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Changes in
Alcohol Use During the
First Year of University: A
Longitudinal Analysis

by

Margaret Sullivan, B.A.

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfilment of
the requirements for the degree of
Master of Arts
Department of Sociology Anthropology

Carleton University

Ottawa Ontario

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Changes in
Alcohol Use During the
First Year of University: A
Longitudinal Analysis

submitted by Margaret Sullivan, B.A.
in partial fulfilment of the requirements for
the degree of Master of Arts

A handwritten signature in black ink, appearing to read "Bruce Cauden", written over a horizontal line.

Thesis Supervisor

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Chair, Department of Sociology and Anthropology

Carleton University

April 1993

Abstract

In August 1990, one month prior to beginning first year university, students who were registered to attend Carleton University were sent a questionnaire regarding their experiences with alcohol. A total of 554 students returned the questionnaire with 419 signing their name agreeing to participate in a follow up study. Those students were mailed a second questionnaire seven months later in March 1991, in order to determine if any changes in alcohol use had occurred while at university. A total of 295 usable questionnaires were returned. Overall, the results indicated that the increase of alcohol use from high school to university was small which may suggest that drinking patterns are formed in high school. Larger increases in quantity/frequency of alcohol were found among students who lived on campus in residence, especially among women. Living situation, peer use of alcohol and age of first use was found to be significantly related to quantity/frequency of alcohol use among the respondents. The number of negative complications experienced did not increase from high school to university but it was found that heavier drinkers and students who lived in residence experienced a greater number of negative complications. It is suggested that program planners take these differences into consideration when implementing programs and policies.

Acknowledgements

This research was supported by the Carleton University P.A.R.T.Y. committee. I appreciate the assistance of the committee and all members involved who helped make this happen with particular thanks to Patty Allen, Neil Hunter and Beth Page. Special thanks to Beth who constantly reminded me about balance.

Not enough thanks can be said to my advisor Florence Andrews who inspired me to pursue this challenge and encouraged me every step along the way. Thank you Flo for all your help over the past several years. Special thanks to Craig Mckie who spent numerous hours pouring over rough drafts leaving big question marks in the margins. Thank you Craig for your encouragement during the time I have been at Carleton.

I would also like to thank Ikuko Webster for her invaluable statistical assistance and the constant reminder: "But what is your hypothesis?" Special thanks goes to Nadine Morrison for assisting me with coding and inputting the data.

A very big thank you to my sister for proof reading over 100 pages of material. And of course thank you to the rest of my family and especially my mother who provided Sunday evening meals. Special thanks to Olinda, my roommate who had to put up with my grumbling from the back room. Thank you to all my friends who supported me during this process and waited for me to return to the real world. And to Luc, je suis grandement reconnaissante envers mon ami qui a su rendre les choses, plus faciles. One very big thank you to Cooper who was forever at my side while I wrote this paper.

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Introduction

The majority of university students use alcohol responsibly. However, there is a small portion of the student population that overindulges and experiences problems associated with alcohol use. This paper examines differences in alcohol use among students in first year university. This thesis was inspired by Louis Gliksman, Research Scientist for the Addiction Research Foundation, in London Ontario. In order to discover differences in drinking patterns from high school to university, Gliksman (1988) questioned students prior to starting university and eight months later, near the end of their first year, about alcohol and problems associated with their alcohol use. I was interested in Gliksman's findings and felt that in order to discover differences in alcohol use between high school and university, it was important for additional longitudinal studies in this area to be pursued. As a result, I began a study similar to Gliksman's in order to assess the changes in alcohol use from high school to first year university.

At the beginning of this project, I was a member of the alcohol education committee on campus. (P.A.R.T.Y. an acronym for Promoting Alcohol Responsibility Through You). The committee members thought that there was a high level of drinking among first year students and were interested in conducting a survey in order to discover patterns and behaviours. As a result, I was funded by the committee to conduct a survey regarding alcohol use among first year students. I proposed a longitudinal survey, similar to Gliksman's so that it would be possible to ascertain changes in the drinking

patterns of first year students. The first questionnaire was sent out at the beginning of August, 1990, and the follow up was mailed to those who agreed to be questioned at a later date in March 1991. The questionnaires are quite extensive, dealing with numerous issues such as respondent's alcohol use, parent's alcohol use, friend's alcohol use, family background, employment patterns, extra curricular activities, binge drinking, place of drinking, attendance at P.A.R.T.Y. sponsored events, negative social complications, motivations for drinking, tobacco use, and other drug use (See Appendix 1 and 2).

The focus of this thesis will be limited to alcohol use patterns, changes in use, and negative effects of alcohol use. I felt it was necessary to limit the scope of the thesis to specific issues such as the transition from high school to university and changes in alcohol use and consequences that result from heavy alcohol use. Firstly, I shall examine patterns of alcohol use in high school and university in order to detect differences with a particular focus on variables that may be associated with one's use of alcohol such as parents, peers, or the university setting. Secondly, I will examine consequences of heavier alcohol use among drinkers before the time they entered university and seven months into the first year of university. And finally, I shall examine differences between males and females; and those who live on campus and live off campus.

While attending university, patterns of behaviour may be formed and these patterns may continue throughout adulthood. Although this study is limited to alcohol use during the first year of university, the potential exists for this study to be continued in the future. If problematic behaviours are identified, this study may prevent others from establishing the same patterns of heavy drinking. Heavy use of alcohol could affect post-university

life, and if detrimental patterns are discovered, this knowledge could prevent someone from suffering serious negative social complications in the future.

It is important to establish clear definitions of alcohol use that will be discussed throughout this paper, because a common problem in the literature regarding youths and alcohol is the inability to agree on definitions of drinking and problem drinking. Terms such as alcohol use, abuse, overuse, heavy drinking, frequent heavy drinking, alcoholism, or alcohol dependence syndrome are often used interchangeably without clear definitions of their criteria. For the purpose of this thesis a limited number of terms will be used and will be clearly distinguished.

Alcohol users will be referred to as those who consume any amount of alcohol, and *abstainers* are those who have never or currently do not use alcohol. In order to classify types of drinkers, alcohol users have been ranked into two categories. The division of drinkers is a measure of the quantity and frequency of alcohol consumed per week based on the traditional Straus and Bacon (1953) quantity/frequency scale and tailored to the present study. The rankings closely follow prior national studies of alcohol use among students (Cahalan et al. 1969; Rachal et al. 1975; Blane 1979; Zucker and Harford 1983). *Light drinkers* are those who consume seven or fewer alcoholic beverages per week and *heavier drinkers* are those who consume over seven alcoholic beverages per week.

It should be noted that heavier drinking does not translate into alcoholism, which is commonly defined as "a chronic behavioral disorder manifested by repeated drinking of alcoholic beverages in excess of the dietary and social uses of the community, and to

an extent that interferes with the drinkers's health or his social or economic functioning" (Keller 1958 in *Drugs in Society* 1992:198). Since it takes a number of years for chronic alcoholism to develop, the students in this questionnaire who are experiencing a number of negative complications may be problem drinkers but are not likely to be alcoholics. Therefore, in this thesis, students who are heavier drinkers and are experiencing a high number of negative complications (over 8 per year) will be referred to as: "problem drinkers". As Blane (1979:28) argues:

it does appear that problems with drinking in early adulthood are linked with alcohol problems in middle age, but the linkages are so weak that no reliable predictive statement can be made about a given individual even in the presence of extensive information about the person's drinking behavior, personality, and life history.

Finally, one additional term used throughout this paper that requires a definition is the term: negative social complications. (also introduced by Straus and Bacon 1953). Negative social complications are problems experienced as a result of overuse of alcohol. Items include, but are not limited to, personal, social, and legal problems such as: hangovers, regrets, difficulties with school, and impaired driving. Negative social complications have also been used by Engs (1977); and Gliksman (1988). Negative social complications are often age specific. Since young drinkers are often inexperienced with the effects of alcohol, often they will experience complications that are a result of this inexperience such as: hangovers, nausea and vomiting (White and Labouvie 1989).

It is important to examine drinking patterns that may contribute to high risk behaviour that may lead to alcoholism in the future. I will examine in this thesis drinking patterns among different groups of students, which include: males, females, and those who

live on, and off campus, in order to determine if differences exist between these groups and what characteristics are associated with these differences. Since this thesis is a longitudinal study, perhaps future research in this area can examine the different groups and determine which variables in youth lead to different patterns of drinking in adulthood. By determining and examining current patterns, it is possible to inform first year university students about the problems associated with heavier use. This information can be used to educate incoming university students and alert students of drinking behaviours that could lead to heavy alcohol use and negative social complications that result from heavy alcohol use.

Chapter Outlines

The thesis will consist of five chapters. Chapter I will be a review of the literature that introduces Straus and Bacon's (1953) famous study that laid the foundation for alcohol studies among students. Competing perspectives in the area of alcohol use and university students will be discussed with specific reference to studies that are pertinent to the present analysis. For the most part, the literature in this area is atheoretical: that is, it does not attempt to arrive at a theory of heavy drinking among students. This chapter will also include a statement of the problem and the research questions.

Chapter II will discuss the methodology, specifically: subjects, measures, measurement characteristics, variables, procedures, data analysis, and limitations. It will also discuss the representativeness of the sample of respondents who signed their name

agreeing to be questioned in the future along with those who did not sign their name.

Chapter III is a discussion of the results. This section describes the sample, patterns of alcohol consumption, and differences in alcohol consumption from high school to university. This chapter also describes the negative social complications and differences from high school to university.

Chapter IV is a discussion of the findings and integrates the literature review, research questions and results. Findings will be discussed and the implications of this study will be addressed. Recommendations for further research will be suggested along with limitations due to sample bias.

Chapter V will summarize the major findings. The bibliography will follow along with appendixes of the two questionnaires, figures, and other documents used in the data collection.

CHAPTER I

LITERATURE REVIEW

Alcohol use among students is not a new phenomenon. Reports of use and the control of use date as far back as the 18th century (Engs and Hanson 1988). However, it has not been until the early part of the 20th century that studies began to seriously examine alcohol use among students. Then in 1953, Straus and Bacon published *Drinking in College*, which became known as the groundbreaking research that laid the foundation for studying alcohol use among students. This chapter will review the literature in the area of alcohol use among students beginning with Straus and Bacon's (1953) famous work. It will examine a number of perspectives that have been put forward and will focus on those issues that are pertinent to the present study.

Competing Perspectives

A review of the literature in the area of substance use and abuse among university students finds that a large portion of the research is atheoretical (Goldsmith 1990). A large number of studies focus on empirical research that support or restrict students' use of alcohol such as parental influence (Straus and Bacon 1953; Gusfield 1961; Zucker 1976; Wechsler and McFadden 1979; Harford and Spiegler 1983; Keltner et al. 1986; Kandel and Andrews 1987; Samson et al. 1989); peer influence (Kane and Patterson 1972; Margulies et al. 1977; Igra and Moos 1979; Harford and Spiegler 1983; Barnes and Welte 1986; Kandel and Andrews 1987; Downs 1987); social context of use (Gusfield 1961;

Clark and Trow 1966; Igra and Moos 1979; Canterbury et al. 1990; Crowley 1991); gender (Straus and Bacon 1953, Orford et al. 1974; Stokes 1974; Engs 1977; Rosenbluth, Nathan, and Lawson 1978; Kaplan 1980; Wechsler and McFadden 1979; Wechsler and Rohman 1981; Zucker and Harford: 1983; Rohsenow 1983; Ratliff and Burkhard 1984; O'Hare 1990; Brennan et al. 1986; Canterbury et al. 1990); age (Jessor and Jessor 1975; Margulies et al. 1977; Barnes and Welte 1986; White and Labouvie 1989); age of first use (Fromme and Samson 1983; Haertzen et al. 1983; Barnes and Welte 1986; Samson 1987; Samson et al. 1989); and negative social complications (Wechsler and Thum 1973; Jessor and Jessor 1975; Moos, Moos, and Kulik 1976; Engs 1977; Harford and Mills 1978; Wechsler and McFadden 1979; Engs and Hanson 1985; Barnes and Welte 1986; Wiggins and Wiggins 1987; Gliksman 1988; White and Labouvie 1989).

A number of theories do exist that attempt to explain findings regarding alcohol use among students. Hirschi's (1969) social control theory examines why people conform, especially to parents and peers. Bandura's (1977) social learning theory explains that "learning is acquired and shaped by positive and negative reinforcements (rewards and punishments), as well as by observation of other people's behavior" (Johnson et al. 1988:579). Zuckerman's (1979) sensation-seeking theory posits that "the primary functions of sensation seeking are to provide new experiences, reduce boredom, facilitate disinhibition, and offer adventure. Using alcohol or other drugs, eating, smoking cigarettes and engaging in sexual activity are examples of sources of sensory stimulation" (Johnson et al. 1988:582). Jessor and Jessor's (1977) problem behavior theory argues that "problem behavior is treated as the result of the interaction of three systems of variables: the

personality system, the perceived-environment system, and the behavior system" in Donovan et al. 1983:110). Kandel's developmental model of substance use explores the relationship between alcohol and other drugs arguing that stages of drug involvement occur during adolescence, and alcohol is a stepping stone drug for other drug use such as marijuana and other illegal drugs (Goldsmith 1990).

Each of these competing theories contributes to the literature in an attempt to explain problems in alcohol use among youth. However, what it needed is an integrated theory that contributes to explaining alcohol problems among youth. Recently, more research is being done that combines a biopsychosocial perspective utilizing path analysis models in order to research the area of alcohol use among youth (Schall et al. 1992). Regardless of whether a study is empirical or theoretical, a primary reason for studying alcohol use among students is the predictive validity of doing such research. That is, an argument exists regarding the relationship of overuse of alcohol in adolescence and its effect in adulthood. The present study examines empirical variables in order to assess changes from high school to university so that students can be educated about changes that may occur from high school to university.

On the one hand, researchers argue that detrimental patterns of behaviours may become established in university and that these patterns will continue into adulthood (Gliksman 1988). The longitudinal studies that have been conducted concerning alcohol use among a sample of college students Fillmore (1974, 1975) and Donovan et al. (1983) have found "support for the hypothesis that college problem drinkers are more likely than college nonproblem drinkers to show significant drinking problems 6 years (Donovan,

Jessor and Jessor 1983) and 20 years (Fillmore 1974) later" (Brennan et al. 1986:482). Donovan et al. (1983) found approximately 20-50% go on to become adult problem drinkers regardless of what type of drinkers they were in their youth, and more than half of these are males. Fillmore's (1974) sample, derived from the original sample of Straus and Bacon's (1953), found approximately 50% of the current problem drinkers had been problem drinkers in college (Brennan et al. 1986:182).

On the other hand, students may "mature out" of alcohol abuse (Brennan et al. 1986:476) which may have only been conditional to what Brennan et al. (1986:476) label:

situational stresses inherent in the college situation as well as the environmental processes of the 'college drinking ethic', which is reinforced by fraternity and dormitory parties that focus on alcohol.

Without the use of longitudinal data it is very difficult to say how much of an effect overuse of alcohol during university has on students. Schall et al. (1992:122) summarize the argument as follows:

if adolescents and young adults survive this period of risk, they may grow into "normal" adults. Drinking and drug use will decrease for most young adults as they mature and assume the responsibilities of adult life (Donovan et al. 1983). Unfortunately, some will continue to increase their consumption and develop a dependency on alcohol. Others may decrease their consumption for a time and then increase their consumption and develop a dependency later in life. Still others who were not problems drinkers in adolescence or during their college years will develop the problem later in life (Fillmore and Midanik 1984). We cannot assume that a heavy drinking university student will necessarily progress into alcoholism or even remain a heavy drinker.

Still, the debate continues regarding the effects of overuse of alcohol in university. Since alcoholism progresses slowly, it is difficult say if overuse of alcohol in university contributes to alcoholism. After following students in longitudinal studies for a number

of years, we can then develop a model or theory that may predict alcoholism among students. But there are a limited number of longitudinal studies and until more are conducted, the best analysis on current data is best served by examining data with a "one point in time study" and isolating those who are putting themselves at high risk for current, and possibly future negative social complications. Until further studies are conducted, it is not possible to conclude that overuse of alcohol in university will lead to overuse of alcohol in later life.

Another question that requires investigating is: when do students begin to drink? A number of researchers argue that by university, students already have established drinking practices (Engs and Hanson 1988; Anderson 1988) and another group argues that drinking patterns change substantially during the first year (Holupka and Martin 1990; Johnston et al. 1989).

The present study focuses on empirical influences that are associated with alcohol use and examines changes in alcohol use from high school to university and environmental variables that may be associated with alcohol use such as parents, peers, and the social context of alcohol use. The present study also examines complications of overuse of alcohol, such as negative consequences that may result from overuse of alcohol i.e., hangovers, blackouts, and regrets after drinking. It is hoped that this study can contribute to empirical research and eventually towards a theory of substance abuse among university students.

Drinking Patterns

Straus and Bacon's (1953) pioneering study, *Drinking in College* paved the way regarding alcohol studies among students. Published in 1953, this landmark study was an exploration into the "drinking customs and attitudes" of college students. The study was conducted in order to discern the problems connected with alcohol use and examined "demographics, context, motivations, significant others, problems and drinking history" (Wiggins and Wiggins 1987:319). It is interesting to note that since the Straus and Bacon's (1953) study a number of "basic assumptions" such as the presence of alcohol and the prevalence of use by men and women have been taken for granted by alcohol researchers (Andrews 1991). Moreover, a number of the traditional variables are still being replicated today such as "the quantity/frequency measures, frequency of intoxication, and alcohol-associated problems" (Andrews 1991:176).

A review of the literature finds that "ever use" category of alcohol is increasing considerably. In the Straus and Bacon (1962:247) study, results indicate that 74% of the respondents had used alcohol at some time. Since then, numerous investigations have been conducted and have found that over time alcohol use among students has continued to rise. During the 1960s and 1970s drinking rates increased ten percent and in the 1980s and 1990s increased another ten percent from the original studies in the 1950s. On the whole, students are "drinking more alcohol, more often and...the frequency of intoxication has also increased" (Wechsler and McFadden 1979:970). Currently, in most studies the "ever used" drinking "figures are generally in the 90% range" for both men and women (Meilman et al. 1990). This has changed dramatically since the Bacon and Straus

questionnaire in the early 1950s. The major change has been for women, the frequency of female drinking rates has increased, but quantities still remain higher for men (Meilman et al 1990). Despite the high rate of alcohol use among students this does not mean that students are abusing alcohol, only that they are using alcohol.

It was not until the 1960s that establishments licensed to serve alcohol were being introduced on campus for the first time in a number of Ontario post-secondary institutions. Consequently, it did not take long for alcohol related problems to appear on campuses (Hart et al 1986). However, it was not until the early 1980s that alcohol policies began to take form on campuses across Ontario. A benefit of this study is its ability to contribute towards analyzing alcohol use patterns among university students so that program planning for educators targets the appropriate audiences. Finding out if alcohol use increases from high school to university, and among whom, can help detect high risk groups and target certain populations. Finding out if there is an increase in negative social complications and what the particular complications are, can facilitate educators to focus their efforts in order to make beneficial changes.

Transitions

An important component of this study is to examine if the quantity/frequency of alcohol use is increasing. It is often argued that the transition between high school and university is complemented with a constellation of transitions such as the transition from youth to adulthood, illegal to legal drinking age, and leaving the parental nest and childhood friends (Brennan et al 1986). These transitions are difficult because students

are presented with new options, ideas, values, beliefs, and attitudes. A new student may be vulnerable to new ideas for the sake of compliance, and/or identification. The transition from adolescence to adulthood is not always a smooth one and is not always accompanied by clear expectations. The transition may be especially hard for residence students due to the fact that these students are living away from their parents and high school friends, some for the first time. The students' value systems and fundamental beliefs may not be established, and, as a result, could be easily influenced into participating in activities that offend their values, so that they will not be excluded. The transition from high school to university and the accompanied changes may be contributing factors to an increase in the quantity/frequency of alcohol use.

Even though most high school students have not reached the legal age to drink, it has been found that most students do drink alcohol (Holupka and Martin 1990). Even if patterns are established in high school, those patterns may change as the students enter university and adulthood. As Holupka and Martin (1990) found, even if drinking patterns have been established during high school, drinking patterns change during the university career. The trend appears to be that in first year it is common for students to increase their drinking as soon as they arrive during the orientation period. And then, drinking decreases as students reach senior years (Engs and Hanson 1988, Anderson 1988, Holupka and Martin 1990).

If students begin to drink on a regular basis in high school and then come to university, some may start to drink more heavily because the transition from high school to university is difficult. Wiggins and Wiggins (1987:323) found that the "transition from

high school to college represents the greatest environmental change " And as mentioned earlier the transition may even be more difficult for residence students who are unfamiliar with how to cope with problems and do not have the "familiar and supportive family structure" (Brennan et al 1986 450) Students entering university arrive on a campus where alcohol is available, legal and socially acceptable (Brennan et al 1986 450)

Another benefit of this study is the ability to discern drinking patterns in high school and university, and the difference in drinking patterns from high school to university There are a number of different types of drinking patterns and styles which may be used in order to predict different types of future problem drinking (Kilty 1990) If it is found that drinking in certain situations gives rise to higher levels of drinking, students can be made aware of these situations and educated so that they are aware of the potential problems they may face in the future

Age and Age of First Use as a Predictor in Determining Drinking Patterns

Despite the fact that the legal drinking age in most provinces and states lies between 18 and 21 years of age, being of legal age to drink is not a factor for the majority of young people Numerous researchers have found that youths under the legal age are in fact users of alcohol (Jessor and Jessor 1975, Margulies et al 1977, Barnes and Welte 1986, White and Labouvie 1989) However, it has been found that patterns of alcohol use are different for younger drinkers than older drinkers According to White and Labouvie (1989) "young people drink less often than adults, but when they drink, they tend to drink in larger amounts " In taking larger amounts of alcohol this may lead to

feeling nauseated, vomiting and hangovers. This is usually a result of inexperience in drinking. As one grows older, one becomes an experienced drinker and may avoid these consequences.

Another interesting area regarding age and alcohol use is the relationship between age of first use of alcohol and current use of alcohol. Relationships have been found between these two variables and reported by Fromme and Samson (1983); Haertzen et al. (1983); Barnes and Welte (1986); Samson (1987); and Samson et al. (1989). Samson et al. (1989:258-259) found that:

correlational statistics for both men and women indicated that the younger the respondent at first taste and/or first intoxication experience the greater the current drinking level... However, while there was some predictability of current drinking levels associated with ages of first taste and first intoxication, together these factors accounted for only approximately 7% of the variance in current drinking practices for either males or females...It has been proposed that the age of initial alcohol exposure is related to increased frequency and quantity of later drinking behavior, as well as increased alcohol-related problems.

According to Andrews (1991:180) "the earlier the age of first alcohol use, the greater the level of alcohol intake and the frequency of drunkenness." It appears that experimenting with alcohol begins at an early age, perhaps even high school. This study will answer two important questions: when does drinking begin; and, are patterns of alcohol use already established before students reach university? By examining alcohol use patterns before university, it is possible to see if patterns are already established, and, if they do change, what factors contribute to the change? Perhaps age of respondents is irrelevant and alcohol use patterns are simply extensions of high school patterns.

Gender

Differences in alcohol use between males and females are dwindling (Barnes and Welte 1986; Johnson et al. 1986). Earlier studies found differences in consumption rates between males and females (Straus and Bacon 1953) but now, "ever use" rates between males and females are nearly identical (Wechsler and McFadden 1976). However, quantity and frequency rates still remain higher for males than females (Straus and Bacon 1953; Orford et al. 1974; Stokes 1974; Engs 1977; Rosenbluth, Nathan, and Lawson 1978; Kaplan 1979; Wechsler and McFadden 1979; Wechsler and Rohman 1981; Zucker and Harford, 1983; Rohsenow 1983; Ratliff and Burkhard 1984; O'Hare 1990; Brennan et al. 1986; Canterbury et al., 1990). Brennan et al. (1986) state that findings of gender differences must be interpreted with caution because of size differences. Males, on average, can drink higher quantities of alcohol because their system can absorb larger quantities of alcohol due to relative body weight (Brennan et al. 1986; Ratliff and Burkhardt 1984; Canterbury et al. 1990). According to Ray and Ksir (1987) (in O'Hare 1990:540): "women's blood alcohol concentration is considered to be about 20% higher than men's given the same amount of alcohol consumed." And, "women have lower total body water content than men of comparable size" (National Institute on Alcohol Abuse and Alcoholism 1990:2 and DeMarco 1990). Another factor that may account for differences is "fluctuations in gonadal hormone levels during the menstrual cycle may affect the rate of alcohol metabolism, making a woman more susceptible to elevated blood alcohol concentrations at different points in the cycle"...however, "research findings have been inconsistent" (National Institute on Alcohol Abuse and Alcoholism 1990:2).

Concerning alcohol related problems and gender, men experience a greater number of complications than do women (Engs 1977; Wechsler and McFadden 1979). However, current studies are finding that the number of complications experienced by men and women are almost equivalent (Werch et al. 1987; O'Hare 1990).

One of the problems in trying to determine differences between the drinking patterns of males and females is that men and women have different drinking patterns during the life course. For example, according to the National Institute on Alcohol Abuse and Alcoholism (1990:1):

drinking behavior differs with the age, life role, and marital status of women. In general, a women's drinking resembles that of her husband, siblings, or close friends (Wilsnack et al. 1984). Whereas younger women (aged 18-34) report higher rates of drinking-related problems than do older women (Wilsnack et al. 1984; Hilton 1987), the incidence of alcohol dependence is greater among middle aged women (aged 35-49) (Williams, 1987).

Overall, differences between males and females in alcohol use do still exist. Quantity and frequency of alcohol use is still lower among women than men. But, women may be "catching up" to males in terms of incidence of use.

Parental Use of Alcohol

Parental use of alcohol has been regarded as an "antecedent factor that may be involved in the initiation to alcohol use" (Samson, Maxwell and Doyle 1989:254). The relationship between parental use of alcohol and one's use of alcohol has also been documented by Straus and Bacon (1953); Gusfield (1961); Hanson (1974); Zucker (1976); Wechsler and McFadden (1979); Harford and Spiegler (1983); Kandel and Andrews

(1987); and Keltner et al. (1986). Wechsler and McFadden (1979:985) found parental use was an important factor in determining how much students drank, but the relationship "was not found between the drinking patterns of the students and their mothers." Wechsler and McFadden (1979) found among the men and women heavy drinkers their "fathers were heavy or problem drinkers." This finding is also supported by Gusfield (1961); Orford et al. (1974); and Barnes et al. 1992). However, two studies, one by Reiskin and Wechsler (1981) and the other by Wechsler and Rohman (1981) did not find any significant relationships between the drinking of parents and their children.

For the most part, the relationship between parental use of alcohol and respondents use of alcohol is positive yet weak (Brennan et al. 1986:481). Moreover, it is important to realize that measures of parental drinking are often based on "student perceptions" and may not be an accurate representation of actual parental drinking patterns (Brennan et al. 1986).

Zucker (1976:211) states that the "acquisition of drinking behaviour is a developmental phenomenon, starting in the home for the majority of youth." The attitudes and values that parents have concerning alcohol and the use of alcohol are re-directed to their children through socialization. Zucker (1976) examines a heuristic model of the process of parental effects. Zucker (1976) states: "at the first level socioeconomic and sociocultural influences can be viewed" such as family influences on an individual, for example, the parents socioeconomic status, religiosity, values and attitudes of drinking. The second level involves "family interaction factors" such as parents use of or non-use of alcohol. Consequently, these ideologies are passed on to their children. At the third

level "parents individually behave in ways that enhance or suppress their child's drinking" (Zucker 1976 211-212) Zucker and Fitzgerald (1991,18) believe that "the process occurring during youth and earlier childhood that relate to the emergence of alcohol and other drug involvement during the teen years may help us to understand the causal chain leading to severe problems in adulthood "

Contemplating Zucker's analysis may lead to a couple of questions Firstly, when does parental drinking become associated with their children's use of alcohol? And, secondly, if parental use is associated, do parental drinking patterns have a greater influence on children who are living at home over those who have moved out of their parents home? According to Ellickson and Hays (1991) "as adolescents get older the parental influences of alcohol use tend to diminish " This could be due to leaving home, aging, or peer drinking habits becoming more influential

An area of the literature that is burgeoning today is the self-help movement especially among people who lived a childhood in a family that grew up with alcoholism by one or both parents Often termed ACOAs (Adult children of alcoholics) these people have grown up in households that were exposed to dysfunctional lifestyles as a result of their parent's drinking. Despite the abundant literature available discussing the psychological effects of growing up in an environment that is not conducive for fostering healthy relationships, (Woititz 1983, Black 1985, Black et al 1986), few studies have found significant differences between samples of adult children of alcoholics and adult children of functional families (Engs 1990, Churchill et al 1990, Chassin et al 1992; Jones and Houts 1992, Meilman et al. 1990) Until further research has been conducted

in this area, the effects of problem-drinking parents will remain inconclusive

Peer Use of Alcohol

Peer use of alcohol has often been associated with one's use of alcohol. Often this can be considered "peer pressure" or the "influence of modelling of alcohol consumption" (Brennan et al. 1986:477). The relationship between one's use of alcohol and peer use of alcohol has been supported by Kane and Patterson (1972), Margulies, Kessler and Kandel (1977), Igra and Moos (1979), Harford and Spiegler (1983), Shore et al. (1983), Barnes and Welte (1986), Kandel and Andrews (1987), Smith et al. (1989), Ellickson and Hays (1991). These studies have examined peer use of alcohol from a variety of perspectives such as the onset of alcohol use, type of peer group (formal or ad hoc), patterns of intoxication, drinking motives, and number of friends who drink. These studies have established that peer use of alcohol is associated with one's use of alcohol. For example, Igra and Moos (1979:395) "hypothesize that students who are more involved in formal school activities will be less likely to use alcohol, while students who are more involved in informal social activities will be more likely to use alcohol."

Researchers are not in agreement as to which social network is most associated with one's use of alcohol. Smith et al. (1989:139) found that "the strongest source of direct influence on a teenager's drinking may come from his or her close peer group." Braucht (1980) is in agreement with the peer group as a whole as opposed to a single friend. Yet Margulies et al. (1977) argue that it is the importance of closeness to friends, as well. Downs (1987:173) found that "close friends seem to increase the quantity and/or

the frequency of adolescent drinking "

For the most part, researchers are in agreement, that "peer influence is widely assumed to affect the drinking behavior of adolescents" (Downs 1987). Peers play an important role in the transition from youth to adulthood in regards to alcohol use. Peer influence to drink to become "one of the gang" can result in an increased use of alcohol. As first year students enter the university they may believe that in order to be accepted and meet new friends, they must drink. If they do not drink some may fear ostracism. As Shore et al (1983:53) assert "one of the consequences of living in a college social milieu is that failure to drink can result in social sanctions." As a result of propinquity, university students who live on campus generally choose to socialize with others who live in residence. Since these students are encountering similar experiences, for instance, being away from home for the first time, feelings of loneliness, and tensions from school, these students form close bonds. As a form of socializing together many of these students drink alcohol, in their rooms or on campus bars.

Drinking among university students may be considered a social activity, especially among residence students. Living on campus may contribute to higher rates of alcohol use because of the social norms of drinking. The question is "In what settings does the quantity/frequency of alcohol use increase?" It has been found that "heavy drinking occurs more frequently in large groups consisting of peers than those accompanied by parents or other adults (Davies and Stacey 1972, Harford and Grant 1987, Harford and Spiegler 1983, Margulies et al 1977 in Van de Goor et al 1990). Selnow and Crano (1986) argue that "it appears that the underlying norms of behavior of the particular group, not the

mere fact of joining or resisting group membership, is the critical issue." If a person is a member in a group, that member identifies with the underlying norms of the group. If the norms of the group prescribe heavy drinking, those members who remain in the group are likely to be heavy drinkers. If there is cohesion among the group, the group norms will be adhered to. This theory applies to groups that abstain as well as with groups that are light drinkers.

Is it peer pressure to drink or the subculture that gives rise to drinking in university? Or is it failure to drink? According to Shore et al. (1983:353) "the non-drinkers are assumed to be teetotallers and are frequently stigmatized because others expect that they will attempt to convert fellow students to abstinence." Social context of alcohol use including the university and the possibility of a subculture may be an important factor in alcohol use patterns.

Social Context of Use

Part of social context of use consists of where the respondent drinks alcohol. For the purpose of this study and studies involving university students, alcohol is usually consumed in residence rooms, in bars on or off campus, on campus and at home with roommates or parents. A few studies that examine social context discuss a college "subculture" that may give rise to heavier drinking in certain places such as the dormitory (Gusfield 1961; Clark and Trow 1966; Igra and Moos 1979; Barnes et al. 1992).

The theory of the campus subculture indicates that there is an underlying set of norms that gives rise to heavy drinking. Gusfield (1961:429) in his study defined the

campus culture as a set of "norms supported by the membership groups in the campus society to which the student belongs, such as his school class, social clique or housing unit " Igra and Moos (1979,402) draw on Gusfield's (1961) subculture theory and state that their data found support for the hypothesis that.

drinking is part of a pattern of college social life which has been labelled a collegiate subculture Students in this subculture are more involved with the social rather than the academic side of college life. Their dormitory living groups lends support to this orientation.

Igra and Moos (1979 402) also found the relationship between college dormitory living and drinking was "an important influence on shaping student drinking especially among female drinkers " Igra and Moos (1979 402) argue that the subculture that proscribes heavier alcohol use found that the students are more involved with social, as opposed to the academic side of college and become more involved with social relations and gravitate towards "drinking oriented peers in their living groups " As well as a greater number of peers who drink in residence, Barnes et al (1992 929) contend "living in a dorm (as opposed to living in a household in the general population) may reflect increased opportunities for heavy social drinking, whether these contexts for drinking occur in dormitory or other settings."

The idea of a drinking subculture is not restricted to university life Cosper (1979,886) identifies subculture theory as a valid explanation for alcohol overuse in different occupations As opposed to viewing the drinking in a group as a deviant activity, it is viewed as a form of solidarity, and conformity This is similar to drinking in residence and in university Drinking is an activity that is part of university, and once a person leaves the university the possibility exists that their drinking patterns will change

completely.

The social context of university contributes to the difference between university students and non-university youth (Crowley 1991:10). University students are exposed to a social milieu and also to the rigors of essays and exams (Crowley 1991). As Crowley (1991:10) states "in contrast, young people who are not in college have, by and large accepted adult roles by entering the labor force and/or by establishing their own family units." Only a limited amount of studies exist that compare university students with adults of similar ages outside of the university setting. National studies find alcohol use rates lower for youth the same age in the general population as university students, indicating that it may be that university life is associated with heavier alcohol use. A study conducted by Barnes et al. (1992:929) found that "whether one was a college student or not was not a significant predictor variable...however, it was surprising to see the emergence of dorm living as such an important factor in determining both heavy drinking and alcohol-related problems." Barnes et al. (1992:930) maintain that:

there is something unique about living in a dorm situation with same-aged peers that contributed to alcohol misuse. People living in dorms may be more likely to drink and drive to parties and bars; they may also have differing styles of consuming alcohol, such as gulping drinks for a quicker effect or having "chugalug" contexts to prove one's prowess in holding alcohol.

In sum, the social context of drinking in university may be associated with one's use of alcohol. There appears to be a subculture present at the university especially in the residences that condones higher uses of alcohol and gives rise to heavier drinking patterns of alcohol use. Students may be drinking as an activity so that closer bonds are formed.

and after they leave the university establish alternative patterns related to their current lifestyle.

Negative Complications

Since alcohol affects everyone differently in terms of becoming intoxicated and blood alcohol levels, alcohol related problems will vary among individuals. Since younger drinkers tend to consume larger amounts of alcohol in a shorter time period than older more experienced drinkers, younger drinkers are more likely to experience alcohol related problems that are a result of single episodes of drinking rather than a result of long term abuse (White and Labouvie 1989:30). Common alcohol related problems among university students are hangovers, nausea and vomiting, missing classes because of a hangover, drinking and driving (Engs 1975, Engs and Hanson 1985, Gliksman 1988), behaviour changes such as belligerence, loss of inhibitions, and aggressiveness (Jessor and Jessor 1975; Harford and Mills 1978; Wiggins and Wiggins 1987, White and Labouvie 1989), and problems with family and friends (Jessor and Jessor 1975, Engs 1977, Gliksman 1988)

Academic achievement has been found to be inversely related to heavier use of alcohol (Wechsler and Thum 1973, Moos, Moos, and Kulik 1976, Engs 1977, Wechsler and McFadden 1979, Barnes and Welte 1986, Gliksman 1988) Students who are heavier drinkers tend to spend less time studying, and have lower grade point averages Gliksman (1988:1293) suggests that if a student's grade point average is affected by their alcohol use, it may lead to further complications such as failing a year or "not getting into a

specific program of study." Alcohol use may even hinder educational aspirations due to poor school performance (Margulies et al. 1977).

Drinking alone, regrets after drinking, and binge drinking have also been regarded as social complications according to Straus and Bacon (1962); Wechsler and Rohman (1981); Temple (1986); and, White and Labouvie (1989). Not all solitary drinking is detrimental, but as Straus and Bacon (1962:256) indicate, drinking alone is "identified as a warning sign of possible deviant drinking behavior. Drinking is primarily a social function, and drinking alone, especially to the point of intoxication, is considered pathological." Binge drinking, drinking bouts that last a couple of days or drinking large quantities of alcohol in a single session, are common among university students. On the one hand, Temple (1986) and White and Labouvie (1989) argue that binge drinking is characteristic of this age group. Yet, on the other hand, Gliksman (1988:1293) argues that "students may be establishing patterns of alcohol use that they will carry with them into adulthood, and as these patterns become more entrenched, they will make it difficult for the individual to cope."

As heavier use of alcohol continues, it is common to experience problems with family and friends. This finding has been substantiated by Jessor and Jessor (1975); Engs (1977); and Gliksman (1988). Two types of problems may occur. One, the person who is intoxicated with alcohol may do or say things that they normally would not to a family member or friend. Or, two, a family member or friend may criticize drinking related behaviour.

Blackouts are another effect of alcohol overuse and until recently have received

little attention in the area of negative complications. Recently, Jennison (1992:8) examined the incidence of alcohol related blackouts among young adults in a National study and found that "the incidence of blackouts is attributable to heavier alcohol consumption", and appears to be gender-related, that is males are twice as likely to experience blackouts as females." According to Jennison (1992:1) "the blackout experience is defined as amnesia for the events of any part of a drinking episode without loss of consciousness (Keller et al. 1958), and is not to be confused with 'passing out'."

Drinking alcohol before going out to a party or bar has become known as priming and is common among students due to financial restraints. However, when Straus and Bacon (1953) studied priming they found that some students did this due to fear no alcohol would be served. Straus and Bacon (1953) argue that this is an indicator of alcoholism. Additional research in the area is needed in order to determine if students today are priming for the same reasons.

"Although alcohol is a central nervous system depressant, its usual early effects are heightened activity and disinhibition...which results from depression of the inhibitory and behavioral control centres of the brain" (*Drugs and Drug Abuse Reference Text* 1987:279). An example of loss of inhibitions includes doing something that would not normally be done if sober. Loss of inhibitions can lead to engaging in sexual activity, belligerence, and driving while impaired.

Recently the number of driving while impaired charges has been decreasing. For example, a recent report indicated that the number of "alcohol related crashes decreased by 47% in the 10-year period from 1982 to 1992, down 14,012 from 26,588" (*Ottawa*

Citizen 1993). A popular misconception is that students do not drink and drive because they live on campus and do not own cars. However, students do own cars and they are drinking and driving (Gliksman 1988).

Excessive use of alcohol over a number of years can result in lethal diseases such as liver cirrhosis, and gastro intestinal dysfunctions. As mentioned earlier, younger drinkers are generally not at risk for these life threatening diseases. As one progresses towards alcoholism, there are a number of incidents that may indicate a problem is developing, such as drinking first thing in the morning, hands shaking because one needs a drink and losing a job due to alcohol use on the job or poor performance on the job due to hangovers. However, these last three complications are not typically experienced among young drinkers.

In sum, some of the complications experienced by university students can affect school performance and interfere with studies. As a result, if students experience a number of negative social complications during their academic career precautions should be taken in order to reduce the number of complications experienced.

Prevention

With the increase in alcohol related problems on college and university campuses, a number of education and prevention of alcohol abuse programs have been implemented on campuses. However, it is difficult to target the entire population of students. Often education and prevention programs are sponsored by small committees with limited funds and find it difficult to educate entire student populations. An American organization that

has recently come to Canada is BACCHUS (boost alcohol consciousness concerning the health of university students). This national organization has contributed to increasing awareness of alcohol related problems on campus and what campuses across Canada can do to reduce alcohol-related problems among students. It is difficult to say which programs or campaigns are the most effective. However, Brennan et al. (1986) suggest that in terms of prevention and treatment programs, "it would be wise to realize that some students drink because of personal factors and others drink in response to social factors in particular what social norms of a campus give rise to greater alcohol use." With that in mind it is important to target specific audiences and specific groups. According to Johnson et al. (1987:584)

no single approach has been identified as effective for preventing use of alcohol by youth. In fact, different factors in separate programs appear to be effective in certain communities with certain age groups. A multifaceted approach to prevention is necessary. For maximum effectiveness, a prevention strategy needs to address parental and peer influences, teachers, and community leaders, norms, marketing and availability of alcoholic beverages, and alcohol-related laws, regulations, and policies.

Another approach that has been effective according to Perry (1987:19) is peer related programs. Peer related programs seem to be popular and have achieved the most success. As Perry (1987:19) states "it thus appears that peer-led strategies may be an efficient and effective vehicle for drug-abuse and health-promotion programs.

Within the past 10 years prevention programs have been implemented on campus. According to Bloch and Ungerleider (1988:317) "recognition is growing that campus alcohol and other drug prevention programs can have an impact on student knowledge, attitudes, and even behavior." The results of the present study will contribute to

determining specific groups that can be targeted for alcohol education.

The Present Study

The present study was conducted at Carleton university during the 1990-1991 academic year. The university is situated in Ottawa, Ontario. It is a large university with a total undergraduate population of 20,371 full and part-time students (*Carleton Data Book* 1991:1). This sample is not representative of all students attending this university, but it is a panel study and it is possible to assess changes from high school to university. The responses of the two samples appear to be similar to other student samples that have been conducted in Canada and the United States.

Sample Bias

The particular sample that is being used for this study is biased in a number of ways. First, only one university was chosen to represent the change in student drinking from high school to university, unlike other studies that have used a number of universities. Second, Carleton University is situated in the Nation's Capital region. Third, since it was a self-report study the answers to all questions must be viewed with caution.

As Brennan et al. (1986:482) state:

the results in this area should be viewed with the realization that measures of parental drinking practices were based on student perceptions and may have been contaminated by the student's willingness to report certain attitudes and levels of alcohol use, both in themselves and in their parents.

Baer et al. (1991:580-584) compared individual drinking patterns and the perceived drinking patterns of close friends and found that all students reported that their friends

drank more than they did, leading these researchers to believe that "the reports of others' drinking were exaggerated"...especially "members of friendship or living groups are seen as drinking more often, but only moderately larger quantities per occasion." Another problem is under-reporting of one's own consumptions levels in terms of quantity and frequency (Pernanen 1974; O'Hare 1991). A reason for the inaccuracy with self-reported data is that "people do not accurately report their drug use either because they do not choose to or because they cannot remember the details (Smart and Jarvis 1981:83).

And finally, it is important to keep in mind that university students are not representative of the youthful population. That is, university students are different from non-university peers. Since drinking patterns of non-university students were not compared at the same time there is no way of knowing if the changes in quantity/frequency of alcohol use are an age-related characteristic or characteristic of university students. As a longitudinal panel study, it is possible to determine which variables are associated with alcohol use and if any negative consequences exist as a result of use. Some questions that may arise are the theory of a sub-culture effect, and what effect does drinking in university play in later life. This question cannot be answered at this time, but if a further study is done at a later date with the same respondents, further analysis could be pursued.

Research Issues

In order to facilitate alcohol education on campus, a study was undertaken in order to determine consumption patterns among first year students before entering university and

seven months into their first year. Three issues are central to an analysis of drinking among first year university students, so that program planning can be effective.

- 1) Do alcohol consumption patterns change from high school to university, and what factors are associated with alcohol use in high school and university?
- 2) Does the use of alcohol have any negative effects on students in high school and university?
- 3) Does the number of negative effects increase with heavier uses of alcohol?

CHAPTER II

METHODOLOGY

The research design was a longitudinal panel study of students which used two survey instruments. The purpose of the design was to assess the changes in drinking patterns from before first year university and seven months after starting university. The following chapter discusses the participants, measures, procedures, statistical analysis, and limitations. In particular, it describes the questionnaire instruments, the variables that were computed and the different types of analysis that were used to test the hypotheses. This chapter also discusses the representativeness of the sample being studied.

Subjects

This study was conducted at Carleton University which is located in Ottawa, Ontario, during the 1990-91 academic year. At that time, a total number of 20,371 students were registered for full-time and part-time studies (*Carleton Data Book* 1991:1). The university offers both undergraduate and graduate degrees but the enrollment is primarily in full time undergraduate programs. In early August of 1990, the total population of students who were registered to attend a full or part-time first year undergraduate program (approximately 4,500) were mailed a questionnaire regarding their past and current alcohol and drug use patterns. The sample was obtained from joining forces with the students' association so that the cost of mailing would be reduced. A total

number of 554 questionnaires were collected. The sample was divided into a subset from those who signed their name to the questionnaire agreeing to participate in a follow up questionnaire (N=419), and those who chose not to sign their names (N=135). The second sample was collected in March 1991, from individuals who responded to the follow up questionnaire (N=295). Two of the 1991 questionnaires were not used because one person had dropped out of Carleton and the other did not attend Carleton.

Since the goal was to assess changes from high school to university, a large sample size was needed in time one in order to receive a sufficient sample size in time two. Due to limited resources (funding and help) it was more convenient to include the questionnaire in the student's associations mailout rather than conducting a random sample.

Setting

The 1990 questionnaire was distributed to students across Canada and other countries who were registered to attend Carleton in the fall. The 1991 questionnaire was distributed only to those students who were still registered at Carleton seven months later. In past years, including the year of this questionnaire, Carleton University, and especially students who live in residence have held a reputation of being a university with a heavy drinking population. On campus there are seven establishments licensed to serve alcohol, one in the athletics complex, five in the main building on campus, and one in residence.

During the 1990-91 academic year, there were 1,681 students living in residence. A large majority of these students are first year students. Since living on campus is

limited, first year students who are interested in living in residence must enter their name in a lottery draw, and are chosen by luck of the draw. Alcohol use is allowed in residence, however, it is restricted to those who are of legal drinking age, although this is difficult to monitor.

Measures

The survey instruments were designed by the author during the summer of 1990 and the spring of 1991. The questionnaires were freely adapted from approximately a dozen different student questionnaires (see appendix 3 for a complete listing of the questionnaires). The questionnaire layout was designed by the Carleton University Students' Association. Both questionnaires were pretested for clarity by randomly selected students who willingly offered constructive feedback. Changes were made and final copies of the questionnaires are included in appendix 1 and 2. The 1990 questionnaire included questions regarding family background, such as family size and demographic questions of parents; perceived drinking patterns of parents and friends, respondent's drinking patterns; and complications from alcohol use. In the second questionnaire, the background questions were eliminated and lifestyle questions were added such as hours spent studying and extra-curricular activities. Identical questions regarding respondent's alcohol use; and the perceived use of alcohol by friends were repeated.

The 1990 questionnaire was three pages in length and consisted of a total of 81 questions: 43 were closed ended and 38 were open ended. Completion time was approximately five minutes. The 1991 questionnaire was also three pages in length and

consisted of a total of 89 questions 58 were closed ended and 31 were open ended
Completion time was also approximately five minutes

Measurement Characteristics

Since this is the first and only time these questionnaire instruments have been used, it is not possible to assess the reliability and validity by comparing these results to past studies. However, each question that was used on the questionnaires was taken from a previous tested questionnaire used in student questionnaires. In terms of validity it is possible to compare the results of the questionnaire with similar measures of characteristics of Carleton University and other university student questionnaires. The following table compares characteristics such as age, major and residence and university status

Table 2.1 Percentages of selected Characteristics of Ontario Students, Carleton University Students and Students in the 1990 and 1991 Samples

Variable	Sample of Students from Four Ontario Universities*	Carleton University first year Population**	1990 Questionnaire	1991 Questionnaire
Total	4911	5530	419	295
Females	61.9%	45%	60%	64%
Males	37.3%	55%	36%	36%
Major				
Arts/S.S	42.8%	71%	68%	NA
Commerce	9.9%	6%	5%	NA
Engineer	6.7%	7%	10%	NA
Science	19.2%	6%	3%	NA
Architec	--	1%	2%	NA
Other	21.4%	9%	13%	NA
Age				
Mean	22.4	20	19.6	20.5
S.D	5.1	NA	3.3	3.2
Residence				
On	NA	30%	NA	42%
Off	NA	70%	NA	58%
Status				
Full	100%	77%	NA	95%
Part	--	22%	NA	2%

Notes. *From *The Drinking, Drug Use, and Lifestyle Patterns of Ontario's University Students*, Louis Gliksman, Ruth Engs, and Cynthia Smythe, Addiction Research Foundation, 1989.

**From *The Carleton University Data Book*, 1991

Table 2.1 indicates that the two samples from Carleton University are broadly representative of the population of first year students at Carleton and students from other universities in Ontario. However, one exception is gender. There is an overrepresentation

of female respondents, especially in comparison to the number of full and part-time female first year students at Carleton. However, the overrepresentation of females also appears in the student questionnaire conducted by the Addiction Research Foundation. For example, in the Ontario student questionnaire 61.9% of the sample were female compared to 37.3% males, and in the Carleton questionnaire in 1990, 60% were females compared to 36%, and in 1991, 64% were females and 36% were males. The other major discrepancy is with the number of full time and part-time students.

The variety of majors in the Carleton questionnaire is similar to the number of majors among first year students at Carleton. In other words, the various disciplines are represented in the sample. The "other" category is larger in both the 1990 questionnaire and in the Ontario students questionnaire, possibly due to the number of interdisciplinary majors and also to account for people who are undeclared.

For the 1991 Carleton questionnaire, there was an almost equal representation of students who lived both on campus in residence and off campus. The majority of students who participated in the questionnaire were full time students.

The university's data book does not breakdown age by year, 20 is the age that occurs most often and first year students are the largest population. The average age of the sample is 19 in 1990. The mean age for the Ontario student questionnaire was 22.4, however, the Ontario study represented all years of students. Only 20.9% of that sample were first year students (Gliksman et al. 1989).

At the time of the mailing only about 4,500 students had enrolled at the university. As a result, approximately 1,000 students did not receive the first questionnaire. Based

on the actual number of 5,530 students, the size of the two samples are quite small. For the first sample, a total number of 419 questionnaires were returned in the 1990 questionnaire which represents approximately 8% of the student population. For the second sample, a total of 295 questionnaires were used which represents approximately 5% of the student population.

Variables

In order to examine research issues a number of variables were used. For this analysis, the dependent variables included quantity/frequency of alcohol use and a scale of negative social complications. The independent variables include sex, age, place of residence; orientation group; number of siblings, home town, working at a job, number of hours spend at a job, major, age of first use of alcohol, and social context of drinking. Whenever possible ordinal variables were quantified into continuous variables. A number of variables were quantified such as quantity and frequency of respondents use of alcohol, friends' use of alcohol; parental use of alcohol; study time and number of hours spent on extra-curricular activities. The two dependent variables that were used: quantity/frequency and negative social complications require further clarification.

Quantity/Frequency

In order to determine the average number of drinks per week a quantity/frequency scale was constructed combining both the quantity of alcohol use and frequency of alcohol use. A scale was developed by multiplying quantity by a fraction of the frequency based

on a weekly consumption scale. The following table displays the calculations that were made in order to determine the quantity/frequency scale.

Table 2.2 Calculations of determining the Quantity/Frequency variable

<p>The frequency scale is divided into:</p> <p>0 = Never/Not applicable/Former drinker 1 = Less than once a year 2 = At least once a year 3 = Less than once a month 4 = Once a month 5 = 2-3 times a month 6 = 1-2 times a week 7 = 3-4 times a week 8 = nearly every day 9 = daily</p>	<p>And the quantity scale is as follows:</p> <p>1 = One drink 2 = Two drinks 3.5 = 3-4 drinks 4 = 5-6 drinks 7.5 = 7-8 drinks 10 = 9-11 drinks 13 = 12-14 drinks 15 = 15 or more drinks</p>
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<p>These variables were combined as follows:</p> <p>If Frequency = 9 then $QF = 7 \times \text{Quantity}$ If Frequency = 8 then $QF = 7 \times \text{Quantity}$ If Frequency = 7 then $QF = 3.5 \times \text{Quantity}$ If Frequency = 6 then $QF = 1.5 \times \text{Quantity}$ If Frequency = 5 then $QF = .63 \times \text{Quantity}$ If Frequency = 4 then $QF = .25 \times \text{Quantity}$ If Frequency = 3 then $QF = .02 \times \text{Quantity}$ If Frequency = 2 then $QF = .02 \times \text{Quantity}$ If Frequency = 1 then $QF = .02 \times \text{Quantity}$</p>
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Since quantity and frequency was measured in both the 1990 and 1991, it was possible to calculate changes in drinking patterns from time one to time two. These variables could be measured separately or combined to make a traditional quantity

frequency index such as the one composed by Straus and Bacon (1953), and as illustrated in Table 2.2. For the purpose of this study, a drink was defined as one 12 oz. bottle of beer; one 3 to 4 ounce glass of wine; or one 1 1/4 shot of liquor straight or with a mixed drink. The quantity/frequency scale could either be used as a continuous variable or dichotomized into light and heavier drinkers.

Negative Social Complications

Respondents were asked to recall the number of occasions over the past high school year in 1990 and the past seven months in university in 1991, in which the use of alcohol was directly related to a list of negative social complications. The negative social complications could be examined individually and also a scale was designed by combining the sum of the means of each complication. This scale was used as a continuous and dichotomous variable. For chi-square analysis it is dichotomous, divided at the median into low (8 or less complications) and high (over 9 complications).

Procedures

1990 Survey Instrument

The most cost effective method of distributing the first questionnaire was to include it in the students' association mailout package. As a result, the questionnaire was a component of a package that included information about orientation, health services and additional university information. Mailing labels of home addresses were obtained from administration for all students who had registered for fall courses. The students were

asked to complete the questionnaire and return it in a self-addressed stamped envelope. (The envelope was also used to respond to a request for an orientation kit.) At the end of the 1990 questionnaire the students' name was requested so that contact could be made in the future. However, it was the student's option to include their name or leave it anonymous and return it regardless. It was assured that the information would be held in strict confidence. (See last page of appendix one for wording regarding anonymity of questionnaire.)

A total number of 554 questionnaires were returned for a response rate of approximately 12%. Of the 554 questionnaires, 419 signed their name and student number agreeing to be contacted at a later date. The remaining 135 questionnaires were completed, but the respondents chose not to sign their names. This sample of students was then used to check the representativeness of the original sample.

Representativeness of Respondents

An additional data set was built with the remaining 135 questionnaires from students who did not sign their name allowing us to contact them in the future. In order to determine if the 1990 questionnaire with signed names was biased in any way a number of comparisons and correlations were done using chi-square and Manova analysis. Twelve chi-square and 12 manova correlations were calculated, and six significant differences between the two samples were found. For further information regarding the correlations see appendix 6 regarding the results of the comparisons for representativeness.

1991 Survey Instrument

For the follow up 1991 questionnaire, mailing labels of addresses for 411 of the initial respondents were obtained from administration. A follow-up questionnaire was mailed in late February to those who lived out of town so that if the respondent returned home for the study week, they would receive their questionnaire. The remaining questionnaires were mailed the beginning of March. Each questionnaire included a self-addressed stamped envelope. A total of 297 questionnaires were returned resulting in a response rate of 72%. Two were deleted because one person had dropped out of university, and the other did not attend Carleton, resulting in a final number of 295. The 411 questionnaires were marked with an identifier so that it would be possible to match respondents from time one to time two. After the second week of the second mailout, letters were sent to those who had not returned their questionnaire. After the third week, approximately 200 questionnaires were still outstanding. At that time, members of the P.A.R.T.Y. committee telephoned respondents asking them to complete and return their questionnaire. At the beginning of April, a final mailout was distributed to those unreachable by telephone. There were approximately 35 unreachable students. A copy of the letter and telephone prompt are included in appendix 4 and 5. The questionnaires were then coded using SPSSX-PC (statistical package for the social sciences - personal computer) data entry version 3.0. The data analyses were performed on the Bull DPS 8 70 running CP-6 E03 using SPSS-X version 3.1.

Statistical Analyses

After the data were coded, a number of statistical analyses were performed. Where possible, means and standard deviations are reported for most continuous variables. For nominal data, chi-square analysis was performed by using cross classification tables. Manova (multivariate analysis of variance) was used to test for significant differences between groups. And multiple regression was used in order to predict the variance in a dependent variable. Together these statistics were used in order to test the research questions.

Means

In order to determine the means of continuous variables, the **MEANS** command was used. This calculated the means and standard deviations for variables. Using the **MEANS TABLES** command, the means and standard deviations of two variables were calculated.

Chi-square

Chi-square analysis was used with categorical variables. The tables known as cross-tabulation or cross-classification tables display counts. The row variable is the dependent variable and the column variable is the independent variable. The assumptions of chi-square call for randomly selected data with large enough cell values in order to satisfy significance levels (Erickson and Nosanchuk 1977:255). Chi-square tested numerous variables, in order to discern relationships and also for descriptive purposes.

Manova

Manova (multivariate analysis of variance) was used for two purposes: one to test for representativeness between those who signed their names and those who did not; and two, to test for differences in variables from time one to time two. While testing for representativeness, continuous variables were tested against the two samples. While testing for changes, continuous variables were tested against time one variables and time two variables in order to find any significant differences between the two groups.

Regression

"Multiple regression is a method for linear prediction in which a criterion (dependent) variable is predicted by two or more independent variables" (Heubner et al. 1976:379). Multiple regression was used in order to determine which variables contribute to the variance regarding quantity/frequency in the sample in time one and in the sample in time two and the difference in quantity/frequency from time one to time two.

In this study the stepwise regression technique was utilized. This method is a technique for adding only those predictor "variables which independently contribute towards explaining the variance in the dependent variable" (Plant et al. 1984:198). This methods adds the predictor variables, one at a time, such that the independent variable added yields the largest possible increase in R-square.

Multiple regression requires interval level data; however, there are a number of variables that are categorical. For this reason, dummy variables are utilized. Dummy variables are coded as 0 and 1 and are used as predictor variables. In this data set, the

dummy variables are: sex, living on off campus, working at a job, attended orientation, and drinking on or off campus.

Other variables such as parent's use of alcohol, friend's use of alcohol, hours spent studying, and hours spent at extra-curricular activities were ordinal variables but they were quantified into interval level data.

Transformations

In multiple regression the data should be normally distributed. Multiple regression is fairly robust and the assumptions need only be met roughly. One way to check the assumptions to see if the data are normally distributed is to plot a histogram. The quantity frequency difference between time 1 and time 2 was normally distributed and did not need to be transformed. However, in order to use the quantity/frequency in 1990 and 1991 in the regression analysis it was necessary to transform the original variables. A number of transformations were attempted; and the square root transformation was found to be most appropriate. Transformation is quite dependable for "normalizing" the data. The final objective is to work with data that are normally distributed. After transformation the data were not clustered around one data point but were roughly symmetric (Erickson and Nosanchuk 1977).

Data Analysis

Manova was the primary statistical method used in order to assess differences in alcohol use from time one to time two. Multiple regression was used in order to discover

which variables contributed to the variance of quantity frequency of alcohol use. And, chi-square, and means analysis were used in order to detect significant differences between variables.

Limitations and Delimitations

Limitations

The limitations include the number of potential respondents who did not participate in the first questionnaire. Since this questionnaire was sent to the entire first year population without identifying markers on the questionnaire, it was not possible to differentiate between those who returned the questionnaire and those who did not (except for those who signed their names). There was a number of questionnaires returned without identification. If an additional mailing was distributed, the possibility existed that two questionnaires from the same person could have been used. Therefore, the original sample was not sent additional mailings of the first questionnaire. I expected that there would be a return rate of approximately 15% of the 4,500 students, and in fact, there was a response rate of 12%. Perhaps a random sample would have yielded a higher response rate (by following up non-respondents with additional mailouts), but as mentioned earlier this process would have been too costly.

Delimitations

Since this was not a random sample, but a sample of convenience it is not possible

to generalize these results to the whole of the first year student population. However, it is a panel study and it is possible to assess the changes in the sample. But the problem with panel studies is that not all of the members respond a second time, even though they initially agreed. The final sample size for time two is 295 from 419, a loss of 124 people. An examination of the loss of respondents is as follows: 8 had withdrawn from the university, 21 were unlocatable and 95 chose not to respond.

People move away, or are not interested in continuing with the research. The losses can cause problems of representativeness and validity in the data. Also another problem with panel studies is that once the respondent has filled out the questionnaire they may be aware of drinking situations and consequences from drinking and this may cloud the results of time two (Warwick and Lininger 1975). On the whole, even though generalizability is limited, it is possible to see changes from time one to time two.

The two sample sizes are appropriate for this study. There is a large enough sample size to assess changes from time one to time two and the sample is of sufficient size to perform numerous types of statistical analysis.

CHAPTER III

RESULTS

This chapter presents the results of the data analysis. Overall, the change in quantity/frequency of alcohol use was not large. This may indicate that alcohol use patterns are formed in high school. If this is the case, alcohol education should begin well before starting university. Once in university, the types of alcohol education programming should be aimed at how to use alcohol responsibly. On the other hand, there were a number of significant findings, indicating that alcohol use did increase among certain groups of students. One significant finding was the higher level of alcohol use among students who lived on campus in residence. Another significant finding was the larger difference in alcohol use from high school to university for women. And finally, at all levels, peers play a significant role in contributing to the quantity/frequency of one's alcohol use.

Description of the Sample

The total sample size in the 1990 questionnaire was 419, divided into (250) 60% females and (169) 40% males. In the 1991 questionnaire the total sample size was 295 divided into (188) 64% females and (107) 36% males. The majority at 96% were single. Eighty-three percent were from two-parent families. The mean age of the sample in 1990 was 19.6 with a standard deviation of 3.3. Four respondents were 17 and there was one person who was 65. In 1991, the mean age was 20.5 with a standard deviation of 3.25.

The sample of respondents is divided between on campus (42%) and off campus (58%) students. The majority of the respondents were full time (95%) compared to part-time (2%). Seventy-two percent of the respondents were from Ontario. The remainder of the respondents were from other Canadian provinces and other countries. Forty-three percent were from communities of 100,000 and over.

Patterns of Alcohol Consumption

Table 3.1 Proportion of Current Drinkers in 1990 and 1991

Year	1990	1991
Yes	(391) 93%	(279) 94%
No	(28) 7%	(16) 6%
Total	(419) 100%	(295) 100%

Overall, the majority of the respondents 93% in 1990 and 94% in 1991 are current users of alcohol. Gender is independent of alcohol use, that is the percentage of users among males and females are equal. A small proportion of students have never used alcohol, 7% in 1990 and 6% in 1991.

Frequency of Alcohol Use (Figure 1)

Respondents were asked "About how often do you drink?" The answers to this question provided the frequency of alcohol use. The most frequent response at 25% was 2-3 times per month in 1990 and 26% at 2-3 times per month in 1991. Next followed 1-2 times a week at 23% for both 1990 and 1991.

Quantity of Alcohol Use (Figure 2)

Next respondents were asked "When you consume alcohol, about how many drinks do you have on average?" The most frequent response was 3-4 drinks at 27% in 1990 and 29% in 1991, followed by 2 drinks at 25% in 1990 and 17% in 1991.

Quantity/Frequency

The quantity and frequency variables were combined to create a composite variable quantity frequency and the results of a number of tests using quantity frequency are represented in this chapter.

Quantity/Frequency and Gender

Table 3.2 Means and Standard Deviations for Quantity/frequency 1990 and 1991 and Quantity/frequency by Gender for 1990 and 1991

1990 (High School)

Variable:Quantity/frequency	N	$\bar{X}$	SD
Gender			
Males	147	5.7	7.3
Females	220	2.9	4.4
Entire Sample	367	4.0	7.3

1991 (University)

Variable:Quantity/frequency	N	$\bar{X}$	SD
Gender			
Males	96	5.9	9.7
Females	174	3.6	5.3
Entire Sample	270	4.5	7.2

The quantity/frequency scale regarding alcohol consumption found that the average number of drinks consumed per week in 1990 was 4.0 and increased to 4.5 in 1991. Males consumed a higher average of drinks per week at 5.7 in 1990 and 5.9 in 1991.

compared to females who drank 2.9 drinks per week in 1990 and 3.6 drinks per week in 1991. The overall increase in quantity/frequency for the entire sample was .5 drinks. The overall increase of quantity/frequency was higher for females than males.

Table 3.3 Bivariate Table Showing the Relationship Between Type of Drinker and Gender in 1990 and 1991 in percentages

Type of Drinker	1990			1991		
	Total N	Males	Females	Total N	Males	Females
Light	311	78.9%	88.6%	216	76%	82.2%
Heavier	56	21.1%	11.4%	54	24%	17.8%
Total	367	100%	100%	270	100%	100%

Notes. Light drinker is defined as 7 or fewer drinks per week. Heavier is defined as more than 7 drinks per week.

Table 3.3 presents the percentage distributions of alcohol use by gender for 1990 and 1991. In both 1990 and 1991 males were heavier drinkers than females, 21.2% and 24% compared to 11.4% and 17.8%. However the increase in heavier drinking was higher for females than males, 6.4 and 2.9 respectively.

Table 3.4 Means and Standard Deviations of Quantity frequency by Living Situation

1991

Variable	N	$\bar{X}$	SD
On Campus	110	5.8	8.5
Off Campus	159	3.5	6.1
Entire Sample	269	4.5	7.3

Quantity/Frequency and Residence

The quantity frequency of alcohol use was higher among students who live on campus than for students who live off campus. The average number of drinks per week for on campus students was 5.8 drinks per week compared to those who live off campus at 3.4 drinks per week. This means that students who live on campus consume on average 2.3 drinks per week more than students who live off campus.

Differences in Alcohol Use Patterns from High School to University

The major benefit of this panel study was the ability to match results of those who responded in both questionnaires, and examine changes in respondents alcohol use patterns from high school to university. The difference in quantity frequency from high school to university was calculated. It was found that quantity frequency did not increase substantially, in fact it only increased by .8 drinks per week. However, by examining who changed it was found that the largest changes were found among students who lived on campus, and women.

Table 3.5 Means and Standard Deviations of the Difference in Quantity/Frequency from High School to University among Men, Women, and Living Situation of Students

Variable	N	$\bar{X}$	SD	Minimum	Maximum
Quantity/Frequency Difference	244	.388	4.8	-17.05	26.75

Variable: Quantity/Frequency Difference	N	$\bar{X}$	SD
Gender			
Males	86	.30	4.8
Females	158	.43	4.9
Entire Sample	244	.38	4.8
Living Situation 1991			
On Campus	97	2.0	5.6
Males	26	1.6	6.3
Females	71	2.1	5.4
Off Campus	146	-.649	3.7
Males	60	-.27	3.3
Females	86	-.91	4.0

Table 3.5 indicates that the average increase in quantity/frequency is .38 drinks per week from time one to time two. The largest decrease of 17 drinks per week was reported by a male student who lived off campus in comparison to the largest increase of 26.7 drinks per week reported by a male student who lived on campus. The difference in quantity/frequency was higher for females than males .4 and .3 respectively. Also there was an increase of 2 drinks per week for students in the sample who lived on campus, and a decrease of .6 drinks per week for students in the sample who lived off campus. Table

3.5 demonstrates that females who lived on campus experienced the largest increase in alcohol use at 2.1 drinks per week.

Differences in Quantity, Quantity/Frequency, and Friends Use of Alcohol from High School to University

In order to determine if the difference in quantity frequency of alcohol use was statistically significant from high school to university, the two groups (sample from high school and sample from university) were tested using Manova. There were significant differences for quantity of alcohol use and closest group of friends' use of alcohol. These findings are displayed in the following tables. A number of additional variables were examined in order to discern differences from high school to university. There were no significant effects found for negative complications, frequency and closest friend's perceived use of alcohol.

Table 3.6 Analysis of Variance of Quantity Frequency of alcohol use from high school and university and differences by Sex and Time

Variable:Quantity frequency	N	$\bar{X}$	SD
Quantity Frequency 1990			
Males	91	4.4	6.2
Females	156	3.3	4.8
Entire Sample	247	3.7	5.4
Quantity Frequency 1991			
Males	91	5.8	9.7
Females	156	3.7	5.3
Entire Sample	247	4.5	7.3

Source	SS	DF	MS	F	Sig
Between Subjects					
Sex	297.64	1	297.64	4.64	.032*
Subjects within groups	15728.64	245	64.2	--	--
Within Subjects					
Time	95.82	1	95.82	5.30	.022*
Sex By Time	27.19	1	27.19	1.50	.221
Time By Subjects	4429.60	245	18.08	--	--

* $p < .05$

Table 3.6 presents the means, standard deviations and statistical significance for the panel of students who responded to both questionnaires. There is a significant difference in quantity/frequency of alcohol use from high school to university and a difference in quantity frequency for males and females from high school to university. The analysis reveals significant main effects for Sex ($F(1,245) = 4.64, p < .05$) and Time ($F(1,245) = 5.30, p < .05$), but there was not a significant Time by Sex interaction.

Table 3.7 Analysis of Variance of Quantity of Alcohol Use from High School and University and Differences by Sex and Time

Variable	N	$\bar{X}$	SD
Quantity 1990			
Males	94	4.0	2.9
Females	161	3.4	2.1
Entire Sample	255	3.6	2.4
Quantity 1991			
Males	94	5.3	3.8
Females	161	4.0	2.2
Entire Sample	255	4.5	3.0

Source	SS	DF	MS	F	Sig F
Between Subjects					
Sex	107.51	1	107.51	9.19	.003*
Subjects within groups	2959.72	253	11.70	--	--
Within Subjects					
Time	111.76	1	111.76	36.86	.000*
Sex By Time	15.79	1	15.79	5.21	.023*
Time By Subjects	767.20	253	3.03	--	--

* $p < .05$

Table 3.7 presents the means, standard deviations and statistical significance for quantity of alcohol use by sex and time from high school to university. The effect of all three of these variables are significant. The analysis of this variable illustrates significant main effects of Sex ($F(1,253) = 9.19, p < .05$) and Time ($F(1,253), p < .05$), and a significant Time by Sex interaction ($F(1,253), p < .05$). The increase in quantity per week is higher for males than females, 1.3 to .6 respectively. However, the average number of drinks for females increased to 4 drinks per week in university which was the same level for males in high school.

Table 3.8 Analysis of Variance of Group of Friend's Perceived Use of Alcohol Difference from High School to University by Gender and Time

Variable	N	$\bar{X}$	SD
Closest group of friends' use of alcohol in 1990			
Males	94	67.4	69.3
Females	153	56.2	50.6
Entire Sample	247	60.5	58.5
Closest group of friends' use of alcohol in 1991			
Males	94	114.6	85.8
Females	153	108.2	83.5
Entire Sample	247	110.6	84.2

Source	SS	DF	MS	F	Sig F
Between Subjects					
Sex	8936.88	1	8936.88	1.30	.255
Subjects within groups	1681733.54	245	6864.22	--	--
Within Subjects					
Time	286463.82	1	2886463.82	77.92	.000*
Sex By Time	674.07	1	674.07	.18	.669
Time By Subjects	900761.15	245	3676.58	--	--

* $p < .05$

Table 3.8 presents the means, standard deviations and statistical significance of closest group of friends' perceived use of alcohol per year by sex and time. There was only one significant main effect, that of Time ($F(1,245) = 77.92, p < .05$). There is a large increase in the perceived alcohol use of friends. In high school respondents recorded that their group of friends drank approximately 60.5 times a year, but in university this figures nearly doubles at 110.6 times a year

Predictors of Quantity/Frequency in High School and University and Difference from High School to University

High School

In order to determine what variables contributed to quantity frequency of alcohol use in high school and university three multiple regression models were analyzed. Table 3.9 examines variables that explained a portion of the variance of quantity frequency in 1990. The first multiple regression analysis that was performed used the transformed square root quantity frequency as the dependent variable.

Table 3.9 Multiple Regression Analysis of variables associated with Square root Quantity/Frequency of alcohol use 1990 (high school)

Independent Variables	B	Beta	T	SIG T
Closest Friend's use of alcohol	.006530	.334633	6.071	.0000*
Closest group of friends' use of alcohol	.006586	.329676	5.978	.0000*
Age of First Use	-.065821	-.127597	-3.041	.0025*
R ² = .40 F(3, 346) = 76.62. p = .0000				

*p < .05

The respondent's quantity frequency of alcohol use can best be examined by the contribution of three predictor variables: 1) the quantity of alcohol use that the respondents report their closest friend uses; 2) the quantity of alcohol use that the respondents report their closest group of friends' use; and also, 3) predicted by the respondents' age of first use of alcohol. The combination of these variables account for

40% of the variance of subjects quantity/frequency.

The strongest predictor of heavier drinking was closest friends' use of alcohol. This variable accounted for 32% of the variance of quantity/frequency of respondent. A further 6% of the variance was accounted for by closest group of friends use of alcohol. And with the final predictor variable, a further 2% of the variance of quantity frequency was accounted for by age of first use of alcohol. This meant that the younger the respondent started to drink, the more likely they were to be heavier drinkers. Several of the independent variables were not statistically significant in predicting heavier use of alcohol, these included: parental drinking, sex, age, hours spent working, and major of study.

In order to determine which variables contributed to quantity frequency in university two models of multiple regression analysis were performed with the transformed square root quantity frequency being used as the dependent variable.

University

Table 3.10 Multiple Regression Analysis of variables associated with Square root Quantity/Frequency of alcohol use 1991 (university)

Independent Variables	B	Beta	T	SIG T
Closest Group of friends' use of alcohol	.003895	.261069	3.530	.0005*
Closest friend's use of alcohol	.005484	.001432	3.831	.0002*
Place of use	.464648	.174259	2.846	.0049*
R ² =.28 F(3, 197)=25.76, p=.0000				

* $p < .05$

In the first model the relationship between the respondent's square root quantity frequency can best be examined by the contribution of three predictor variables: 1) the quantity of alcohol use that the respondents report their closest group of friends' use; 2) the quantity of alcohol use that the respondents report their closest friend drinks and also 3) predicted by where the respondents drink. The combination of these variables account for 28% of the variance of subjects square root quantity/frequency.

The strongest predictor variable in this model was the closest group of friends' perceived use of alcohol, which accounted for 20% of the variance of square root quantity/frequency of respondent. A further 5% of the variance was accounted for by closest friend's perceived use of alcohol. These predictor variables were the opposite in the 1990 regression model. That is, closest friend, not closest group of friends' accounting for the major portion of the variance. And with the third and final variable, a further 3%

of the variance of square root quantity frequency was accounted for by where respondents use alcohol. It was found that drinking on campus contributes to heavier drinking levels.

Table 3.11 Multiple Regression Analysis of variables associated with Square root Quantity Frequency of alcohol use 1991 (university)

Independent Variables	B	Beta	T	SIG T
Hours spent working	.036872	.234367	2.541	.0125*
Hours spent studying	-.039258	-.224026	-2.429	.0168*
$R^2=.10$ $F(2, 105)=6.29$. $p=.0026$				

* $p < .05$

The second multiple regression analysis that was performed using the square root quantity frequency as the dependent variable found two additional predictor variables contributed the variance of square root quantity frequency of alcohol use of respondent. The two predictor variables: 1) hours spent working and 2) hours spent studying account for 10% of the variance of subjects square root quantity frequency.

The first variable that was entered into the regression equation was hours spent working. This variable accounted for 5% of the variance of square root quantity frequency of respondent meaning that quantity frequency is higher the more time spent working. A further 5% of the variance was accounted for by hours spent studying indicating that quantity frequency is lower the more hours spent studying.

A number of additional variables were entered into the regression equation but were not significant. they included: parental drinking, sex, age, working at a job.

participating in orientation, living on or off campus, living situation, and hours spent at extra-curricular activities.

As well as examining predictor variables that contributed to the variance of quantity frequency of alcohol use in high school and university, a multiple regression analysis was carried out that examined variables that contributed to the difference in quantity frequency from high school to university.

Difference in Quantity/Frequency from High School to University

Table 3.12 Multiple Regression Analysis of variables associated with Difference of Quantity Frequency of alcohol use in 1991

Independent Variables	B	Beta	T	SIG T
Place of Residence	2.039256	.199966	3.140	.0019*
Group of Friends use of alcohol from(time 1)	-.026246	-.310084	-4.617	.0000*
Group of Friends use of alcohol from (time 2)	.010891	.179726	2.343	.0201*
Closest friend's use of alcohol from (time 2)	.012916	.166997	2.215	.0279*
R ² =.19 F(4,206)=12.11. p=.0000				

* $p < .05$

The relationship between the respondent's difference of quantity frequency from high school to university can best be examined by the contribution of four predictor variables: 1) place of residence while at university; 2) perceived use of alcohol by high school friends; 3) group of friends from university perceived use of alcohol; and,

4) perceived use of alcohol of closest friend. The combination of these four variables account for 19% of the variance of subjects quantity/frequency of alcohol use.

The strongest predictor of difference in quantity/frequency from high school to university that was entered into the regression equation was place of residence. Living on campus contributed to a higher difference in the quantity/frequency. This variable accounted for 6% of the variance of difference in quantity/frequency from high school to university of respondent. The next variable group of friend* from high school perceived use of alcohol contributed to the respondents' having a lower quantity/frequency of alcohol use. A further 4% of the variance was accounted for by this variable. A further 7% was accounted for by group of friends from university perceived use of alcohol. And finally, an additional 2% of the variance of the quantity/frequency difference was accounted for by closest friend from university perceived use of alcohol. Together peer use of alcohol account for 13% of the variance, suggesting that peer use of alcohol contributes to changes in the respondents' use of alcohol in university, either higher or lower quantity/frequency levels.

The number of hours spent working at a job, leisure time, orientation, sex, age, and parental drinking were not significant predictors of contributing to the difference of alcohol use from high school to university.

Overall it was found that the perceived peer use of alcohol as a predictor variable contributed to the variance of quantity/frequency of alcohol use in high school university, and as well for the increase in the variance of quantity/frequency from high school to university.

Negative Social Complications

The second research question involves assessing the number of negative social complications the respondents experience in high school, university and if there is an increase in the amount of negative social complications from high school to university. As mentioned earlier when the students who responded to both samples were matched, a significant difference in negative social complications was not found. In other words, the number of negative complications did not significantly increase or decrease from high school to university. However, a significant difference was found between light and heavier drinkers, that is, heavier drinkers in both high school and university experience a greater number of negative social complications as a result of alcohol use. Only, a small minority of current drinkers, 7% in 1990 and 9% in 1991 never experienced a negative social complication as a result of alcohol use.

Table 3.13 Means, Standard Deviations, Minimum and Maximums for Negative Complications in 1990 and 1991 by Gender and Place of Residence

Variable	N	$\bar{X}$	SD	Minimum	Maximum
Negative Complications 1990	374	16.4	24.7	0	208
Negative Complications 1991	264	16.8	24.4	0	195

Variable: Negative Complications	N	$\bar{X}$	SD
Negative Complications 1990 and Gender			
Males	148	19	29.6
Females	226	15	20.8
Entire Sample	374	16	24.7
Negative Complications 1991 and Gender			
Males	94	20	32.3
Females	165	15	18.2
Entire Sample	259	17	24.3
Negative Complications 1991 and Living Situation			
On Campus	109	22	29.3
Off Campus	154	13	19.6
Entire Sample	263	17	24.5

The average number of negative social complications experienced from alcohol use in 1990 and 1991 was 16. When examined further it can be seen that males experience a greater number of complication than females 19 to 15 in 1990 and 20 to 15 in 1991. As well respondents who live on campus experience a greater number of complications 22 compared to those who live off campus at 13.

Overall, of those that drink, the majority drink responsibly experiencing few complications. Figures 3 through 25 in appendix 7 illustrate by way of diagram the

number of negative social complications by year.

Of the complications reported, most students reported experiencing hangovers, nausea and vomiting, regrets after drinking, blackouts, priming before going out, and being with friends who became sick after drinking alcohol in both high school and university. The one complication that did increase substantially from high school to university was skipping classes due to hangovers. In 1990 only 6.4% of the respondents reported skipping classes due to hangovers, and in 1991 this figure increased to 24.6%. Overall, the number of negative complications among these respondents are low, and the overall increase from high school to university was small.

Table 3.14 Bivariate Table Showing the Relationship Between Negative Complication and Type of Drinking in 1990 and 1991, Controlling for Living Situation and Gender in percentages

A

Negative Complication	1990			1991		
	Total N	Light	Heavier	Total N	Light	Heavier
Low	177	59%	5%	132	60%	13%
High	175	41%	95%	128	40%	87%
Total	352	100%	100%	260	100%	100%

Controlling for Living Situation

B

Negative Complication	On Campus			Off Campus		
	Total N	Light	Heavier	Total N	Light	Heavier
Low	36	44%	9.4%	96	70.8%	18.2%
High	71	56%	90.6%	57	29.2%	81.8%
Total	107	100%	100%	153	100%	100%

Notes. Light drinker is defined as 7 or less drinks per week. Heavier is defined as more than 7 drinks per week. Negative complications have been divided at the median 8 and under being low and 9 and over is high.

Controlling for GenderC
1990

Negative Complication	Males			Females		
	Total N	Light	Heavier	Total N	Light	Heavier
Low	64	57%	9.7%	113	59%	0%
High	74	43%	90%	101	40.2%	100%
Total	138	100%	100%	214	100%	100%

Controlling for GenderD
1991

Negative Complication	Males			Females		
	Total N	Light	Heavier	Total N	Light	Heavier
Low	47	61.8%	21.7%	85	60.1%	6.5%
High	44	38.2%	78.3%	84	39.9%	93.5%
Total	91	100%	100%	169	100%	100%

Notes. Light drinker is defined as 7 or less drinks per week. Heavier is defined as more than 7 drinks per week. Negative complications have been divided at the median 8 and under being low and 9 and over is high.

As presented in Table 3.14A, in 1990, 95% of heavier drinkers experience a high number of complications compared to light drinkers. In 1991, this figure decreased to 87% but nevertheless still remains high. Overall, 59% in 1990 and 60% in 1991 of the

light drinkers experience a low number of complications compared to heavier alcohol users.

In 1990 and 1991 both males and females who were heavier drinkers experienced a greater number of negative social complications, compared to lighter drinkers. This appears to be especially true among the women who are heavy drinkers in both 1990 and 1991. One hundred per cent of the heavier drinking female students experienced negative complications in 1990. This figure decreased in 1991, but was still quite high at 93.5%. As well both heavier drinking students who live on an off campus experience a high number of negative social complications.

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Chapter IV

Discussion

The primary focus of the analyses was descriptive, that is, determining if quantity frequency increased from high school to university and if the number of negative social complications increased from high school to university. A secondary focus was to examine variables that were associated with the quantity frequency of alcohol use. The data suggest that there is an increase in quantity frequency from high school to university. However, the increase is not large which may indicate that drinking patterns are already established before entering university, especially patterns of use for male respondents. Also, the increase in the number of negative social complications from high school to university was not significant, which may also indicate that patterns remain the same from high school to university. However, the results do indicate that heavier drinkers experience a greater number of negative complications in both high school and university. It was found that living on campus is associated with higher rates of alcohol use and was also associated with the difference in quantity frequency from high school to university. Peer use of alcohol was associated with the quantity frequency of alcohol use at all levels. The following discussion will be divided into the two areas of focus: quantity frequency and negative complications.

Changes in Quantity/frequency

Taking methodological limitations into consideration, comparisons of the results of this questionnaire can be made to other university studies. The results indicate that the number of current alcohol users in this sample are consistent with previous studies that found the majority of the students to be current alcohol users (Wechsler and McFadden 1979; Meilman et al. 1990). In this study 93% in 1990 and 94% in 1991 have in fact used alcohol at some time in their life. Only a small minority of the sample were abstainers. Differences were not found between males and females in terms of current alcohol use. That is, an equal number of males and females have tried alcohol. In past studies it was found that females tended to be abstainers more so than males, however, this is no longer the case (Hanson 1974; Engs 1977). The increase in quantity frequency for females from high school to university was higher at .7 than the increase for males at .2. This finding is consistent with Igra and Moos (1979), especially concerning the higher increase in alcohol use among women residence students. In terms of heavier drinking, males still continue to consume larger amounts than females, without taking into consideration physiological differences such as body size, height and weight.

In 1990, the average number of drinks for the entire sample was 4 per week. This figure increased to 4.5 per week in 1991. Even though an increase in the quantity frequency of alcohol use exists, the increase is not very high, indicating that perhaps alcohol use patterns are already formed in high school, and university drinking patterns are an "extension of students' drinking patterns in high school" (Barnes et al. 1992:927).

The number of heavier drinkers increased from high school to university. In 1990, 15% of the sample drank more than 7 drinks per week. In 1991, this figure increased to 20%. Further analysis indicates that heavier drinking increased for both males and females but more so for females. For example, in 1990 21.1% of the males were heavier drinkers and this increased to 24% in 1991; whereas, in 1990, 11.4% of the females were heavier drinkers and this increased to 17.8% in 1991. It should be noted that only between 15-20% of the two samples are heavy drinkers which is contrary to the view that Carleton is a heavy drinking university.

Changes from high school to university

Since this was a panel study it was possible to match respondents from time one and time two. That is, students who volunteered their names in the first questionnaire were matched with their responses from the second questionnaire. By matching those individuals from time one (those who responded just after high school) to time two (those who responded while in university) significant differences were found for three variables: quantity frequency, quantity, and perceived use of alcohol by closest group of friends. Quantity frequency for the entire sample of matched respondents increased from 3.7 to 4.5 drinks per week, an increase in 0.8. For males the increase was 4.4 to 5.8 drinks per week, an increase of 1.4. For females the increase was 3.3 to 3.7 drinks per week, an increase of 0.4.

Also peer use of alcohol increased considerably. In 1990, based on a yearly calculation of number of drinks, for the entire sample, peer use of alcohol increased from

60.5 drinks to 110.6, almost twice as many drinks from high school to university. Drinking among the friends of females increased more than the drinking among friends of males, for example 52 drinks per year for friends of females compared to 47.2 drinks per year for friends of males. This could mean that males are already associating with peers who are drinkers, and females are socializing with friends who are heavier drinkers. The peers of the respondents could be of either sex, the question asks to report the drinking habits of their closest friend and closest groups of friends but does not ask them to indicate the sex of their friends. As a result there is no way of knowing what sex males and females in this study are socializing with.

Additional variables associated with quantity/frequency

A number of additional variables were found to be associated with quantity/frequency, these included age of first use of alcohol, hours spent studying, and hours spent working at a job.

Regression analysis indicated that the younger a person tried alcohol, the higher the quantity/frequency of alcohol use. The average age of first use was 14.8 with a standard deviation of 2.3. This finding is consistent with other studies that also found early onset of drinking to be a strong predictor of current alcohol consumption (Barnes and Welte 1983, Samson et al. 1989, Barnes et al. 1992). However, it must be noted that even though a significant regression coefficient was found, the variance accounted for only 2%.

Other variables that were associated with quantity/frequency in university were the

hours spent working, and hours spent studying. Quantity frequency was higher for those who spent more hours working, perhaps as a result of having additional funds to spend on alcohol. As well, hours spent studying was associated with a lower quantity frequency of alcohol use. Quantity frequency decreased if students spent time on school studies. This is comparable with the results of Igra and Moos (1979) suggesting that academic achievement is negatively related to alcohol use.

Variables not associated with Quantity/Frequency

A number of additional multiple regression analysis were conducted and found that certain variables were not significant, these included: sex; age; participation in orientation, hours spent at extra-curricular activities, and parental drinking.

A number of studies have found a significant relationship between parental use of alcohol and their children's use of alcohol (Straus and Bacon 1953; Gusfield 1961; Orford et al. 1974; Hanson 1974; Zucker 1976; Wechsler and McFadden 1979; Harford and Spiegler 1983; Kandel and Andrews 1987; Keltner et al. 1980). However, in this study a relationship was not present. This could also be due to the inaccuracy of reporting parental alcohol use. Or, this could be due to the absence of family contact since being away at university and living away from their family of origin and peer socialization has taken over. If parental use of alcohol is associated with one's use of alcohol it is unknown when parental use has its greatest effect. According to Engs (1990) familial alcoholism may not affect a person until adulthood or later in adulthood, and as a result familial alcoholism may not be affecting them "at this point in their psychosocial development"

(Engs 1990:547)

Proponents of the ACOA movement indicate that "being raised with an alcoholic parent has been found to be related to the development of emotional and behavioral problems and personality disorders" (Black 1986, Jones and Houts 1992). "have found to be at a higher risk of becoming alcoholic (Booz-Allen and Hamilton 1974, Schuckit et al 1972, Goodwin et al 1974, Cotton 1979), have a higher tendency to marry an alcoholic (Nieri 1979, James and Goldman 1971), and, have "greater records of absences from school, greater difficulty with family relationships, social relationships, emotional stability, adjustment to reality, lower self-regard and self-acceptance, greater difficulty in accepting their aggressive feelings and greater need for support from others" (Woititz 1978:21). However, an interesting finding is that "children of alcoholics do not necessarily demonstrate problems in their youth" (Booz-Allen and Hamilton 1974, Black 1979).

One additional variable that did not contribute to predicting quantity frequency was participating in orientation. During the first week of university higher levels of drinking occur due to parties and events. It was thought that this would establish patterns of heavy drinking for the school year. However, this relationship was not significant.

The University Setting

The results of this data indicate that a difference exists between drinkers and place of residence. Those who live on campus consume more alcohol than those who live off campus. Examining the average number of drinks per week in 1991 further analysis indicates that students who live on campus consume an average of 5.8 drinks per week.

compared to 3.5 drinks per week students who live off campus consume. When the difference was calculated between time one and time two and averages were determined it was found that drinking increased by .38 drinks. However, for students who lived on campus it was found that their drinking increased 2 drinks per week and for students who lived off campus their drinking decreased by .6 drinks per week. Further analysis indicates that the average of 2 drinks per week for on campus students can be broken down by gender and it was determined that males quantity frequency increased 1.6 drinks per week and females quantity frequency increased 2.1 drinks per week. The results from this study support Igra and Moos (1979:401) finding that "the living group context has an impact on drinking." And in particular Igra and Moos (1979) found residence influential on female drinkers which is also substantiated in this study. On the other hand, concerning off campus students the decrease was higher for females than males, .91 and .27 respectively.

The literature indicates that drinking in university may be part of a subculture, especially drinking in residence (Igra and Moos 1979, Barnes et al. 1992). It has been found that students who live together and experience life crises together and become part of a group that socializes together. These students are more integrated into university life than those who live off campus. The Carleton community has been referred to as "a city within a city", with enough resources and supplies available so that one would not have to ever leave campus. For this reason, some residence students rarely leave the Carleton campus and spend a great deal of time in residence. Residence students eat together, share living accommodations, and socialize together which may include imbibing together. Off

campus students have different drinking patterns and habits. The majority of off campus students spend more time away from campus and only frequent bars and pubs on campus for special occasions.

As well as living on campus contributing to heavier alcohol use, drinking on campus in bars or residence rooms was found to be associated with heavier drinking. As Schall et al. (1992:134) point out:

students living in a university environment where there is social pressure to drink, where heavy drinking is approved and where alcoholic beverages and the places to consume them are readily available people will drink relatively heavily on the average.

Even though the results indicate that patterns of use appear to be established before arriving at university, drinking patterns still do change during first year. Holupka and Martin (1990) found that "alcohol problems are not simply "inherited" by colleges, the college setting fosters even greater alcohol use among many students." Holupka and Martin (1990) contribute the increase to "absence of parental controls" and, "a social milieu that condones and encourages heavy drinking, especially among certain groups of students." In sum, it appears that patterns are fairly well established before entering university but do change and in particular increase for students who live on campus, especially women.

Becoming a drinker

The present study reveals that the social and environmental factors that appear to be related to heavy drinking include peer use of alcohol and living situation. Heavier drinkers and the difference in quantity frequency from high school to university appears

to be associated with peer use of alcohol especially among residence students.

Jessor and Jessor discuss the development of becoming a drinker in relation with the transition from youth to adulthood. They state that this transition is marked by a number of additional transitions such as "sexual intercourse and marihuana use" or a developmental phase of becoming an adult. And they indicate that these transitions contribute to becoming a drinker. On the other hand, Holupka and Martin (1990) argue "students may now start drinking well before they arrive at college, and the college years represent less of a transition or experimental period. If this explanation is correct, then university does not represent a major transition period in alcohol use. Efforts to reduce alcohol consumption by college students would have to take into account that much of the problem is 'inherited'." However, because the overall rates of drinking did not change substantially, the transition theory may not apply to the entire sample, but only those who live in residence.

Quantity frequency did increase for residence students, indicating that the transition of being away from the social support of home and high school friends for the first time may give rise to a higher use of alcohol. But, there appears to be something about the university setting that gives rise to higher uses of alcohol. This finding can be substantiated by the fact that a regression analysis was run with living situation off campus, that is whether or not students lived with their parents or without their parents and there was no significant contribution to the variance of quantity frequency of alcohol use. In sum, the largest difference in alcohol use is with students who live on campus. Therefore, it appears that it is not simply the transition and lack of parental support but

the actual residence.

The results presented in this paper, suggest that heavier users of alcohol tend to be male and on campus students. However, weight differences were not taken into account, therefore the results must be interpreted with caution. Also the results presented in this paper indicate that there were larger differences in alcohol use from high school to university for female students. It appears that the pattern of alcohol use for males is more established than for females, and changes for female residence students.

The results of the data suggest peers influence "consumption levels through influence or modelling of heavier drinking" (Downs 1987:173). Students in this study with a larger quantity/frequency of alcohol use socialize with peers who are also heavier drinkers. This finding has been well documented in the literature (Straus and Bacon 1953; Lane and Patterson 1972; Margulies et al. 1977; Igra and Moos 1979; Harford and Spiegler 1983; Shore et al. 1983; Banges and Welte 1986; Downs 1987; Kandel and Andrews 1987; Smith et al. 1989; Ellickson and Hays 1991). However, a recent article in *The Journal* (1993:1) stated: "blaming excessive drinking by young people on peer group pressure is a 'sloppy explanation'." The article states that "young problem drinkers are not 'naive innocents being subverted by evil gangs,' rather they are like-minded individuals who get together to get drunk...because it's fun." The researcher responsible for this statement suggests that instead of examining peer-group pressure researchers should examine "peer-group influence in a more positive light."

In that case perhaps drawing on Cosper's (1979) theory of conformity and solidarity is appropriate. In fact, not all drinking should be viewed as deviant. Alcohol is

a legal drug and as MacAndrew and Edgerton (1969) "have argued, drinking and drunkenness serve a socially positive function as a means of taking 'time-out' from the demands and rules of everyday life" in (Kilty 1990:563). There appears to be a fine line between drinking and drunkenness. Drinking is a socially acceptable activity but drunkenness is not acceptable in most situations. In residence it may be acceptable. If this is true this could allow for more tolerant norms regarding drinking and drunkenness in residence. According to MacAndrew and Edgerton (1969) in Kilty (1990:563) drinking "takes place within a particular social context, and it is a learned activity." And there are many "opportunities to learn how, when, where and with whom to drink, as well as how to react after consuming beverages (Kilty, 1982). In sum, drinking as an activity may become a socially accepted past time in residence, and students are only following the socially sanctioned norms.

Shore et al. (1983) also discuss the element of "time-out" in terms of college as being different from the "real world". If this is true, then factors that would normally be associated with one's alcohol use such as parent's drinking habits may not be influential during the university career. Peer use of alcohol may become more of a factor influencing alcohol use. As the student graduates and returns to the "real world" factors such as parental use of alcohol may "reassert themselves as influences over drinking behavior" (Shore et al. 1983:358).

The results are consistent with the findings of Shore et al. (1983) in that the alcohol use of the closest peer from high school was not significantly related to the difference in quantity frequency from time one to time two. This could be similar to the

lack of parental influence as the best friend from high school is no longer part of the social network and as seen from the other life. Also As Shore et al. (1983:358) argue:

perhaps best friends are not conceptualized as part of the group called peers, and peer pressure is seen as something emanating from less familiar students, from those with higher prestige or from an undifferentiated mass of students who are perceived as setting college rules and norms. As a result, the student does not worry about the opinions of friends but is influenced by those whose friendship is not already secured.

In any event, peer use of alcohol is associated with one's use in alcohol in high school and university. Either peer influence affects "the drinking behavior of adolescents" (Downs 1987:167) or people directly or indirectly select friends based on self-drinking (Downs 1987). What is interesting to note is that similar to the finding by Margulies et al. (1977:167) regarding closeness to friends "in determining alcohol use" that in the high school sample close friends had more of an influence than group of friends. But in university this changed to group of friends having a greater influence. This finding is substantiated by Braucht (1990) in that "peer group as a whole may be a more important source of influence than a single friend" (Downs 1987:167).

In high school, peer use of alcohol was associated with respondents's alcohol use. In university peer use of alcohol was associated with respondent's use of alcohol but in calculating the difference of alcohol use from high school to university peer use of alcohol was associated with respondent's use of alcohol but group of friends from high school had a positive influence on respondents use of alcohol. That is, friends from high school has a lowering effect on respondent's quantity frequency. This finding is consistent with Margulies et al. (1977) that close friends have an impact on youthful drinking whether the influence be towards heavier drinking or lighter drinking.

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PRECISIONSM RESOLUTION TARGETS

Types of Drinkers

The number of heavy drinkers in this study 15% in 1990 and 20% in 1991 is comparable to other studies. For example, Wechsler and McFadden (1979) found 21.8% of their sample of to be infrequent heavy and heavy drinkers. O'Hare (1990) found 18.5%. Welch et al. (1987) in O'Hare (1990) found 14.5% to be heavy drinkers. All of these findings are based on five or more drinks once per week or more.

The overall quantity/frequency consumption shows that males 21% in 1990 and 24% in 1990 are likely to be heavier drinkers than females at 11% in 1990 and 18% in 1991. This finding is consistent with other researchers who have found males to be heavier drinkers (Harford and Spiegler 1983; Meilman et al. 1990; Canterbury et al. 1990).

However, even though a small minority of students were heavier drinkers, our attention should be focused on ways to encourage that group to drink moderately and to be aware of detrimental problems faced while in university and possible repercussions after university, such as developing a dependency on alcohol. For the most part, alcohol dependency is not an issue among university students but "it should not be concluded that there is an absence of drinking problems" (White and Labouvie 1989). Negative complications such as hangovers and sickness are more likely to result from overuse of alcohol at this stage. But if these complications persist and additional complications interfere with university, students should seek help.

Negative Complications

There was not a significant increase in negative social complications from time one to time two, that is the mean number of complications did not increase significantly when the two groups were combined and respondents answers were compared. However, men and women students in the heavier drinking category in both 1990 and 1991 were significantly more likely than the lighter drinkers to experience negative social complications as a result of alcohol use.

Consistent with previous findings, men reported more alcohol related problems than women (Engs 1977, Wechsler and McFadden 1979). The mean number of negative complications men experienced in 1990 was 19, and females 15. However, in 1991 the mean number of complications increased for men to 20 and stayed the same for women at 15. It is interesting to note that there is not a large disparity in the number of complications men and women experience considering males are heavier drinkers. Another interesting finding is that the average number of complications for women did not increase even though quantity/frequency did and the percentage of heavier drinkers increased. For the most part, the results in this questionnaire indicate that the majority of students in this sample are moderate drinkers who do not experience a large number of alcohol-related complications. Unlike previous studies that contends that negative complications increase among alcohol users, (Wechsler and Thum 1973, Jessor and Jessor 1975, Engs 1977, Gliksman 1988), this was not found in this study.

The failure to determine this relationship could be due to a number of reasons. First, the number of negative complications could be under-reported due to an inability

to remember the exact number of complications, or fear of being identified. Second, the sample could be biased, that is, those who responded with their names may have had an interest in alcohol related research. Comparing this sample with the sample of students who did not give their names found that the number of complications was higher in the no-name sample. Third, as the students age they are becoming more experienced drinkers and are not experiencing the number of complications inexperienced drinkers may encounter. And finally, perhaps the university campaigns have been successful and students are becoming moderate responsible drinkers.

In sum, students do experience negative complications but the overall increase from high school to university was not significant. However, the number of negative complications was higher for students who live on campus and among heavier drinkers.

Longitudinal studies to date have been inconclusive regarding finding relationships between problem drinking in high school and university and problem drinking in later life. Fillmore (1975-2003) found that experiencing certain problems in youth predicted alcohol problems in later life but were "not necessarily tomorrow's problem drinkers (although they may be today's problem drinkers)." It is important to remember that even though one may experience a number of complications due to alcohol use, these complications may be a result of being an inexperienced drinker. Students at this age may be experimenting with alcohol and may not be aware of detrimental side effects.

Future Problem drinking

Alcohol use is age related, that is, drinking is found to be higher in youths

between the ages of 19-24. Schall et al. (1992:134) point out that the majority of "university students are within the age range of heaviest drinking (Clark and Midanik 1982)." Therefore, drinking rates among university students may be higher because of the average age of students. A recent Canadian study found that among 15 to 19 year old drinkers, the average number of drinks consumed during the seven days prior to the questionnaire was 2.4; and among 20 to 24 year old drinkers, the average number of drinks consumed was 4.3 (Eliany et al. 1991). In the present study the drinking rates were similar to those found in the above mentioned study.

It was also found that age of first use predicted higher consumption rates. However, even if age of first use predicted a higher quantity/frequency, this does not imply that early drinking lead to heavier drinking in university and in later life.

Even though the results indicate that quantity/frequency of alcohol use has increased from high school to university, caution must be used when interpreting these results. The results cannot be used to say that these students will have problems in the future because after leaving university new situations may not give rise to alcohol use. Some of the students who are heavier drinkers may be problem drinkers now, but it does not mean that they will be problem drinkers of the future. Drinking in university may be the result of the social aspect of drinking and learned behaviour. As mentioned earlier some students proceed to drink excessively, some students continue to drink moderately, and some students become abstainers. As Brennan et al. (1986:476) state:

college drinking may be primarily a function of the situational stresses inherent in the college situation as well as the environmental press of the "college drinking ethic," which is reinforced by fraternity and dormitory parties that focus on alcohol. Later adult problem drinking, on the other

hand, may also be a function of a more complex set of variables, such as genetic predisposition, lifelong habits, and pervasive maladaptive ways of coping with stress.

What this study can do is facilitate an awareness to students who live on campus in residence that they may be living in an environment that may put them at risk for heavy alcohol use and complications resulting in heavy alcohol use as hangovers, vomiting, and missing classes.

Schall et al. (1992:134) also agree that the dormitories are environments that foster and promote heavy drinking. It was found that the average number of drinks was higher and also the increase from high school to university was higher. But not all residence students are heavy drinkers.

On the whole, those who drink heavily in university will not always go on to become heavy drinkers in adult life. Not all problem drinkers are alcoholics. However, if we can discern high risk groups and educate people about high risk situations, perhaps people will be aware of their alcohol consumption. Nevertheless, as Gliksman (1988:1293) states: "students may be establishing patterns of alcohol use that they will carry with them into adulthood, and as these patterns become more entrenched, they will make it difficult for the individual to cope."

Towards an integrated approach to explaining alcohol use

It is difficult to isolate one theory and declare that this theory explains alcohol use when there are a number of different types of individuals being studied. For example, one theory may be more appropriate for women and another for males. One theory may be

more appropriate for students of particular ages and in certain disciplines and yet another for students who live on campus and those who live off campus. A major finding in this study is that alcohol use is higher for students who live on campus. This may indicate that a subculture exists that gives rise to heavier drinking levels. Is it the university environment supplying legal and available alcohol? Is it social learning that demonstrates higher uses of alcohol on campus is a socially accepted norm? Does Zuckerman's sensation seeking contribute to the consumption of alcohol? Or is it a result of specific factors that exist or is it the types of students who enter residence? Residence students in this sample are chosen via lottery, that is, all first year students who want to live in residence request so and then are chosen by the lottery system. Is it a certain type of person that chooses to live in residence? Perhaps personality correlates should be gathered in order to see if there are common personality traits. Are the students who live in residence more easily coerced into situations, especially drinking situations? Do those students seek situations that are more adventurous? Or as Selnow and Crano (1986:52) ask, do students "seek out places and social arrangements where such use may be more accepted or even encouraged?" Are these students lacking in social and lifestyle skills and find it difficult not to follow the group norm? Perhaps a further investigation into the personality styles of these individuals may be necessary. Schall and al (1992:122) argue that alcohol consumption is a "consequence of biopsychosocial determinants." If this is the case it may be important to draw on a number of perspectives that theoretically explain the use of alcohol.

Limitations of the present study

The results of this study are generally consistent with earlier studies found in previous research on drinking in university, with the exception of parental use of alcohol and the increase in negative complications. The findings in this study cannot be generalized to the entire university population or other types of campuses due to self-selection and self-reporting. Since this was not a random sample, those who chose to answer may have been involved in alcohol education in high school and had a bias towards answering the questionnaire. As well, current studies suggest that "university students almost always perceive friends and family members of social reference group as drinking more than themselves" (Baer et al 1991:584). The self-reporting estimates of drinking quantity and frequency of self and parents are "subject to faulty recall and denial" (Meilman et al. 1990). Perhaps if the information regarding parental and peer use of alcohol were independently obtained the results would have been more accurate.

An alternative way of recording the data may have been to ask the respondents to record their drinking occasions and number of drinks consumed in a retrospective diary (RD) (O'Hare 1991). O'Hare (1991) found that using the traditional quantity/frequency method of reporting alcohol use consumption levels tended to be under-reported. O'Hare (1991:500) proposed the RD as an alternative and found the RD "will detect more average daily consumption, more heavy drinking (defined as an average of two drinks or more daily) and more peak drinking (defined as 5 or more drinks at one sitting at least once per week) "

It is important to question the sample that was used for this report. Overall the

results are similar to other surveys that have been conducted regarding university students. But it must be remembered that it is a sample of university students and cannot be generalized to the entire student population. Also this sample was asked to fill out this questionnaire without coercion or rewards. The people who filled out the questionnaire are not be entirely representative of the student body population. The people who responded may have had a desire to complete a questionnaire or were simply interested in the issue of alcohol on campus. For this reason the results should be interpreted with caution.

Implications

Even with limitations the data can be helpful with targeting certain groups and guiding program planners. A number of different prevention programs over the years have been implemented at the university. It appears that the present P.A.R.T.Y (Promoting alcohol responsibly through you) program has been the most successful in terms of positive response with the students. In the early 1980s, a program called C.A.P.E. (campus alcohol policy and education) introduced pamphlets and brochures that reported on negative consequences of alcohol use. The university administration was responsible for the C.A.P.E. program and was met with resistance because the students did not have a voice in any alcohol policies or education. With the introduction of P.A.R.T.Y. in the late 1980s, representatives from all areas of the university were invited including student governments and representatives. The philosophy of the P.A.R.T.Y. committee was to educate students concerning responsible use of alcohol as opposed to abstinence. The

committee provided information, workshops, and interactive education regarding responsible use. Often alcohol committees are looked upon as unfavourable because they restrict or condemn alcohol use. However, the P.A.R.T.Y. committee maintains a favourable reputation on campus and is well received by the students.

The findings of the present study indicate that it is important to alert students who are entering first year university and especially those who are living in residence that the quantity/frequency of alcohol may increase. If their alcohol use increases they could experience a greater number of negative complications and thus risk not doing well during their first year of university.

Since the results indicate that the majority of students are entering the university with established patterns of alcohol, alcohol programming should begin in the high school. Prevention and education programs need to be continued in university, but education is essential in the high school where students begin to experiment with alcohol and other drugs. Moderation and responsible use need to be taught and encouraged.

However, if current patterns of alcohol consumption are a continuation of high school patterns of alcohol consumption, it may be difficult for program planners to change patterns and implement programs. Another problem faced by educators is that program planning for students concerning overuse of alcohol, are usually not attended by students who need it but by those who have an interest in learning about alcohol. It is difficult to reach the portion of the population that are heavy users because they tend to ignore educational promotions thereby presenting challenges to educators (Wechsler and McFadden 1979).

Campus administrators and educators should be aware of the increases in alcohol use and educate appropriately. Since alcohol consumption in university is cyclical, that is, higher during orientation, lower during the semester, and higher again during exams, educators should focus their efforts on alcohol use at different time periods in the year. Since alcohol use is heavier during the orientation period and it is believed that participating in orientation and being socialized into groups that are drinking heavily will set the pace of drinking for the entire year. However, when examining whether or not participating in orientation contributed to the variance of quantity/frequency, it was found not to be significant.

University is different from high school and students should be aware of situations that may contribute to use of alcohol. Students do not have to follow a routine of mandatory classes thus giving them much more freedom. High school friends may or may not continue to university or the same university thus a student may lose their old social support network. Old high school friends may lose influence and a new different set of peers may influence new behaviours which may include heavier use of alcohol. And since this is a process of maturation, turning legal age or just turning legal age, new behaviours and new responsibilities may give rise to stressful situations where students turn to alcohol instead of old social support networks. Role playing scenarios should be implemented into the education of students so that they can draw on new educational experiences.

Recommendations for further research

At the time of writing, the students in this sample will have been at the university for three years. Future research could include an additional questionnaire in order to discover current consumption levels and if the students are still in the same program of study and also changes in grade point averages. Did their alcohol use increase or decrease since the summer of 1990 and the spring of 1991? This group could be followed after they complete university and contacted periodically in order to discover patterns of alcohol use. As well, the use of qualitative research may further enlighten educators and researchers by obtaining information that cannot be collected via questionnaire research.

CHAPTER V

Conclusions

The major purpose of this analysis has been to describe the drinking patterns of students as they enter first year university. Specifically, the analysis has been concerned with two central issues. First, the quantity/frequency of alcohol use and changes in quantity/frequency. A secondary concern involved negative social complications.

In general, it was found that a pattern of drinking has already been established before the students enter first year university. Increases from high school to university were small and were more evident among students who live in residence and among women. These results are consistent with the findings of quantity/frequency increasing (Gliksman 1988; Holupka and Martin 1990) and increases of alcohol consumption among residence students (Gusfield 1961; Clark and Trow 1966). The results were not consistent with Gliksman (1988) regarding increases in negative complications. It was found that there was not a significant difference from high school to university in the number of negative social complications experienced. On the other hand, the results are consistent with Engs (1977) regarding heavier drinkers experiencing a greater number of negative social complications. The results are consistent with Shore et al. (1983) that indicate that present environment factors exert a greater influence on alcohol use than past influences.

For a number of years, Carleton University has had a reputation for being a

university with major alcohol problems. However, this allegation is not substantiated in this study. In fact, the majority of students in this sample are not heavy drinkers and are not experiencing a large number of negative complications.

In terms of additional education one of the main findings that resulted from the present study was the fact that quantity/frequency is higher among residence students. Therefore, it is important that residence students receive additional education regarding alcohol use. Education may involve workshops regarding alcohol, values regarding alcohol, responsible use of alcohol, and also workshops on "assertiveness, stress management, communications skills, management of test anxiety" (Brennan et al. 1986:490) relationships, self esteem, and skill building skills such as "peer resistance problem solving.... and ability to ask for help" (Johnson et al. 1988:584). As a result, it would be beneficial if a multifaceted approach to reduce alcohol abuse be implemented. According to Johnson et al. (1988:584) "for maximum effectiveness, a prevention strategy needs to address parental and peer influences, teachers, and community leaders; norms; marketing and availability of alcoholic beverages; and alcohol-related laws, regulations, and policies" (Perry 1986).

A study of this type allows alcohol educators to discover patterns among a select group and focus efforts on problems inherent their own university. Overall, negative complications did not increase. This is an interesting finding because quantity/frequency did increase. In prior studies as quantity/frequency increases the number of negative complications increase. Why the number of negative complications did not increase is intriguing especially with more consumption on campus. It may be because of the sample

bias and self-reporting. It may be difficult to remember negative complications and report information that does not have a positive influence on your life.

This paper attempted to investigate alcohol use among first year students and factors that contribute to a higher quantity and frequency of alcohol use. And also negative social complications that result from alcohol use. The purpose in doing research of this type is best articulated by Andrews and Mills (1990:6). They state "alcohol use among young people is particularly important to investigate, because such research can identify present problems and may predict future trends and problems involving drinking." Even though problem drinking in youth does not indicate problem drinking in later life, if enough longitudinal panel studies are conducted, eventually there may be a common variable or set of variables that are associated with problem drinking in adulthood, thus contributing to the necessity of research.

At all levels peer use of alcohol is associated with one's use of alcohol. This finding is consistent with the results of prior research by Brennan et al. (1986), Kane and Patterson (1972), Margulies et al. (1977), Igra and Moos (1979), Harford and Spitzler (1983), Barnes and Welte (1986), Kandel and Andrews (1987), Ellickson and Hays (1991), Smith et al. (1989). Peers are influential role models that often motivate one to indulge in substances. The socialization process of peers appears to be strong at the university setting. As Kandel et al. (1987:339) state "friendships... result from deliberate choices. It seems plausible that peers come to exert a stronger influence once the adolescent is committed to a course of action and can select to associate with peers who will reinforce his norms and behaviors." Peer use of alcohol accounts for a large portion of the variance

in quantity/frequency in high school, university and the difference between quantity/frequency from high school to university.

Despite the belief that all university students drink to excess, quite the opposite was found. Only a small minority of the sample were heavier users drinking more than 7 drinks per week. Due to the fact that quantity/frequency did not increase substantially, it may be surmised that drinking patterns are in fact formed in high school and change very little when one enters university. The average age of the students in time one when they just finished high school was 19 which is the legal age to drink in Ontario. It may be more appropriate to survey the students while they are still in their last year of high school when they are still under the legal age to drink. On the other hand, quantity/frequency of alcohol use did increase substantially for those students who live in residence which indicates that there is something about residence life that contributes to higher rates of alcohol use. These are the students who are living away from home and their parents and high school friends who previously were their support group. They are entering an atmosphere that legally sells alcohol and does not condemn its use.

The socialization process of entering into the university setting may give rise to higher uses of alcohol. That is, the drinking may be a learned social behaviour (Barnes and Welte 1986) which during the transition from high school to university a person learns to become a drinker. A person may be drawn to those who drink or hang around with a group of people who drink more frequently and as a result increase their own use of alcohol.

In sum, it appears that different drinking patterns exist among men, women, and

students who live on campus and students who live off campus. It would be beneficial if further studies in the area of alcohol use among university students focused on one of these particular subgroups and investigated differences. Additional longitudinal research is needed in this area in order to examine future patterns and correlates of drinking in university.

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Appendix 1

1990 Questionnaire

1 9 9 0 S U R V E Y

Dear First Year Student:

PROMOTING **A**LCOHOL **R**ESPONSIBILITY **T**HROUGH **Y**OU

We would like to take this opportunity to congratulate you on your decision to attend Carleton University. In order to facilitate our program planning on campus regarding alcohol use, you have been selected to complete this survey.

May we remind you that all answers are strictly confidential and total anonymity will be adhered to at all times. Please skip any question(s) you do not wish to answer. Once you have completed this questionnaire, place it in the self-addressed stamped envelope and return it at your earliest convenience to the Carleton University Students' Association. If you have any questions please do not hesitate to call Maggie Sullivan, Special Activities Coordinator for the alcohol policy committee, at (613) 788-6688, or Patty Allen the Health Educator at 788-6676.

Thank you for taking time out to complete this survey.
Have a good year at Carleton. Best of Luck.

Sincerely,

Patty Allen
Health Educator
Maggie Sullivan
Special Activities Coordinator
Promoting Alcohol Responsibility Through You

Please complete and return in the enclosed self-addressed stamped envelope. Thank You.

First, we would like to know a few things about your personal background. Please place an 'x' in the box that corresponds with your answer.

1. Sex: ☐ Male ☐ Female

2. What year were you born: 19 _____

3. What is your current marital status?

- ☐ Single
☐ Married
☐ Living with someone
☐ Separated
☐ Divorced
☐ Widowed
☐ Other (please specify) _____

4. Current Living Situation:

- ☐ With both parents
☐ Mother only
☐ Father only
☐ With roommates
☐ Alone
☐ Other (please specify) _____

5. How many brothers and sisters do you have?

brother(s) _____ sister(s) _____

6. Please state your birth order?

- ☐ Only child
☐ First child
☐ Somewhere in middle
☐ Last child
☐ Other _____

7. What was your last high school grade that you completed?

State grade _____

8. What was your overall average for this high school year?

- ☐ below 50% ☐ 50-59% ☐ 60-69%
☐ 70-79% ☐ 80-89% ☐ over 90%

9. What is your undergraduate major field of study?

- ☐ Arts or Social Science
☐ Commerce
☐ Engineering
☐ Science
☐ Architecture
☐ Undeclared
☐ Other _____

10. Do you work at a job? ☐ Yes ☐ No

11. If yes, how many hours on average a week do you work? _____

12. What is the name of your home town?

State name of home town _____

13. What is the population of this town?

State population _____

Now we would like some information concerning your family background.

14. Please check the category which best describes the family you grew up in:

- ☐ Two-parent family
☐ One-parent family
☐ Other (please specify) _____

15. Please state your combined family household's gross annual income for 1989?

State income _____

16. Please indicate your parents' highest level of education?

Father	Mother	
☐	☐	Some public school
☐	☐	Finished public school
☐	☐	Some high school
☐	☐	Completed high school
☐	☐	Some college or CEGEP
☐	☐	College or CEGEP graduate
☐	☐	Some university
☐	☐	University graduate (e.g., B.A., B.Sc)
☐	☐	Graduate or professional degree (e.g., M.A., M.D., Ph.D.)
☐	☐	Don't know

17. Occupation of Parents

What job does your father or step-father usually do?

Name of job _____

Now describe carefully what he does in this job?

18. What job does your mother or step-mother usually do?

Name of job _____

Now describe carefully what she does in this job?

Now we would like to know a bit about alcohol use amongst those that are close to you, that is family and friends. *Please note that 1 drink means one 12 oz. bottle of beer; one 3 to 4 ounce glass of wine; or one 1 1/4 shot of liquor straight or with a mixed drink, ie., rye and coke.*

19. Which category comes closest to the drinking habits of your closest friend? My closest friend drinks:

☐ Daily	☐ nearly everyday
☐ 1 - 2 times a week	☐ 3 - 4 times a week
☐ 2 - 3 times a month	☐ once a month
☐ less than once a month	☐ at least once a year
☐ less than once a year	☐ never
☐ former drinker	☐ not applicable

20. Which category comes closest to the drinking habits of your friends that you hang around with?

☐ Daily	☐ nearly everyday
☐ 1 - 2 times a week	☐ 3 - 4 times a week
☐ 2 - 3 times a month	☐ once a month
☐ less than once a month	☐ at least once a year
☐ less than once a year	☐ never
☐ former drinker	☐ not applicable

21. Which of the following comes closest to describing how often your father drinks?

☐ Daily	☐ nearly everyday
☐ 1 - 2 times a week	☐ 3 - 4 times a week
☐ 2 - 3 times a month	☐ once a month
☐ less than once a month	☐ at least once a year
☐ less than once a year	☐ never
☐ former drinker	☐ not applicable

22. Which of the following comes closest to describing how often your mother drinks?

☐ Daily	☐ nearly everyday
☐ 1 - 2 times a week	☐ 3 - 4 times a week
☐ 2 - 3 times a month	☐ once a month
☐ less than once a month	☐ at least once a year
☐ less than once a year	☐ never
☐ former drinker	☐ not applicable

The next set of questions concern your own use of alcohol.

23. Have you ever used alcohol? ☐ Yes ☐ No

If "NO" would you tell me why you avoid alcohol.

If you do not drink, please proceed to question number 30.

24. How old were you when you had your first drink, not just a sip or taste?

State age _____

25. Where were you when this occurred?

- ☐ At home with your parents
☐ At home without your parents
☐ With friends
☐ By yourself
☐ Other (please specify) _____

26. About how often do you drink?

☐ Daily	☐ nearly everyday
☐ 1 - 2 times a week	☐ 3 - 4 times a week
☐ 2 - 3 times a month	☐ once a month
☐ less than once a month	☐ at least once a year
☐ less than once a year	☐ never
☐ former drinker	☐ not applicable

27. When you consume alcohol, about how many drinks do you have on average?

☐ One drink	☐ Two drinks
☐ 3-4 drinks	☐ 5-6 drinks
☐ 7-8 drinks	☐ 9-11 drinks
☐ 12-14 drinks	☐ 15 or more

What type of beverage do you prefer to drink?

The following are common results from alcohol use that other students in the past have experienced. Please respond to the following questions as accurately as possible.

28. Please indicate the number of times the following situation has happened to you during your last high school year or last year? *Please indicate once, twice, three times....*

1. Ever drink alone to the point of intoxication? _____
2. Have had a hangover? _____
3. Skipped classes due to a hangover? _____
4. Skipped classes to drink alcohol? _____
5. Gone on a binge, that is drank a large quantity of alcohol or stayed drunk over a few days? _____
6. Had regrets after drinking? _____
7. Decided to have intercourse only after drinking alcohol? _____
8. Experienced blackouts or memory loss due to drinking? _____
9. Have gotten nauseated and vomited from drinking? _____
10. Have driven a car after having several drinks? _____
11. Have driven a car when you know you have had too much to drink? _____
12. Have been arrested for driving while impaired? _____
13. Have been criticized by parent (s) because of your drinking? _____
14. Have been criticized by friend(s) for drinking too much alcohol? _____
15. Have lost a job because of drinking? _____

29. Continued...

16. Have received a lower grade because of drinking? _____
17. Have gotten into trouble with the school administration because of drinking? _____
18. Contracted a sexually transmitted disease? _____
19. Ran out of money because I spent it on alcohol? _____
20. I drink a few quick ones before going to a party or bar or special event? _____
21. I drink first thing in the morning? _____
22. My hands shake until I have a drink? _____
23. Been with a friend who became sick from drinking too much? _____

29. People drink wine, beer or liquor for different reasons. The following are statements for why some people drink. Please indicate if you agree, strongly agree, disagree, or strongly disagree with the following statements.

- Check in diff bl males & females*
	Strongly Agree	Agree	Disagree	Strongly Disagree
☒ I drink because it helps me to relax	☐	☐	☐	☐
☐ I drink to be sociable	☐	☐	☐	☐
☒ I like the taste	☐	☐	☐	☐
☒ I drink because the people I know drink	☐	☐	☐	☐
☐ I drink when I want to forget something	☐	☐	☐	☐
☐ I drink to celebrate special occasions	☐	☐	☐	☐
☒ A drink helps me to forget my worries	☐	☐	☐	☐
☒ I drink because I need it when I'm tense and nervous	☐	☐	☐	☐
☒ I drink to relieve boredom	☐	☐	☐	☐
☐ I drink when I am lonely	☐	☐	☐	☐
☐ I drink to overcome my inhibitions	☐	☐	☐	☐
☐ A drink helps me face difficult situations	☐	☐	☐	☐
☐ A drink helps me to get along better with other people	☐	☐	☐	☐
☒ A drink makes a social gathering more enjoyable	☐	☐	☐	☐
☐ A drink gives me more confidence in myself	☐	☐	☐	☐
☐ A drink helps me enjoy a party	☐	☐	☐	☐

30. The following section deals with your use of drugs other than alcohol.

How often do you smoke cigarettes:

- ☐ Never smoked
- ☐ Only smoked once or twice ever
- ☐ Used to smoke, but stopped
- ☐ Smoke occasionally
- ☐ Smoke less than a pack a day
- ☐ Smoke a pack a day or more

31. During the past high school year, how many times have you used the following drugs? Indicate whether that would be never, once, a few times or often?

	Never	Once	A few times	Often
Cannabis (marijuana or hash)	☐	☐	☐	☐
Hallucinogens (LSD, Mescaline, Magic mushrooms)	☐	☐	☐	☐
Amphetamines, without prescription (speed, uppers, pep pills, bennies, dexies, black beauties, beans)	☐	☐	☐	☐
Barbiturates, without prescription (downers, amytal, phenobarbital, seconal)	☐	☐	☐	☐
Cocaine (coke, snow, snort, blow)	☐	☐	☐	☐
Crack	☐	☐	☐	☐
Heroin (horse, smack)	☐	☐	☐	☐
Sniffed glue, gasoline or solvents	☐	☐	☐	☐

32. Have you had any alcohol or drug education in your high school?

☐ Yes ☐ No

If yes, please describe:

P = motivation to drink.

"We are asking you to give us your name in the hope that we may contact you again, later in your university career. If you prefer not to give this information, you should complete your questionnaire and turn it in anonymously. However, it will help our study a great deal to have the information, and we assure you that it will be held in strict confidence. Your name will be deleted from this form as soon as we code your replies."

Your name : _____

Your student number : _____

T H A N K Y O U

1 9 9 1 S U R V E Y

Dear Student:

The Carleton University P.A.R.T.Y. (Promoting Alcohol Responsibility Through You) Committee is currently conducting a follow-up study of persons who participated in the 1990 survey regarding alcohol and drug use.

Perhaps you remember filling out this survey and giving us permission to be contacted later. We are interested in your responses to the following survey and would like you to return it in the self-addressed stamped envelope within two weeks of receiving the survey.

If you have any questions, please do not hesitate to contact me at 788-6688.

Please respond as accurately as possible, and remember your answers are strictly confidential.

On behalf of the committee, I would like to thank you for your cooperation in our study.

Sincerely,

Maggie Sullivan
Special Activities Coordinator
Promoting Alcohol Responsibility Through You

Please complete and return in the enclosed self-addressed stamped envelope. Thank You.

First, we would like to know a few things about your personal background. Please place an 'x' in the box that corresponds with your answer.

1. Sex: ☐ Male ☐ Female
2. What year were you born: 19 _____
3. Please state how many credits you are enrolled in:

4. What is your average grade point average for all subjects this year at Carleton?
☐ Mostly A
☐ Mostly A and B
☐ Mostly B
☐ Mostly B and C
☐ Mostly C
☐ Mostly C and D
☐ Mostly D
☐ Mostly D and F
5. If you attended Orientation in the fall, which group did you belong to?

My group was:

☐ Skateboards

☐ Playdohs

☐ Weebles

☐ Marbles

☐ Scrabbles

☐ Hot Rods

☐ Yo-Yos

☐ Scooters

☐ Did not attend

☐ Slinkys

☐ Pogos

☐ Jigsaws

☐ Crayons

☐ Twisters

☐ Tinkertoys

☐ Frisbees
6. Current living situation.
Do you live:
☐ On Campus (Please go to question 6a.)
☐ Off Campus (Please go to question 7.)
- 6a. If you live On Campus, in which Residence?
☐ Glengarry
☐ Russell
☐ Lanark
☐ Grenville
☐ Renfrew
☐ Stormont / Dundas*

* If Stormont/Dundas, where did you live from September until December?

☐ On Campus (Please go to question 6b.)
☐ Off Campus (Please go to question 7.)
- 6b. Please describe your living situation in Residence.
☐ Single
☐ Double
☐ Single within a suite
☐ Double within a suite

6c. Do you live on a co-ed floor?

- ☐ Yes
☐ No

7. If Off Campus do you live:

- ☐ With both parents
☐ Mother only
☐ Father only
☐ With Roommates
☐ Alone

8. Do you work at a job? ☐ Yes ☐ No

9. If yes, how many hours per week on average do you work?

10. Outside of classroom and laboratory time, about how many hours a week do you spend studying?

- ☐ 0 - 5 hours
☐ 6 - 10 hours
☐ 11 - 15 hours
☐ 16 - 20 hours
☐ 21 - 25 hours
☐ 26 - 30 hours
☐ 31 and over

11. About how many hours a week do you spend at volunteer work, organized sports, other organizations, or hobbies?

- ☐ 0 - 5 hours
☐ 6 - 10 hours
☐ 11 - 15 hours
☐ 16 - 20 hours
☐ 21 - 25 hours
☐ 26 - 30 hours
☐ 31 and over

Now we would like to know a bit about alcohol use among those who are close to you, that is, your closest friends.

Please note that 1 drink means one 12 oz. bottle of beer; one 3 to 4 ounce glass of wine; or one 1 1/4 oz. shot of liquor straight or with a mixed drink, i.e., rye and coke.

12. Which category comes closest to the drinking habits of your closest friend? My closest friend drinks:

☐ Daily	☐ nearly everyday
☐ 1 - 2 times a week	☐ 3 - 4 times a week
☐ 2 - 3 times a month	☐ once a month
☐ less than once a month	☐ at least once a year
☐ less than once a year	☐ never
☐ former drinker	☐ not applicable

13. Which category comes closest to the drinking habits of your friends that you spend your leisure time with?

☐ Daily	☐ nearly everyday
☐ 1 - 2 times a week	☐ 3 - 4 times a week
☐ 2 - 3 times a month	☐ once a month
☐ less than once a month	☐ at least once a year
☐ less than once a year	☐ never
☐ former drinker	☐ not applicable

The next set of questions concern your use of alcohol.

14. Have you ever used alcohol? ☐ Yes ☐ No

If "NO" would you tell me why you avoid alcohol.

If you do not drink, please proceed to question number 25 on the next page.

15. About how often do you drink?

☐ Daily	☐ nearly everyday
☐ 1 - 2 times a week	☐ 3 - 4 times a week
☐ 2 - 3 times a month	☐ once a month
☐ less than once a month	☐ at least once a year
☐ less than once a year	☐ never
☐ former drinker	☐ not applicable

16. When you consume alcohol, about how many drinks do you have on average?

☐ One drink	☐ Two drinks
☐ 3-4 drinks	☐ 5-6 drinks
☐ 7-8 drinks	☐ 9-11 drinks
☐ 12-14 drinks	☐ 15 or more

17. What is the greatest amount of alcoholic beverages that you have had at a single sitting in the past six months? Please state number:
- _____

18. In the past six months, how many different times have you had this greatest amount of alcoholic beverages?

_____ times in the last six months.

19. What type of alcoholic beverage do you prefer to drink?

☐ Beer	☐ Wine
☐ Coolers	☐ Fancy Drinks
☐ Liquor (Mixed or Straight)	

20. Where are you most likely to have a drink?

☐ Campus Bars
☐ Ottawa/Hull Bars
☐ Residence Room / Friend's Residence Room
☐ Your Home / Friend's Home
☐ Other, please state:

The following are common results from alcohol use that other students in the past have experienced. Please respond to the following questions as accurately as possible.

21. Please indicate the number of times the following situation has happened to you during this university year.

1. Ever drink alone to the point of intoxication?	_____
2. Have had a hangover?	_____
3. Skipped classes due to a hangover?	_____
4. Skipped classes to drink alcohol?	_____
5. Gone on a binge, that is drank a large quantity of alcohol or stayed drunk over a few days?	_____
6. Had regrets after drinking?	_____
7. Decided to have intercourse only after drinking alcohol?	_____
8. If intercourse took place only after drinking, how many times did you use protection?	_____
9. Experienced blackouts or memory loss due to drinking?	_____
10. Have gotten nauseated and vomited from drinking?	_____
11. Have driven a car after having several drinks?	_____
12. Have driven a car when you know you have had too much to drink?	_____
13. Have been arrested for driving while impaired?	_____
14. Have been criticized by parent (s) because of your drinking?	_____
15. Have been criticized by friend(s) for drinking too much alcohol?	_____
16. Have lost a close relationship, i.e. boyfriend, girlfriend, due to drinking too much alcohol?	_____
17. Have lost a job because of drinking?	_____
18. Have received a lower grade because of drinking?	_____
19. Have gotten into trouble with the school administration because of drinking?	_____
20. Contracted a sexually transmitted disease?	_____
21. Ran out of money because I spent it on alcohol?	_____
22. I drink a few quick ones before going to a party or bar or special event?	_____
23. I drink first thing in the morning?	_____
24. My hands shake until I have a drink?	_____
25. Been with a friend who became sick from drinking too much?	_____

Continued on next page....

Remember to return this survey in the enclosed self-addressed stamped envelope as soon as you have completed it.

22. People drink alcoholic beverages for different reasons. The following are statements for why some people drink. Please indicate if you agree, strongly agree, disagree, or strongly disagree with the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree
I drink because it helps me to relax	☐	☐	☐	☐
I drink to be sociable	☐	☐	☐	☐
I like the taste	☐	☐	☐	☐
I drink because the people I know drink	☐	☐	☐	☐
I drink when I want to forget something	☐	☐	☐	☐
I drink to celebrate special occasions	☐	☐	☐	☐
A drink helps me to forget my worries	☐	☐	☐	☐
I drink because I need it when I'm tense and nervous	☐	☐	☐	☐
I drink to relieve boredom	☐	☐	☐	☐
I drink when I am lonely	☐	☐	☐	☐
I drink to overcome my inhibitions	☐	☐	☐	☐
A drink helps me face difficult situations	☐	☐	☐	☐
A drink helps me to get along better with other people	☐	☐	☐	☐
A drink makes a social gathering more enjoyable	☐	☐	☐	☐
A drink gives me more confidence in myself	☐	☐	☐	☐
A drink helps me enjoy a party	☐	☐	☐	☐

23. If you drink a few quick drinks before going to a party/ bar or special event:
(Check all those that apply.)

Do you: ☐ Drink alone
☐ Drink with friend(s)
☐ Not applicable

How many drinks do you have?
 State Number: _____

24. What are the main reasons why you drink before attending a party/bar or special event?

☐ Save money
☐ So I will be more relaxed
☐ Meet people more easily
☐ Makes socializing more fun
☐ Other, please state: _____

25. The following section deals with your use of drugs other than alcohol.

How often do you smoke cigarettes:

☐ Never smoked
☐ Only smoked once or twice ever
☐ Used to smoke, but stopped
☐ Smoke occasionally
☐ Smoke less than a pack a day
☐ Smoke a pack a day or more

26. Since starting university, how many times have you used the following drugs? Indicate whether that would be never, once, a few times (less than once a month since starting university) or often (once a month or more since starting university).

	Never	Once	A few times	Often
Cannabis (marijuana or hash)	☐	☐	☐	☐
Hallucinogens (LSD, Mescaline, Magic mushrooms)	☐	☐	☐	☐
Amphetamines, without prescription (speed, uppers, pep pills, bennies, dexies, black beauties, beans)	☐	☐	☐	☐
Barbituates, without prescription (downers, amytal, phenobarbital, seconal)	☐	☐	☐	☐
Cocaine (coke, snow, snort, blow)	☐	☐	☐	☐
Crack	☐	☐	☐	☐
Heroin (horse, smack)	☐	☐	☐	☐
Sniffed glue, gasoline or solvents	☐	☐	☐	☐

27. Have you heard of the P.A.R.T.Y. (Promoting Alcohol Responsibility Through You) program at Carleton?

☐ Yes
☐ No

28. Have you attended any P.A.R.T.Y. sponsored events at Carleton. Check all those that apply.

Yes No
 Attended Did Not Attend

- ☐ ☐ The P.A.R.T.Y. program at Carleton workshop during Orientation.
☐ ☐ Women and Addictions workshop from Amethyst House.
☐ ☐ Tea Party in Rooster's Coffeehouse.
☐ ☐ Confession of a Residence student in Residence commons.
☐ ☐ Labatt's Road Scholarship
☐ ☐ Breathalyzer demonstration with the Ottawa Police in Baker Lounge.
☐ ☐ Moussy non-alcoholic beer party in Rooster's Coffeehouse with Dave Kalil.
☐ ☐ Ministry of Transportation and Communications Drinking and Driving interactive computers.
☐ ☐ "Project Live" Audience in Oliver's
☐ ☐ "Missing You" video in Baker Lounge or Residence Commons.

29. Have you seen our Tom Turkey T-shirts or Your Mother Lied T-shirts?

☐ Yes
☐ No

30. Did you purchase either one?

☐ Yes
☐ No

T H A N K Y O U

Appendix 2

1991 Questionnaire

Appendix 3 Surveys used in the Design of Questionnaires

- 1) Survey on Drinking and Driving Statistics Canada
- 2) The Ontario Drug Use Survey
- 3) Alberta Alcohol and Drug Abuse Commission
- 4) Student Life Questionnaire Traffic Injury Research Foundation of Canada
- 5) The Drinking, Drug Use, and Lifestyle Patterns of Ontario's University Students, ARF
- 6) Delinquency Drinking Study
- 7) Student Alcohol Survey
- 8) Ewing and Rouse study: "Alcohol Use in a Student Population" Male undergraduates
- 9) Rouse and Ewing Research North Carolina
- 10) Rutgers center of Alcohol studies college Follow-up study
- 11) Highway Safety Research Institute School of Public Health
- 12) Patterns of Student Life and Alcohol Use
- 12) Berkeley and Davis Student Purchasing study

Appendix 4 -- Letter sent to students

April 1991

Dear

Hi! My name is Maggie Sullivan and I am writing to you on behalf of the Carleton University P.A.R.T.Y. (Promoting Alcohol Responsibility Through You) committee. We recently conducted our 1991 survey and have not yet heard from you. Enclosed is a copy of the 1991 Alcohol use survey.

You may have already received one earlier, and if you did and returned it, please disregard this notice and survey. But, if you did not receive a survey or have not mailed yours yet, this is a reminder to do so.

I would appreciate it if you would take a few minutes to complete the survey. All answers are confidential, and the responses are kept in strictest confidence.

If you have any questions please do not hesitate to call me at 788-6688.

I would like to take this time to thank you in advance and for participating in our 1991 survey.

Have a great summer!

Sincerely

Maggie Sullivan
Special Activities Coordinator

Appendix 5 Telephone Prompt and Feedback Form

HELLO

I WOULD LIKE TO SPEAK TO

MY NAME IS _____. AND I AM CALLING ON
BEHALF OF THE CARLETON UNIVERSITY'S PARTY COMMITTEE. P.A.R.T.Y.
STANDS FOR PROMOTING ALCOHOL RESPONSIBILITY THROUGH YOU AND
IS THE ALCOHOL POLICY COMMITTEE ON CAMPUS.

WE'VE RECENTLY CONDUCTED OUR 1991 SURVEY AND WE WERE
WONDERING IF YOU RECEIVED YOURS IN THE MAIL?

YES -- WE WOULD BE VERY INTERESTED IN HEARING FROM YOU AND
WOULD APPRECIATE IT IF YOU COULD RETURN THE SURVEY
AS SOON AS POSSIBLE

RESPONDENT -- I HAVE ALREADY RETURNED IT -- THANK YOU

RESPONDENT -- I WILL THANK YOU

RESPONDENT -- NOT INTERESTED OK THANK YOU

NO PERHAPS WE DO NOT HAVE YOUR CORRECT ADDRESS IS IT
SEE ATTACHED

IF ADDRESS IS CORRECT WE COULD SEND YOU ANOTHER ONE
IN THE MAIL. PERHAPS THE FIRST ONE WAS LOST.

IF ADDRESS IS NOT CORRECT OBTAIN CORRECT ADDRESS

I WOULD LIKE TO THANK YOU FOR PARTICIPATING IN OUR STUDY. GOOD
LUCK IN YOUR FUTURE ENDEAVOURS. THANK YOU AND GOOD BYE

Feedback Form

NAME: _____ PHONE: _____
ADDRESS: _____
REMARKS: _____
DATA OF CALL: _____
REACHED RESPONDENT: _____
ALREADY RETURNED IN MAIL YES NO
ADDRESS CORRECT YES NO
NEW ADDRESS: _____

NAME: _____ PHONE: _____
ADDRESS: _____
REMARKS: _____
DATA OF CALL: _____
REACHED RESPONDENT: _____
ALREADY RETURNED IN MAIL YES NO
ADDRESS CORRECT YES NO
NEW ADDRESS: _____

NAME: _____ PHONE: _____
ADDRESS: _____
REMARKS: _____
DATA OF CALL: _____
REACHED RESPONDENT: _____
ALREADY RETURNED IN MAIL YES NO
ADDRESS CORRECT YES NO
NEW ADDRESS: _____

NAME: _____ PHONE: _____
ADDRESS: _____
REMARKS: _____
DATA OF CALL: _____
REACHED RESPONDENT: _____
ALREADY RETURNED IN MAIL YES NO
ADDRESS CORRECT YES NO
NEW ADDRESS: _____

Appendix 6 Representativeness of Questionnaire

Table A6.1 Comparisons between the sample of students who signed names against those who did not sign name using categorical variables and chi-square

Variable	Significance
1) Sex	.25284
2) Marital Status	.66911
3) Residence (with or without parents)	.72010
4) Average	.00430*
5) Major	.32544
6) Employment	.70896
7) Population	.00119*
8) Father's Education	.04621*
9) Mother's Education	.04091*
10) Ever Use Alcohol	.20346
11) Frequency of Smoking	.41720
12) Frequency of Cannabis	.08462

* $p < .05$

In order to determine if there were any bias in the sample of students who signed their name to the back of the 1990 questionnaire a comparison of responses was made between those who signed their name and those who did not. Of the 12 correlations, it can be seen that there were significant differences between the two samples for 4 correlations: average, size of population of home town, father's education and mother's education. Table A6.1 illustrates the percentages of the significant variables that indicated differences between the two samples.

The significant variables indicate that those that tended to remain anonymous had higher averages, their parent's were university graduates, and came from cities with populations of 100,000 or greater.

As well as examining nominal data, continuous variables were examined using Manova. The two groups (those who signed their names and those who did not) were tested using Manova and continuous variables. Table A6.2A and A6.2E are examples of the means and standard deviations of each group and for the entire sample.

Table A6.2A Comparisons of Those who signed names and those who did not sign name using Manova and continuous variables

Variable	N	$\bar{X}$	SD	F	Sig. of F
Hours working at a job					
Group 1	323	31.059	11.862	.39235	.531
Group 2	100	30.170	14.007		
Entire Sample	423	30.849	12.391		
Number of Siblings					
Group 1	323	1.789	2.403	1.09417	.296
Group 2	100	1.930	1.297		
Entire Sample	423	1.823	1.174		
Age of First Use					
Group 1	323	14.718	2.403	.11637	.733
Group 2	100	14.810	2.168		
Entire Sample	423	14.740	2.347		
Age of Respondent					
Group 1	323	19.529	2.565	.29631	.586
Group 2	100	19.690	2.620		
Entire Sample	423	19.567	2.576		
Closest Friend's Use of Alcohol					
Group 1	384	56.702	63.185	1.88854	.170
Group 2	125	65.792	67.375		
Entire Sample	509	58.934	64.291		
Group of Friend's Use of Alcohol					
Group 1	384	59.816	63.774	2.86747	.091
Group 2	125	70.976	64.681		
Entire Sample	509	62.557	64.115		

Notes. Group 1 refers to those that signed their names, and group 2 refers to those who chose not to sign their name.

Friends's Use of Alcohol: Parent's Use of alcohol and Frequency are calculated on a yearly basis.

* $p < .05$

Table A6.2B Comparisons of Those who signed names and those who did not sign name using Manova and continuous variables

Variable	N	$\bar{X}$	SD	F	Sig of F
Father's Use of Alcohol					
Group 1	384	99.246	120.903	.24047	.624
Group 2	125	93.192	116.701		
Entire Sample	509	97.759	119.799		
Mother's Use of Alcohol					
Group 1	384	55.109	95.325	1.63287	.202
Group 2	125	43.048	79.280		
Entire Sample	509	52.147	91.718		
Frequency of Respondent's Use of Alcohol					
Group 1	352	47.459	58.041	10.524	.001*
Group 2	96	69.062	57.070		
Entire Sample	448	52.088	58.448		
Quantity of Respondent's Use of Alcohol					
Group 1	352	3.771	2.584	.00304	.956
Group 2	96	3.755	2.351		
Entire Sample	448	3.768	2.533		
Quantity Frequency					
Group 1					
Group 2	352	4.188	7.422	.32333	.570
Entire Sample	96	3.708	6.963		
	448	4.085	7.321		
Negative Complications					
Group 1					
Group 2	352	16.710	25.258	4.06149	.044*
Entire Sample	96	23.927	46.732		
	448	18.257	31.207		

Notes. Group 1 refers to those that signed their names, and group 2 refers to those who chose not to sign their name.

Friends's Use of Alcohol; Parent's Use of alcohol and Frequency are calculated on a yearly basis.

* $p < .05$

There are only two continuous variables in Tables A4.3A and A4.3B that are significantly different in the two groups: frequency of respondent's use of alcohol and the negative social complications. The mean frequency of the group that signed their name is 45.6 compared to those that did not sign their name at 67.8. As well the number of negative complications reported by those who signed their name is .716 compared to those who did not sign their name at 1.085. This indicates that those who chose to remain anonymous had a higher frequency of alcohol use and well a higher number of negative complications from alcohol use.

Appendix 7 Figures 1 - 25

Figure 1

Frequency of Alcohol Use

Figure 2

Quantity of Alcohol Use

Figure 3
Drink alone to intoxication

Figure 4

Had a Hangover

Figure 5

Drinking Binge

Figure 6
Intercourse after drinking

Figure 7

Blackouts

Figure 8

Vomitted

Figure 9

Contracted A STD

Figure 10
Ran Out of Money Due to Alcohol

Figure 11

Prime Before Going Out

Figure 12

Drink in the Morning

Figure 13

Hands Shake until Drink

Figure 14
Been with a Friend who became Sick

Figure 15

Lost a Job

Figure 16

Regrets after drinking

Figure 17
Parent Criticized Drinking

Figure 18

Friends Criticized Drinking

Figure 19

Driven after drinking

Figure 20

Driven after too much

Figure 21

DWI

Figure 22

Received A Lower Grade

Figure 23

Skipped Classes/Hangover

Figure 24

Skipped to drink

Figure 25

Trouble with School Admin

END

16-12-93

FIN