinking for the same reasons as their male counterparts.

Table 4
Reasons for Drinking Based on Gender

	Overall		Male		Female		Chi ²
	N	%	N	%	N	%	
Drink to be sociable							
Yes	296	64.6	79	64.6	152	64.7	.001
Drink to add enjoyment to the meals							
Yes	150	33.0	71	32.3	79	33.6	.093
Drink to feel good							
Yes	36	51.9	124	56.1	112	47.9	3.10
Drink to help relax							
Yes	168	37.1	87	39.5	81	34.8	1.11
Drink to forget worries							
Yes	112	24.7	56	25.7	56	23.8	.21
Drink to feel less shy							
Yes	149	33.0	78	35.8	71	30.5	1.43

Note: *p<. 05, **p<. 01, ***p<. 001

Correlational Relationships with Reasons for Drinking

Socio-Demographics and Reasons for Drinking

In correlational analyses of the relationship between socio-demographic variables and reasons for drinking, data indicates that age plays a role in the relationship. Table 5 demonstrates that age positively correlates with drinking to be sociable ($r = .34$ $p < .01$), drinking to add enjoyment of meals ($r = .29$ $p < .01$), drinking to feel less shy and inhibited ($r = .23$ $p < .05$), drinking to help relax ($r = .17$ $p < .01$), drinking to feel good ($r = .14$ $p < .05$).

01) and drinking to forget worries ($r = .08$ $p < .001$). Family net worth and parents' years of education did not appear to be associated with reasons for drinking

Table 5
Socio-Demographics and Reasons for Drinking

	Drink to be Sociable	Drink to add to the enjoyment of meals	Drink to feel Good	Drink to Help Relax	Drink to Forget Worries	Drink to Feel Less Shy and Inhibited
Age	.34***	.29***	.14***	.17***	.08***	.23***
Family Net Worth	.11**	.02	.08	.05	.05	.00
Mother's Years of Education	-.12**	.03	-.02	.01	-.08	-.13**
Father's Years of Education	.07	.09	.02	.04	.02	-.02

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

There was, however, a positive association between drinking to be sociable and family net worth ($r = .11$ $p < .001$) and a negative association with mother's years of education ($r = -.12$ $p < .01$).

Personality and Reasons for Drinking

Next, I examined the relationship between personality and reasons for drinking using bivariate correlational analysis. As shown in Table 6, the Addiction Prone Personality (APP) positively correlated with all of the reasons for drinking with the highest correlations being with, drinking to feel good ($r = .34$ $p < .001$), drinking to forget worries ($r = .31$ $p < .001$), drinking to help relax ($r = .28$ $p < .001$), and drinking to feel less shy and inhibited ($r = .20$ $p < .001$). As expected, neuroticism positively related to drinking to drinking to forget worries ($r = .17$ $p < .001$) and drinking to help relax ($r = .12$ $p < .001$). Agreeableness and conscientiousness were negatively related to drinking to feel good ($r = -.20$ $p < .001$ and $-.12$ $p < .01$ respectively), drinking to help relax ($r = -.17$ $p < .001$ and $-.12$ $p < .01$ respectively), and drinking to forget worries ($r = -.16$ $p < .001$ and $-.15$ $p < .01$ respectively). In addition, openness negatively correlated with drinking to add to the enjoyment of meals ($r = -.12$ $p < .01$) and drinking to be sociable ($r = -.12$ $p < .01$).

Table 6
Personality and Reasons for Drinking

	Drink to be sociable?	Drink to add to the enjoyment of meals?	Drink to feel good?	Drink to help you relax?	Drink to forget worries	Drink to feel less shy and inhibited?
Addiction Prone Personality	.12*	-.17*	.34***	.28***	.31***	.20***
Neo-Five Factor Inventory						
Neuroticism	-.00	-.09	.03	.12***	.17***	.06
Extraversion	.09	.05	.02	-.09	-.13**	-.09
Openness	.09*	-.12**	.05	.05	.01	.02
Agreeableness	-.03	.06	-.20***	-.17***	-.16***	-.07
Conscientiousness	-.02	.07	-.12**	-.12*	-.15**	-.06

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 7
Alcohol Consumption Patterns and Reasons for Drinking

	Drink to be sociable?	Drink to add to the enjoyment of meals?	Drink to feel good?	Drink to help you relax?	Drink to forget worries	Drink to feel less shy and inhibited?
Ethanol Daily Average	.16***	.05	.32***	.25***	.21***	.14***
Heavy Drinking Patterns	.20***	.00	.31***	.23***	.29***	.20***
Mast Scale Scores	.001	-.07	.10	.13*	.17***	.08
Cage Scale Scores	.27***	.05	.32***	.25***	.30***	.30***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Alcohol Consumption Patterns and Reasons for Drinking

In the correlation matrix shown in Table 7, drinking to add to the enjoyment of meals did not play a significant role in youth drinking patterns. Drinking to be sociable, drinking to feel good, drinking to help relax, drinking to forget worries, and drinking to feel less shy and inhibited were all shown to be significantly associated with increased alcohol consumption and alcohol related problems among youth. Specifically, drinking to feel good was positively correlated with daily average alcohol consumption ($r = .32$ $p < .001$), heavy drinking ($r = .31$ $p < .001$), and CAGE scale scores ($r = .32$ $p < .001$). Drinking to help relax was positively correlated with daily average alcohol ($r = .25$ $p < .001$), heavy drinking ($r = .23$ $p < .001$), and CAGE scale scores ($r = .25$ $p < .001$). Drinking to forget worries was positively correlated with daily average alcohol ($r = .21$ $p < .001$), heavy drinking ($r = .29$ $p < .001$) MAST scale scores ($r = .17$ $p < .001$) and CAGE scale scores ($r = .30$ $p < .001$). Drinking to feel good, drinking to forget worries, and drinking to help relax have a positive relationship with increased daily average alcohol consumption and heavy drinking patterns

Bivariate Relationships of Alcohol Consumption and Related Problems

Socio-Demographic Variables and Alcohol Consumption and Related Problems

The bivariate correlational data for socio-demographic factors and alcohol consumption and related problems suggests that age and gender play a significant role in the consumption of alcohol in the youth population (see Table 8). Age positively correlated with alcohol daily average ($r = .17$ $p < .001$) and CAGE test scores ($r = .14$ $p < .001$), male gender was also positively correlated with heavy drinking ($r = .17$ $p < .001$). In other words, daily average alcohol use and CAGE test scores increase with age while

males were more likely to report a higher frequency of heavy drinking. Family net worth and parent's education levels were not found to be significant predictors of increased alcohol consumption and related problems.

Personality and Alcohol Consumption and Related Problems

The correlations between personality and alcohol consumption and related problems are presented in Table 9. As expected, the APP Questionnaire scores positively correlates with alcohol consumption and related drinking problems. Participants testing high on the APP reported higher levels of daily average alcohol ($r = .27$ $p < .001$), heavier drinking patterns ($r = .17$ $p < .001$) and higher scores on the MAST scale scores ($r = .15$ $p < .001$) and CAGE scale scores measure ($r = .22$ $p < .001$). Participants who scored higher in agreeableness and conscientiousness reported lower alcohol consumption ($r = -.21$ $p < .001$ and $r = -.10$ $p < .05$ respectively), less binge drinking ($r = -.20$ $p < .001$ and $r = -.09$ $p < .01$ respectively) and less alcohol related problems as shown by significant negative correlations with MAST scale scores ($r = -.14$ $p < .05$ and $r = -.14$ $p < .05$ respectively) and CAGE scale scores ($r = -.18$ $p < .001$ and $r = -.12$ $p < .05$ respectively).

Table 8
Socio-Demographic Factors and Alcohol Consumption and Related Problems

	Ethanol Daily Average in Past Year	Heavy Drinking Patterns	Cage Scale Scores	Mast Scale Scores
Age	.17***	.01	.14**	-.07
Gender	.11	.17***	.06	.13**
Family Net Worth	.07	.03	.10*	.07
Mother's Years of Education	-.02	-.02	-.01	.03
Fathers Year's of Education	-.05	-.06	.01	.01

Note: *p<. 05, **p<. 01, ***p<. 001

Table 9
Personality and Alcohol Consumption and Related Problems

Personality	Daily Average in Past 12 Months	Heavy Drinking Patterns	Mast Scale Scores	Cage Scale Scores
Addiction Prone Personality	.27***	.17***	.15***	.22***
Neo-Five Factor Inventory				
Neuroticism	-.04	-.04	-.02	.06
Extraversion	.05	.00	.01	.09*
Openness	-.07	-.05	-.12*	-.03*
Agreeableness	-.21***	-.20***	-.14*	-.18***
Conscientiousness	-.10*	-.09**	-.14*	-.12*

Note: *p<. 05, **p<. 01, ***p<. 001

Regression Analyses

The following section presents data from a series of regression analyses. The purpose of the regression analyses was to examine the relative contributions of the socio-demographic, personality, and cognitive domains in predicting alcohol consumption patterns and related problems. The variables chosen to include in the demographic domain were age and gender due to noted significant associations with alcohol consumption, related problems, patterns, and reasons for drinking as shown in Tables 3, 4, 6 and 8. The Addiction Prone Personality Scale and all of the personality traits assessed by the Neo-FFI were selected based on their significant associations with reasons for drinking, and alcohol consumption and related problems (shown in Tables 6 and 9). Drinking to feel good and drinking to forget worries were the two cognitive domain variables selected. Selection was based on their consistent significant associations with the personality domain (Table 6) and alcohol consumption patterns and related abuse (Table 7).

The demographic domain variables (age and gender) were entered at step one. The personality domain predictors added at step 2 included the APP, neuroticism, extraversion, openness, agreeableness, and conscientiousness. In the last step, selected reasons for drinking (drinking to feel good or drinking to forget worries) were added in separate analyses to avoid problems of multicollinearity. For each set of analyses three dependent variables were used 1) daily average alcohol consumption, 2) heavy drinking, and 3) Cage scale scores. This procedure was conducted in order to test for the mediation affects of cognition (reasons for drinking) between certain personality factors (APP, agreeableness, conscientiousness, extraversion, Neuroticism, and openness) and drinking

patterns and related problems (average daily alcohol, heavy drinking or CAGE). Results of the regression analyses are shown in Tables 10 through 15.

Hierarchical Regression Model: Socio-Demographics, Personality and Drinking to Feel Good Predicting Daily Average Alcohol Consumption

In the regression models predicting daily average alcohol consumption, Table 10 shows that the demographic domain explained 4% ($p < .001$) of the variance; the personality domain explained 13% ($p < .001$) of the variance; and drinking to feel good explained an additional 3% ($p < .001$) of the variance. When all the variables were entered the total variance explained in this model was 20% ($p < .001$)

Step one of the model indicated a positive association between age and average daily of alcohol consumption ($\beta = .17$ $p < .001$). Step two introduced personality factors. In this step, age continued to play a positive role in the model ($\beta = .23$ $p < .001$). Regression analyses showed a positive association between daily average alcohol consumption and an Addiction Prone Personality ($\beta = .30$ $p < .001$). Higher scores on agreeableness ($\beta = -.14$ $p < .05$), neuroticism ($\beta = -.16$ $p < .01$), and openness ($\beta = -.11$ $p < .05$) were all associated with lower scores on daily average alcohol consumption.

In step 3, age remained a significant ($\beta = .22$ $p < .001$) predictor of daily average alcohol consumption. The association between an addiction prone personality and daily average consumption patterns also remained significant ($\beta = .22$ $p < .001$). In addition, the negative associations between daily average alcohol consumption and agreeableness ($\beta = -.12$ $p < .05$), neuroticism ($\beta = .14$ $p < .01$), and openness ($\beta = -.11$ $p < .05$) remained significant. Drinking to feel good was positively associated with daily average alcohol consumption patterns ($\beta = .20$ $p < .001$). However, when drinking to feel good was entered

into the regression predicting daily average alcohol consumption, the direct effect of APP on daily average alcohol consumption was only slightly reduced from .30 to .22 but remained significant ($p < .001$).

Hierarchical Regression Model: Socio-Demographics, Personality and Drinking to Forget Worries Predicting Daily Average Alcohol Consumption

Table 11 describes the Hierarchical Regression Model predicting daily average Alcohol consumption based on socio-demographics, personality and drinking to forget worries. Age and gender explains 4% ($p < .001$) of the variance, the personality domain accounts for 13% ($p < .001$) of the variance, and drinking to forget worries explained 1% of the variance ($p < .05$). The overall variance for this model was 18% ($p < .05$) when all the variables were included.

At step one, age showed a significant association with alcohol consumption ($\beta = .17$, $p < .001$). Step two of the model introduced personality factors. The hierarchical regressions showed that age remained significant ($\beta = .23$, $p < .001$). Higher scores on the Addiction Prone Personality Scale were associated with higher reports of daily alcohol consumption ($\beta = .30$, $p < .001$). A negative association was shown between daily average alcohol consumption and agreeableness ($\beta = -.13$, $p < .01$), neuroticism ($\beta = -.16$, $p < .001$) and openness ($\beta = -.11$, $p < .05$).

In the final step, age remained significant ($\beta = .22$, $p < .001$), as did the Addiction Prone Personality ($\beta = .26$, $p < .001$). The negative association between agreeableness ($\beta = -.13$, $p < .01$), neuroticism ($\beta = -.16$, $p < .01$), and openness ($\beta = -.11$, $p < .05$) and alcohol consumption also remained significant. Higher scores on drinking to forget worries was associated with higher reported daily average alcohol consumption ($\beta = .11$, $p < .05$). When

drinking to forget worries was entered into the regression predicting daily average alcohol consumption, the direct effect of APP on daily average alcohol consumption was only reduced from .30 to .26 but remained significant ($p < .001$).

Table 10
Hierarchical Regressions Model: Socio-Demographics, Personality and Drinking to Feel Good Predicting Daily Average Alcohol Consumption

Stepwise Model	Step 1 Beta	Step 2 Beta	Step 3 Beta
Demographics			
Age	.17***	.23***	.20***
Gender	.09	-.06	-.05
Personality			
Addiction Prone Personality		.30***	.22***
Agreeableness		-.14*	-.12*
Conscientiousness		-.05	-.05
Extraversion		.05	.04
Neuroticism		-.16**	-.14**
Openness		-.11*	-.11*
Drinking to feel good			.20***
R ² Change	.04***	.13***	.03***
R ²	.04	.17	.20

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 11
Hierarchical Regression Model: Socio- Demographics, Personality and Drinking to Forget Worries Predicting Daily Average Alcohol Consumption

Step Predictors	Step 1 Beta	Step 2 Beta	Step 3 Beta
Demographics			
Age	.17***	.23***	.22***
Gender	.09	-.06	-.05
Personality			
Addiction Prone Personality		.30***	.26***
Agreeableness		-.13**	-.13**
Conscientiousness		-.06	-.05
Extraversion		.05	.06
Neuroticism		-.16**	-.16**
Openness		-.11*	-.11*
Reasons for Drinking			
Drinking to Forget Worries			.11*
R ² change	.04***	.13***	.01*
R ²	.04	.17	.18

Note: *p<. 05, **p<. 01, ***p<. 001

Hierarchical Regression Model: Socio-Demographics, Personality, and Drinking to Feel Good Predicting Heavy Drinking

Table 12 shows data from the hierarchical regression model predicting heavy drinking based on age, gender, personality and drinking to feel good. Age and gender explained 4% ($p < .001$) of the variance; Personality factors explained 6% ($p < .001$) of the variance with drinking to feel good explaining 5 % of the variance ($p < .001$). The total variance for this model was 15% ($p < .001$) when all the factors were entered.

In the initial step of the analyses, age and gender were positively associated with heavy drinking ($\beta = .09$ $p < .05$ and $\beta = .17$ $p < .001$ respectively). Age remained significant in step two ($\beta = .13$ $p < .01$). The Addiction Prone Personality was positively associated with reports of heavy drinking ($\beta = .16$ $p < .01$) while agreeableness and neuroticism were negatively associated ($\beta = -.15$ $p < .01$ and $\beta = -.12$ $p < .05$ respectively) in the second step of the model.

In the final step, the negative association between agreeableness and reports of heavy drinking patterns remained significant. In addition, higher reports of drinking to feel good were associated with higher reports of heavy drinking ($\beta = .25$ $p < .001$). When drinking to feel good was entered into the regression predicting heavy drinking patterns, the direct effect of APP on daily average alcohol consumption was reduced from .16 to .07 eliminating the significance of the association.

Hierarchical Regression Model: Socio-Demographics, Personality, and Drinking to Forget Worries Predicting Heavy Drinking

The Hierarchical Regression Model data predicting heavy drinking based on age, gender, personality, and drinking to forget worries is shown in Table 13. Four percent of the variance was explained by age and gender ($p < .001$), personality factors explained 6% of the variance ($p < .001$) and drinking to forget worries explained 6% of the variance ($p < .001$). The total variance explained in this model was 15% when all the variables were entered ($p < .001$).

Step one shows a positive association between age ($\beta = .09$ $p < .05$), gender ($\beta = .17$ $p < .001$) and heavy drinking patterns. Age remained significant in step two ($\beta = .13$ $p < .01$). Step two also showed a positive association between scores on the Addiction Prone Personality scale ($\beta = .16$ $p < .01$) and heavy drinking patterns. In addition, lower scores on agreeableness ($\beta = -.15$ $p < .01$) and neuroticism ($\beta = -.12$ $p < .05$) were associated with higher reports of heavy drinking patterns.

In the final step of the analyses, the negative association between agreeableness ($\beta = -.15$ $p < .01$) and neuroticism ($\beta = -.13$ $p < .05$) and heavy drinking patterns remained significant. In addition, the association between drinking to forget worries showed a positive association ($\beta = .25$ $p < .001$) with heavy drinking patterns. When drinking to forget worries was entered into the regression predicting heavy drinking patterns, the direct effect of APP on daily average alcohol consumption was reduced from .16 to .07 with significance being eliminated.

Table 12
Hierarchical Regression Model: Socio-Demographics, Personality, and Drinking to Feel Good Predicting Heavy Drinking Patterns

Step Predictors	Step 1 Beta	Step 2 Beta	Step 3 Beta
Demographics			
Age	.09*	.13**	.09
Gender	.17***	.06	.08
Personality			
Addiction Prone Personality		.16**	.07
Agreeableness		-.15**	-.13*
Conscientiousness		-.04	-.03
Extraversion		.01	.01
Neuroticism		-.12*	-.10
Openness		-.04	-.04
Reasons for Drinking			
Drinking to Feel Good			.25***
R ² change	.04***	.06***	.05***
R ²	.04	.10	.15

Note: *p<. 05, **p<. 01, ***p<. 001

Table 13
Hierarchical Regression Model: Socio- Demographics, Personality and Drinking to Forget Worries Predicting Heavy Drinking

Step Predictors	Step 1 Beta	Step 2 Beta	Step 3 Beta
Demographics			
Age	.09*	.13**	.10*
Gender	.17**	.07	.08
Personality			
Addiction Prone Personality		.16**	.07
Agreeableness		-.15**	-.15**
Conscientiousness		-.03	-.02
Extraversion		.01	.03
Neuroticism		-.12*	-.13*
Openness		-.04	-.04
Reasons for Drinking			
Drinking to Forget Worries			.25***
R ² change	.04***	.06***	.06***
R ²	.04	.10	.15

Note: *p<. 05, **p<. 01, ***p<. 001

Hierarchical Regression Model: Socio-Demographics, Personality and Drinking to Feel Good Predicting CAGE Scale Scores

Table 14 shows the hierarchical regression model predicting Cage Scale scores based on age and gender, personality, and drinking to feel good. Age and gender accounted for 3% of the variance ($p < .01$), personality factors reported 9% of the variance ($p < .001$), and drinking to feel good explained 5% of the variance ($p < .001$). Entering of all variables in the model accounted for 17% of the variance ($p < .001$).

In step one, age was positively associated with higher Cage scale scores ($\beta = .14$ $p < .01$). The positive association between age and Cage scale scores remained significant in step two ($\beta = .20$ $p < .001$). Higher scores on the Addiction Prone Personality questionnaire ($\beta = .17$ $p < .001$) and extraversion ($\beta = .16$ $p < .001$) were significantly associated with higher Cage scale scores. There was a negative association between agreeableness and CAGE scale scores ($\beta = -.12$ $p < .05$).

The significant positive association between age and Cage scale scores remained in step 3 ($\beta = .16$ $p < .005$), as did the positive association between extraversion ($\beta = .16$ $p < .01$) and CAGE scale scores. Agreement with drinking to feel good was positively associated with CAGE scale scores ($\beta = .25$ $p < .001$). When drinking to feel good was entered into the regression predicting Cage scale scores, the direct effect of APP on daily average alcohol consumption was reduced from .17 to .09 eliminating the significance of the association.

	Step 1 Beta	Step 2 Beta	Step 3 Beta
Demographics			
Age	.14**	.20***	.16***
Gender	.06	-.02	-.01

Table 14
*Hierarchical Regression Model: Socio-Demographics, Personality, and Drinking to Feel
Good Predicting CAGE Scale Scores*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Hierarchical Regression Model: Socio-Demographics, Personality and Drinking to Forget Worries Predicting CAGE Scale Scores

Table 15 represents the final hierarchical regression model predicting Cage scale scores based on socio-demographics, personality and drinking to feel good. Age and gender variables explained 3% of the variance ($p < .01$), Personality factors explained 9% of the variance ($p < .001$), and drinking to forget worries explained an additional 5% of the variance ($p < .001$). Total variance explained in this model was 17% ($p < .001$) when all the variables were entered.

In step one, age and Cage scale scores were positively associated ($\beta = .14$ $p < .01$). In the step two, age remained significant ($\beta = .20$ $p < .001$). In addition, positive associations were found with the Addiction Prone Personality, ($\beta = .18$ $p < .001$), extraversion ($\beta = .16$ $p < .01$) and higher Cage scale scores. In addition there was a negative association between agreeableness and CAGE scale scores ($\beta = -.12$ $p < .05$).

The final step of the hierarchical regression model predicting Cage scale scores showed that age remained significant ($\beta = .18$ $p < .001$), as did extraversion ($\beta = .18$ $p < .001$). Agreeableness continued to show a negative association ($\beta = -.12$ $p < .05$). Step three also shows an association between lower reports of agreeableness and higher CAGE scale scores ($\beta = -.12$ $p < .05$). In addition, higher reports of drinking to forget worries were associated with higher CAGE scale scores ($\beta = .25$ $p < .001$). When drinking to forget worries was entered into the regression predicting CAGE scale scores, the direct effect of APP on daily average alcohol consumption was reduced from .18 to .10 eliminating the significance of the association.

Table 15
Hierarchical Regression Model: Socio-Demographics, Personality, and Drinking to Forget Worries Predicting Cage Scale Scores

Step Predictors	Step 1 Beta	Step 2 Beta	Step 3 Beta
Demographics			
Age	.14**	.20***	.18***
Gender	.06	-.02	-.01
Personality			
Addiction Prone Personality		.18***	.10
Agreeableness		-.12*	-.12*
Conscientiousness		-.08	-.07
Extraversion		.16**	.18***
Neuroticism		.02	.01
Openness		-.06	-.05
Reasons for Drinking			
Drinking to Forget Worries			.25***
R ² change	.03**	.09***	.05***
R ²	.03	.12	.17

Note: *p<. 05, **p<. 01, ***p<. 001

DISCUSSION

I examined socio-demographic characteristics, specific personality factors, alcohol consumption and abuse patterns and reasons for drinking in a Vancouver youth sample. The aim was first to show that neuroticism was significantly associated with drinking to feel good and drinking to help relax. Second, I expected to show that the Addiction Prone Personality is a strong indicator of reasons for drinking. Finally, I expected to find that cognitions mediate the relationship between personality and alcohol consumption patterns and related problems.

Socio-demographic Characteristics of the Vancouver Family Survey & Alcohol Consumption Patterns and Motives.

The Vancouver Family Survey socio-demographic data suggests gender, age, family net worth, and mother's years of education may influence youth alcohol consumption patterns or related drinking problems. In the previous 12 months, males consumed more than females (1/2 ounce vs. 1/3 ounce daily average). Males also scored higher in heavy drinking patterns and related problems. In addition, a significantly higher percentage of males endorsed all six reasons for drinking. However, contrary to Cooper (1994), and Kuntsche et al. (in press) who found gender differences between older youth and drinking motives, I found less of a gender difference in the Vancouver Sample. Although the percentages endorsing each reason was slightly higher in the male population drinking to be social, drinking to feel good, and drinking to help relax were endorsed as the first, second, and third highest percentage respectively within both the male and female population who reported consuming alcohol. .

As stated in earlier studies, higher daily average alcohol consumption and higher CAGE Scale scores are more likely to occur in the older youth population (Adolescent Health Survey, 1992, 1999, 2003; and Prevention Source BC, 2001). This finding was duplicated in our data analyses. In addition, higher family net worth positively correlated with drinking to be sociable, and mother's years of education positively correlated with drinking to feel less shy and inhibited. Further research is needed to fully understand the significance of this connection.

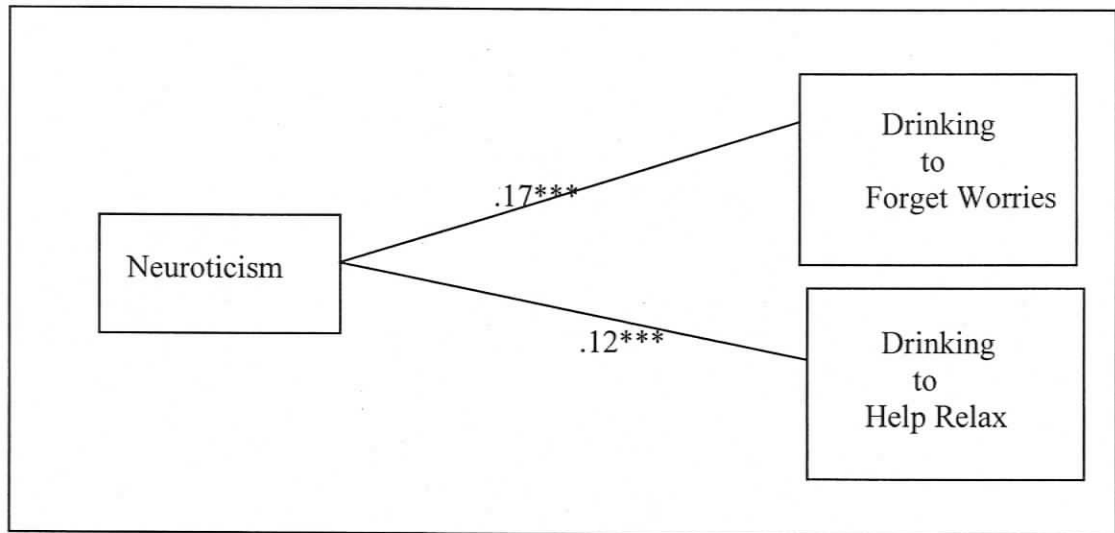
Personality and Reasons for Drinking

Analyses of the Vancouver Family Survey Questionnaire support earlier studies showing that the addition of personality factors into the matrix are crucial for understanding youth drinking epidemiology (Cox & Klinger, 1988; Copper et al. 2000; Copper 2004; Theakson et al. 2004; Barnes, Murray, & Anderson, 2005; Kuntsche et al. 2005).

Neuroticism and Reasons for Drinking

As expected, youth scoring higher on neuroticism were more likely to report drinking to forget worries and to help them relax (see Figure 5). The data supports our submission that neuroticism and drinking to relieve tension and anxiety are positively associated and substantiates earlier studies endorsing the theory that neurotic individuals place more importance on drinking to alleviate or cope with negative feelings such as anxiety or tension (Cooper et al. 2000; Kuntsche et al. 2005; and Kuntsche et al. in press Loukas et al. 2000; Stewart et al. 2001; Stewart & Devine, 2000).

Figure 5
Positive Correlation with Neuroticism and Drinking to Forget Worries and to Help Relax



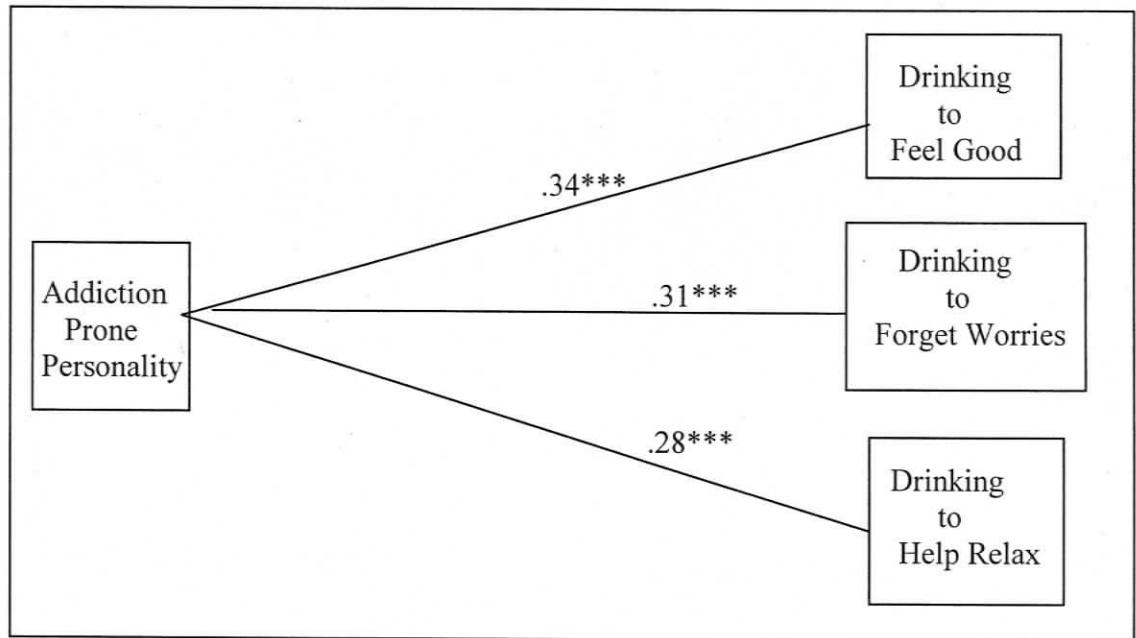
Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Addiction Prone Personality and Reasons for Drinking

Youth who score higher on the APP measure scored higher on all six reasons for drinking presented in the Vancouver Family Survey. These significant findings provide additional validation to the Barnes theory (Barnes, Murray, Patton, et al. 2000; Barnes, 2005; and Barnes, Murray, & Anderson, 2005). The proposition that an Addiction Prone Personality is a strong indicator of cognitive motivation for alcohol consumption was supported in the examination of the correlational data of personality factors and reasons for drinking. A positive association among youth reporting an Addiction Prone Personality was found with drinking to feel good, drinking to forget worries, and drinking to help relax. In other words, it appears that youth who present with an Addiction Prone Personality will choose to consume alcohol more often to make themselves feel better and to forget their worries. Thus, an addiction prone personality is a strong indicator of

reasons for alcohol consumption as shown in Figure 6. These findings are congruent with findings of Barnes, Murray, and Anderson (2005); Barnes, Murray, Patton et al. (2000); Cooper (1994); Cox and Klinger (1988), Sher et al. (2000), and Theakson et al. (2004). In addition, the findings provide validation for Mac Andrew's (as cited in Barnes, Murray, Patton, et al. 2000) and Loukas et al. (2000) assertion of a need for a specifically designed instrument to measure addiction prone personalities. Ergo, the Addiction Prone Personality Questionnaire benefits research and prevention strategies in identifying individuals with specific vulnerable personality characteristics.

Figure 6
Positive Correlation with APP and Drinking to Feel Good, Help Relax, and Forget Worries.



Note: *p<. 05, **p<. 01, ***p<. 001

Neo-Five Factor Inventory and Reasons for Drinking

Theakson et al. (2004) found that persons scoring high in extraversion chose reasons for drinking that fall under general enhancement motives such as drinking to feel good or to be sociable. As shown in Table 6, extraversion did not form any associations

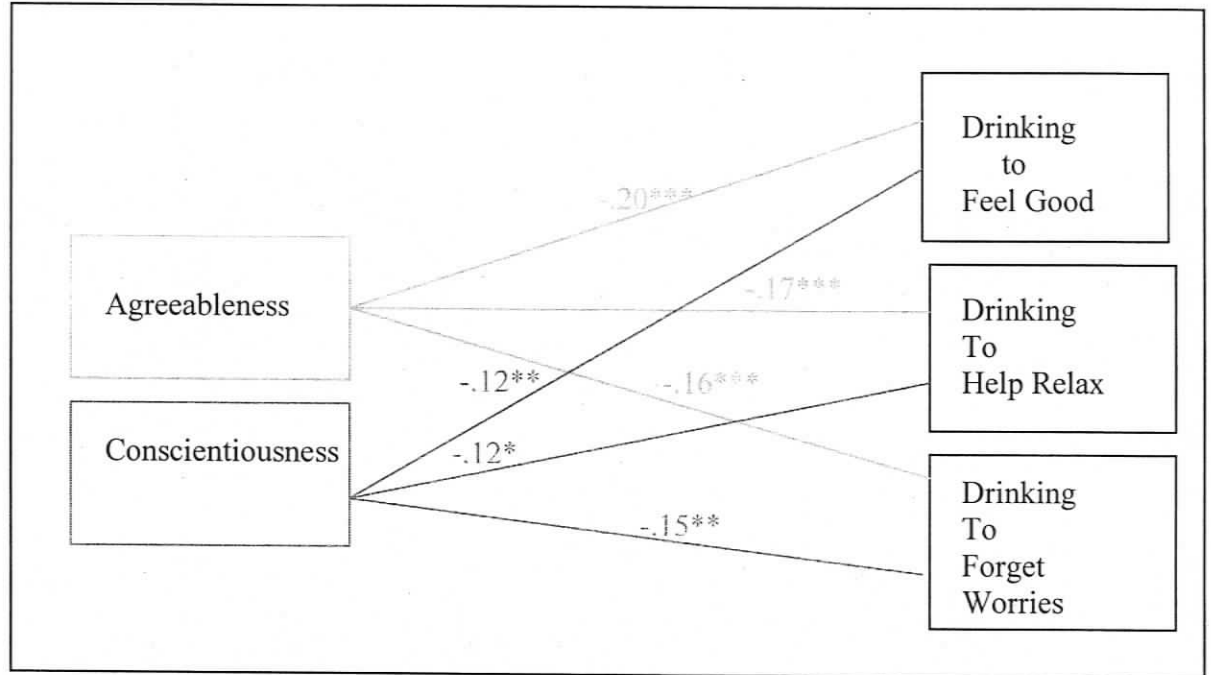
with enhancement motives. However, those presenting with high extraversion scores were less likely to drink to cope (forget worries). In addition, it is interesting to note that youth who scored higher on openness were less likely to drink to add to the enjoyment of meals but showed no correlation with the other five reasons for drinking.

Drinking for enhancement purposes or coping with negative emotional states have been previously associated with lower agreeableness and conscientiousness (Copper et al. 2000; Stewart & Devine, 2000; & Theakson et al. 2004). Our data suggests that youth who score higher in agreeableness and conscientiousness score lower on both enhancement and coping motives such as drinking to feel good, relax, or forget worries (see Figure 7).

There is little evidence provided showing that openness predicts reasons for drinking (Copper et al. 2000; Stewart & Devine, 2000; & Theakson et al. 2004). Yet, Stewart and Devine (2000) did find sufficient correlations to suggest that openness and enhancement motives are negatively correlated. My data analysis concurs with Stewart and Devine (2000) in that individuals who score higher in openness are less likely to drink to add to the enjoyment of meals. No other significant correlations were found.

Figure 7

Negative Correlation between Agreeableness & Conscientiousness and Drinking to Feel Good, Relax, and Forget Worries.



Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Mediation

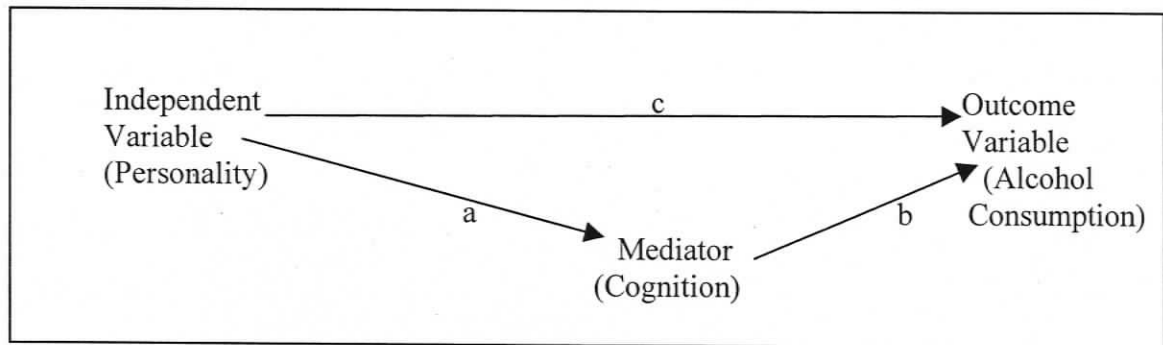
In the previous ten to fifteen years, youth alcohol consumption research has adopted an integrated approach in which studies are now addressing the importance of cognition in developing an understanding of youth at-risk drinking patterns. Cognition may be said to act as a mediator when the following conditions are met (see Figure 8):

“(a) variations in levels of the independent variable significantly account for variations in the presumed mediator (i.e. Path *a*), (b) variations in the mediator significantly account for variations in the dependent variable (i.e. Path *b*), and (c) when Paths *a* and Paths *b* are controlled, a previously

significant relationship between the independent and dependent variables is no longer significant, with the strongest demonstration of mediation occurring when Path *c* is zero" (Baron & Kenny, 1986, p 1176).

In keeping with standards for determining a mediation effect, I conclude that mediation has occurred when Beta weights between personality and alcohol consumption patterns (path *c*) decrease when controlling for drinking to feel good and drinking to forget worries (Baron & Kenny, 1986; & Catanzaro & Laurent, 2004).

Figure 8
Theoretical Mediation Model (Baron & Kenny, 1986)



There is consistent evidence that enhancement and coping motives have connected pathways to personality and youth drinking patterns. (Finn et al. 2000; Fischer et al. 2003; Kuntsche et al. 2005; Sher et al. 2000; Stewart & Devine, 2000; Theakson et al., 2004;). As expected cognition as a mediator between a set of personality factors and drinking patterns was confirmed. However, the following discussion shows less of a mediating effect than expected.

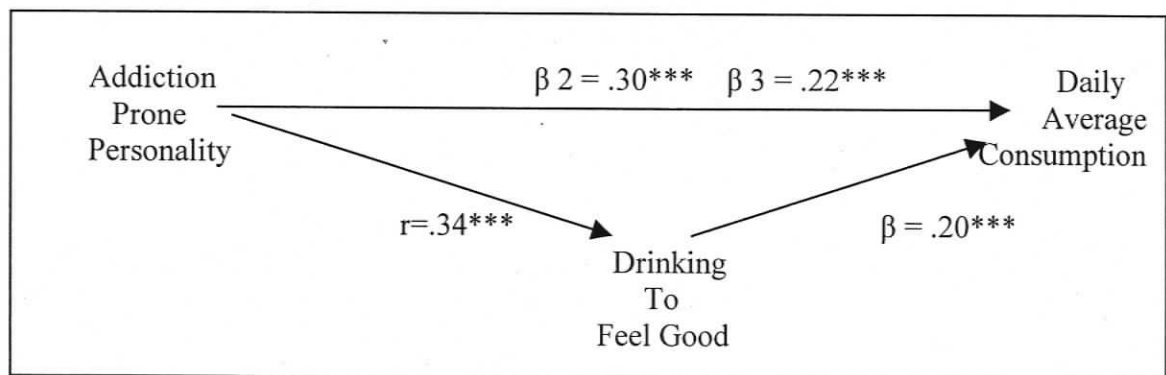
Daily Average Alcohol Consumption

The data did not support reasons for drinking as fully mediating the association between personality and daily average consumption in our youth sample. We did, however, find that mediation did occur in those youth scoring higher on the APP

Measure. As indicated in Tables 10 and 11, step one and two show age and APP as predictors of increased daily average consumption of alcohol while those scoring higher on agreeableness, neuroticism, and openness were likely to have lower daily average consumption.

In the final step of the model predicting alcohol consumption, drinking to feel good showed a partial mediation effect on the relationship between daily average alcohol consumption and the Addiction Prone Personality (see Figures 9). This falls in with the work of Finn et al. (2000) who found that perceived positive expectations mediated the relationship between personality and alcohol consumption. Unlike earlier researcher (Fischer et al. 2003; and Theakson et al. 2004) our data does not indicate that cognition mediates a relationship personality factors such as those found in the Neo-Five Factor Inventory and alcohol consumption.

Figure 9
Partial Mediation effect of Drinking to Feel Good between APP & Daily Average Consumption



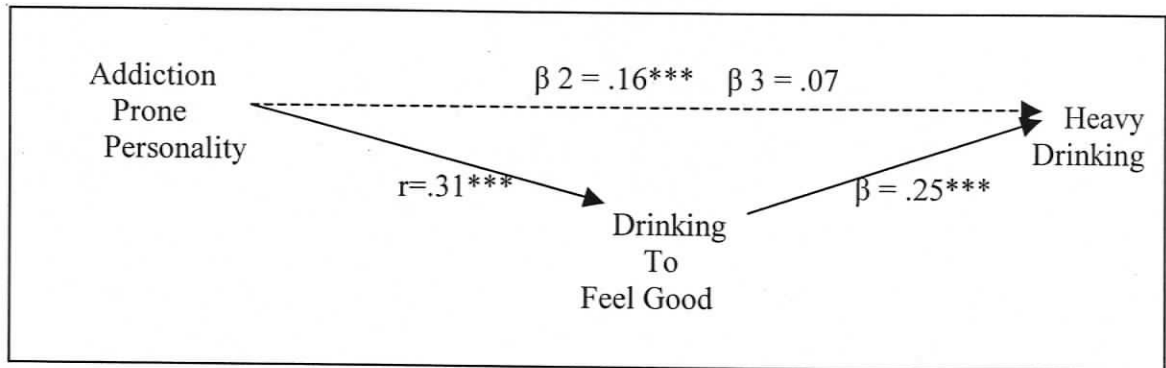
Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Heavy Drinking Patterns

Theakson et al. 2004 found that high sensation seeking is predictive of enhancement motives for abusive alcohol consumption patterns. As shown in Figure 10, the final step of our analyses of the Hierarchical Regression Model found a substantial

Figure 10

Mediation effect of Drinking to Feel Good between APP & Heavy Drinking

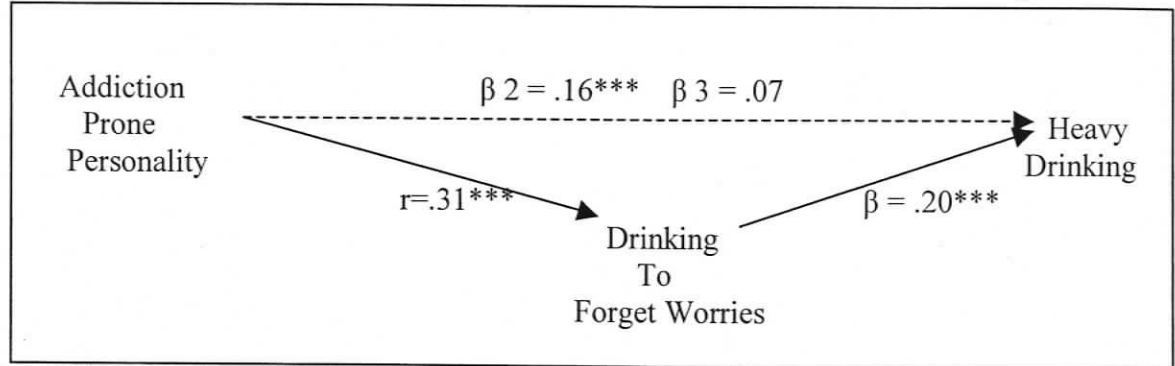


Note: * $p < .05$, ** $p < .01$, *** $p < .001$

mediating effect of enhancing ones mood (drinking to feel good) between an addiction prone personality and heavy drinking patterns.

In addition, drinking to forget worries thus relieving tension and anxiety also mediates the relationship between addiction prone personalities and heavy drinking patterns (see Figure 11). However, we could not duplicate those findings that suggest coping and conformity motivators in individuals who wish to relieve tension and anxiety mediate the relationship between extraversion or neuroticism and heavy drinking patterns (Carey, 1993; Fischer et al. 2003; Smith, Goldman, et al. 1995; & Stewart & Devine, 2000;). Of note is that our survey has included the Addiction Prone Personality as an independent variable whereas earlier research has not.

Figure 11
 Mediation Effect of Drinking to Forget Worries Between APP & Heavy Drinking



Note: * $p < .05$, ** $p < .01$, *** $p < .001$

CAGE Scale Scores

High scores on the CAGE measurement indicate alcohol related problems. Little has been written about the mediating effect of cognition between personality factors and alcohol related problems. Our analyses of the hierarchical regression model predicting CAGE Scale scores based on socio-demographics, personality and high-risk reasons for drinking found total mediating effects. Drinking to feel good (see Figure 12) and drinking to forget worries (see Figure 13) mediated the relationship between an addiction prone personality and CAGE Scale scores in a youth sample. In other words, youth presenting with an Addiction Prone Personality who drink to feel better or relieve tension and anxiety will have a greater number of alcohol related problems.

Figure 12
 Mediation Effect of Drinking to Feel Good Between APPQ uestionnaire & CAGE Scale

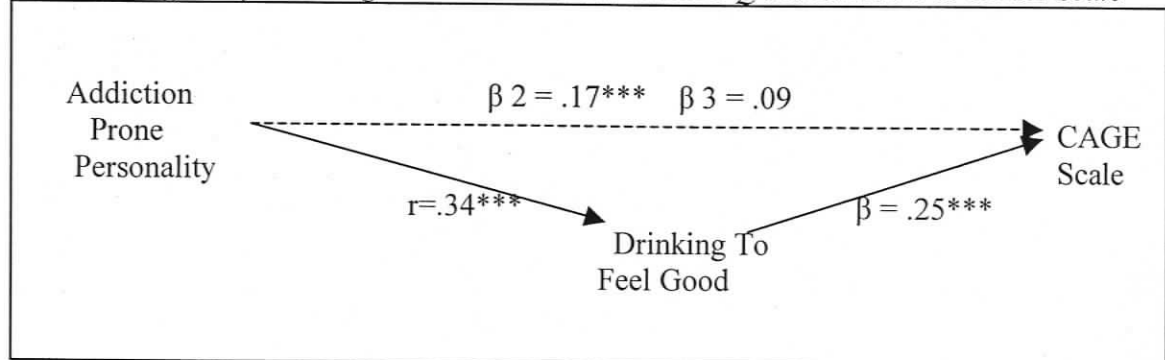
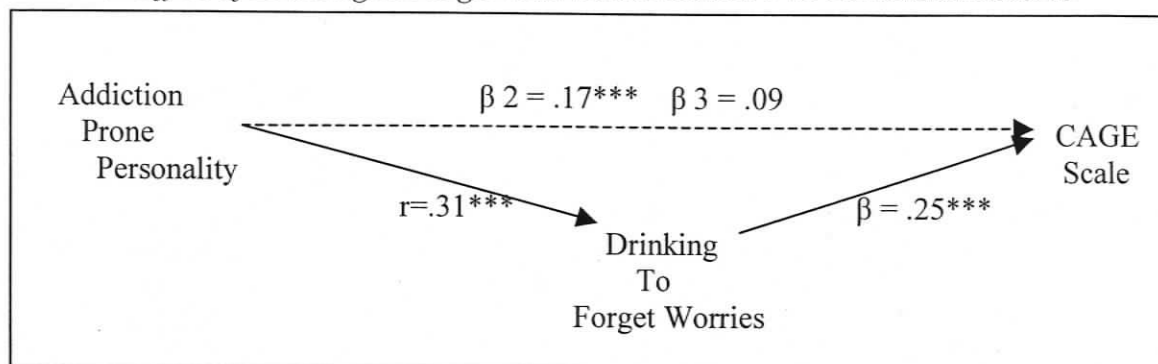


Figure 13
Mediation Effect of Drinking to Forget Worries between APP & CAGE Scale Scores



IMPLICATIONS

Data analyses support the need for transferring the information gleaned from the data analyses into everyday practical uses in the area of intervention and prevention. We cannot stop at prediction of alcohol consumption abuse and related problems. The implications surrounding the use of the Addiction Prone Personality measure can provide a path for policy and procedure, politically and developmentally. Advocacy for programs and funding aimed at prevention are needed in conjunction with intervention and treatment programs.

Males are drinking more and bingeing more often than females. In addition, a higher percentage of males are endorsing drinking for enhancing and coping reasons. However, the differences separating the two genders are decreasing. Females are now endorsing enhancement and coping means in line with their male counterparts. Further research is needed with a sample population of 12 to 16 year olds to determine if this is true for a younger group of youth. Further studies are also needed for determining the association between gender and personality traits associated with alcohol consumption patterns and related problems.

We know that an addiction prone personality exists. There is also a positive association between an addiction prone personality and alcohol consumption patterns and related problems. In addition, the APP measurement strongly predicts that alcohol will be used by youth for enhancement and coping reasons. We also know that these reasons mediate the relationship. This information can be useful in the development of skills based training and treatment programs aimed at addressing those inappropriate behaviours associated with increased drinking patterns.

All behaviour has a message. The association between heavy drinking and CAGE Scale scores with enhancement and coping reasons implies a necessity for understanding those youth who choose to partake in at risk and sensation seeking activities. Implications are also present for gaining a deeper understanding of what is happening in the youth's environment that necessitates unsuitable practices for relieving tension and anxiety and coping. An important question needing to be answered is, what is causing youth to need external stimuli to feel good and from where is the tension and anxiety coming?

Individuals and organizations responsible for the development of training and treatment programs now have the knowledge base to focus on the underlying cognitions associated with inappropriate behaviour, and include them into the change process needed to overcome addiction and negative aspects of their developing personalities.

Parents and caregivers are paramount in the development of personality. Parenting programs and skill based training for young parents that understand the need for appropriate ways to cope with life and enhance one's moods intrinsically will be proactive in the reduction of youth alcohol consumption abuse and related problems.

Further research is needed in the area of personality: reasons for drinking and alcohol consumption and abuse patterns in youth. The Vancouver Family Survey lends itself to longitudinal studies addressing the impact that aging and work vs. school may have on the use and abuse of alcohol beverages. Further expansion of the Vancouver Family Survey into marginalized communities will allow for expanding generalizations of the findings and further validate the need of understanding the addiction prone personality as a stand-alone phenomenon. Professional understanding of the addiction

prone personality will result in increased positive expected outcomes of those programs aimed at addressing the underlying issues of addiction rather than the symptoms.

SUMMARY AND CONCLUSION

Modern research is now focusing on sensation seeking and reward stimulation as important factors in predicting enhancement and coping motivation and consequent higher alcohol consumption and related problems (Barnes, Murray, & Anderson, 2000; Barnes, Murray, & Anderson 2005; Barnes, Murray, Patton, et al. 2000; Finn et al. 2000; Fischer et al, 2003; Kuntsche et al. in press; Stewart & Devine, 2000; Barnes, 2004; & Theakson et al. 2004). This line of research seems to be more applicable for understanding the reasons for alcohol consumption in a younger sample. However, generalized personality factors are not, in and of themselves, flawless as predictors of alcohol consumption patterns and related problems. Personality traits and the expected consequences to alcohol consumption develop prior to symptomatology (Fischer et al. 2003). In addition, traits found in sensation seekers strengthen alcohol expectancies through earlier experiences with alcohol consumption Finn et al. (2000),.

In this research, I have presented a mediation model of alcohol consumption and related problems in relation to an Addiction Prone Personality and reasons for drinking in a sample of youth 14 to 24 years of age. Thus supporting my hypotheses that an Addiction Prone Personality is a strong indicator of enhancement and coping reasons for drinking and that cognition mediates this in males and females 15 to 24 years of age. It is interesting to note that recent drinking patterns of females are shown to be more similar to males than in the past. It is a well known fact that females are catching up to their male counterparts in aggressive behaviour. One may wonder if those factors affecting youth violence have any connection to the increase in young female alcohol consumption patterns and related problems. Future research is indicated on these implications.

I was unable to show a mediation effect of cognition on other personality factors such as extraversion and neuroticism when an addiction prone personality was included in the regression model. Discrepancies between my findings and those of previous research may be accounted for by the research design of the Vancouver Family Survey. Motivation and reasons for drinking have been used interchangeably throughout the literature. The Vancouver Family Survey used specific succinctly defined reasons for drinking such as “drinking to feel good” and “drinking to forget worries” while other studies employed generic motivators such as enhancement and coping. In addition, the same item appears under different dimensions allowing participants and researchers to attribute different meaning to the same item. For example, Kuntsche et al. (2005) found that participants chose drinking to get drunk as a predictor for heavy drinking patterns in both enhancement and social motivations.

Common scales used in previous studies include a 34-item Alcohol Outcome Expectancy Questionnaire (Leigh & Stacy, as cited in Catanzaro & Laurent, 2004), a 15 Scale COPE Instrument (Carver et al. as cited in Catanzaro & Laurent, 2004), a 20 item Reasons for Drinking Scale (Cooper, 1994) and a 12 item Alcohol Behavioural Questionnaire (Hansen, Malotte, Collins, & Fielding, as cited in Catanzaro & Laurent, 2004). It was also noted that previous research employed questionnaires that collectively measured a variety of personality factors. For example, the Neo-Five Factor Inventory (Costa & McCrea, 1992) measures five personality traits and Eysenck’s System (Eysenck, as cited in Digman, 1990) measures two. The Vancouver Family Survey used a tool specifically designed to measure one personality trait, the Addiction Prone Personality.

As profound and exciting as our results were, it is imperative to caution against widespread generalization of the findings. The demographics used in this survey are youth from intact, biological families whom a majority of participants purport to be of an English speaking white middle class living in a large urban centre. As stated in the Adolescent Health Survey (1996), youth living in the Vancouver area are likely to drink less than youth living elsewhere in British Columbia. Longitudinal studies are needed in rural northern and aboriginal communities to further validate the usefulness of the Addiction Prone Personality measurement as a tool for predicting alcohol consumption abuse and related problems in our youth population.

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APPENDIX A

Addiction Prone Personality

1. Do you give money to charities? **R**
2. Do you often feel 'fed up'?
3. Have you often gone against your parents' wishes?
4. Have people said that you sometimes act rashly?
5. Do you go to church almost every week? **R**
6. Have you had a very strange or peculiar experience?
7. Do you have strange or peculiar thoughts?
8. Have you lived the right kind of life? **R**
9. Have your parents often objected to the kind of people you went around with?
10. Did you play hooky from school quite often as a youngster?
11. Did you ever feel that strangers were looking at you critically?
12. Have you ever been in trouble with the law?
13. Are you unable to keep your mind on one thing?
14. Do you prefer (a) endurance sports (b) games with rests?
15. Do you prefer (a) sports car (b) passenger cars?
16. Do you prefer (a) loud music (b) quiet music?
17. Do you prefer (a) electric music (b) unamplified music?
18. Do you prefer (a) rock music (b) ballads?
19. Would you prefer to be (a) stunt man (b) prop man?
20. Are you a steady person? **R**
21. Do you wish you could have more respect for yourself?

Items

- 1,5, 8, and 20 – add one point if negative
 14-19- score of a=1, b=0;
 20 and 21 reduced to two-point scale;
 All other items – affirmative response adds one point.

APPENDIX B*Brief Michigan Alcohol Screening Test (MAST Scale)*

- 1 Do you feel you are a normal drinker?
- 2 Do friends or relatives think you are a normal drinker?
- 3 Have you ever attended a meeting of Alcoholics Anonymous (AA) for help with your drinking?
- 4 Have you ever lost friends or girl/boy friends because of your drinking?
- 5 Have you ever gotten into trouble at work because of your drinking?
- 6 Have you ever neglected your obligations, your family, or your work for two or more days in a row because you were drinking?
- 7 Have you ever had delirium tremens (DTs) severe shaking, heard voices, or seen things that weren't there after heavy drinking?
- 8 Have you ever gone to anyone for help about your drinking?
- 9 Have you ever been hospitalised because of your drinking?
- 10 Have you ever been arrested for drunk driving after drinking?

APPENDIX C*CAGE Scale*

-
- | | |
|---|-------------------------------------------------------------------------------------------------------------------|
| 1 | Have you ever felt that you should cut down on your drinking? |
| 2 | Have people annoyed you by criticizing your drinking? |
| 3 | Have you ever felt bad or guilty about your drinking? |
| 4 | Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (eye-opener)? |
-